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8th European Conference of ACENDIO

E-Health and Nursing – How Can E-Health Promote Patient Safety?

A C E N D I O

ACENDIO 2011

E-HEALTH AND NURSING

How Can E-Health Promote Patient Safety?

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E-HEALTH AND NURSING

How Can E-Health Promote Patient Safety?

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Interventions and Outcomes, Dublin, Ireland.

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Message from the President of ACENDIO

There is a saying that you should know the past to be able to live in the present and to understand the future. ACENDIO was established in 1995 at a time when interest of nursing terminologies had awoken among nurses. The developments in electronic information systems also contributed to their curiosity although terminologies and computers were not necessarily linked together.

As we know from nursing history, and Florence Nightingale's contribution to statistics, having credibility and visibility has been of great importance. Thus the possibilities to aggregate nursing knowledge using standardized terminologies should be recognized among nurses.

For sixteen years the association has offered a network for all nurses to become involved in terminology development. Some among our members have identified the importance of the association in sharing knowledge through biennial conferences while others have taken advantage of the experiences and developments of other countries in a more personalized way.

The strength of our association has always been the European perspective that we represent. In the future, I think cooperation will be even more important, with legislation and regulations allowing nurses increased mobility during their nursing career. This will create new challenges for us to have new possibilities for expertise and knowledge sharing when nurses are more aware of various nursing environments and of nursing itself in the European countries. ACENDIO can and will serve as a platform for knowledge transfer and distribution.

Prof. Kaija Saranto

Message from the Chair of the Scientific Committee

I am proud to present you the proceeding of the 8th European Conference of ACENDIO. The conference is exploring the state-of-art in worldwide e-health initiatives in nursing, describing best practice and looking for evidence of how these can contribute to five major goals: patient safety, quality of care, efficiency of care nursing service provision, patient empowerment and continuity of care.

Both themes are pertinent. E-Health is advancing at great speed, providing a wide range of digital solutions that are essential for medical innovations. At the same time, there is increasing awareness of quality and patient safety given the number of medical errors and adverse events that occur every year in hospitals and other healthcare settings. One of the main priorities in patient safety research, given by the WHO Alliance for Patient Safety in 2009, is that of coordination and communication. There is evidence that good teamwork, supported by high qualitative interprofessional communication and mutual respect, is leading to better quality of care, more patient satisfaction and shorter length-of-stay in hospitals.

This is what this conference is about: how nurses can take advantage of this growing digital e-health environment to take better care of their patients. In total 143 abstracts were submitted for the conference. Based on a scientific review process, we selected 48 oral presentations, 53 poster presentations and 3 workshops. I wish to thank all reviewers for their contributions to guarantee a high scientific standard for the conference. I would also like to thank all presenters for their contributions to the conference. I wish all participants a good and inspiring conference.

Prof. Walter Sermeus

Greetings from the Chair of the Conference Committee

On behalf of the Conference Committee for the 8th International Conference of ACENDIO, I would like to welcome you to the Autonomous Region of Madeira. It is with great pride that we are able to acknowledge the holding of this great event, despite the harsh economic circumstances that we have collectively been facing. You all know how much a scientific event of this nature means to us.

It being the first time ACENDIO has held its conference in this country and we are glad to recognize and appreciate the Board's decision to host it in Portugal, specifically in the Madeira Archipelago. We recognize the potential risk initially undertaken in making that decision and we will do everything within our reach to guarantee that everyone can benefit, not only in directly contributing to our excellent program, but equally by taking advantage of the networking environment created here as well as enjoying the chance for leisure in a wonderful island such as our own.

We further take this chance to thank all our guest speakers, authors, presenters and, of course, you, our participants, for the commitment and dedication demonstrated. We would equally thank the IMIA-NI Board for its decision to host their General-Assembly here in Funchal, alongside the conference. Last, but not least, a very special thank you to the Regional Secretariat of Health and Social Affairs and to the Regional Section of the Nurses Association (Ordem dos Enfermeiros) for the support given, as well as to all others that have contributed to the success of this important Conference.

Élvio H. Jesus

Chapter 1 - Keynotes

1. eHealth and Nursing

Professor Heimar Marin (Brazil)

“... never do harm to anyone.”

Hippocratic Oath

"...I will abstain from whatever is deleterious and mischievous and will not take or knowingly administer any harmful drug..."

Nightingale Pledge

It is worldwide accepted that information and communication technologies have the potential to improve life and health conditions. However, in which extensions these resources are being used as collaborative tools to create effective solutions, in the current environment to enhance life conditions in all continents, is not in completely equity to all communities. eHealth resources can provide more flexible and powerful means to monitor, evaluate and manage citizen's health status.

Simple and sophisticated technologies are available and we need to be prepared to develop resources usable, giving to users ability to explore potential all functionalities. Investigation must demonstrate the evidence of e-health using information technology to manage patient care having a positive impact in the healthcare of populations over countries.

The degree of development in IT solutions for healthcare demands effective evaluation of real needs at the point of care; we need tailored intelligent systems that support patient and providers, optimizing workflows, reducing duplication and errors. No success will be complete if we continue to add solutions that just give sophistication and modernity. We need to bring to the setting the resources that really works.

As stated by Silva and cols¹, the major objective of health IT should be to subtract work, not to add work or make it harder. Clinicians do not use IT systems because they fail to offer value. Fundamental relationship between perceived value of an IT system and the usability and utility to its intended users must be clear. Utility is perceived if the resource delivers immediately useful information and requires minimal effort by the user with almost no training (usability).

Technology in healthcare has brought several resources that were supposed to be fundamental instruments to improve health care delivery. Professionals and users are getting used to these instruments, trusting that they will achieve better results and more access to the facilities, information and providers.

Currently, individuals are incorporating technologies resources in the daily life in such degree that is not anymore understandable life with any of these resources such as mobile phones, notebooks, Ipods, Ipads, ATM machines,...The market grows every second and healthcare area is taking advantage of these resources - sometimes in a slow speed sometimes with no purpose, control and governance, sometimes with a huge success resulting as ascertained concept of improvement to the delivered care.

Adopting the broad definition of ehealth that covers all electronic/digital process in health care, specific application examples range from electronic health record and telehealth to mobile devices for monitoring patients and consumers using virtual healthcare involving sharing and collaborating team work among healthcare providers and clients.

The two sides of this scenario are: the improvement and the pollution of technology at the bed side, at the encounter. How to establish the balance? How to determine the turning point where technology plays a fundamental role to support and enhance human work assuring better conditions, patient safety and quality improvement without compromising health professional-patient relationship, privacy, liberty to choose and dignity.

How to find the optimal point where technology will support professionals to do the right thing at the same time that create difficulty or even resources that avoid doing the wrong thing? Where is the position where induced errors by technology are not able to be in place and the *technological iatrogenesis* does not have chance to happen?

The ehealth resources applied in care for patient and population need to be based in principles that maintain the pillars of patient centricity, safety and quality assurance, privacy and security, care delivered coordination and the conduction of research and teaching.

The base pyramidal is research, education and care delivered to enhance health promotion for the citizen. The solutions comprises interoperability, uniformity, systematic approach maintaining information technology aligned with operation, with the product or service delivered at the point of care.

The health care system in its evolution across countries established several indicators as a measurement tool to evaluate quality, return of investments, security and outcomes, including service coverage, risk factors, mortality, morbidity and health systems resources.

An indicator is a measure to capture a key dimension of health, such as how many people suffer from chronic disease, how many people were born and died or have had a heart attack in a specific population. Indicators also capture various determinants of health, such as income, or key dimensions of the health care system, such as how often patients return to hospital for more care after they are treated, falls, pressure ulcer, nosocomial infections, transfusion reactions, among others.

In addition, indicators are important and play an essential role on the making decision process and quality improvements efforts. However, it is time to categorize critical and non-critical indicators using balanced scorecard like methodologies.

To date, we have zillions of data collected and few information at the point of care. The same way we are trying to identify the essential data set we need to identify which indicators are essentials to the healthcare system. We need to construct evidence that e-health—using information technology to manage patient care—can have a positive impact in the healthcare of populations over countries.

Research funding should require continuous evaluations to ensure that future e-health investments are well-targeted. It is mandatory to assure that systems available for selling are developed according to principles of security, privacy, confidentiality and interoperability. It is necessary to test and certify software applications. Consumers also must be trained, test and deploy systems aligned with their needs and expectations.

There is no doubt that the future generations will face technology in a way that our generation is not able to consider. A recent study conducted by the AVG Technologies² interviewed 2,200 mothers with Internet access across 10 countries. The mothers, all with children aged 2-5, were asked to rank a list of computer and traditional life skills according to how early their children had mastered them. The results showed that while most small children can't yet swim (20%) or tie their shoelaces (9%), albeit they **do** know how to turn on a computer, point and click with a mouse, and play a computer game (25%).

Parents need to shift paradigms for children education as much as nurses and all clinical providers need to identify, adopt and master technology resources to improve care delivery diminishing errors and pitfalls. When a nurse try to deal with too many things at once or when they're running out of time, they may be overwhelmed by the situation. Then, opportunities to errors and lack of critical evaluation are opened.

Searching some resources available and studies conducted to evaluate the impact of technology in the life style and professional duties, it is worthwhile mention the tendency to develop e-health resources for citizens that could keep them healthy or maintain disease control, resources for travelers and business, for patient with chronicle ills, translated as decision support systems, alarms, computerized provider order entry - CPOE, intelligent infusion pumps, eprescribing, among others.

Independently from any kind of ehealth resources we use or decide to adopt, the essential is to remind that safety will be in place when any adverse event does not happen. As nurses, it is our duty to assure it. Technology can become obsolete when all functionalities are learnt, but caring for people will never be obsolete.

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2. ICNP and Standardization

Professor Amy Coenen (USA)

Abstract not available

3. Cross-Border Electronic Health Records: Challenges for Nurses and Patients

Professor Abel Paiva (Portugal)

Abstract not available

4. Creating a Safe Patient Care Environment.

Professor Linda Aiken (USA)

Context

Research is growing on the effectiveness of various nursing interventions. However, in actual practice, many previously tested interventions do not have their expected results including improvements in electronic medical records. This presentation explores why and what can be done to improve patient care outcomes and the implementation of evidence based nursing practice.

Theoretical Framework

The Quality Health Outcomes Model posits that nursing interventions are mediated by attributes of the nurse work environment. The quality of nurse work environments vary by hospital and setting thus potentially explaining why many evidence based interventions do not consistently produce good outcomes.

Methods

A combination of nurse and patient surveys and administrative data from multiple countries are used to examine how nursing impacts patient outcomes and factors associated with nurse retention.

Results

Better nurse staffing, a more educated nurse workforce, and a good nurse work environment individually and together are associated with better patient and nurse outcomes. However, improving nurse staffing and nurses' education in settings with poor work environments have no impact on improving patient outcomes.

Conclusion

Improving nurse work environments has the greatest value of all the nursing options for improving patient outcomes. New interventions including eHealth will fail to have their expected positive results on patient outcomes unless nurse work environments are improved and sustained.

Chapter 2 – Documenting Nursing Care

1. Accuracy in documentation of pressure ulcers in patient records

A. Thoroddsen, A. Ehrenberg, M. Ehnfors. (Iceland/Sweden).

Introduction

Accurate and complete clinical information is required for health care quality improvements, safety of care, communication, research and policy making. Data and information in the patient record are considered as the most central factors to improve patient safety together with tools in information technology and the electronic health record (EHR) (Bakken, 2006). Quality of information in patient records includes accuracy, completeness and comprehensiveness as essential characteristics (Häyrinen, Saranto, Nykänen, 2008). Lack of information quality and standardisation in documentation of the patient's condition and the care given may have a severe negative impact on quality and safety of care. It is reasonable to assume that good documentation contributes to safety and continuity in patient care even if there is no evidence in the literature indicating that better documentation *per se* improves quality of care or leads to change in practice (Saranto & Kinnunen, 2009).

Documentation formats and structures are considered important to render comprehensive and complete documentation (von Krogh & Nåden, 2008). Organisations, such as the European Pressure Ulcer Advisory Panel (EPUAP) (1998), have recommended a structured approach to risk assessment of patients. Identification of patients at risk for pressure ulcers is an important patient safety issue and research-based clinical guidelines to prevent and treat these conditions have been available for years (Agency for Health Care Policy and Research (AHCPR), 1992).

The purpose of documentation is to facilitate flow of information that supports continuity, quality and safety of care (Keenan, Yakel, Tschannen, & Mandeville, 2008). Documentation provides a mechanism to describe, record, and communicate data, information and knowledge, which are the key components of evidence-based practice and knowledge management in nursing. To enable complete, comprehensive and consistent documentation, structures and formats are important (von Krogh & Nåden, 2008). There is, however, evidence that the primary purpose of documentation in nursing often fails (Keenan, et al., 2008). Common, well-defined nursing care topics are often deficient in the patient record and studies have also shown inconsistency between what has been documented in patient records and observations of pressure ulcers (Gunningberg, Fogelberg-Dahm, & Ehrenberg, 2008). A common concern is that nursing documentation fails to provide information about the present status of patients and actual care given (Ahlqvist, et al., 2009; . Ehrenberg & Ehnfors, 2001; Simmons, Babineau, Garcia, & Schnelle, 2002)

Aim of the study

To describe whether the status of patients identified with pressure ulcers was accurately documented in patient records.

Methods and material

A cross-sectional descriptive study was performed in a university hospital that included skin assessment of patients on one day in 2008 and retrospective audits of corresponding records for the care episode. A sample of 219 (66.7%) patients, 18 years of age or older who had been hospitalised for more than 48 hours in surgical, internal medicine, geriatric or rehabilitation wards (29 wards), was inspected for signs of pressure ulcers on one day in 2008. Records of patients identified with pressure ulcers were audited (n=45) retrospectively. The instruments used were the EPUAP prevalence study tool (European Pressure Ulcer Advisory Panel (EPUAP), 1998) for skin assessment and a modified audit tool based on the EPUAP was employed for the record audits (Gunningberg & Ehrenberg, 2004). The EPUAP tool includes the Braden scale for pressure ulcer risk assessment.

Accuracy in this study was defined as the correspondence between documentation and existing pressure ulcers, staging and location of pressure ulcers. *Completeness* was defined as the presence of risk factors in the patient record, and *comprehensiveness* was defined as whether a patient record included elements needed for identification of a pressure ulcer or its risk factors and a plan of care to resolve or prevent a pressure ulcer in accordance with the nursing process. Records of patients hospitalised for a long time

were audited for a period of maximum two months prior to the assessment day.

Inter-rater reliability in the record audit showed 60 to 100% agreement between auditors of the patient records. Descriptive statistics were used for the analysis.

Results

Only 60% of the identified pressure ulcers were documented in the patient records and 44% of patients had a pertinent nursing diagnosis. Presence of pressure ulcers were mostly documented in nursing assessment (when present on admission) or in progress notes (when acquired during hospital stay). Pressure ulcer risk factors were by far most frequently documented in free text in nursing progress notes. Data to support identification of a pressure ulcer or risk factors and care plans to prevent or treat a pressure ulcer were scarce and lacked completeness. A full pressure ulcer risk assessment according to the Braden scale was available in only one patient record.

The nursing process (assessment, diagnosis, goal or expected outcome, nursing care plan and evaluation of outcome in progress notes) was used to structure the documentation in the patient records. All phases of the nursing process related to pressure ulcers were recorded in only one out of 45 patient records and 13 patient records had no elements recorded. Signs, symptoms, nursing diagnoses and progress notes related to pressure ulcers and a pressure ulcer prevention plan were found in less than 50% of the patient records. Information on pressure-relieving devices,

turning schedules or care plans for pressure ulcer treatment were found to even a lesser degree in patient history, nursing assessments, medical diagnoses, expected outcomes.

Discussion

The purpose of documentation to record, communicate and support the flow of information in the patient record was not met. Data in the patient records to support identification of a pressure ulcer or risk factors and care plans to prevent or treat a pressure ulcer were scarce. The patient records lacked accuracy, completeness and comprehensiveness, which can jeopardise patient safety, continuity and quality of care. Gunningberg and Ehrenberg (2004) reported similar findings in a university hospital in Sweden. Their study showed lack of accuracy of pressure ulcers in nursing documentation, i.e. only half of observed pressure ulcers were recorded (59 of 119). Relevant information related to risk assessment, pressure ulcers and care planning to prevent pressure ulcers for patients in care was also lacking in the patient records and documentation of risk factors showed lack of completeness. Despite the increased emphasis on better documentation in clinical practice and the request for accurate and complete clinical data, our study still showed deficiency in documentation that can compromise continuity, quality and safety of care. All parts of the patient records were audited in the study. Structured recording is likely to increase completeness in documentation (Ehrenberg & Ehnfors, 2001). To improve the accuracy, completeness and comprehensiveness in records a systematic method for assessment of risk factors for pressure ulcers is needed.

Only 44% of the patients with ulcers had a nursing diagnosis pertinent to pressure ulcers. The wording of the nursing diagnoses used (such as risk for impaired skin integrity, impaired skin integrity, tissue integrity and risk for disuse syndrome) is not transparent for describing pressure ulcers and thus hampers the reliability of use of these diagnoses to represent presence of or risk for pressure ulcers. Inaccuracy in diagnosis a nursing problem can lead to deficiency in care and jeopardize patient safety. Also, when the meaning of the nursing diagnoses is not clear, recording of pressure ulcers and risk for pressure ulcers is not obvious in the patient records. Unclear meaning has impact on the reliability and validity for using the diagnoses. In comparison, the ICD-10 medical diagnosis is *decubitus*, which is a synonym for pressure ulcer and a more precise description. When documentation of risk for pressure ulcers and prevalence of pressure ulcers is not clearly defined and described in the patient records the patient is put at unnecessary risk and information in the patient record will not reflect the exact patient condition. Appropriate diagnoses with a clear meaning are likely to increase accuracy in documentation and thus improve patient safety.

Conclusion

The findings in this study show that the purpose of documentation to record, communicate and support the continuity of information in the patient record was not met. The patient records lacked accuracy, completeness and comprehensiveness, all of which can jeopardize patient safety, continuity and quality of care. Information on pressure ulcers in patient records cannot be

considered as a valid and reliable source for evaluating quality of care. To improve accuracy, completeness and comprehensiveness of data in the patient record a systematic risk assessment for pressure ulcers and assessment of existing pressure ulcers based on evidence-based guidelines need to be implemented and recorded in clinical practice.

Keywords: Accuracy, documentation, pressure ulcer

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2. Use of the Omaha System for Documenting Health Visiting Practice in the United Kingdom

J.R. Christensen (United Kingdom)

Introduction

Health visiting in the UK is a primary care service that is aimed at promoting health and well-being and preventing ill-health in the community and is one of the few universalist services offered to families in which there are new births, regardless of need. While the focus of health visiting is mainly targeted at families with pre-school aged children, the service also addresses the needs of older people and other vulnerable adults, such as the disabled. Health visitors often work on an individual basis with families in their own homes, but can also work with groups and whole communities to promote health and provide parenting support for children and families.

One might imagine that such a service would be highly valued at a time when negative lifestyles are costing the National Health Service in the UK a considerable amount of money. Health visiting would seem to be a service that is well placed to assist the Government in achieving better health gains for their investment, but it is a service that is not without its critics. Some went so far as to say that services whose assertions of effectiveness were untestable and unchallenged had become established simply by tradition, and cited health visiting as one such service. These criticisms were not completely unfounded for health visiting

services had no means of measuring health visiting sensitive client outcomes except in small specific research projects that are difficult to extrapolate to the larger population (Barker 1991). There are many different influences on the health outcomes of a client or population, such as socio-economic status, family support mechanisms and a host of other extraneous variables that might have a greater influence on health outcomes than a healthcare intervention (Hegyvary 1991), which further confounds accurate outcomes measurement. The problem of attribution in the measurement of health outcomes is a difficult one to overcome and is probably the main reason that the effectiveness of a healthcare service in the UK is often overlooked, or proxy measures are used that are often a poor measure of the service under consideration.

It was in response to these criticisms that the a project was initiated to document health visiting practice using the Omaha System in an area of South Wales in the UK, under the academic leadership of a professor of a community nursing who was internationally renowned in the field of nursing language development. The Omaha System (Martin 2005, Martin and Scheet 1992) was originally developed by the Visiting Nursing Association of Omaha, Nebraska in the United States of America and is now widely used in many countries throughout the world to document community nursing services. This was the first time that the Omaha System had been used in the UK.

The objectives of the research project were to evaluate whether the Omaha System could:

- Document the everyday practice of health visiting;
- Provide a measure of the effectiveness of the services provided; and
- Facilitate more effective clinical decision-making.

Methods

This was an action research project that had six action research cycles over a period of four years. The terminology was revised to make it more suitable for health visiting practice in the UK and was tested, refined and re-tested in each action research cycle, some of which ran concurrently with each other. These are summarised below:

Cycle One

This was a short pilot of the Omaha System with 17 health visitors using the system over a period of three months, documenting 92 contacts with 73 families in which there had been new births during that period of time. The results of this pilot were promising enough to be awarded funding to take the project further.

Cycle Two

Cycle two was a more rigorous test of the system involving 36 health visitors recording 769 contacts with 205 families over a period of nine months. Health visitors were asked to record contacts with ten families each, selected from the whole spectrum of a health visiting caseload, and to include at least one family where there were child protection issues.

Cycle Three

The Sure Start programme is an early intervention programme that is targeted at areas of deprivation and which aims to break the cycle of disadvantage for vulnerable children. Cycle three involved four Sure Start health visitors recording all of their contacts with families using the Omaha System. This cycle lasted for 11 months, during which time 1,721 contacts were recorded with 124 families.

Cycle Four

During Phase Four a computerised prototype of the Omaha System was developed. Before commencing this phase of the project considerable work went into modifying the Omaha System to enable it to populate a computerised system. Additional axes were introduced to give greater precision and reduce the amount of free text required. In the Problem Classification Scheme the modifiers *family* and *individual* were retained but were entered into a new axis labelled *bearer* in line with SNOMED-CT. The Intervention System was expanded with the introduction of three new axes called *recipient*, *focus* (equivalent to the original Omaha System Targets) and *method*, again in line with SNOMED-CT. Each intervention had to have a related *recipient* and at least one *focus*, but it did not necessarily need to have a related *method*. The resulting computerised terminology was subjected to a quality review using the following nine criteria identified by Zielstorff (1998): *domain completeness; granularity; parsimony; synonymy; non-ambiguity; non-redundancy; multi-axial and combinatorial ability; unique, context-free identifiers; multiple hierarchies.*

Cycle four involved two health visitors, one clinic nurse and one paediatric liaison health visitor testing the system on laptops for one visit per day for 8 weeks. Contemporaneous paper records were also kept during this phase as the computerised system was not 'live' in that it was not being backed up to a server.

Cycle Five

For this cycle, the same users as in Cycle Four entered all of their contacts onto a laptop using the computerised version of the Omaha System. The encounters recorded were backed up onto a central server and so contemporaneous records were no longer kept, except for families where there were child protection issues.

Cycle Six

This cycle lasted for four weeks and involved the same users as in Cycles Four and Five recording all of their contacts using the computerised version of the Omaha System on laptops in the clients' homes. Recordings were backed up onto a server and the system included the additional interface of a link to the Community Child Health System (which is a nationwide system that keeps a record of immunisations and examinations received by children), a link to the local hospital to receive accident and emergency discharges and a link to the Health Visiting Manager.

Each action research cycle was analysed using various methods that included focus groups, field diaries, questionnaires and quantitative analysis of encounters recorded using the Omaha System.

Results and Discussion

Suitability of the Omaha System for documenting the everyday practice of health visiting

The experiences of the project have shown that the Omaha System needed very little modification to be used in the UK, as evidenced by the fact that many of the revised terms were changed back to original Omaha System terms at a later date. Apart from the Anglicisation of words in terms of their spelling, very little amendment was needed.

It can therefore be said that the Omaha System was a suitable means for documenting health visiting practice in the UK. However, while the health visitors liked the structure of the Omaha System they found it too time-consuming to use on paper. It was this view that led to the extension to the research project to develop a computerised version of the Omaha System in Cycles Four, Five and Six.

Use of the Omaha System to Provide a Measure of the Effectiveness of Services Provided

Some interesting results arose from the quantitative analyses of the data from the Outcome Rating Scales of the Omaha System, particularly when comparing Cycles Two and Three of the project. Outcome Rating Scale scores for *Knowledge*, *Behaviour* and *Status* were analysed using Statistical Package for Social Sciences (SPSS), where a paired *t*-test was used. For the purpose of this evaluation a significance level of $p < 0.05$ was set as the level that would be considered statistically significant. In Cycle Two an additional outcome measure of *Coping* was introduced but was later omitted

as it was found to be too similar to *Behaviour*. Outcome ratings must be mutually exclusive if a high level of inter-rater reliability is to be achieved.

The Phase Three Sure Start health visitors had achieved statistically significant results in 21 different Problems out of a total of 186 different Problems that they had addressed with their clients. The Cycle Two health visitors achieved statistically significant results in only 12 Problems out of a total of 177 different Problems that they addressed with their clients. A difference in professional expertise could not account for this variation as the four Sure Start health visitors originally came from generic health visiting where they had participated in Cycle Two.

Of even greater significance is the Problem of *Sleep Pattern*. When this was addressed by Sure Start health visitors statistically significant results (K $p = <.001$; B $p = <.001$; S $p = <.001$) were achieved, but that was not the case for the generic health visitors (K $p = .104$; B $p = .168$; S $p = .104$; C $p = .096$). The solution to this difference can be seen by looking at the frequency with which the Problem was addressed. In Phase Two, the 27 generic health visitors who participated addressed this Problem 14 times. In Phase Three, the four Sure Start health visitors addressed this Problem 195 times. The intensity with which this Problem was addressed was therefore far greater in Phase Three and was obviously the key to successful interventions in this case. The Sure Start health visitors had average caseloads of 30, while the generic health visitors had average caseloads of 550. The much smaller caseloads of Sure Start health visitors allowed them to visit clients

intensively and to focus their interventions repeatedly in a short space of time to facilitate a change of *Knowledge* and *Behaviour* in the client, which resulted in improved *Status* of the Problem. Generic health visitors have to spread their interventions so thinly because of their large caseloads that there comes a point beyond which their interventions become totally ineffective.

In relation to the problem of attribution Donabedian (1992) stated that we can derive probabilities from outcome measures but only when these are linked to causal relationships. He suggested a tripartite model of healthcare quality measurement in which health outcomes are measured in relation to the process by which those outcomes are achieved (the intervention) and the structure in which they are delivered (the resources, systems, training, staffing levels, environment and equipment necessary to support the service).

Use of the Omaha System to Facilitate more Effective Clinical Decision-Making

Qualitative feedback from health visitors indicated that they felt that the quality of their encounters with clients had improved as a result of using the Omaha System. This was an unexpected finding but it was an important one that demanded further exploration.

An exploration of the nature of clinical decision-making in health visiting concluded that the Omaha System works in the same way as the police photofit picture (Polanyi 1967), in that it breaks a client encounter up into individual parts, facilitates reflection on each part and uses dialectic materialism (Woods & Grant 1995) to bring the components back together to form a whole. In this way

tacit knowledge is made explicit and can be subjected to a process of deliberative rationality that is used to influence judgements. It can therefore be said that the Omaha System acts as a tool to facilitate better clinical decision-making by forcing reflection on every aspect of a client encounter and enabling the process of deliberative rationality to take place.

Conclusion

This research project was a rigorous evaluation of the Omaha System when used by health visitors in the UK over a period of four years. It clearly demonstrated the ability of the Omaha System to document health visiting practice and to provide a measure of the effectiveness of services provided. An additional finding was that the Omaha System improved the clinical decision-making of health visitors by forcing reflection in everyday practice. One caveat from this research is that it needs to be used in computerised form if it is to support the everyday practice of health visitors.

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3. Documentation of Nursing Care Provided to Patients with Peripheral Venous Catheters: Gap Between Practices and Guidelines.

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Introduction

Since the time of Florence Nightingale, nurses have considered documentation on patient care as an essential component of professional practice. This component serves multiple and diverse purposes, as it ensures the continuity of care, furnishes legal evidence of the process of care and supports evaluation of quality of patient care (Cheevakasemsook *et al.*, 2006).

Records have been considered essential and indispensable, because nurses can then make their performance more visible, reinforcing their professional autonomy and responsibility (Dias *et al.*, 2001). However, we still find references to the fact that nursing records need more clarity and specificity (Törnvall e Wilhelmssons, 2008). Recent studies on how nurses document and combine their contribution to nursing care show, however, that many of their interventions are still not documented, thus their contribution remains invisible (Hyde *et al.*, 2005).

Today, in hospital setting, the use of peripheral venous catheters is a constant need, and in most cases nurses insert these catheters and also care for these patients. Besides peripheral venous catheter

placement, it is very important to monitor them so as to prevent complications that can jeopardize patients' safety.

Different guidelines (CDC, 2002; INS; 2006; RCN, 2010) on the documentation of the care provided to patients with peripheral venous catheters consider it important to standardize these procedures, by defining the information that should be included in the records.

However, many authors still refer to the little documentation on peripheral venous catheters. In studies conducted by Bravery *et al.* (2006) and Ahlqvist *et al.* (2009), the authors mention the lack of documentation on PVC insertion. According to Ahlqvist *et al.* (2009), only 71.8% of PVCs were documented, and in 46.2% of PVCs there was only documentation of the insertion site and catheter gauge.

Vidal Villacampa (2008), based on more than 8700 nursing records on patients with peripheral venous catheters, concluded that the implementation of quality improvement strategies reduced the number of complications, such as constant pain in the insertion site, extravasation or edema, 1st, 2nd and 3rd degree phlebitis and catheter-associated infection. The author concluded that it was necessary to integrate in the nursing process the concept of safety as a main aspect in nurses' performance. This need is more evident in patients with intravenous therapy needs. Ahlqvist *et al.* (2009) also considered that an improvement in documentation is necessary to serve as a basis for an improvement of the quality and research on PVC, as well as to improve the information provided to the patients so as to engage them in PVC care.

Thus, a study was conducted to compare the documentation of care provided by nurses to patients with peripheral venous catheters with the international guidelines.

Methodology

Data was collected in August, 2009, from the clinical records of patients hospitalized in a medical ward of a central hospital. We checked each file so as to access nurses' records in the form used to write down patient progress notes in each shift.

We checked these files after shift change at 4 p.m., a period in which all files were available (in a place where they are usually stored) and were less often used by nurses and physicians.

Personal data and data about patients' clinical condition was collected and the transcription of sentences related to peripheral venous catheters and IV medication was performed based on 1409 nursing records of 43 hospitalized patients (23 male and 20 female patients) with a mean age of 76.23 years, most of them coming from emergency rooms and with high levels of dependence.

In the first medical record transcription of each file, we recorded all the information since the patients' date of admission. Record transcription would start again in the day/shift in which we had suspended the previous collection. If the patient's were not in the file due to discharge, death or other, we would start the data collection again, with a new patient in the same bed.

A thematic analysis was conducted, followed by a categorical and frequency analysis. The categories that emerged from the

transcribed data were analysed taking into account the international guidelines.

Presentation and Analysis of Results

The analysis of 1409 record units (RU) and the Morning, Afternoon and Night shifts concerning 43 hospitalized patients corresponds to around 4.3% of the documentation performed by nurses in the three shifts over the period of one year, based on a unit occupation rate of 100% (30 beds).

As for the analysis of the transcribed records, we concluded that all patients were punctured in a peripheral vein during hospitalization, with the exception of one of them who had and kept with him a totally implantable catheter (c7-26/08/09). Nurses did not document IV medication or puncture by a peripheral venous catheter only in 13 patients.

The objective outlined allowed for the identification of two categories:

- Characterization of catheter insertion and Maintenance of peripheral venous catheter;
- Characterization of catheter insertion.

As for the characterization of catheter insertion, three subcategories were identified: “Reasons for puncture”; “*Description of interventions*” and “*Difficulties in catheter insertion*”.

There is usually reference to the need to obtain a peripheral venous access, and 106 punctures were documented.

As for the documentation of the “Reasons for puncture”, we concluded that, in 57 record units, there is only reference to the intervention: “Patient was repunctured” (c5- 09/08/09), without reference to the reason for puncture. However, in the other record units, the reason for puncture is described: “Repunctured due to phlebitis” (28 RU); “Repunctured due to infiltration” (8 RU); “Repunctured due to catheter exteriorization” (8 RU), “Repunctured because catheter did not work” (2 RU); “Punctured new access for blood cells” (2 RU); “Punctured new access because central catheter was removed” (1 RU).

We concluded that in the record units the reason for new puncture was mentioned: complications, patient’s clinical situation or need for medication or blood cell infusion.

We also verified that in most cases of catheter exteriorization (8), which represents 50% of cases in the night shift, the reason is not mentioned. In only one of the situations it is mentioned as being accidental. We would like to underline that the reference to catheter exteriorization occurs in patients with confusional states (6 RU), although this association is not documented.

The reasons underlying the decision to insert a new catheter seem to be associated with the prescription of some specific drugs, although this is not always recorded. No explicit correlation is established between the complications and the type of medication administered, nor is it mentioned any attitude that aims to prevent these complications: “Saline infusion in permeable peripheral vein + infusion of ISDN at 2.1cc/hour in second access” (c7-06/08/09).

“2 Dopamine vials with 500cc of saline solution at 30 ml/h for hypotension were prescribed. Patient repunctured. 2nd access with reflux valve”. (c12-13/08/09).

As for the *“Description of interventions”*, we observed that 58 of the total punctured documented by nurses were in the morning shift, 36 in the afternoon shift and the remaining in the night shift. As for the documentation of the 106 peripheral catheters inserted, we observed that there is little information on this procedure. It is only specified in 13 punctures if it was performed in the right or left upper limb, with no information on the specific site or punctured vein. There was also no reference to the disinfectant used to perform the puncture, the gauge, brand or material of the intravenous catheter, as well as the type of securement/dressing applied to the catheter site.

The type of training provided to the patient and family about the puncture and necessary care was not documented in any record unit. We also could not find any reference to patient’s engagement and participation during the procedure.

The difficulties in catheter insertion were only documented in a single record unit, although it was not explicit if the puncture was performed in the first attempt or not: *“Patient was repunctured with difficulty”* (c 19-20/08/09). However, we observed that in two cases there was record of the patients not being repunctured but there was no reference to the reason: *“Catheter removed because it wasn’t working. Patient was not repunctured. Physician was informed.”* (c26-19/08/09); *“Patient was left with no access; the physician was informed.”* (c 26 -28/08/09).

Maintenance of Peripheral Catheter

As for the category “Maintenance of peripheral catheter”, we identified two subcategories: “*Catheter with reflux valve versus infusion saline*” and “*Number of inserted catheters*”. Many of the interventions related to catheter surveillance and/or maintenance were not documented, particularly the observation of catheter insertion site, catheter flushing, insertion site disinfection, replacement of the securement system/dressing, etc.

Even when it is necessary to replace the device, the reason resulting from the surveillance of the patient with the catheter is not always documented, as we have previously mentioned.

As for the subcategory “*Catheter with reflux valve versus infusion saline*”, we verified in our analysis that nurses document how the catheter is maintained. In situations where the patients do not have intravenous infusions, the presence of catheter with reflux valve is always documented: “*Maintains IV catheter with reflux valve.*” (c 10- 19/08/09). Infusion saline is always documented, usually using abbreviations: “*Saline in pv*” (c5-09/08/09); “*Saline in permeable peripheral vein (ppv).*” (c7- 17/08/09). When saline ends, nurses write down: “*Saline in pv. Finished, keeps catheter with reflux valve.*” (c10-24/0/09).

We observed that in the records of 43 patients, only 4 patients have no reference to infusions. We observed that we can find a reference to the ongoing saline and catheter with reflux valve in the same patient, simultaneously and alternately. The documentation about

the catheter with reflux valve occurs especially in the afternoon and night shifts.

In situations with no association between medication and saline, in most record units the infusion speed is not mentioned. However, whenever this correlation exists, nurses usually document infusion speed and identify the drug dissolved in saline (55 RU): KCl (10 RU); Magnesium (3 RU); ISDN (3 RU); Dopamine (21 RU) and Amiodarone (3 RU).

As for the subcategory “Number of inserted catheters”, we observed that in the record units thirteen patients received more than one catheter at the same time. At least one is documented has having reflux valve but the reason for having it is not clear. In other cases, there is a non-systematic reference to more than one catheter (c7-3/08/09), (c23-14/08/09) and (c27-23/08/09).

In patients without IV medication we observed that the information that they have a catheter with reflux valve is kept throughout various shifts, although patients no longer have them. No reason is given for this (c15 - 17/08/09 to 23/08/09) and (c18 - 21/08/09 to 25/08/08).

After ending the medication or blood cell infusion, catheters remain in place with reflux valves during various shifts, and once again no reason is given for this: “Ongoing saline, 2nd access with reflux valve.” (c7-09/08/09); “Ongoing saline, 2nd catheter with reflux valve.” (c13- 28/08/09).

Discussion and Conclusions

With the exception of one patient, all other patients have records of the insertion of one or more peripheral venous catheters at the same time.

There is a reference to the need of puncture/re-puncture of a peripheral venous access, and 106 catheters were inserted during the data collection period. However, in 53.8% catheter insertions, the type of complication or the reason for catheter insertion is not documented as it is recommended in the *guidelines* (CDC, 2002; INS, 2006; RCN, 2010). A correlation between the need for catheter replacement and the type of medication used or the patient's clinical condition was also not established.

As for the procedure, there is a significant difference concerning what is established by the guidelines previously mentioned. The specific catheter insertion site is not mentioned, and the limb used is only mentioned in 12.3% catheter insertions. There is also no reference to aspects, such as the type of disinfectants used, the gauge, brand and material of the intravenous catheter, the type of securement/dressings, the difficulties in catheter placement, and patients' training and participation. Catheter surveillance or maintenance interventions are not documented and many venipunctures are recorded without an explicit reason, despite the recommendation for its immediate removal.

We would like to highlight a very significant gap between nurses' records of the care provided to patients with peripheral venous catheters and the guidelines on this matter (CDC, 2002; INS;

2006; RCN, 2010). The recorded information is scarce and there are no standardized criteria for the team. The implementation of a standardized information system is vital to make nursing interventions more visible and improve the quality of care.

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4. Implementation of Standardized Nursing Care Plans – Important Factors and Conditions

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Summary

The aim of this study was to use the “Promotion Action on Research Implementation in Health Services framework” (PARIHS) to explore important factors and conditions at hospital wards that had implemented Standardized Nursing Care Plans (SNCPs). Outcome was measured by means of a questionnaire based on the PARIHS-model.

Introduction

There is a lack of evidence about how to successfully implement standardized nursing care plans (SNCP), in various settings. SNCP is described as a printed general action plan that outlines the nursing care [1]. The plan includes nursing diagnosis, goal and planned interventions. According to a Swedish survey [2], the SNCP is used as a clinical guideline, although there is a lack of research behind it. Despite this criticism, the SNCP is a tool that helps nurses to define the mandatory level of nursing care as well as highlighting nursing care plans in patient records, something that has previously been found to be inadequate [3]. Nurses perceived that SNCPs increased their ability to provide the same quality of care to all patients and reduced the time spent on documentation as well as unnecessary documentation [4].

Important factors and prerequisites for the use of research results as well as changes in practical working methods in clinical practice can be described on the basis of the Promoting Action on Research Implementation in Health Services (PARIHS) theoretical framework [5]. According to PARIHS, successful change is based on the interaction between evidence, context and facilitation. The PARIHS framework defines evidence as research, clinical experience, patient experience and local data/information (systematically collected and evaluated). The context concerns the environment in which the change is implemented and is divided into culture, leadership and evaluation. Facilitation refers to processes aimed at implementing knowledge in a practical setting and requires a person (the facilitator) to assist the implementation in terms of aims, roles, skills and characteristic features. All of these factors can be placed in a continuum from low to high, and the implementation will be successful if all factors are at the high end.

Aim

The aim of this study was to use the PARIHS framework to explore important factors and conditions at hospital wards that had implemented SNCPs.

Method

We employed a retrospective, cross-sectional design and recruited nurses from four units at a rural hospital and seven units at a university hospital in the western and southern region of Sweden where SNCPs had been implemented. A selection was made of all

nurses who worked day/evening and/or night shifts in the various wards (n=276). A questionnaire was used for data collection, which was originally developed for measuring factors and prerequisites for the implementation of clinical guidelines on the basis of the PARIHS [6]. The questionnaire was revised for the present study in order to make it relevant for SNCPs and thus contained items based on the SNCPs recently used by the informants, an example of which they had enclosed in the response envelope.

Result

The total response rate after one reminder was 50 % (n=137). Ninety eight per cent of the respondents stated that they used SNCPs in their everyday work.

The basis of the SNCPs that the respondents enclosed with the questionnaire was, according to the respondents perception, mainly clinical experience, 59 % (n=81), and research, 45 % (n=62). Patient experiences were mentioned by 12 % (n=17) of the respondents, while 28 % (n= 39) did not know on what the SNCP was based.

The factors of greatest importance for implementation were that SNCPs were easy to understand and follow as well as being based on the relevant clinical standards and experience (Table 1).

The three most common implementation strategies were: reminders to apply the new method following the implementation 63 % (n=83), education before implementation 63 % (n=82) as well as an internal facilitator 62 % (n=82) Forty eight per cent (n=63) of the respondents did not know whether the SNCP had been

evaluated, while 21 % (n= 27) stated that an evaluation had taken place and 30 % (n= 39) that it had not (8 missing answers). The most common form of evaluation was based on the clinical experience of the staff as well as on patient records.

Total number of informants n=137	Yes	No	Don't know
Easy to understand (n=133)	93 % (n=124)	5 % (n=6)	2 % (n=3)
Easy to follow (n=132)	90 % (n=119)	8 % (n=11)	2 % (n=2)
In line with organisational norms (n=133)	88 % (n=116)	5 % (n=7)	7 % (n=9)
Based on clinical experience (n=132)	77 % (n=101)	2 % (n=3)	21 % (n=28)
Research based (n=133)	53 % (n=70)	7 % (n=10)	40 % (n=53)
Based on patient experience (n=131)	40 % (n=52)	14 % (n=19)	46 % (n=60)

Table 1: The factors of greatest importance for implementation. Several alternatives could be selected. The differences between the total and individual n represent missing data.

More than half of the respondents, 57 % (n=77), stated that they actively discussed/reflected upon the value of clinical experience in their clinical practice and 43 % stated that they actively discussed/reflected upon the value of patient experience at their ward.

Discussion

This study involves limitations that need to be pointed out. First, the response rate was only 50 %, which limits the conclusions that can be drawn from the result.

Secondly, in this study, we asked the respondents about their self reported perceptions of different aspects. Thus, no objective

evidence was provided to demonstrate if the SNCPs were based on research or the knowledge base behind the SNCPs.

The most common implementation strategy was the use of internal facilitators. A similar number reported that training before as well as reminders after the implementation were used, which leads us to the conclusion that this had been organised by the internal facilitator. External facilitators were only used to a small extent, thus we can conclude that external training rarely took place. Instead, the training was conducted within the context of the workplace, which indicates that this is the best method for implementing SNCPs.

The main reason for using SNCPs is to enhance the quality of care and implement evidence-based practice. The basis of the SNCPs referred to by the informants in this study mainly comprised clinical experience followed by research, while patient experience was rarely mentioned. According to the PARIHS framework, these three factors can be considered evidence [5]. It must be regarded as serious that nurses in the units studied did not consider research to be a priority. This agrees with Forsman et al. [7], who revealed that, one year after graduation, nurses were low users of research and even more so three years after graduation. Likewise, Rycroft-Malone et al. [8] found that the nurses did not consider research important. Since the nursing education today is highly academic and based on research, these results are worrying and require reflection.

Our study also demonstrates that few respondents believed that patient experience was used in the development of SNCPs, as does

a study of clinical pathways [9]. We believe that this is worrying, as one of the main benefits of SNCPs is that they enable the nurse to discuss the treatment goals and interventions with their patients, thereby ensuring their involvement in the care.

Implications and further research

Our study demonstrates that in order for SNCPs to be implemented in clinical practice, they need to be easy for the nurses to assimilate, thus enabling their use as a tool in clinical practice. Successful implementation of research based SNCPs requires internal facilitators with knowledge of evidence-based nursing. It takes time and knowledge to develop an SNCP. Therefore such work should be prioritised and co-ordinated to avoid every hospital or unit carrying out duplicate work.

More research is required to explore the reason why patient experience is not considered and how this situation can be improved. We also require more knowledge about why research appears to be of no interest to practising clinical nurses, as well as how their attitude can be changed.

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Chapter 3 – Informatics in Clinical Application

1. Nursing Records in the Surgical Area Related to Quality and Clinical Safety

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Introduction

Safety is one of the main concerns of the Spanish health system. Surgical procedures are highly susceptible to provoking some adverse outcomes resulting from our sanitary attention. This is primarily because patients are becoming more pluripatologic, and the complexity and technology used is increasing, as well as the number of multidisciplinary professionals, including some non-surgical disciplines. All of which is leading to an increase in super specialization. Recent studies done by The Institute Of Medicine, show us that of all the adverse outcomes occurring in hospitals, 40 % are produced in the operating rooms, in the surgical environment as well as anesthetics.

I.O.M. defined adverse outcome as unexpected damage unintentionally caused by health care professionals not related to either disease or underlying conditions of the patient.

Different published studies show us that there are three elements involved in adverse outcomes:

1. Unsafe Anesthetic practices.
2. Nosocomial infection of the surgical wound.(14% of hospital infections)
3. Poor communication among the surgical team.

Therefore we must work in three ways:

1. To achieve safe anesthetic practices by standardizing pre-anesthetic visits, by using tools and equipment check-lists, and finally by the teams' agreeing on correct procedure depending on patients' needs.
2. To use prophylactic protocols regarding infection prevention, according to scientific evidence - hand washing, antibiotic prophylaxis and traceability control of surgical materials and equipment).
3. To improve communication among the surgical team through the procedure check-list.

The WHO and the Ministry of Health in Spain are aware that registration systems represent a key instrument in identifying incidents and preventing adverse outcomes.

This is not the only change, for introducing tools means having to use them. It must be recognized that the chosen professionals performing this job might be antagonistic or engaged in hierarchical relations with the rest of the team. Thus, we must change our organization, from the highly hierarchical to one in which team work predominates, moved by working leadership. This must be promoted by management.

It is true, as WHO says, that it is not only necessary to have the tools, but we must also convince all professionals that they should accept them as a personal goal, each one of them, all together, all the time. The check-list used, as seen in different countries, has been introduced as a tool that aids in detection of potential adverse events. Tools and goals must be agreed upon by all team members and promoted by central management.

The Hospital Clínic of Barcelona has proposed registering every activity done by the nursing staff that may directly increase patient safety and, consequently, this record keeping has fallen on nursing professionals, which is why both records have been integrated in the computerized operating room nurse register.

Objective

To elaborate a nurse registration instrument for the surgery patient, paying special attention to safety and including every member of the team throughout the whole procedure.

Material and methods

- *Anesthetic Material checklist*

In order to establish the checklist of anesthetic equipment, we selected those activities performed on a daily basis by the anesthesia nursing staff and elaborated an initial list implemented in a pilot program.

Main points:

1. Verification of the respirator.

2. Verification of monitors used in the procedure.
3. Check for difficult airway.
4. Others.

Duration: 2 months.

Population: 20 out of the 25 operating rooms of the Hospital Clinic Barcelona that perform anesthetic procedures.

Sample: 1105 records from a total of 1200.

- *Procedure verification checklist*

The surgical verification checklist was based on the document proposed by the WHO which underwent a pilot test before it was introduced.

Duration: April 15, 2009 to date.

Population: Three out of 25 operating rooms.

Total sample: 1272 registration sheets from a total of 19,050 surgical procedures during the study period.

The introducing of this record was done through informative sessions, including all implicated professionals, both nurses and physicians and institution managers supported by the quality control staff, medical and nurse directors.

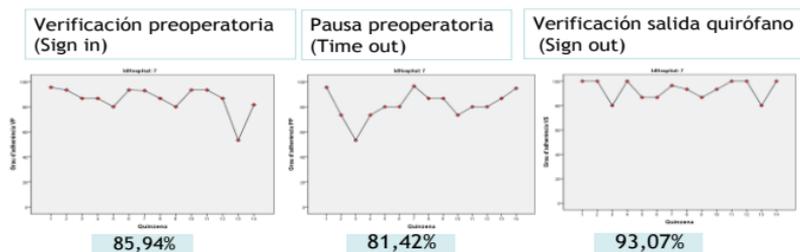
Results

The result was a daily, one-page checklist of anesthetic equipment¹, organized by shifts, collected monthly and approved by both the anesthesia nurses and staff anesthesiologist.

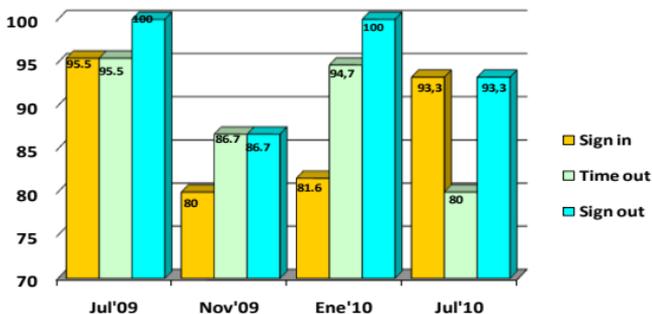
The WHO's checklist² was validated in our hospital, adapted in paper format, and incorporated into the patient's file. Throughout the test period we observed a high level of successful collaboration, indicating high awareness of the concept of safety³.



Grado adherencia acumulado Checklist



The process of creating a computerized nurse record in anesthetic and surgical procedure was approached from the perspective of not only registering nursing skills, but also including both safety records, substituting the paper format for a computerized version^{1'2}.



The final format consists of two records automatically generated by the Surgical Process Program (S.A.P.) to ensure security of files:

1. Anesthetic nurse record.
2. Surgical nurse record.

Completion follows the normal flow of any surgical procedure of each professional skill.

Those records send two documents to the patient file:

1. A surgical nurse document to register the nurse activities during the procedure and incidents.
2. A checklist of procedures that includes the equipment checklist and the WHO checklist timed according to their recommendation
 - Sign in.
 - Time in.
 - Sign out.

We also provide a backup paper format in case of computer stoppages, and we have an erasable board available for when no P.C. is on hand.

Discussion and Conclusions

The registration systems collect information in real time and can help us to take immediate action, improving safety and reducing damage before it occurs in the process of patient care.

The high degree of acceptance of the records and the general belief that they contribute directly to patient safety led us to include them in the nursing computer record.

Including all team members in the creation and diffusion of the records increases success.

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2. Proneness to Accidents in a Graduate Population: A Pilot Study of Accident Occurrence and Functional Health Patterns.

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Background

Accidents are costly. They are costly in a monetary sense, resulting human suffering and loss of productivity and time. In many cases irreparable damage is done and often unexpected costs are incurred. Research shows that the accumulated cost of accidents is frequently much higher than could have been predicted from the incident itself (Hrymak & Perez-Gonzalez, 2007; Mossink and De Greef, 2002). Furthermore, accidents are among the main causes of death and serious injury in children and adolescents (Pless *et al.* 2003). In light of this it should come as no surprise that finding ways to predict and avert accidents is a rich area of research.

The field of risk assessment is based on the premise that accidents in general are not due to chance alone (Visser *et al.* 2007), and focuses specifically on analyzing circumstances and factors that affect the risk of accidents. The human factor is one of them. One perspective on how circumstances present a risk of accidents to humans emphasizes how the human system in general is prone to making errors in particular circumstances. Another perspective incorporates individual differences in proneness to accidents in the equation.

Recent research has shown for instance that car crashes could be predicted from a risk taking personality trait, sensation-seeking, normlessness, and driver anger (Iverson and Rundmo, 2001). In children, it has been found that high energy levels, optimism and introversion predicted involvement in accidents (Vollrath *et al.* 2003). A review and meta-analysis of studies of this kind (Visser *et al.* 2007) comes to the conclusion that accident proneness is an important and 'real' issue, and that personality aspects are implicated. Other research suggests that physiological aspects such as left handedness (Bhushan and Khan, 2006), organic illnesses (Engel, 1991), and socioeconomic status (Neeleman, 2001) may also play a role. It follows that if one is interested in reducing the frequency of accidents it may be appropriate to further investigate the personality precursors of accidents as well as physiological, health and socioeconomic aspects.

Aims and Research Questions

This study sought to fill the gap reported in the literature above. It aimed to identify the prevalence of and proneness for accidents in a population of university graduates and to explore whether or not differences exist between different professional groups. In fulfilment of this aim, three research questions were formulated.

Research Questions

1. What is the prevalence of accidents in a population of university graduates and what kinds of accidents are most common among them?

2. What is the relationship between prevalence of accidents and behavioural (functional) health patterns?
3. What is the correlation between biographical factors such as age and proneness to accidents?

Methods

Study design

The design chosen for this study was a descriptive survey. In this design, the focus is mainly on examining specific characteristics of respondents from a particular population (Gill & Johnson 2010). In this study the researchers wished to examine the relationship between accident history, functional health patterns and demographic or biographical aspects.

Sample and Sample Size

A self-selecting sample was recruited electronically via the electronic magazine of a large Dublin-based university. This was mediated by the alumni office of the university which acted in the role of gatekeeper. As the form was to be completed online via a third party, the researchers had no access to individual respondents and thus, anonymity was maintained. Information about the study was available via a web-link and consent was implied by completion of the online anonymous survey. The principal criterion for inclusion was that respondents had to be registered with the alumni office of the university. Following the initial response rate, a further advertisement was placed on the university's closed-access Facebook site. Whereas this population amounts to 70,000 individuals, the response rate was poor with

just 67 respondents (0.09% response rate). This is not, therefore, a representative sample and limits the generalisability of findings.

Data Collection Methods

Data was collected via an online questionnaire survey using the FHP Assessment Screening Tool (FHPAST) which was developed by Foster and Jones (1997, 2008) in the United States of America. Permission to use this questionnaire was given by the authors. Accident proneness was assessed by collecting data on the occurrence of accidents among the sample and correlating this with biographical data and information collated on the individuals' Functional Health Patterns (FHP). Data collection was undertaken from July until the end of November 2010.

Description of questionnaire

This survey questionnaire collected data on the frequency and types of accidents, as well as on biographical, physiological, behavioural and health factors. The questionnaire was divided into three sections: (a) biographical factors which contained 10 items; (b) accident history which was made up of four items; and (c) Functional Health Patterns comprising 58 Likert-type items. The biographical factors included age group, gender, handedness, marital status, ethnic group, country of residence, urban or rural setting, academic qualifications, employment status, type of work, and income. Accident history included questions such as number of accidents in the last five years, categories of accidents, and events that contributed to accidents. An accident was defined as events that lead to injuries requiring medical care and events were

classified as traffic, work, sports and home accidents. The Functional Health Patterns section utilised a Likert-type scale with four response alternatives – never, sometimes, often and routinely. The 58 items contained in this section were divided into two main categories: (a) items indicative of good health and mental health and healthy lifestyle; and (b) items relating problems associated with health and mental health.

Reliability

The reliability of a tool speaks to its consistency. That is, the tool produces results that are the same on more than one occasion when used by the same person (Gill and Johnson 2010). The authors of The Functional Health Pattern Assessment Screening Tool (FHPAST) have reported an overall internal consistency of $\alpha = 0.91$ (Jones and Foster 2006, Jones 2002).

Data Analysis

All questionnaires were screened for completeness before entry into an SPSS data file. Data were analysed using both descriptive and inferential statistics. Descriptive statistics included frequencies, means and standard deviations. Data from the FHP section of the questionnaire were analysed using t-tests and Multiple Regression procedures. The significance level was set at 0.05.

Ethical Considerations

Respondents were adequately informed about the aim and justification for the study through a cover letter and respondent

information sheet. Anonymity was maintained throughout the study given that the questionnaire was completed online with no direct contact between respondents and the researchers. The study was granted ethical approval by a faculty of Ethics Review Committee in 2010 prior to commencement of data collection.

Findings

Analysis of the data was performed using SPSS version 16.0. The approximate size of the alumni group is 70,000 but the response rate was only 0.095% (67). Whilst a total of 67 potential participants accessed the online tool, 49 proceeded to participate. They completed the section on biographics and accident proneness. A further 6 did not complete the last section which included the FHPAST. The full instrument was therefore completed by 43 participants.

Accident Proneness within the Sample:

About 40% of the participants (n=20) reported having had accidents in the last 5 years, while 60% reported that they had not (n=29). Traffic and work accidents were each reported by only one participant, while 10 participants reported sports accidents and 13 participants reported accidents taking place in the home. Most participants reported one or two accidents while 5 participants reported as many as six. More specifically participants were asked to categorise the accidents that they had experienced as caused by specific events. Falls were most common (24), followed by cuts (14). Burns and scalds were mentioned 3 times and motor vehicles,

bites or stings and machinery once each. Two variables were considered indicators for accident proneness:

- *Accidents (yes/no)*: The answer to the question whether a person had any accidents in the last 5 year, provided us with a categorical variable (yes/no). The relationship between functional health and Accidents (yes/no) was assessed through t-tests in which Accidents (yes/no) was the independent factor
- *Accident Proneness*: The response to the question identifying the number of accidents in each of the four categories. Scores were summated, using the mean of each category (i.e. category 5-6 has a mean of 5.5) to create a separate Accident Proneness score for each category and a total of their summated scores. The latter was used as dependent variable in a multiple regression procedure, which included FHPAST and the main demographic variables.

Response to the FHPAST

The FHPAST was scored according to the principles set out by Jones and Foster (2010). Most importantly this included inverting the items 40-57 (outcome score = 4 – initial score) which are phrased negatively, to ensure that in the summation of items to compute the FHPAST score, their impact would be recorded correctly. The summated score was divided by the number of questions to achieve a mean outcome score. In addition, the three factors yielded by a factor analysis by Jones and Foster (2010) were used in the analysis of our findings. These factors are *Health*

Risk/Threat, General Wellbeing and Self Confidence and Health Promotion/Protection Activity.

The descriptive statistics in this study for the FHPAST total mean score and the three factors are presented in table 1. It is noteworthy that the scores for *health risk/threat* are lower than those for the other factors. The FHPAST score is close to 3, which on the 4 point scale used (1=never, 2=sometimes, 3=often, 4=routinely) suggests that overall aspects of health were experienced ‘often’. Jones and Foster (2010) suggest that scores higher than 3 indicate ‘desirable functional health’.

	N	Min.	Max	Mean	Std. Dev.
FHPAST	43	1.28	3.49	2.8331	.37964
Health Risk/Threat	43	1.06	2.82	2.4528	.31639
General Wellbeing and Self Confidence	43	1.52	3.96	3.0887	.48156
Health Promotion Protection Activity	43	1.15	3.77	2.8014	.52555
Valid N (listwise)	43				

Table 1: Descriptive statistics in this study for the FHPAST and its three factors (Jones and Foster 2010).

Relationship between Proneness to Accidents, Functional Health Patterns Questionnaire (FHPAST) and Biographical Variables

In order to compare FHPAST scores of participants reporting having had accidents with those who reported no accidents, two statistical tests were performed. Firstly, independent t-tests were computed using *Accidents (yes/no)* as the independent variable. Outcomes of these t-tests showed that there were no significant differences in FHPAST scores between the two groups. Nor were there significant differences between the three factors.

Secondly, a multiple regression analysis was performed to identify the impact of biographical and health factors on *Accident Proneness*. Initially, the multiple regression (in Enter Mode) computed, only included the FHPAST total score and the main biographical variables. This yielded no significant predictors. In a further effort to establish a relationship between the three factors within the FHPAST, and biographical variables with *Accident Proneness*, a regression was performed (still in Enter mode) including, as independent variables, the three factors (*Health Risk/Threat, General Wellbeing and Self Confidence and Health Promotion/Protection Activity*), Handedness, Gender, Marital Status, Urban/Rural, Age, Employment and Income. No interactions were included (* $p < .05$; ** $p < .01$; *** $p < .001$).

The findings show that of these variables, only the factor *Age* loaded significantly on the dependent variable *Accident Proneness*. This demonstrates that only *Age* is associated with *Accident Proneness* in this study, while the other factors appear to be irrelevant. The associations are positive, suggesting that older participants were less prone to accidents. While the predictive value of the equation is limited, and only 15% ($R^2=0.15$) of the variance is explained by the factors included in the model, it is striking that the factor significantly related to *Accident Proneness* does so in a counterintuitive way. The results suggest that this could be the result of the inclusion of sports related accidents. This was tested by excluding sports accidents from the *Accident Proneness* variable. Performing the same regression yielded no

significant predictors (with *Age* no longer predicting *Accident Proneness* in any significant way) this time.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.961	3.795		.253	.802
Age	-1.128	.443	-.779	-2.544	.017
Gender	.746	.760	.189	.981	.335
Handedness	.246	1.053	.041	.233	.817
Marital Status	-.287	.404	-.123	-.710	.484
Urban/Rural	-.636	.527	-.222	-1.208	.238
Highest Qualification	.097	.206	.085	.472	.641
Employment	1.705	1.002	.527	1.702	.100
Income	.043	.122	.066	.353	.727
Health Risk Threat	-1.631	1.264	-.280	-1.290	.208
General Wellbeing Self Confidence	1.687	.959	.452	1.759	.090
Health Promotion Protection Activity	-.333	.846	-.095	-.393	.697

Table 2: Multiple regression (Enter mode): Impact of biographical and health factors on accident proneness. (Residual standard error: 1.699 on 38 degrees of freedom; Multiple R-Squared: 0.40; Adjusted R²: 0.15; F-statistic: 1.616 on 7 and 31 DF, p-value = 0.150)

The impact of the aforementioned factors to *Proneness to Sports Accidents* was considered. To test for this, an additional multiple regression procedure, using *Proneness to Sports Accidents* as dependent variable, was performed. The outcome demonstrated that *General Wellbeing and Self Confidence* and *Age* were significant predictors. Thus, younger people with a higher general wellbeing and self confidence were more likely to have sports accidents.

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.084	1.611		.052	.959
Health Risk Threat	-.792	.666	-.246	-1.190	.244
General Wellbeing Self Confidence	1.267	.491	.615	2.580	.015
Health Promotion Protection Activity	-.460	.407	-.237	-1.132	.267
Age	-.726	.234	-.908	-3.096	.004
Gender	.176	.394	.081	.448	.658
Marital Status	-.068	.211	-.053	-.321	.751
Urban v Rural	-.164	.269	-.103	-.609	.547
Highest Qualifications	.067	.106	.106	.635	.530
Employment	1.069	.529	.599	2.022	.053
Income	.014	.064	.039	.223	.825

Table 3: Multiple regression (Enter Mode): Impact of biographical and health factors on sports accident proneness. (Residual standard error: 0.898 on 38 degrees of freedom; Multiple R-Squared: 0.43; Adjusted R²: 0.22; F-statistic: 2.088 on 7 and 31 DF, p-value = 0.061)

The conclusion is that only Proneness to Sports Accidents is predicted by an aspect of the FHPAST, *General Wellbeing and Self Confidence* (Factor 2), with a high score predictive of higher participation in sports and therefore a higher chance of sports injuries. Higher age also predicts lower *Proneness to Sports Accidents*. Considering the low number of participants, interaction effects between *Age* and *General Wellbeing and Self Confidence* could not be included in the multiple regressions performed here.

A further important conclusion is that *Accident Proneness* in general (not including sports accidents), as operationalised in this

study, cannot be predicted with any degree of significance from any of the factors in this study.

Discussion

This study set out to investigate the relationship between accidents prevalence, functional health patterns and a number of demographic variables. The small size of the sample greatly limits the possibility of making generalised statements in this regard, but a number of interesting trends emerged from the data. The only significant biographical factor that predicted accident proneness was age. Thus, it was found that older respondents were less prone to accidents than were younger respondents. It was also found that positive functional health patterns were associated with greater accident proneness! This appears counterintuitive until one considers the fact that, whilst the prevalence of accidents in this sample was 40% (51 accidents), almost half of these (n=23) were sports-related. In fact, a positive link between frequency of sports injuries and the general wellbeing and self confidence factor of functional health was identified. Beyond this, however, the findings were inconclusive due to the size and non-representativeness of the sample. They are, however, indicative of a potential for the FHPAST to be used in the identification of proneness to accidents. Further research will be required to explore any such potential.

Some limitations of the study have already been noted. The response rate was very small. This is not surprising since poor response rates and technical difficulties are listed as some of the limitations of online surveys (Evans and Mathur, 2005; Granello and Wheaton, 2004). A second limitation concerns the gender

distribution of the sample. The majority of the respondents (67.3%, n=33) were female while only (32.7%, n=16) were men. It is quite possible that accident rates and proneness to accidents are different between men and women but with such small numbers it is not possible for the authors to comment confidently on this aspect of the findings.

Conclusion

Accidents, as indicated earlier in this article are costly and can contribute to reduced productivity and increased human suffering. This, together with a desire to better understand the associations between accidents and other variables strengthens the need for continued research in this area.

This paper is based on a pilot study that explored the relationship between accident occurrence, biographical factors, and functional health patterns using the FHPAST instrument (Foster and Jones 1997, 2008) among a group of university alumni. Although the sample was small, the findings provided an insight into the prevalence of accidents in this population and the correlations between proneness to accidents, functional health and demographic variables. The findings suggest that the majority of accidents occurred in the home or were sports related and that there was no significant difference between the overall functional health patterns of those reporting having had accidents and those who did not. However one of the factors of the FHPAST, the general wellbeing and self confidence factor, predicted more frequent sports accidents. The findings further demonstrated that of all the biographical factors examined, age group was the only one

that loaded significantly on accident proneness and that higher age predicted lower proneness to accidents. However, when sports-related accidents were excluded from the analysis, there was no significant relationship between age group and accident proneness.

Although the findings presented here cannot be generalised to other populations they do, nonetheless, offer some useful insights into the relationship between health and accident proneness among a cohort of university graduates. It is possible that a larger sample may produce different findings, so from this perspective, the authors would support the view that further research to explore the relationship between proneness to accidents and other associated variables should continue using larger samples from different populations. Finally, the findings also suggest that accident proneness may not be a unitary concept and that distinctions between types and context of accidents need to be included in future research.

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3. Effects of a Computerized Decision Support System on the Prevalence of Pressure Ulcers and Malnutrition in Nursing Homes

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Abstract

Nursing home residents are at high risk for pressure ulcers (PUs) and malnutrition. These are serious problems that increase morbidity and mortality and cause discomfort for residents. Computerized decision-support systems (CDSSs) have been shown to help health care professionals to avoid errors and improve clinical practice and efficiency in health care, although little is known about the influence on nursing practice and residents' outcomes in nursing homes. The aim of the study was to study the effects on the risk for and prevalence of pressure ulcers (PUs) and malnutrition by implementing a computerized decision-support system (CDSS) for care planning in nursing homes. For this study a vendor developed a CDSS integrated in the electronic health care record (EHR) to support nurses' risk assessment of residents in nursing homes. Based on the results from these assessments, staff was provided with evidence-based preventive interventions to support care planning in the EHR.

This quasi-experimental study was designed with two intervention groups and one control group. Based on a power analysis, residents from a total of 15 nursing homes with 46 nursing units from four counties in southern Norway volunteered to participate. Nursing staff in the two intervention groups received education in

preventing PUs and malnutrition and one of the intervention groups, in addition, received training and had a CDSS implemented for assessment and care planning. Data on pressure ulcers and malnutrition was collected from 491 residents in 2007 before the intervention and 480 residents in 2009 after the intervention. The Mini Nutritional Assessment (MNA®) and Risk Assessment Pressure Scale (RAPS) were used for data collection.

Results from the study showed that the proportion of malnourished residents decreased significantly in the intervention group between 2007 and 2009. No other significant changes were found.

The overall intent by implementing a CDSS in nursing homes is to increase the effectiveness and efficiency to achieve better residents' outcomes. The main strength of this study was that we tested a CDSS in a natural setting. Further studies could be conducted to assess residents by including more data from residents on their general health status. Although no differences were discovered on rates of PUs and malnutrition between the intervention groups and the control group, other areas such as quality of life, their general health status and well-being might have improved. A larger sample size and a longer follow-up period to show effects on residents' outcomes are also recommended. It is also important to gain more knowledge about what workflow changes that were induced by implementing the CDSS.

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4. The Patient with Confusion and the Nursing Action – A Model from Action Research

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Summary

Acute confusion is a frequent and serious phenomenon in hospitals mainly affecting the older people. Patients with acute confusion are more vulnerable to threats to their security, such as falls, not only because they have an increased risk but also because the nurses have difficulty in the identification and treatment of acute confusion.

Challenges emerge related to quality and continuity of nursing care provided to these patients, including the introduction of measuring instruments of acute confusion and the implementation and evaluation of the effectiveness of specific nursing therapies in clinical practice.

The development of this research, from 2007, allowed the identification and the introduction at the documentation software in use – SAPE – in Portugal, of an algorithm that emerged from the answers of the nurses, which became implemented in a decision support system for the nurses, allowing to achieve significant health gains in patients with confusion.

Acute confusion is a multifactorial phenomenon with a lot of predisposing and precipitants factors, and about which much is still unknown.

It is related with age, morbidity, mortality and worse clinical outcomes, hence it should be, and is not always regarded as a serious problem on which is very important to develop knowledge with practical applicability.

Its characteristics, fluctuating nature and motors sub-types, coupled with reduced awareness and knowledge of the problem by nurses⁽¹⁾ who are focused in orientation and in the behavior⁽²⁾ and a weak use of measuring instruments for its evaluation⁽³⁾, like the Neecham Confusion Scale, difficult diagnosis, and consequently the treatment, contributing not only to personal but also to economic and social severe consequences, such as the increasing of the length of hospitalization and institutionalization

At the same time, research didn't enable significant advances in this field, and the management of confusion continues to be built on the experience and knowledge of each professional⁽⁴⁾. These facts have not helped to reduce the Physical Restraints (PR), because they pose serious security problems in these patients, such as falls, which together with the confusion, are an indicator of quality of care. In doubt and before weighing the risks and benefits of therapy, nurses rarely consider alternatives⁽⁵⁾.

For three years, we conducted an action research in a unit of medical care for acute patients of an hospital in Oporto - Portugal, to study the patient with confusion and the nursing action. Our purpose was to identify a model that supports the conception of nursing care which is inherent. We performed training, nurses' interviews, field notes and analysis of documentation. We used the Strauss & Corbin method to create a Grounded Theory, appealing

to N Vivo 7 application for organizing the content analysis. Nurses were trained on the confusion and in the Neecham Confusion Scale which was applied at the patients' admission. The Neecham Confusion Scale was translated and validated into Portuguese of Portugal.

From the answers of the nurses we identified several conditions that are relevant to their decision making, in addition to information concerning to the confusion itself. Such as behavioral answer (verbal, non verbal) and functional status (bedridden/walk)

In patients who walk the balance is important while in the bedridden ones is important the ability to rise. It was noticed that the dynamics and the relationships of the various possibilities stand out in clusters of confused patients with characteristics which were unknown so far, opening up huge possibilities to research.

An algorithm of care for patients with confusion emerged from the data obtained - Figure 1 - It is composed by conditions that include nursing diagnosis associated with three phenomena: confusion, agitation and fall. These findings led to the introduction of a Decision Support System for nurses at the SAPE application (Support System for Nursing Practice), which is used in most health institutions in Portugal, 10G version which uses the ICNP and for a period of six month. At the end we used SPSS version 18.0 considering only the results with statistical significance.

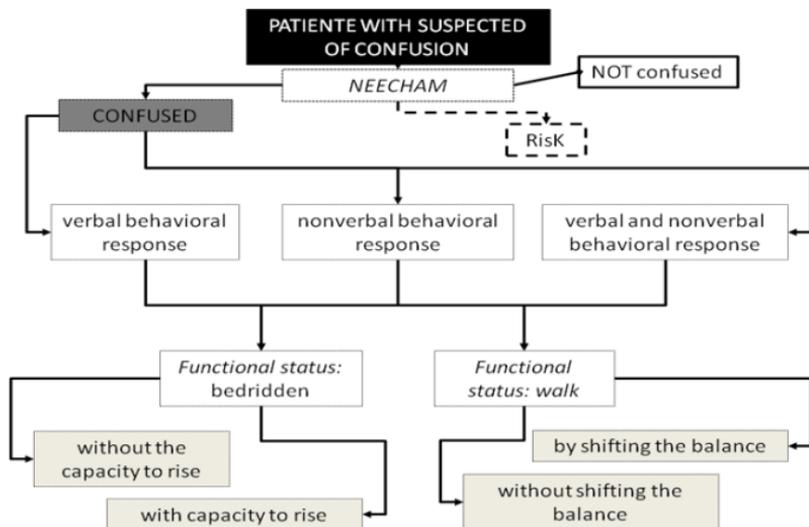


Figure 1 - Algorithm of confusion.

The documentation system implemented associate diagnostic activities, diagnosis and suggested nursing interventions, starting to have some therapies described in the literature and that nurses used them, although a record of a inadequate professional training, as Reality Orientation, to Validation Therapy and to Encourage Family Involvement, and nursing outcomes

At the end of time for implementation of the changes, the evaluation pointed out the importance of the study, since the evidence has demonstrated the improvement in quality, in continuity of care and in patients' safety.

Summary of Results

- Reduction of the under diagnosis of acute confusion; The systematic use of the Neecham Confusion Scale in the patients admission, allowed to increased the diagnostic of confused patients, specially its sub type hypoactive, which is congruent with the literature⁽⁶⁾.
- Reduced incidence of acute confusion - 4.3%. The new cases triggered in the context of the study, are reduced which is an indicator of quality of care⁽⁷⁾.
- Reality Orientation is associated with a positive evolution of the functional status. Patients who shift from the state “bedridden” to “walk”. Reality Orientation seems to be an important intervention to these patients which is congruent with the best available evidence⁽⁸⁾.
- Encourage Family Involvement is linked to a positive evolution of the Neecham score and the functional status. Several studies^(8,9) pointed out the importance of the presence and the intervention of the family to guide the patient and in the control of his/her behavior.
- The evolution, under different conditions, located with high values but, in the maintenance of the state. There was a statistically significant improvement in the various levels of confusion determined by Neecham, which classifies patients as being not confused, in likelihood of confusion, with mild confusion or early development or moderate to severe confusion, as in other conditions but staying in a given status, suggests competent actions by nurses⁽¹⁰⁾.

- The nurses focus interventions in patients with mild confusion. This information seems to mean that this is where nurses see a greater possibility to obtain gains for the patient.
- Physical Restraint is associated with moderate to severe confusion, to patients with non verbal behavioral response to bedridden and to patients without the capacity to rise. These data suggest these are the patients most at risk of fall. It is noted that in the care unit where the research took place measuring instrument are not used to assess the risk of fall.
- Confused patients are hospitalized on average five days more than non-confused. This information has an extraordinary weight. At a time when financial matters take a leading role and more decisive than ever, to setting and achieving the overall policy, this will lead to a greater discussion of the topic.
- The efficacy of the diagnosis risk of fall increased from 0% to 50%. The diagnosis of a problem is the first step towards its resolution
- This reasoning is true but it had no effect during the research period because the number of falls did not change significantly. However the proposed system proved appropriate and valid for this particular aspect, which adds importance.

The standardization and simplification of the documentation of nursing care, allowed obtaining data for the theory but also for nursing practice. For theory because now exist new knowledge related to a very important issue in the health care and for nurses in particular. For practice because the developed system proved to be useful and suitable for its purposes supporting nurses in the care

of hospitalized patients with confusion. The system could be improved and replicated in other clinical settings.

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Chapter 4 – E-Health for Practice

1. E-Health and Nursing: Using Smartphones to Enhance Nursing Practice

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No doubt, Alexander Graham Bell, the inventor of the telephone, would be amazed at the phone's transformation. Not so long ago, the telephone was a simple two way communication device. Today, the phone is a sophisticated tool that connects people to a world of information. Smart phones affect all aspects of our lives. It is estimated that approximately 12% of the global population own smart phones (Terran Tribune, 2010). Italy leads smart phone usage with 28% penetration, followed closely by France at 23% and the US at 17% (Sniderman, 2010). Not surprising, teens, young adults, and professionals with higher incomes use smart phones more than older adults with a predicted 1.4 billion smart phone users globally by 2015 (Versel, 2010).

Smart phone use by healthcare workers is most predominant in the US. It is estimated that 72% of US physicians use smart phones in their practice (Dolan, 2010) compared to 31% in European countries (Mesko, 2010). Evidence of smart phone use in healthcare by other countries such as Australia (Hodgkinson,

2010), South Korea (Korea Intelligent Technology & Business, 2010), Asia (Asia Pulse, 2010), and Russia (ben-Aaron, 2010) are surfacing. Nurses continue to trail physicians in smart phone use. Little is known about the number of nurses who use smart phones but an online survey reports half of the nurses who responded use or own a smart phone. About 25% use it to access drug guides and other clinical references but only 20% use their smart phone during direct patient care (RNSearch.com, 2010). In January 2010, approximately 1700 medical applications were downloaded by 1 million users in the US (Byrne, 2010). Smart phone use is expected to rise due to the increasing number of available medical applications spurring more rapid adoption.

Not all smart phones use the same operating system (OS). Overall, there are six: Palm®, Windows Mobile®, Apple iPhone®, Symbian®, Google Android, and Blackberry®. The most common operating system globally is the Symbian® OS holding 53% of the market share but unfortunately, there are fewer medical applications for the Symbian® OS than any other operating system. The iPhone® OS with 43% of the market share has more medical applications that require it's OS than any other system (Dignan, 2009) but Palm®, Windows Mobile®, Blackberry® and Google Android are rapidly growing their medical applications.

Medical applications for smart phones are abundant and include drug references, medical calculators, reference guides and personal health applications. When US health care students, administrators, providers, and nurses were surveyed, they reported using their smart phones to access email (83%), write notes and memos (72%),

use drug references (50%), access clinical decision support tools, (28%), view medical images (13%), access lab orders and results (10%) and access patient records (6%) (Thorman, 2009).

Drug references or databases are the most commonly used medical applications on smart phones. These applications are helpful because they provide drug disease, lab, safety, and interactions between medications at the point of care. Some of the drug databases include features for identifying unknown medications based on pill characteristics and formularies to help select therapies based on insurance coverage. Highly rated by healthcare providers, several applications, including ePocrates®, Skyscape® and Lexi-Drugs®, contain free or trial versions of drug databases (Elnerson, 2010). These also include medical calculators and reference guides when additional features are purchased and are available for most of the operating systems, except Symbian® OS. Skyscape® is the only application that will operate on Symbian® OS.

Medical calculators are helpful because they include a variety of medical algorithms commonly used by practicing nurses. Examples include BMI calculations, OB wheel, Braden scale, glomerular filtration rate, creatinine clearance, body surface area, pediatric dosage calculations, and peak flow predictions. MedCalc®, a popular medical calculator, is available free for Palm®, Window Mobile®, and iPhone®. A similar program, known as UIQ MedCalc is available for the Symbian® OS (Husain, Alkadhi & Misra, 2010).

One of the greatest advantages of using medical applications on smart phones is the convenient and quick access to medical references that have not been easily accessible until now. Outlines in clinical medicine[®] (OCM[®]), a comprehensive resource that relates the latest research and evidenced based clinical practice information is a Skyscape[®] product and available on all operating systems.

The US National Library of Medicine offers PubMed Mobile, available for all operating systems, that allows one to access pertinent and up-to-date research and clinical information at the bedside.

Healthcare is complex and often requires specialty knowledge and expertise. Locating resources to assist with complex medical problems is often challenging. Smart phone applications support healthcare workers enabling access of specialty information in areas such as radiology, drug trials, neurology and continuing education activities (Husain et al., 2010).

Gazelle™ and Capzule PHR[®], two iPhone[®] applications, offer innovative healthcare approaches with personal health records. Individuals may record their personal health histories, access information while receiving health care and share with their providers; however, these applications do not seamlessly interface with electronic health records (Wodajo, 2010).

Nurses may play a vital role in advising patients about tools that can promote health and wellness. A variety of applications are available for managing chronic disease, diet, exercise and lifestyle choices. For example, most of the mobile operating systems have

an application for managing exercise and diet: iFitness™ and My Fitness Pal are applications specific to iPhone OS® and Cardio Trainer + Racing requires Google Android OS. Ascendo Fitness™ and Total Fitness operate on Blackberry while Mobile Personal Trainer and Personal Trainer for Activity work on Symbian® OS.

Selecting the best smart phone and locating healthcare smart phone applications may not be as daunting as it seems. There are websites that have selected applications available for download in one convenient location. Often, the websites score applications based on peer review and include a brief summary and pricing information. Sometimes, these sites recommend the appropriate users (e.g. student, patient or provider). Examples include:

Apps Store Apps	http://www.appstoreapps.com/top-50-free-medical-apps/
Facebook Apps	http://www.facebook.com/iMedicalApps
Twitter Apps	http://twitter.com/imedicalapps
Symbian® Software	http://www.symbiansoftware.us/medical
Smart Phone Mag	www.smartphonemag.com/cms/_archives/Febo06/medical.aspx
Ascendo™	http://www.ascendo-inc.com/
Palm® Mobile Apps	http://www.palm.com/us/products/software/mbile-applications.html

Applications and websites listed here may be beneficial to nurses but it is the responsibility of every health care provider to ensure the applications meet the standards necessary for providing quality health care. Technology is never static so a new wave of mobile devices has already been launched but has yet to penetrate the healthcare industry. It is expected that tablets such as the Apple iPad®, and the Blackberry Playbook®, will transform the work of nurses and other healthcare workers including access to patient

information, data retrieval, data entry, and reference materials and applications currently used on smart phones.

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2. Integrating a CDSS in the NIS to Improve the Quality of Care. An Experience.

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Abstract

The five steps/components of nursing process are assessment, diagnosis, planning, implementation, and evaluation. Face to this, the Electronic Nursing Information Systems (ENIS) should be prepared to incorporate all the nursing process. However, the different ENIS used in Portugal presents some difficulties to nurses, because the system don't provides evidence based guidance to a systematic analysis for nursing support decision.

The purposes of this study were to develop a Clinical Decision Support System (CDSS) for nursing process that provide decision support automatically as part of nursing clinician workflow and integrate it into the ENIS.

Keywords: clinical decision support system, nursing, practice

Introduction

Develop and implement a CDSS is a way to help nurses to deliver a highest quality in care. A clinical decision support system presents healthcare providers with an interactive, computerized system that uses data and models to generate information to support clinical decision making. The construction of a CDSS should anchor in the scientific knowledge resulting from research, as well, in the practical knowledge. A clinical decision support system presents

healthcare providers with an interactive, computerized system that uses data and models to generate information to support clinical decision making. The construction of a CDSS should anchor in the scientific knowledge resulting from research, as well, in the practical knowledge.

Clinical Decision Support Systems

Clinical decision support systems are computer programs designed to help health care professionals make clinical decisions and can be used to: information management, focusing attention, and patient-specific consultation (Musen, Shahar, & Shortliffe, 2006).

Kawamoto, Houlihan, Balas, & Lobach (2005) provide some evidence based guidance in a systematic analysis of the ability of decision support systems to improve practice in both statistically significant and clinically meaningful ways. They state that a CDSS should (a) provide decision support automatically as part of clinician workflow, (b) deliver decision support at the time and location of decision making, (c) provide actionable recommendations, and (d) use a computer to generate the decision support.

It's very important for the success of the CDSS the following settings: user acceptance, workflow integration, compatibility with legacy applications, system maturity, and upgrade availability. Some studies have shown that many CDSSs improve practitioner performance (Garg et al., 2005).

The three main components of a decision support system are a knowledge base, an inference engine, and a user interface. A

knowledge base typically contains domain expertise which may be represented as clinical guidelines, decisional rules, and records of past patient cases. An inference engine is a computer program which processes information using systematic inference steps, similar to the decisional steps employed in the human thought process, and uses one or more reasoning methodologies (Elvidge, 2008).

In recent years, there has been increased attention to evidence-based nursing practice. A number of authors have stressed the importance of an informatics infrastructure for evidence-based practice and patient safety and identified the components of such an infrastructure: data acquisition methods and user interfaces, health care data standards, data repositories and clinical event monitors, data mining techniques, digital sources of evidence or knowledge, communication technologies, clinical information systems, and informatics competencies (Bakken et al., 2008). For the same authors, the efforts to facilitate application of evidence into nursing practice are unlikely to be successful unless the approaches used are integrated into the clinical workflow.

But a question remains: do we have/want a CDSS for to be used by nurses, or we need a Nursing CDSS? It appears to be the same thing, but it's not, otherwise let's see.

In many situations, the substitution of nurses into roles traditionally carried out by others professionals, has been supported by the introduction of clinical decision support. We found some electronic health record systems with a CDSS used by nurses, for instance, triage process, telephone counseling drugs

administration and management of some diseases (Dowding et al., 2009; Randell, Mitchell, Dowding, Cullum, & Thompson, 2007).

Another thing is the decision-making using the Nursing Knowledge, where a nurse bases her practice in scientific evidence. This means, the ENIS should mirror the nursing process, with all their components: assessment, diagnosis, planning, implementation, and evaluation. The CDSS can and must be a contribution to this process and to the safety of the nursing decisions.

Project

After collected a few quotes from nurses expertise in this area, we began by defining what changes would be necessary in the ENIS to incorporate the CDSS. The following changes were effected in the ENIS:

- a) Nursing diagnostics activities (NDA) parameterized for each nursing phenomenon (NP) for nursing assessment;
- b) Possibility of creating measuring instruments
- c) Nursing interventions (NI) associated to each state judgment of nursing diagnoses (ND);
- d) Assignment of an internal code for each ND.

Then we started to design conceptually the CDSS, following the recommendations found in the studies of Kawamoto et al. (2005) and Garg et al. (2005). The following settings are in this CDSS:

- a) Chance of a nursing data set (assessment from NDA) suggesting automatically a state judgment of ND;

- b) Possibility to suggested nursing assessment on a NP after define a specific state judgment to a ND;
- c) Possibility to choose and plan the NI for each ND identified;
- d) After implement the NI, and when necessary, nurses can do the nursing assessment to each situation (with the NDA); when there are changes in the nursing data, the system may suggest modification of the state judgment of the ND identified;
- e) Suggestion to end a NI when it is not part of the new state judgment of the ND (the system makes an internal check to validate that is not part of another ND, and only in this case, makes the suggestion).

Passing the conceptual phase, the CDSS was built by the engineers and the first tests began in July on the same year. After some adjustments, the system was gradually integrated into all hospital settings.

Results

We have the CDSS full integrated in the ENIS, and in use on all hospital settings.

From all NDA parameterized in the ENIS, 59 are linked to ND. The data from the NDA were grouped, some of them in combination, in several sets of conditions (n=233). A total of 104 ND were linked with nursing assessment (NDA). This means that a state judgment of a ND can be suggested by more than one set conditions. Each ND suggests a state judgment of a ND set, and is the nurse who chooses those she wants to identify and plan the NI.

At the end of the shift, nurses validate each NDA and makes changes as needed. Based on this (the new nursing assessment), the CDSS can suggest a new ND, or keep the same.

Conclusions

- The CDSS is stabilized, and the first opinions from the users show us that the nurses are satisfied and it's useful for their practice.
- The system only suggests it needs always the nurse validation. But, it's important to say that the CDSS helps the nurse in the nursing decisions. We have no doubt about the importance of an informatics infrastructure for evidence-based practice and patient safety.
- We are currently evaluating the impact of the CDSS in nursing practice. Additional research is needed for evidence-based nursing practice to be incorporated in the system, this means, more Nursing Knowledge to be on the knowledge base, inference engine and user interface.

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3. Swedish e-Health – A Strategy for Accessible and Safe Information in Health and Social Care

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Background

This paper describes a rather unique national work to coordinate the work with Information and Communication Technology (ICT) support where most of the parties concerned are involved. The work was initiated by the Swedish government since a national need for a common development of ICT in health and social care was identified.

“Patient safety, healthcare quality and availability of health care and social care can be greatly improved by the use of various forms of IT support. Electronic patient records, prescriptions and digital-sharing with management today are a natural part of everyday medical care. The potential to streamline and improve your business using IT is great. Despite this the current IT tools does not give the benefits that would be possible. This is partly due to that IT use varies widely in the care sector, partly because many of the IT systems used can not communicate with each other. Access to relevant information is a necessity to ensure proper and safe care. In order for these benefits to be achieved requires an in-depth national collaboration” (Government communication No. 2005/06:139).

Aim

The purpose of this paper was to describe the establishment of a close national cooperation concerning ICT development in health and social care and to describe nurses' part in the work.

Course of Action

In 2005 the government appointed a High-Level Group for eHealth comprised of representatives from the Ministry of Health and Social Affairs, Swedish Association of Local Authorities and Regions, National Board of Health and Welfare, Medical Products Agency, Apoteket AB and CareLink. A reference group was formed with representatives from relevant authorities including the Ministry of Finance and the Ministry of Industry and Communication, representatives of various groups of health professionals, branch agencies for the pharmaceutical and ICT industries, representatives of principals, and providers of health and social care. The reference group was in 2009 converted to a Consultative Group to broaden and formalize the dialogue and ensure commitment for the ongoing work. The consultative group discussed strategic issues, identified new areas of focus and initiated specific working groups. All reported to the High-Level Group. The Swedish Society of Nursing have entered into both the reference group and in the consultative group. The consultative group have met seven times since October 2009 and participated in the conference World of Health IT in March 2010.

In this first part of the work with the national strategy for eHealth the Swedish Society of Nursing emphasized that the patients'

perspective has to be clearly pronounced. The first draft of the Swedish National strategy for eHealth had three prioritized areas, a national compatible patient health record, intervention to facilitate patients and care givers accessibility to information and e-prescriptions. All three areas are important for nurses and had been requested for, by the Swedish Society of Nursing , since the use of electronic patient health record had started in the 1990's. The basic structure of a national electronic health record and technical solutions for this was one demand as well as education to health personnel to increase the ability to use IT in their work. The Swedish Society for Nursing also strongly emphasized the importance that the summary text of the strategy should be concrete and should be interpreted in the same way by all nurses. Further should the information management proceed from ethical values and the cost for implementation of the eHealth strategy should be calculated (Swedish Society of Nursing 2006).

Result

The first National Strategy for eHealth was presented in 2006 and outlined six areas of intervention (Swedish Government office 2006, 2009). Those six areas and their current state are described below

1. *Bringing laws and regulations into line with extended use of ICT.*

In 2008 the Patient Data Act came into force. The aim was to establish clear rules designed to ensure secure and efficient handling of personal data while improving patient safety and

strengthening personal privacy. Citizens will also have direct digital access to their own information. The Patient Data Act will as well enable care professionals to digitally access a patient's entire care history from different levels within the health and medical care services (Patient Data Act SFS 2008: 355).

2. *Creating a common information structure.*

In the work to create a common information structure, two projects were started, the National Information Structure and the National Project for an Interdisciplinary Terminology. The last project included a translation and adoption of the international terminology system SNOMED Clinical Terms (SNOMED CT).

3. *Creating a common technical infrastructure.*

To create a common technical infrastructure several projects has started or been performed for example SJUNET, a national network for all digital communication in the care sector. SJUNET is a platform for secure communication over organisational boundaries and geographical distances and HSA a health services address registry. In this area there is also work ongoing for secure communication of sensitive information, Basic Services in Information Maintenance responsible inter alia for supplying the role and authorization management services for secure information handling across organizational boundaries in the care sector as required under the Patient Data Act

4. *Facilitating interoperable, supportive IT systems that, enable information access across organizational boundaries and making information and services easily accessible to citizens and personnel.*

Areas 4-6

ICT use varies across and within the operations of health care principals. The objective is ICT systems with good interoperability that allow the exchange or sharing of information, that are user-friendly for personnel and do not disturb the dialogue with patients, that provide information and knowledge support to safe and secure medical treatment, and can communicate with surrounding ICT systems. Examples of a project is the National Patient Summary (NPÖ) which intend to facilitate access to necessary information, like current care contacts and chronic diseases, about patients that received care from other care providers than the responsibly county council. Another example is Pascal which will provide comprehensive information on individual drug prescription to give prescribers and patients full access to information on the medication regimes.

To easily give citizens access to health related information and communication with health and social care the Care Online, 1177 website and Telephone Advisory Service was designed. Care Online is a portal to help the citizens to choose the right care solution by public care advices and comparison of care givers. The 1177 promotes health and advances knowledge of health and medical care among patients and the general public by information on the website or by personal telephone advice by nurses. For the young a

Web-Based Youth Family Planning Clinic (UMO.se) has been created to provide young people (13-25 years) a reliable, easy to read information about issues that are sensitive, regardless place of residence (Swedish Government office 2006, 2009).

For health personnel the Handbook- online information gives scientifically and professional based information on overall guidelines and practical application in different care work (Swedish Government office 2006, 2009).

From June 2010 the National Strategy for eHealth have an increased focus on development, use and interaction of eHealth service in and between health and social care. In the work within the framework of the National Strategy for eHealth the Swedish Society of Nursing in cooperation with the Swedish Association of Health Professionals had emphasized the need of patient's empowerment in care, the importance that ICT support patient safety in matters as transferring information and drug administration and training in informatics for nurses in basic, advanced and in-service training. The necessity of safe and easy transfer of information between nurses in health care organised by County Councils and/or Local Authorities has also been pointed out.

Nurses are active in the project for national information structure and for interdisciplinary terminology. The nurses contribute with nursing perspective and nursing needs of information structure and terminology so that no important information of the patients care and needs get lost. The interdisciplinary terminology have

been tested in standardised care plans to examine the usefulness of the terminology for nursing.

In the UMO.se the nurses had a dominating role by contribute with reliable information like in the face to face youth clinic. Most important with the UMO.se is that the website is designed in cooperation with young people to make the information interesting and worthy of attention.

The 1177 Telephone Advisory Service is run by nurses with post registration specialist training in different areas and telephone advising. To give advise by telephone demands experience of health care, deep knowledge in most health care areas and a training and knowledge in accessing patients' condition using communication by telephone. The 1177 Telephone Advisory Service has developed on line guidelines and decision support that increase the possibility to equal care and facilitate documentation in the patient health record. In the project the Handbook several nurses with PhD are medical experts and responsible for the information. The conditions are the same for the website 1177.

Areas that still have to be developed are the patients' possibility to take part of the information and adding information in their own patient health record, and patients' possibility to compare caregivers. The education for health personnel have still deficiencies that has to be solved for a full use of the National eHealth strategy. The safe management of drugs is not just about prescribing and dispensing of medicines. It is very much on the supervision and control of intake and effect which often is nurses'

responsibility. Reliable IT support in this area is a high priority and such support would increase patient safety

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Daniel Forslund, Deputy Director at the Swedish Ministry of Health and Social Affairs and the Swedish Strategy for eHealth formed the basis of this presentation.

Chapter 5 – Improving Outcomes Through Evidence-Based Practice

1. A System of Continuous Quality Improvement of Nursing Care Using a Business Intelligence Concept on ICNP Registrations.

C.MM. Martins. (Portugal).

It is now a consensus that, in the clinical practice, it is essential to use an information system that, besides documenting, the nursing care provided, must reflect the reality of the whole process of care, contributing to the research and allowing the assessment of its quality and of its continuous improvement.

We intend to share the work we are developing in our Hospital, CHPVVC, with the implementation of a system of continuous quality improvement of nursing care, based on a research and on the nursing documentation system used in CHPVVC, and also on a protocol we celebrate a with the Ordem dos Enfermeiros for the implementation of a quality standards project of nursing care.

What happened, then, in CHPVVC regarding the implementation of this system? It all started after the indispensable training sessions and the on-site training, when we decided to adopt an information system to document the nursing care provided, using a language

classified with the terms of the ICNP.

Afterwards, we developed a study, under the master's degree in nursing science that allowed the nurses from orthopedics service to engage in the creation of a Nursing Minimum Data Set (NMDS). The purpose was to implement a system of continuous improvement of nursing care, based on the information documented by the nurses, assuming that it was possible to construct a set of performance indicators sensitive to nursing care.

After that investigation, necessarily, we had to revise the data that was being documented in the information system. Therefore, we decided to expand the action research in other services, having created the so-called "SAPE Commission", formed by one nurse from each service, who worked closely to the direction of nursing and to the committee for the development of the information systems of the CHPVVC.

The creation of this group was an advantage and particularly when, in May 2007, we signed the protocol with the OE where we committed ourselves to implement the project of Quality Standards in Nursing. The main goal was, initially, to achieve that all the services produced reliable information that would subsequently enable the production of a set of indicators, from which we could prove that the quality of nursing care was being guaranteed, with continuous improving.

The activities were planned as follows, with the crucial participation and involvement of all the nurses:

PROJECT QUALITY STANDARDS IN NURSING CARE

SCHEDULE OF ACTIVITIES

May 2007	<p>1. Protocol signature</p> <p>2. Nomination of the “energizer” nurses (two)</p> <p>2.1 Quality Standards in Nursing Care and National Nursing Minimum Data Set - “Energizer” nurses training by de Ordem dos Enfermeiros</p> <p>2.2 Preparation of the action plan</p>
June 2007	<p>3. Nursing direction meeting</p> <p>4. Quality Standards in Nursing Care and National Nursing Minimum Data Set - nurses training by “energizer” nurses: directors, chief nurses, trainers in service and elements of the nominated SAPE Commission (replicated on every services)</p>
July 2007	<p>4.1 Selection of Nursing Phenomena (nursing diagnoses) sensible to nursing care</p>
Aug. 2007	<p>4.2 Meeting with “SAPE” commission elements, trainers in service and chief nurses for discussion the Nursing Phenomena, diagnoses e interventions selected in each service</p>
Sept. 2007	<p>4.3 Presentation and discussion of the Nursing Minimum Data Set</p>
Dec. 2007	<p>5. Monitoring by the Ordem dos Enfermeiros</p>
During 2008	<p>6. Review of existing parameterization according with orientations by de National NMDS (nursing diagnoses, interventions, and outcomes) e respectiv codification</p>
From 2008	<p>7. Documentation according to required sets on NMDS - phenomena sensitive to nursing care, interventions that contribute to health gains and systematic documentation of nursing outcomes - and with internal rules in what concerns to diagnostic criteria</p>
2008 - 10	<p>8. Periodic internal audits</p>
2009	<p>9. External audit by nacional coordination of Project Quality Standards in Nursing Care</p>

All these steps were covered, what guarantees that the requirements and guidelines for documentation were being fulfilled. It was needed and expected, and desired by all nurses that we moved on to another stage - the production of indicators, if possible in an automatic way, and then , of course, their appropriated analysis and discussion.

In order to accomplish that achievement, the hospital Board decided to implement a management information project called SINAI (Integrated System of Access to Information).

The goals of this project were:

- To create a Portal for the hospital community - to access and communicate in the hospital
- To provide real-time indicators for decision support and for processes and data auditing.

This software solution enables unified access to information without impact on the pre-existing systems, through the use of tools that gives publishing contents, single sign on, online forms and for decision supporting, providing, in a modular way, the access to central and consolidated information (Corporate Portal), a content publishing, the creation of forms with workflow of processes and reports integrated with the existing systems and decision support: Relational , Data Mining and Data Warehouse (Business Intelligence).

In the area of decision support, the SINAI is composed of modules that provide indicators in the following areas: Production, Nursing,

Day Hospital, Pharmacy and Supply, Human and Financial Resources.

The steps followed in the implementation of a Business Intelligence for the nursing indicators were:

- The requirements specification and the design of the detail of the indicators
- The development of the software and its testing
- go-live and validation

That was possible thanks to the joint work of people from the enterprise and from the CHPVVC. In particular, the SAPE commission played an important role in that liaison.

Nowadays the following nursing indicators are available on the CHPVVC portal (slides attached):

1. Procedure: diagnostic effectiveness rate risk
2. Results: rate of effectiveness in preventing complications, positive changes in the diagnoses state, achievements in knowledge and learning
3. Epidemiological: incidence and prevalence rates

Thus, we have, in CHPVVC, a set of indicators that integrates the system of continuous improvement of nursing care:

NURSING CARE CONTINUOUS QUALITY IMPROVEMENT CYCLE



This system is a cyclical process in which the analysis of these indicators by the team, because they are produced collectively, and their regular comparison allows the reflection of the practices and the adoption of quality-promoting behaviors, what, therefore, lead to continuous improvement quality of care in the service itself, where those indicators are produced.

But these indicators may also be supplemented with others, such as the structure ones, like those measuring the degree of satisfaction of nurses and customers, what we also have in the CHPVVC.

Capital Gains Obtained by Implementation of this Project.

- The experience for everyone involved, what helped to enhance the cohesion of the team - because fighting for a common goal strengthens the unity of the group
- The incorporation, by a team, of a conceptual framework and of the quality standards defined by the OE for the nurses' action, that became a true daily commitment that we assume with our patients
- The possibility, that we now have, of seeing these indicators in our portal
- The existence of systematic audits to the records, which were essential in the validation phase, but that will have to continue to guarantee that the documentation and the indicators are reliable

We also want to emphasize that these indicators can also be used for:

- A starting point for defining a set of targets for quality and efficiency to be established and contracted, internally and externally.
- A tool for monitoring the achievement of the accorded goals, included in the nursing plans of activities of each service
- A component of the overall's continuous improvement system of the CHPVVC.

These indicators can and should be compared across services and

between institutions. However, we can not forget that for that purpose of comparison it is essential that:

- We share the same classified nursing language
- We share the same statements to describe the nursing diagnoses, interventions and outcomes
- We share the same model and the same formulas for calculating the indicators
- We inspect for quality on the rules for recording, using internal and external audits
- The NMDS is updated whenever necessary

Conclusion

Careful registration of nursing diagnoses, interventions and outcomes, with ICNP, according to the NMDS, treated by a business intelligence program, guarantees a cycle of continuous quality of nursing care. Its implementation requires an attemptive planification, execution and audits. All that is essential to testify health gains sensible to nursing care.

All this is, nowadays a reality lived in the Hospital, thanks to all the nurses who have dedicated most of their time on the research in the information systems and especially the nurses with whom I work. Without their commitment and dedication none of this would be possible.

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2. Review of the Outcomes of Regional Health Information Systems in Health Care.

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Introduction

The development of health information exchange among RHISs is viewed as an important step in the development of health information and communication technology. The implementation of such a technology would improve the coordination of care and information among hospitals, health centres, physician offices, and other ambulatory care providers. The aims are to improve continuity of care, enhance access to health care information and patients' medical history, improve decision-making and the supply of cost-effective and quality care.[1]

Objectives

The objective was to find out how RHISs have been investigated, what kinds of effects have been achieved, and what the outcomes have been.

Materials and Methods

The research design was a qualitative systematic review of health care information technology and the implementation of health information exchanges and focused on research on regional or national health information systems. A total of 24 studies were identified.

Results

RHISs were very different in size, and stage of development. Five main outcomes were found: flow of information, collaboration, process redesign, system usability, and organizational behaviour in more broad terms.

The RHISs improved access to clinical data, patient information exchange between professionals and entities, and provided real-time patient information. They improved communication and coordination within the region, empowered collaboration and multidisciplinary teamwork for better understanding of the patient situation.

The RHIS redesigned the process and improved clinical effectiveness; saved time, supported the workflow, patient health care plan process, and improved decision-making. The RHIS decreased the duplication of services for example. System usability focused on usefulness and reliability. However, it was found that there was poor usability of the RHIS, with no single region-wide management system or interoperability, and no appropriate equipment.

There was commitment to the RHIS, with management approval, and widespread participation. Nevertheless, differences in organizational culture and limited understanding of the system concerning RHIS were found.

Discussion

This study is significant, since effective information exchange will become an important part of the development of health information systems in health care delivery. Despite the differences in RHIS types and research approaches in the studies, the main outcomes were quite similar. An RHIS improves clinical data exchange, data access, and effectiveness; provides real-time patient information; improves communication and coordination within a region; and supports process redesign. However, RHISs are heterogeneous and are currently in different phases of development, there is no standardized name for the system and the usability of the systems was quite poor.[2]

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3. A Controlled Nursing Vocabulary to Enhance Evidence-Based Nursing Practice.

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Introduction

Research utilisation among health professionals in clinical area has for long been a theme for discussions. The amount of research papers is enormous but the gap in knowledge transfer from research to practice still exists. The attempts to enhance evidence-based practice in clinical environments make the situation even more critical.

Evidence-based nursing can be defined as exact, precise and considered use of theoretical, research-based information to support decision-making when planning the care of an individual patient or a group of patients according to their individual needs and expectations. Evidence-based nursing requires ability to identify and formulate relevant clinical questions and ability to search, find and critically appraise information. In addition, easy access to databases is required. (DiCenso et al. 1998; Closs & Cheater 1999; French 1999; Ingersoll 2000; Thompson et al. 2004; Newhouse et al. 2005; Vratny 2007.)

In Finland, a controlled nursing vocabulary *Hoidokki* has been developed for indexing and information retrieval purposes. The ultimate aim is to promote evidence-based practice. The expert

group named by the Finnish Foundation of Nursing Education began the development project by choosing terms concerning nursing practice, education, administration and research from the Medical Subject Headings thesaurus (MeSH) created by the National Library of Medicine. Terms were classified in ten themes according to MeSH Main Headings. Themes were named by the knowledge base of nursing science:

-
- | | |
|--|-----------------------|
| 1. Health | 6. Nursing Education |
| 2. Philosophical Principles of Nursing | 7. Nursing Management |
| 3. Nursing Procedures | 8. Nursing Research |
| 4. Nursing Sensitive Outcomes | 9. Health Informatics |
| 5. Nursing Practice | 10. Actors |
-

However, MeSH did not include sufficient nursing terms. Therefore, an additional framework was needed and found in the International Classification for Nursing Practice (ICNP), a classification of nursing phenomena, interventions and outcomes maintained by the International Council of Nurses (ICN). The broad scope of the ICNP provided terms for describing nursing practice.

The first version of the *Hoidokki*-vocabulary was published on the homepage of the Finnish Foundation of Nursing Education in 2005. Since then, *Hoidokki* has supported information retrieval not only with the both national languages Finnish and Swedish but also in English. Now, in November 2010, *Hoidokki* includes 2805 terms; 876 in Finnish, 1116 in Swedish and 813 in English. Since spring 2010, *Hoidokki* has been available in electronic format with an electronic search form. An electronic vocabulary is a flexible

means to compose search strategies to retrieve scientific publications from databases.

Hence, *Hoidokki*-vocabulary has been available for authors and librarians since 2005. This study explored the success of the implementation of the vocabulary in one Finnish scientific nursing journal.

Aim and objectives

The study aimed at analysing the congruence between the keywords of *Nursing Evidence*, a Finnish scientific nursing journal, and the terms of the controlled nursing vocabulary *Hoidokki* in 2006 and 2008. At the same time, the secondary objective was to analyse the keywords with help of the themes of *Hoidokki*-vocabulary in order to identify potential trends in the content of the journal.

Methods

The data were gathered manually from the articles (N=36) of *Nursing Evidence* in 2006 and 2008. In all, the data consisted of 140 keywords. For the analysis, a categorisation table was formulated and repetitive keywords (n=9) were excluded. Each keyword (n=131) was categorised according to its congruence with the terms of *Hoidokki*-vocabulary. The congruence was defined as exact, partial or non-existing. Partial congruence was defined as differences in singular or plural forms of the terms/keywords, or as differences in phrasing the terms/keywords. For inter-rater – reliability, two experts analysed each keyword, and the unanimity percentage was calculated (required unanimity 80%). Next, the

keywords were categorised according to the themes of *Hoidokki*-vocabulary.

Findings

Of the 131 keywords, 68 (52 %) were from 2006 and 63 (48 %) from 2008. In the data from 2006, the congruence of the keywords with the *Hoidokki*-terms was exact for 21 (31 %), partial for 10 (15 %) and non-existing for 37 (54 %). In the data from 2008, the congruence of the keywords with the *Hoidokki*-terms was exact for 18 (29 %), partial for 14 (22 %) and non-existing for 31 (49 %). Inter-rater-reliability of the analysis was 76,8 % in 2006 and 87,3 % in 2008. Analysis of the keywords according to the *Hoidokki*-themes is presented in Figure 1. In 2006, the themes *Health*, *Nursing Procedures* and *Nursing Management* were dominant. In 2008, however, focus of the articles had shifted to themes of *Nursing Research* and *Actors*.

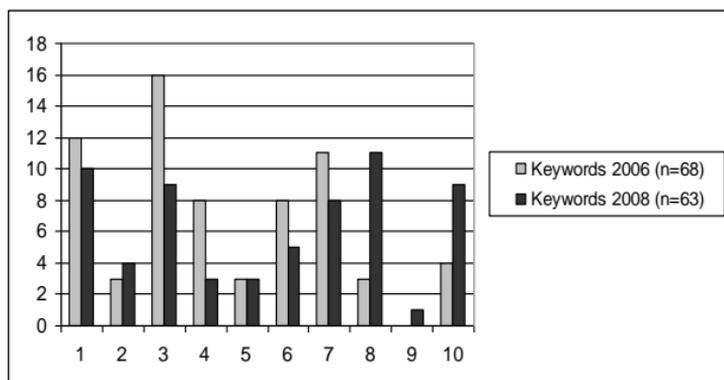


Figure 1: Keywords of the articles according to the *Hoidokki*-themes

Discussion

Hoidokki-vocabulary has been available for authors and librarians as a paper since 2005 on the web-site of the Finnish Foundation of Nursing Education (www.shks.fi). Since spring 2010, *Hoidokki* has been available in electronic format (www.hoidokki.fi), with an electronic search form. The vocabulary has been promoted in annual national nursing congresses and in special educational seminars. Furthermore, the departments of nursing science in Finnish universities, and universities of applied sciences have been informed about the use and benefits of *Hoidokki*. However, findings of this study indicate that the use of the vocabulary has not yet been established. For one third of the keywords, both in 2006 and 2008, the congruence with the *Hoidokki*-terms was exact. At the same time, roughly 50 % of the keywords had no correspondence with *Hoidokki*. This finding reflects that the authors still use their own words - or the words of the title - when selecting keywords.

When exploring the keywords according to the *Hoidokki*-themes they represent, the focus of the journal has clearly shifted towards evidence-based nursing the most prevailing theme in 2008 being *Nursing Research*.

The safe patient care requires that nursing interventions are planned and carried out based on the best possible and available information about the efficiency and usefulness of those particular actions. To ensure that the research findings will benefit the clinical nursing practice, the researchers should mirror the significance of

their study outcomes with relevant keywords. This is of high priority due to the very rapid knowledge generation.

Development and promotion of the *Hoidokki*-vocabulary is continuing. The expert group welcomes all users internationally to suggest new terms via vocabulary web address www.hoidokki.fi.

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Chapter 6 – Nursing Diagnoses and Foci for Nursing Practice

1. The Importance of Transparency of Nursing Diagnoses.

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Background

Use of standardized nursing languages in clinical practice has been emphasized as one of the important infrastructures to promote patient safety as they facilitate data collection and retrieval of data from electronic health care records (Bakken, Cimino, & Hripcsak, 2004). Yet, research shows that use of the languages is still rare in electronic records even if their use improves documentation of the nursing process, improves quality and quantity of documentation (Saranto and Kinnunen, 2009).

Research suggest that too much emphasis has been put on documents and methods to document rather than the care planning itself and which may contribute to limited nursing information and poor nursing data (Keenan, Yakel, Tschannen, & Mandeville, 2008). Keenan and her co-workers (2008) indicate that lack of completeness of the right content may have negative

impact on continuity, quality and safety of care. Structured documentation as well as knowledge and use of standardized languages provide more reliable and meaningful nursing data than unstructured documentation (Lunney, 2006; Müller-Staub, 2009; Shever, Titler, Dochterman, Fei, & Picone, 2007), but variable formats (Karkkainen & Eriksson, 2004), useless content (Green & Thomas, 2008), poor accessibility and informal documentation (Törnvall & Wilhelmsson, 2008) contribute to poor nursing data. All these elements present a risk to patient safety.

Identification of patients at risk for pressure ulcers and falls is an important patient safety issue and clinical guidelines to prevent them have been available for years. Research show pressure ulcer prevalence to range from 8.3% to 23% in different countries in Europe (Vanderwee, lark, Dealey, Gunningberg, & Defloor, 2007) and from 14% to 17% in the United States (Whittington & Briones, 2004). More than 30% of people over 65 years of age in health care institutions fall each year (Gillespie et al., 2003). Incidence of falls ranges from 2.7 to 13 per 1000 inpatient days in hospitals around the globe (Halfon, Egli, Van Melle, & Vagnair, 2001; Healey et al., 2008; Oliver et al., 2007). Documentation on risk of pressure ulcers and falls in the patient record are important as they are significant indicators of patient safety and quality of care in hospital. Patient safety can be jeopardised if appropriate nursing diagnoses are not documented and reported accurately. It was therefore of interest to study how pressure ulcers and falls are presented in the patient record.

Aim of the study

To investigate what nursing diagnoses are documented in patient records to identify patients with risk of pressure ulcers or falls or patients who have pressure ulcers.

Design

A patient record audit was undertaken in a university hospital in Iceland where NANDA-I nursing diagnoses and NIC (Nursing Interventions Classification) interventions (Bulechek, Butcher, & Dochterman, 2008) were used in clinical practice. The samples consisted of patient records during a care episode of patients, who had been hospitalized for more than 48 hours at the day of data collection, to internal medicine, surgical, geriatric and rehabilitation wards in two different years (n=211 and n=196). Pediatrics, obstetrics and psychiatric wards were not included. A systematic sampling method was used.

Quality indicators had not been defined in the hospital or clinical guidelines for pressure ulcer or falls prevention been implemented.

Procedure

The variables of interest from the patient records were nursing diagnoses addressing pressure ulcers and falls and appropriate interventions. A search for conceptual fit was done in the patient records for nursing diagnoses on pressure ulcers and falls and relevant nursing interventions. The term pressure ulcer is not available in the NANDA-I terminology, but different diagnoses on the skin and tissues are. The conceptual match was considered

partly acceptable. Secondly, a search for nursing interventions for pressure ulcers (pressure ulcer prevention, positioning and skin surveillance for pressure ulcers) and falls (fall prevention and safety surveillance for falls) was performed to identify the nursing diagnoses potentially used to document (risk for) pressure ulcers or falls.

Permission from the hospital Institutional Review Board (46/2005) was granted. No patients could be identified in the data set.

Results

In each study year 43 patients were identified with nursing diagnoses and interventions that could be related to pressure ulcers. The diagnoses used to document risk for pressure ulcers or pressure ulcers were four: impaired skin integrity, risk for impaired skin integrity, impaired tissue integrity and disuse syndrome (Table 1). Patients identified with nursing diagnoses and interventions that could be related to risk for falls were 26 in the former study year and 25 in the latter year. The nursing diagnoses used to document risk for falls of patients were five: risk for falls, risk for injury, impaired walking, disturbed sensory perception and acute confusion (Table 2).

Nursing diagnoses and interventions	Yr 1 n=211	Yr 2 n=196
	n	n
Impaired skin integrity	37	30
Pressure ulcer prevention	24	11
Skin surveillance	32	28
Wound care/ skin care	15	7
Risk for impaired skin integrity	2	5
Pressure ulcer prevention	2	2
Skin surveillance	1	4
Wound care/ skin care	1	3
Bed rest care/ positioning	1	0
Impaired tissue integrity	3	7
Pressure ulcer prevention	0	5
Skin surveillance	3	4
Wound care/ skin care	3	4
Disuse syndrome	1	1
Pressure ulcer prevention	1	0
Skin surveillance	0	1
Bed rest care / positioning	1	1
Total diagnoses	43	43
Total interventions	84	70

Table 1. Nursing diagnoses representing pressure ulcer and relevant interventions

Nursing diagnoses and interventions	Yr 1 n=211	Yr 2 n=196
	n	n
Risk for falls	24	16
Fall prevention	13	10
Surveillance: safety	23	16
Risk for injury	0	1
Fall prevention	0	1
Impaired walking	0	2
Fall prevention	0	2
Disturbed sensory perception	1	4
Fall prevention	0	1
Surveillance: safety	1	3
Acute confusion	1	2
Fall prevention	0	1
Surveillance: safety	1	2
Total diagnoses	26	25
Total interventions	38	36

Table 2. Nursing diagnoses representing falls and relevant interventions

Discussion

In the study NANDA-I nursing diagnoses and NIC nursing interventions were used in the patient records to document patient problems and nursing care. Nurses used four different nursing diagnoses to identify pressure ulcers and five for falls. The term pressure ulcer has been used in nursing for decades and the first clinical guidelines were published in 1992 (Agency for Health Care Policy and Research (AHCPR), 1992). Yet, this term is not available in the NANDA-I classification. The most relevant expressions are impaired skin integrity, risk for impaired skin integrity, and impaired tissue integrity which implies different types of skin lesions or wounds. These diagnoses were first included in 1975, and updated in 1998 (NANDA International (NANDA-I), 2009). Through her studies Müller-Staub (2009) draws the conclusion that standardized nursing languages lead to increased accuracy in stated nursing diagnoses, more effective nursing interventions and better patient outcomes.

Results from the present study indicate that the skin and tissue diagnoses are not transparent enough to represent risk for pressure ulcers accurately. The wording of the diagnoses makes it harder for nurses to identify the correct nursing diagnosis and more cumbersome to learn the meaning of the terms within the classification. It can also make audit of patient records regarding pressure ulcers more inaccurate as (risk for) pressure ulcers are not obvious in the patient records or data bases. The use of different nursing diagnoses may also indicate that the nurses were not yet secure in using the languages in clinical practice. All these factors

can jeopardize safety of patient as appropriate diagnoses may not be documented and reported accurately.

The history of the nursing diagnosis risk for falls in NANDA-I is much younger than the skin and tissue diagnoses as it was first included in 2000 (NANDA International (NANDA-I), 2009). It takes time for new nursing diagnoses to be learnt by nurses and be available for use in clinical practice, especially if translations are needed as is the case in Iceland. The five nursing diagnoses used to document patients in risk for falls were more diverse than those for pressure ulcers where three related to the skin or tissue. It may indicate that nurses were searching for the most accurate nursing diagnosis but may not have been aware of the recent diagnosis, risk for falls.

Conclusion

The nursing diagnoses available within NANDA-I are not descriptive enough for pressure ulcers and should be changed or a new diagnosis developed to accommodate the nursing sensitive term pressure ulcer. A conclusion cannot be drawn, if standardized nursing languages contributed more to accurate documentation of pressure ulcers and falls

Clinical implications

The nursing diagnosis used to describe a patient situation, such as pressure ulcer, needs to be easily identified by nurses to increase accuracy in the patient record.

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2. Refined Q-DIO: An Instrument to Measure Accuracy of Nursing Diagnoses, Effectiveness of Interventions and Quality of Outcomes.

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Background and Purpose

Because research based instruments were not available to measure the quality and coherence of/between assessment, diagnoses, interventions and outcomes, the instrument "Quality of documentation of Nursing Diagnoses, Interventions and Outcomes" (Q-DIO) was further refined for use of NNN-based Electronic Health Records (EHR). The purpose of this study was to test the refined instrument in various settings.

Methods

Q-DIO is an instrument to measure the accuracy of patient problems/nursing diagnoses, the effectiveness of interventions and quality of outcomes with 29 items on 3-5 point Likert scales. For instrument development, measurement criteria were derived from a theoretical framework and literature reviews, and operationalized into items. The Q-DIO is a criterion referenced instrument, based on four concepts: (a) accuracy of nursing assessment and diagnoses as process, (b) accuracy of nursing diagnoses as product, (c) effectiveness of nursing interventions, and (d) quality of nursing-sensitive patient outcomes. First,

instrument pilot-testing was performed using a random, stratified sample of 60 nursing documentations representing hospital nursing with and without implementation of standardized nursing language (30 for both strata) of a Swiss General Acute Hospital. Internal consistency and intra- and interrater reliabilities were tested. By item analyses, the grades of difficulty and the discrimination validity of items were evaluated. Second, the refined and translated instrument was tested in a multi-center study in intensive care (Brasilia), rehabilitation (Spain, Switzerland), and home health nursing (Switzerland) after implementing EHRs.

Findings

The refined items capture all relevant topics to assess patients' care needs. Q-DIO has also shown to be suitable for assessing meaningful and correct linkages among all steps of the nursing process. Q-DIO is a valid instrument to assess accuracy of diagnoses, effectiveness of interventions, and quality of outcomes. Internal consistency on nursing assessment and diagnoses as process showed Cronbach's alpha 0.83; nursing diagnoses as product .98; nursing interventions .90; and nursing-sensitive patient outcomes .99. With Kappas of .95, the intrarater and interrater reliabilities were good. Criteria for the grades of difficulty of items and discrimination validity were well met.

Discussion

Results indicate that the Q-DIO is a reliable instrument to assess the accuracy of patient problems/nursing diagnoses, the

effectiveness of interventions and quality of nursing-sensitive patient outcomes in EHRs.

Conclusions

Further testing of Q-DIO in other settings is recommended.

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3. Identifying the Rights-Based Foci for Intellectual Disability Nursing.

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Introduction

The origins of intellectual disability service provision have been recounted elsewhere (Carey 2009; Trent 1994; Robins 1986, 1992), but of particular note is that these services were built around segregation and marginalisation (Borsay 2002; Wolfensberger 1973). The objectification of people with intellectual disabilities that was seen in such services (Goffman 1961) led to dehumanisation such that people with intellectual disabilities' experience of reality was significantly different to that of mainstream society. Thus, they did not have access to the same level of educational, health and social facilities and indeed rights, as did mainstream society, and so, their outcomes in these regards were observed to be different to those of people in the mainstream (Begley *et al.* 2009; Silverstein 2003). The development of specialist intellectual disability nurses and other professionals was grounded in a need to meet the specialised needs of this group, but they returned to the normality of mainstream society at the end of their work periods (figure 1).

Whilst the character of institutions and segregated services has changed in many countries - now there are community group homes and individualised living units – for many people with intellectual disabilities, segregation and inequality remains

(Keenan and Dillenburg 2011; Lunsky *et al.* 2009; Mencap 2007; Lunsky and Havercamp 2002).

One may ask ‘what is the relevance of this to nursing diagnosis, intervention and outcome?’ The answer lies in the fact that many of the nursing diagnoses and interventions that have been identified as being relevant to intellectual disability care are, in fact, relevant to the reality of people with intellectual disabilities mediated through the specialist role of intellectual disability nurses (figure 1). Their *actual* relevance to people with intellectual disabilities is unclear as they derive from a model of disempowerment in which expert nurses make decisions about the lives of their clients.

There is a growing realisation that intellectual disability nurses, by continuing to act solely in the margin, where they have strived to maintain the best possible health outcomes for their service users (Alaszewski *et al.* 2001) are, in fact, contributing to a continuance of inequality and marginalisation. It is becoming clear that nursing action must have two loci of action, one in service, as specialist practitioners, and the other in society as social activists *with* people who have intellectual disabilities. In order to achieve this, and to focus the role of nursing in this regard, it is proposed that nursing must collaborate with self-advocating people who have intellectual disabilities, and that interventional foci should be identified which are grounded in that collaboration.

Two Foci for Intervention

It is wholly appropriate for nursing to focus on the health of people with intellectual disabilities and such a focus builds on the

historical nursing role (Atkinson *et al.* 2010; Department of Health 2007; Northway *et al.* 2006). These sources also call, however, for nurses to act as catalysts for change in society, an approach that is in keeping with the prevalent person-centred philosophy (Wolfensberger 1972; National Disability Authority 2005; O'Brien 2004; Sanderson 2000), for it demands that nurses work in collaboration with the recipients of their service in order to achieve the outcomes that are important for *them* in *their* lives (Mansell and Beadle-Brown 2004). In recent times it has become clear that a common factor underpinning many of the issues being raised by people with intellectual disabilities is inequality grounded in rights restrictions/violations (Cooper *et al.* 2004; Disability Rights Commission 2004; Rioux 2003). These issues include some of the key social determinants of health. Social determinants of health relate to the “unequal distribution of power, income, goods, and services, globally and nationally, the consequent unfairness in the immediate, visible circumstances of people’s lives – their access to health care, schools, and education, their conditions of work and leisure, their homes, communities, towns, or cities – and their chances of leading a flourishing life.” (WHO 2008:1). It is thus incumbent on intellectual disability nurses to engage in social action to address inequities within the social determinants of health.

The model of nursing action, therefore, requires a two-pronged approach (figure 1) and it is this second focus for action that needs description and clarification.

Levels of Action

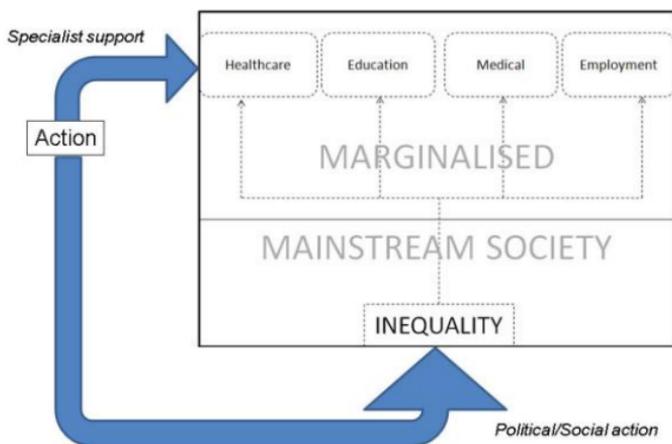


Figure 1: Intellectual disability nursing's two foci of action

Identifying Rights-Based Diagnoses

One commonly referenced definition of a nursing diagnosis is that it is “a clinical judgement about individual, family or community responses to actual or potential health problems/life processes. A nursing diagnosis provides the basis for selection of nursing interventions to achieve outcomes for which the nurse is accountable” (NANDA-I 2002:63). Within the context of the ICNP, it is described as a “label given by a nurse to the decision about a phenomenon which is the focus of nursing interventions” (ICN 2000:1). Both of these definitions refer to the nurse as the enactor and, in one, the person/family/community as the object of a decision which falls within the remit of nursing accountability.

Such a perspective poses difficulties for intellectual disability nursing's activity in relation to rights, as the rights-foci must be defined and named by people with intellectual disabilities and then acted on by nurses in collaboration with them. The nurse's role, in this regard, is one enabling and collaborating (Freire 1993). It is better, therefore, to consider these to be *Rights-Based Diagnoses* instead of *Nursing Diagnoses*. This is conceptually important, especially within the context of a population where professionals have for many years represented control and disempowerment (Rapley 2004; French and Swain 2001).

Rights-based diagnoses (RBD) are foci for intervention that have their origin in the reality of the person who is experiencing a rights deficit in their lives. Unlike nursing diagnoses, RBDs do not derive from a nursing decision or judgement but rather emanate from an internalised awareness on the part of the person, that there is inequality in his/her life, which becomes formalised, through conscious awareness, into a statement of discontent in this regard. In a situation whereby the person is unaware of, or unable formalise awareness of inequality, due, for example, to incomplete/impaired cognitive function, this may be supported by another person such as a nurse who acts in an advocacy role. The outcome of this process may be termed an advocated rights-based diagnosis (aRBD).

The RBD approach is underpinned by a philosophy of humanisation drawing from the social pedagogy of Freire (1993) and hooks (1994), the critical theory of Fanon (1967) as well as from the liberation theology of Sobrino (2008). Central

components of this approach, in respect of people who are marginalised or disempowered, are supportive engagement and conscientisation (*conscientização*) (Freire 1993). It is proposed that intellectual disability nursing, as the only health-care profession prepared uniquely to address the health outcomes of people with intellectual disabilities, has an important advocacy role to play in their regard and that RBDs fall within its scope of practice. Furthermore, this branch of nursing is collaboratively accountable *with* and *to* people who have intellectual disabilities for these outcomes.

Identifying Potential Rights-Based Diagnoses

For the past three years, the author has been engaged in participatory action with individuals from various backgrounds – rights activists, self/supported advocating people with intellectual disabilities, intellectual disability professionals and others – which has focused on providing a forum for people with intellectual disabilities to discuss their rights as equal members of a group that plays no role in providing services to them. The movement, *IDRights: Human Rights and People with Intellectual Disabilities* is grounded in a philosophy of inclusion and this is operationalised through the primacy of the contributions of self/supported advocates, each of whom is supported by another member of the group. The action is focused on promoting a rights-based agenda through collaboration, education, publication and social activism. Central to the progression of this has been the conduct of Rights Days. Three of these have been held to date and each has brought together up to 120 people with intellectual disabilities to discuss

and explore the rights issues that are important in their lives. Whilst the outputs of these discussions have informed the action of the movement, the hosting of these in the author's college has also had an effect on the intellectual disability nursing curriculum, and has placed rights-based issues at the centre of intellectual disability nursing education there.

It is clear from these days that many of the participants are well aware of their rights. That said, though, it is also clear that key rights are not being addressed, many of which fall within the realm of the WHO's social determinants of health. Furthermore, they primarily pertain to the general principles underpinning the *Convention on the Rights of Persons with Disabilities and Optional Protocol* (UN 2006) (figure 3).

- | |
|---|
| <ul style="list-style-type: none">(a) Respect for inherent dignity, individual autonomy including freedom to make one's own choices, and independence of persons;(b) Non-discrimination;(c) Full and effective participation and inclusion in society;(d) Respect for difference and acceptance of persons with disabilities as part of human diversity and humanity;(e) Equality of opportunity. |
|---|

Figure 2: General principles of the Convention on the Rights of Persons with Disabilities (UN 2006:3)

Respect for inherent dignity, individual autonomy including freedom to make one's own choices, and independence of persons

Many participants have indicated that they do not have a right to make choices in their lives with respect to, for example,

friendships, use of money and attending meetings. Attempts to assert one's right in this regard were ignored or not listened to. Some even stated that they were too frightened to speak out in case they would be 'given out to' (reprimanded). It is interesting that the words '...not allowed to...' were aired many times by participants in various groups. This concept is central to the application of 'house rules for the group' and is a tenet of institutionalisation and congregational care. The refusal of choice for these individuals may carry with it a perception that one has no autonomy, 'nobody listens' and, in the context of fear of reprisal, it may be considered better to stay silent. In fact, many participants stated that they could not stand up for themselves and that they needed support in this regard.

CLIENT	FOCUS	JUDGEMENT	LOCATION
Individual	Autonomy	Restricted ¹	Intellectual disability service ¹
Individual	Powerlessness	None	Intellectual disability service ¹
Individual	Hopelessness	Actual	Intellectual disability service ¹

Figure 3: Rights-based diagnoses relating to respect for inherent dignity, individual autonomy including freedom to make one's own choices, and independence of persons based on ICNP diagnostic structure. ¹Not currently included in ICNP.

Full and effective participation and inclusion in society

One's full participation and inclusion in society is based on the premise that one is able to engage with society, in the places where society is (O'Brien 1989). The experience of many participants is that they are not allowed to go out to these places. Often, this is due to the absence of support due to staffing shortages, but it can also be due to restrictive rules. A significant undertone in discussions of

participation in society was fear: fear of using facilities; fear of not being safe; fear of making mistakes. The consequence of this was to remain distanced from society and to let others engage on their behalf.

Non-participation in society means that people's social sphere is often limited to other persons with intellectual disabilities and paid carers. Furthermore, the sometimes arbitrary allocation of individuals to community homes led to friendships being broken and, with restrictions or limitations being places on one's ability to visit friends, socialising was reduced. Such social discontinuity has also been identified by Wolfensberger (2000) in his treatise of social role valorization. Social discontinuity has implications for, not only socialisation, but also the possibility of meaningful relationships being developed.

CLIENT	FOCUS	JUDGEMENT	LOCATION
Individual	Socialisation	Impaired (negative)	Intellectual disability service ¹ Community
Individual	Powerlessness	Actual	Intellectual disability service ¹ Community
Individual	Social isolation	Actual	Intellectual disability service ¹ Community
Individual	Social presence ¹	Impaired (negative)	Intellectual disability service ¹ Community
Individual	Friendships ¹	Abnormal, Impaired (negative)	Intellectual disability service ¹ Community

Figure 4: Rights-based diagnoses relating to full and effective participation and inclusion in society based on ICNP diagnostic structures. ¹Not currently included in ICNP.

Non-Discrimination and respect for difference and acceptance of persons with disabilities as part of human diversity and humanity

Discrimination may be defined as “any distinction, exclusion or restriction on the basis of disability which has the purpose or effect of impairing or nullifying the recognition, enjoyment or exercise, on an equal basis with others, of all human rights and fundamental freedoms in the political, economic, social, cultural, civil or any other field. (UN 2006:4). Many participants spoke of their experiences of being ridiculed, especially by younger people in society. Some were made fun of because of how they looked. This was not restricted to engagement with society, but was also experienced in disability services in the form of bullying. This was primarily between persons with intellectual disabilities themselves and took the form of name calling, being pushed physically and being laughed and shouted at. Again, this led to people being afraid and, when this involved a staff member, fear of speaking out.

CLIENT	FOCUS	JUDGEMENT	LOCATION
Individual	Social exclusion ¹	Actual	Intellectual disability service ¹ Community
Individual	Increased Disablement ¹	Risk, Actual	Intellectual disability service ¹ Community
Individual	Marginalisation ¹	Actual	Community
Individual	Abuse (verbal) ¹ Abuse (physical) ¹	Actual	Intellectual disability service ¹ Community
	Discrimination	Risk, Actual	Community

Figure 5: Rights-based diagnoses relating to non-discrimination and respect for difference and acceptance of persons with disabilities as part of human diversity and humanity based on ICNP diagnostic structures. ¹Not currently included in ICNP.

Equality of opportunity

Equality of opportunity is premised on the development of, and ability to use resources, whether financial, social or personal.

Access to money as a resource was raised by a large number of participants, many of whom had neither a clear idea of the amount that was paid to them in their disability allowance nor any understanding of where that money went. This was largely related to the fact that these people played no part in the collection or use of that money; it was collected by others (family/staff) and used by them on the persons' behalf. This was seen by one person to maintain their dependence on others. The denial of one's possibility to manage his/her monies, removes a central resource which could be used to increase independence and self-esteem. This absence of resource was described as extending to personal belongings with '*personal stuff*' being taken arbitrarily by both housemates and staff. This was complicated by the absence of any real sense of privacy and private space.

For many people in society, financial resources arise from one's engagement in meaningful work. The receipt of disability allowance and other benefits preclude the possibility of people with intellectual disabilities on work training programmes to earn a real wage. Participants described their dissatisfaction at not getting what they considered a fair wage for their work '*why aren't we getting the same money as everyone else*'. The problem appears to be that work training programmes may not lead to anything else, but may become 'occupational' in their essence. Thus, they may not promote development and the possibility of obtaining further

opportunity. This has been raised as a significant issue at several meetings.

It has been noted that non-engagement with society, described by participants had an effect on relationships. A repeating theme in this process has been personal relationships and marriage. This may be considered to be a social opportunity which carries with it other possibilities and obligations. Significant controls were placed on participants' relationships by families and carers. This was manifested in partners not being allowed to be alone together and being chaperoned. Such action is rooted in Irish legislation which may be seen to effectively criminalise any sexual relationships between persons with intellectual disabilities (Government of Ireland 1993). This leads to service providers trying to balance rights with duty of care. Inevitably, duty of care prevails.

CLIENT	FOCUS	JUDGEMENT	LOCATION
Individual	Access to resources ¹	Restricted ¹	Intellectual disability service ¹ Community Family
Individual	Work progression ¹	Restricted ¹	Intellectual disability service ¹ Community State
Individual	Remuneration ¹	Unfair ¹	Intellectual disability service ¹ Sheltered workplace Community
Individual	Potentiality for meaningful relationships ¹	Restricted ¹	Intellectual disability service ¹ Community Family
	Discrimination	Risk, Actual	Community

Figure 7: Rights-based diagnoses relating to equality of opportunity based on ICNP diagnostic structures. ¹Not currently included in ICNP.

Conclusion

It is clear that people with intellectual disabilities experience challenges to their rights at a number of levels within their lives, many of which have their loci outside of health and social service settings. The rights-based diagnoses that emanate from such challenges can be directly related to the social determinants of health and, if these challenges impinge negatively upon these determinants, they may lead to inadequate health outcomes. The role and locus of action for intellectual disability nursing has long been a topic of discussion with various perspectives being proffered. It has clearly expanded beyond the traditional boundary of health and into other areas such as education and social intervention and this has led some to question whether it has lost its essential character. It is argued here that nursing must take cognisance of the social bases for inequities in the health of people with intellectual disabilities that have for many years been the central focus of nursing action. In doing so, it is proposed that, in order to address such inequities, nursing must have a two-pronged focus, firstly providing quality and expert health care intervention to individuals with intellectual disabilities and secondly identifying the rights-based diagnoses to describe the foci for interventions and, thereafter, the collaborative interventions that can be undertaken by nurses and people with intellectual disabilities. It is such diagnoses and interventions that will enable development of social nursing activity to challenging the inequalities that are at the base of the continued marginalisation of these individuals.

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Chapter 7 – Documentation Systems and Models

1. Nursing Documentation with Integrated Nursing Workload Measurement.

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Introduction

Between 2008 and 2009, the Swiss cantonal hospitals in Winterthur and Aarau, Uster Hospital and Zürich University Hospital, in conjunction with the developers of the LEP nursing workload measurement instrument (Maeder et al., 2006), carried out a collaborative project to investigate representations of the nursing process (LEPWAUU, 2010). The aim of the so-called LEPWAUU project was to develop a product which could provide a basis for representing the nursing process in electronic patient records (EPR). The automated linkage of the individual elements of the nursing process (e.g. assessment, nursing diagnoses, interventions) was combined with nursing workload measurement, with the goal of increasing the possibilities of representing care (e.g. for nursing pathways) and the explanatory potential of nursing data (e.g. to explain the nursing workload in DRGs). The theoretical framework is based on the integrated nursing model of Käppeli (1993) and the Swiss Nursing Minimum Data Set (CH-NMDS, 2006). One of the main requirements for the content

development was the criterion of applicability and usefulness in clinical practice.

Methods

During the development period for the Beta version, the project group used a consensus process to link four basis assessments of different clinical areas to nursing diagnoses. In turn, the diagnoses were then linked with nursing aims and interventions. The link to nursing workload measurement is enabled through the interventions.

Throughout the process, researchers consistently oriented themselves towards practical clinical expertise. For example, the basis assessment for children and its linkage with NANDA-I was developed in close co-operation with experts working in the hospitals' pediatric units. During the pilot phase of the EPR in two hospitals, the users evaluated the content using questionnaires.

Results

Overall, the product users found the content to be practice-relevant and a support to the documentation process. There was a need for additional nursing diagnoses (e.g. uncertainty) and interventions (e.g. breast examination). These were added to the expanded Version 1.0. The number of linkages was also criticised in places for being too high or too broad. A few linkages were criticised for being incomplete. The use of filter functions in the software to reduce the linkages according to clinical area (e.g. neurology, cardiac surgery) was widely accepted. It was found that in practical use, it was

impossible to distinguish clearly between missing content and technical problems with the software.

Conclusion

Version 1.0 of LEPWAAU provides a product based on expert opinion and face validity, which provides a basis for representing the nursing process. The content is represented differently in the different software programs of the six user companies. In terms of productive usage, the linkages and the content must be subject to ongoing further development.

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2. Developing a Nursing Documentation System for Klinikum, Stuttgart, Based on the Roper, Logan, Tierney Model for Nursing.

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As a reflection of the rapid changes taking place within the German Health Care System, in 2007 the city of Stuttgart merged four independent hospitals together to form Klinikum Stuttgart (KS). Each hospital had developed its own nursing culture and there were a number of nursing theories and/or models upon which nursing practice was based. With a total of approximately 2300 beds and 3000 nursing staff, KS represents a high degree of specialization and a wide spectrum of nursing care. It therefore became apparent that there was a need to identify a suitable nursing theory for KS that would support a uniform approach and common understanding of nursing care across all departments. For this purpose, in July 2007, a working party representing all specialties, the director of nursing and her assistant, members of the staff council and the director and employees from the education center, was convened and met on a regular basis. The group was chaired by a nurse researcher. The working group's objective was to recommend a suitable nursing theory to the hospital management. The terms "theory", "model" and "philosophy" would be used synonymously (Allgood & Tomey 2006, George 2002, Meleis 1997).

When choosing a nursing theory, existing institutional structures and hospital cultures must be considered. The recommended theory must encapsulate the common understanding of the care provided, be transferable to practice and be acceptable to the nursing staff.

The group identified the concepts of man, health, environment and nursing, as the most appropriate metaparadigms. These were discussed within the group, resulting in Roper, Logan and Tierney's Model for Nursing (2002) being recommended to management as the most suitable model for implementation in KS, the reasons being:

- the model's metaparadigms reflect how nursing is understood in KS
- the model satisfies the approaches to patient care in KS
- existing structures, concepts and tools are integrated and reflected in the nursing model
- the key concepts and terms are already known to nursing staff
- it can be used in conjunction with the nursing process
- it is accessible and easy to understand
- the complexity of life is taken into account.

The recommendation was accepted. All centres in KS were to work with this model. An exception is the paediatric centre.

To facilitate the introduction of the model and provide nursing staff with an appropriate theoretical framework, a training programme was developed and implemented. Feedback from this training programme suggested that one way to support the integration of a model of nursing into practice is to incorporate the model into the

nursing documentation. For this reason, parallel to the training programme, a working group of nurses from all care settings was convened. The mandate of this group was to develop a documentation system based on Roper, Logan and Tierney's Model of Living/Nursing (2009).

A search in the databases Medline, CINHAL, Carelit, Pubmed with the following keywords: Roper, Logan and Tierney, Pflege-theorie, -modell, -prozess, Praxis, Nursing theories, Nursing Models, Nursing Process, Nursing Practice was carried out. Few articles were found on the implementation of the Roper, Logan and Tierney model in the German literature. Hospitals using the model were contacted. This highlighted the great variations which exist in the implementation of the model and in the corresponding nursing documentation used. With this knowledge it became clear that a variety of factors and conditions influence the development of a theory-based documentation. KS is a large teaching hospital covering all specialties ranging from acute care with short stay to chronic illness with longer inpatient times. There are a large number of operating theatres, investigating departments and approximately 30,000 internal transfers per year. Currently there are about six different nursing recording sheets in use which record the patient's permanent data. Therefore, the new documentation system should fulfil several objectives:

- support the nursing staff when completing a comprehensive and systematic assessment of patient care needs
- be uniformly applicable in all departments within the hospital
- be completed within an acceptable time-span

- reflect the steps of the nursing process
- be the precursor to an electronic documentation system.

Action Research was the method selected to develop the new documentation. Lewin (1946, 38) describes this as "... a spiral of steps, each of which is composed of a circle planning, action, and fact-finding about the result of the action". These steps are intertwined, repetitive and often take place simultaneously (Mayer 2002).

At the initial meeting of this working group participants worked in small groups and brainstormed the information they would want to document about a patient on admission. The results of the small groups were recorded, presented and discussed. A group of experts (nursing scientist, nurse consultants) examined and structured the data according to the five influencing factors of the model: biological, psychological, socio-cultural, environmental and politico-economic. During subsequent meetings, the concepts of life span, dependence/independence continuum and life activities (LA) were developed. The members of the working group requested a visual representation of the dependence/independence continuum. The care dependency scale (PAS) (Lohrmann 2003) was identified as a suitable instrument which could fulfil this request. The PAS is a validated assessment instrument based on the 14 basic needs identified by Virginia Henderson (Henderson 1966). On a scale of 1-5, 1= totally independent and 5= totally dependent. The degree of dependence is represented visually. This scale was then modified and adapted to the 12 LA from the Roper, Logan and Tierney model. The information gathered using the PAS,

the placement of the patient along the lifespan, the assessment of the five influencing factors and the completion of the assessment tools normally completed by nursing staff on admission ie. pressure sore risk, falls risk, pain assessment, wound care, nutritional status and suicide risk, support the nurse in assessing the level of dependence on the dependence/independence continuum. The visualisation also acts as a guide for the identification of highly complex patients (complex care measures Score - PKMS).The assessment can be carried out a total of 3 times on one document.

The reassessment also serves as an evaluation tool. At subsequent meetings the working party was divided into smaller groups each representing a speciality within KS. The development of the nursing care plan which consists of problems, aims and interventions was carried out by these small groups. The groups were asked to write down the nursing problems which occur frequently in their area. The group of experts assigned the results to the 12 LA and presented these to the working group. Goals were then determined by the groups and finally interventions identified. These results were structured into the LA by the expert group, presented to and discussed with the working group. This resulted in a documentation consisting of a mixture of predetermined nursing problems, goals and interventions and an area for free text for each part of the nursing process and for each LA. In the evaluation column care measures are assessed for their effectiveness. The new documentation was included in the in-service training programme and was piloted in 5 different areas.

Using the method of action research the documents could be continuously developed and refined.

The development of a nursing documentation system by nurses from all areas in KS for all areas in KS, is a major step to a uniformed approach and common understanding of nursing care. During the development phase a positive exchange between nurses from different areas within KS has emerged. Through close cooperation of the documentation working group and in-service training fear of change and possible loss of existing, established theories and tools initially expressed by nursing staff have not been realised. The clear approach and incorporation of the skills of nurses from all departments has helped lead to a high level of acceptance.

The results of the pilot study are pending. Feedback from nursing staff both from the pilot areas and the in-service training is positive. However, the decision to implement the documentation in all areas of KS is dependent on the result of the pilot scheme.

The newly developed documentation has assisted in creating a uniform terminology and common language in KS. It is hoped that this will lead to a more accurate documentation and a reduction in documentation time.

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3. Expressing Nursing Content: A Comparison Between the VIPS Model for Nursing Documentation and the ICF.

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Background

Interprofessional communication and possibilities to extract information from electronic information systems is important for the quality of patient care, respecting patient safety, continuity and participation. A need has since long been identified for multi-professional approaches and standardized languages in health care. The VIPS-model has been established as a structure for nursing recording in Sweden since the 1990's. ICF is currently introduced in Sweden as a common framework and structure in EPR, but the effects on nursing documentation comprehensiveness have not been investigated.

Aim

To compare the assessment part of the Swedish VIPS-model for nursing documentation and the ICF by investigating the concordance between key words and prototypical examples in the VIPS-model with the terms in ICF and its framework of domains, chapters and specific codes.

Method

Two separate mapping procedures, performed by two researchers at a time, took place in order to evaluate: 1. the extent the concepts

in VIPS could be described using the ICF. 2. the extent the terms in ICF, level 1 to 4, could be categorized using terms in VIPS for assessment.

Findings

The 13 key words for nursing assessment and a vast majority of the 289 identified prototypical examples in VIPS could be described by ICF. However, a perfect match was seldom found. The intended informational content for each key word in VIPS was identified in several chapters in ICF. In most cases, ICF provided more specific terms for the prototypical examples in VIPS, but a lack of sufficient granularity existed in some areas, e.g. for eating, self-care and pain. Further, some core aspects of nursing care, present in VIPS, were missing in ICF, e.g. patient participation, and the patient's own perspective and perception of the health situation. Furthermore, psychological features, family-based assessment, and a range of concepts regarding personal factors could not be represented in ICF. A majority of the ICF terms could be mapped to VIPS key words, apart from terms regarding body structure and some content not appropriate in VIPS, e.g. chapter e5 in ICF regarding Services, systems and policies.

Discussion

ICF can be used to document the majority of information on nursing assessment described in the prototypical examples in VIPS, and often also provide more detailed descriptions. However, there are areas in need of development and aspects of nursing care that are more or less invisible in ICF, e.g. concerning the patient's own

perspective. Implementation of ICF without development of terms for important content in nursing might jeopardize a unique holistic perspective in patient care.

Conclusion

ICF can be useful when documenting nursing assessment, but more work is needed to develop ICF in order to meet the requirements from a nursing perspective. Nurses need to engage actively in that process.

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Chapter 8 – Nursing Use of E-Health

1. Nurses' Perceptions of the Electronic Patient Record Based on Patient Safety.

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Introduction

This study presents a research of the electronic health record has a lot of important information (1,2) which can be crucial to patients' health, this requires that there is good communication between all stakeholders around the patient (3). The electronic patient record requires a good structure to give nurses the opportunity to find key information. It also fact that a documented nursing care is equated with patient safety of which care actually given

Background

Since there is a concept in Sweden called "open return" in which patients with paliativ / severe disease are guaranteed direct admission to a ward without passing emergency intake. The electronic journal is therefore a vital tool to get hold of relevant information for the planned care around the patient (3)

A review of the electronic health records revealed a number of central components regarding how nursing staff felt that they had

difficulties to get a general of the structure of the electronic health record was difficult to see through (4). There is evidence that electronic documents can be both inadequate (6, 5) and is in a too big amount of information (7) which represents the difficulty created in finding relevant information about the patient, which can be vital and safety.

Aim

The purpose of this study was to study nurses' perception of electronic data in patients with open return to inpatient care with a focus on patient safety.

Method

The study was performed in a hospital in Sweden with electronic data records, in 2009. The study was conducted as a cross-sectional study. The number of 150 questionnaires were sending to the departments that received patients with "open return". The number of nurses who chose to participate in the study (n = 68). The questionnaire was divided into 3 part which the first part consisted of nurses' background data. Part two consisted of questions about nursing documentation. Part 3 aimed how nurses' experience of electronic patient records.

The poll's reliability and validity consists of the questionnaire was previously tested by Törnvall in a pilot study (5). And a minor correction in the survey has been conducted to validate the questionnaire against the purpose.

Information for nurses have been given that his participation in the study are the willing, and that a local ethical review has been made of Halmstad University in Sweden.

Results

The nurses were free to evaluate their knowledge with regard to the electronic journal. Table I showed founding of perception of the electronic nursing documentation.

Variable	Very good	Quite good	Neither good nor bad	Pretty bad
Nursing Documentation	9	45	11	3
Documenting nursing process	9	40	15	4
The use of computer	16	44	7	1

Table I: The perception of their own knowledge of the electronic documentation (n = 68)

Results of discussion

When the low response rate can be seen in the study, the result should be interpreted with caution. To make the results clearer, the strongly agree and agree in part been the hope in Table II. Table I. However the results has been revealed to studies of the electronic journal includes a wealth of information (1, 2) which can be crucial to patients' health, also requires health professionals around the

patient, can communicate with each other (3). The result demonstrates that the consideration of nurses believe they have

Variable		
The documentation provides a clear understanding as to what the patient's background	Strongly Agree	35
	Partly agree	27
	Doubtful	5
	Takes some distance	1
	Strongly disagree	0
The documentation provides a clear understanding as to what the nursing interventions performed	Strongly Agree	27
	Partly agree	35
	Doubtful	6
	Takes some distance	0
	Strongly disagree	0
The documentation provides an increased safety for patients	Strongly Agree	40
	Partly agree	20
	Doubtful	7
	Takes some distance	1
	Strongly disagree	0
I find that the documentation does not need to be supplemented orally at the reporting	Strongly Agree	0
	Partly agree	27
	Doubtful	20
	Takes some distance	11
	Strongly disagree	8

Table II: Nurses' experiences of the electronic nursing documentation (n=68)

pretty good knowledge of the document in the electronic journal. It is important to document in patient records to ensure important information both to provide security to the nursing profession and to increase patient safety.

Table II. In studies conducted earlier, nurses have a desire to pass on patient information orally rather than to document in the

electronic health record, which consisted of nursing records a lack of information (8) this may be that the electronic records perceived to be inadequate (6, 5). Founding in Table II shows that the nurses feel satisfied with the electronic health record when it came to the clarity of the patient's background, documentation transparency of nursing interventions performed and experienced nurses to the electronic health record provided a better patient. In spite of the fact the nurses to be of great importance to verbal communication is carried out to the collateral patient safety. With these results, nurses further strengthened in their knowledge of the patient's electronic journal focusing on the structure and rationality.

Conclusion

The results also reveal the necessity of clarify and more systematic thinking in electronic nursing records. The proper documentation of nursing care among patient with “open return” is of crucial importance for safety care.

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2. Exploring the Use of a Standardized Approach to Documentation Hquality Continuity of Care.

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Nursing care is documented in the patient care record and verbally communicated to other nurses and members of the health care team in a variety of different ways. The sharing of patient care information is an essential component of health care delivery. Additionally information about patients' plan of care, their response to interventions and the monitoring and surveillance of patients are all aspects of care that is delivered and needs to be shared with members of the health care team in a timely manner to assure safe quality delivery of care. At one large academic hospital in the northeast part of the United States, a project was started in 2007 to prepare for electronic documentation. At that time, physicians, had some aspects of their documentation done in an electronic system for outpatient care, electronic order entry system and electronic reporting of lab values, however, nursing was documenting all of their care in a paper system. There are 37 inpatient units at the hospital and each unit had a different system for the communication of patient information. It was recognized that much of the key patient information was shared verbally or on a kardex which was a part documentation tool that was not a part of the medical record and discarded when the patient left the hospital.

To prepare for automation, a team of nurses worked with consultants to standardize the documentation and communication system at the hospital. There were staff retreats and educational sessions, where staff and nurse leaders learned to implement a problem oriented charting system and move key aspects of patient care into the patients' medical record. Teams of nurses who were experts in clinical reasoning and documentation provided support to staff as they transitioned to this new model at the times when they wrote their nursing progress notes. Staff were expected to have their nursing notes written before the end of their shift so that oncoming staff could read the patient's assessment form, problem list and most recent nursing progress notes to get to know the patient and see how they were responding to the interventions that had been outlined in the plan of care. After reading these patient documentation materials, staff were expected to touch base with the off going nurse and clarify any questions they had. This was a very new expectation for staff, as historically, nurses had given a verbal report and then after report was finished, they would sit down to write their nursing notes, often resulting in them being at the hospital late.

Implementation of this model took eighteen months to implement on all the inpatient units. After the implementation of this new model, staff was surprised to find out that they could get their notes written during the shift, have the new oncoming nurse read their notes and then just clarify any outstanding issues before leaving on time. A focus group conducted four months after the implementation of the new system showed that staff were adjusting

to the new system, found it less difficult to adapt to and greatly enjoyed getting out of work on time (Coakley, Somerville & O'Malley, 2008).

To evaluate if this documentation and communication model was effective and meeting the needs of the staff as they gave report and changed accountability for patients, a focus group was held with staff from two units at the hospital. The study was approved by the Institutional Review Board at the hospital. This research used a qualitative descriptive approach. A team of three nurses came together to plan, implement, analyze, and write about the research. Each team member participated in a way that was integral to the study.

Research Question

Do staff have the information they need to appropriately care for their patients at the end of the change of shift report?

Methodology

This was an exploratory qualitative study that included two focus groups with staff to ask them about their experiences with the documentation and communication changes at the change of shift report. The focus groups were conducted by a masters prepared nurse who was not involved in the planning of this study. Focus groups were audio-tape recorded and then transcribed.

Staff were invited to attend two focus groups to share information and their experiences about the documentation and communication changes at the change of shift report.

Focus Group questions:

1. Do you have the information you need to care for your patients after you have read all the nursing documentation tools?
2. Recognizing that the written format is the model for the future is there information that should be included in the future that is not there now?
3. If there is other information that you need, where do you get that information now?
4. Are nursing notes written in nursing diagnosis/intervention and outcome language?
5. When you talk with the off going nurse is it for clarification of the written information or repeating what was written?
6. How long does it take to read the information at change of shift?
7. How often do you update each patient's plan of care?
8. How long does it take to update the plan of care

Analysis

Transcripts of the focus group discussions were analyzed using content analysis. Qualitative content analysis is a basic strategy for qualitative descriptive research and an important approach to understanding experiences or events (Sandelowski, 2000). The goal of qualitative descriptive research is to comprehensively summarize informational content in everyday language while also offering an iterative process to the researchers an opportunity to reflect, return to the data and revise understandings throughout the analysis. (Sandelowski, 2000).Some of the advantages of

content analysis include the ability to isolate and interpret themes, issues and repeated patterns (Denzin & Lincoln, 1994) and refine understanding as new insights about the data emerge.

The strategies for analysis were followed:

- the unit of analysis was identified as phrases or sentences contained within the transcripts of the interviews
- categories were initially defined, pretested and revised.
- the revised categories were retested and revised, and
- key findings were synthesized and described.
- key findings were assessed for validity.

Findings

Four overall key findings emerged from the analysis of the data that described the experiences with the change of shift process and the exchange of patient information: 1) there is enough information in the current nursing documentation tools to provide high quality care to patients, 2) nursing diagnosis, interventions and outcome language is used as a framework to reflect nursing's' unique contributions to patient care and outcomes, 3) other important patient care information from other disciplines is utilized when planning care, 4) it is anticipated that computerization will assist and facilitate the transfer of important patient care information.

Key finding one: there is enough information in the current nursing documentation tools to provide care to patients. Participants described reading the nursing assessment form and nursing progress notes and gathering enough information about each patient to begin caring for them. Reading the documentation

information, promoted continuity of the plan of care leading to quality outcomes. They did however express a lack of clarity on how to best utilize the problem/intervention /outcome list, citing redundancy between the problem list and their progress notes.

Key finding two: nursing diagnosis, intervention and outcome language is used by the majority of nurses to reflect nursing's contributions to patient care. Participants described utilizing nursing language as the vehicle to best represent and communicate the nursing plan of care for each patient.

Key finding three: other important information from other disciplines is utilized in planning care. Participants read the patient record and access information about patients such as computerized history and physical exams, provider orders and lab data in developing their plan of care for their patients.

Key finding four: Computerization will assist and facilitate the transfer of patient care information. Participants expect that a computerized documentation system will assist with continuity and consistency of language and interventions, and decrease redundancy of recording patient data.

Implications

Information obtained from these focus groups showcased that documentation information led to the provision of high quality consistent care. The description of documentation redundancy will be used to refine and revise the way information is documented and exchanged at change of shift and when there is a change in patient care accountability.

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3. Aging in Place of People with Mild Dementia with Support of e-Health Services.

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There are indications that aging in place of people with dementia can be facilitated by the use of personalised e-health services. One challenge in this relatively new field of development is to involve the person with dementia in an user driven development of technology services, another is to meet the often complex needs in daily life. Surveys of needs and un-met needs among people with dementia living in their private homes indicates that among all, there are un-met needs in the area of memory support, social communication, safety and meaningful occupation (Van der Roest et al., 2009)

E health services for people with dementia have been evaluated positively in several areas of daily live. Lauriks, et al. (2007), performed a review of published research in the areas of needs for general and personalized information, the need for support with regard to symptoms of dementia, the need for social contact and company, and the need for health monitoring and perceived safety. It was concluded that the informational websites offer helpful information for carers but seem less attuned to the person with dementia and do not offer personalized information. ICT solutions aimed at compensating for disabilities, such as memory problems and daily activities demonstrate that people with mild to moderate dementia are capable of handling simple electronic equipment and can benefit from it in terms of more confidence and enhanced

positive effect. Instrumental ICT-support for coping with behavioural and psychological changes in dementia is relatively disregarded as yet, while support for social contact can be effectively realized through, for example, simplified (mobile) phones or videophones or (entertainment) robots. GPS technology and monitoring systems are proven to result in enhanced feelings of safety and less fear and anxiety.

User-driven development of assistive technical devices for people with dementia is a multidisciplinary engagement and provides new challenges for social researchers (Dutton, Carusi & Peltu, 2006). In a user-driven design the needs and wishes of user-participants are the starting point of the development process and potential users are actively involved in the development and evaluation of Information Technology (IT) services. This involvement increases the chances that the developed IT device adequately meets the needs of the users, will be perceived as user-friendly and useful by them, and as a consequence may increase the chance that the device will be accepted and used in practice (Nugent, 2007; Sixsmith, et al., 2007). Assessments of needs of people with dementia in a user driven approach of designing technology to support quality of life has been described recently by (Orpwood, et al., 2004; Orpwood, et al., 2007) and (H. G. Van der Roest et al., 2008).

The aim is to present findings from evaluation research of e-health services in the described areas of needs. The findings are based on evaluations of video-conferencing and assistive technology services (the COGKNOW project).

Methods

The evaluation of the e-health services was conducted with a qualitative approach using multiple methods for data collection as observations and semi-structured interviews with both the person with dementia, professional staff and their cares. The data is based on studies with in all 52 persons with dementia, 12 professional staff members, and 49 informal carers collected in three research projects. The research projects included the COGKNOW project, an international project, which aimed at developing and evaluating an integrated assistive device to help people with mild dementia to navigate their day (www.cogknow.eu). It also included research projects developing and evaluating concepts for social communication with people with dementia using videoconferencing technique.

The data was analysed with qualitative content analysis (Krippendorff, 2004) and discourse analysis (Silverman, 2001).

Results

The results are presented according to the areas of needs, memory support, social communication, safety and meaningful occupation.

Memory support

Memory support was tested in the COGKNOW project and overall judged positively during the three field tests that the project involved. The memory support included a day and time indication and a reminder function for activities and events and both functions were considered user-friendly and useful. The possibility

of personalised configuration of reminders as choosing pictures, voice prompts and text messages together with the way of attracting attention to the reminders on the screen were considered as very important. The time and day function was generally evaluated as useful while the function of a quarter-hour clock, aiming to support the concept of time remaining to an activity was considered too difficult to understand. Limitations in development time did not allow for attunement of this function during time span of the project.

Whether the device actually supported the memory problems of the people with dementia in their daily lives is difficult to judge due to the design of the evaluation where the time frame of the test did not allow measuring of impact.

Social communication

The COGKNOW project included a picture dialling function with a picture address book to support people with dementia in maintaining their social contacts. This function was evaluated positively in the field tests, and the majority of participants considered it useful for keeping in touch with family and friends. Features evaluated as important was the possibility of personalising the address book, the quality of the sound of the handset and that the steps of the process of making calls were few. The design of the evaluation did not allow for evaluation of the impact of the picture dialling functionality on the autonomy or quality of life of the people with dementia.

In another research project the use of videoconferencing technique was used to facilitate social communication between family members and persons with dementia, assisted by a staff member, when they were placed away from home in respite services. From the perspective of the family member it was evaluated positively from several aspects. One aspect was that the possibility of seeing their partner who had dementia made them experiencing that they could be involved in caring for and for maintaining a relationship with their demented relative. They also experienced that being able for the family member to actually see their partner/parent on the video-phone meant being able to determine their wellbeing and also to confirm their relationship. It was also another way of communicating that was experience as more focused and also more demanding compared to the communication they were used to when being together at home.

An observation made was that the person with dementia, even though they had severe dementia, was able to keep their attention in the video-phone communication and was often apparently interested. One important contributing factor was the support they got from the assisting staff member that provided a sense of security and comfort. Another possible explanation was that the limitations of communications cues provided in the sessions facilitated their interest and attention.

Safety

The COGKNOW device provided a help function where the person with dementia by touching an icon could be connected to an important person for assistance. The use of an icon was evaluated

as difficult to understand and too abstract even though the most persons with dementia and their carers considered the help function useful. Different safety warnings were easy to use and understand during and in general considered as useful.

The navigation support function that helps people find their way back to their house had only limited testing. This function seems useful for both the person with dementia and their carers in increasing feelings of safety, but more research on this is needed.

Meaningful occupation

The COGKNOW device provide personalised functions meaningful occupation as radio function and music playback function that were evaluated positively. Both the person with dementia and their carers considered it easy to use and user-friendly. An important aspect of these functions was the possibility of being able to add preferred pieces of music, recorded stories and radio programmes. The main advantage with these functions compared to using their own radio or music player was the simplified way of using them that facilitated increased use and being able to use them independently.

Discussion

The results are examples of how aging in place of people with dementia can be facilitated by the use of different personalised e-health services. This is a relatively new field of research and existing research consist mainly of descriptive studies and few studies of impact (Lauriks, R. et al., 2007). The demographic development in Europe with a foreseen increase of the number of

people with dementia makes the research important. The results provide an indication that it is possible to assist people with dementia in the important areas of need as memory support, social communication, meaningful occupation and safety, but also that it is a complex area of research that needs further research. The positive results on the use of videoconferencing technique (Sävenstedt, Brulin & Sandman, 2003; Sävenstedt, et al. 2005) are findings that today easily can be transferred to care of people with dementia considering the rapid development and accessibility of this technology.

An important aspect of further research and development of e-health services is the use of user-driven development involving both the person with dementia, family members as well as professional staff members. User driven development with people who have dementia has many methodology challenges that requires the use of a mixed-method design involving different perspectives and ways of collecting information (Sävenstedt et al. 2010).

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Chapter 9 – Standardisation of Nursing Language

1. Standardised Nursing Documentation Model - Results of the National Nursing Documentation Project in Finland.

K. Tanttü. (Finland).

Summary

The national nursing documentation model and the Finnish Care Classification (FinCC) were developed in the national nursing documentation project 2005-2009 as a part of the national solution. FinCC has been implemented in CDA R2 format by Health Level 7 Finland. The information on nursing process and the nursing discharge summary can be transformed and stored in the national archive of EHRs. The health care professionals can, by patient consent, search and reuse the same information in all EHR systems.

Based on the experiences and evaluation results the FinCC can be implemented and used among all kinds of wards. Overall, the quality of the nursing documentation has improved. It is more uniform, patient-centered, based on guidelines accepted for care and in interdisciplinary use. The information concerning the wellbeing of the patient during the care episodes until discharge

improves the care process and pathway and the data of nursing documentation can be used for managerial and administrative purposes.

After the results of the national project, the nationwide implementation process started in Finland in October 2007 and will end in 2011. The project won in Brussels the second place in IT @ Networking Awards 2009, Europe's top event for healthcare IT innovation.

Keywords: standardized documentation, EHR, nursing classification, national solution

Background

Electronic information systems including some platforms of care documentation have been used in Finland more than 10 years, but their structures have not been unified. This kind of development has not been given high priority in the nursing profession in the past. The ratio of nurses to physicians is four to one in Finland. In clinical settings this means that nurses, being the largest group of health care professionals, constitute of the most active users of patient data in hospitals during 24 hours per day and seven days of the week. This reflects that tools and models adopted for daily practice must support nursing from philosophical, ethical and practical perspectives.

The Ministry of Social Affairs and Health launched a large project for improving health services in 2003-2007. The purpose of the project was to unify information systems, national data archives and data security solutions. For the first time nursing was

recognized in the national project. As a part of the national project the nursing documentation project started in May 2005 and ended in October 2009.

Development process towards to a national nursing documentation model

The national nursing documentation project was carried out in collaboration with university and district hospitals, health care centers, private hospital and IT-suppliers. The project was financially supported by the Ministry of Social Affairs and Health.

The aims in national nursing documentation project were:

- to unify and standardize nursing documentation nationally
- to connect it with the interdisciplinary core documentation of the patient history
- to connect it with the national code server
- to connect it with the national archive

The National Nursing Minimum Data Set (NMDS) and Finnish Care Classification (FinCC) were integrated during 2005-2007 into eight health recording systems in 34 healthcare organizations. Piloting was carried out in 106 units/wards in three university hospitals, 11 district hospitals, 19 health care centers, and one private hospital. Integration, testing and assessing in eight EHRs was done in collaboration with six IT suppliers.

The education on systematic nursing documentation included theoretical education on the nursing process, nursing classification and case studies. Case studies were one of the most important

implementation strategies. The case study practice should be planned, it should proceed from simple to complex, it should be relevant to the daily experiences of the nurses and it should be fun. An education model and an eEducation environment were also developed to support the implementation.

The standardized nursing documentation was assessed by continuous observations, questionnaire to nurses (N= 975), questionnaire to head nurses (N=197), documentation cases, and by statistics of the classified documentation. Continuous observation included assessment of the functionality and usability (technical problems, new versions of EHR) of the documentation model. The questionnaire to nurses was done to up-date the FinCC. The use and understanding of nursing decision making process were evaluated by questionnaire to head nurses, random patient documentation cases, and statistics of the documentation.

Results

Standardized nursing documentation model

The developed nursing documentation model is based on the nursing decision making process introduced by the World Health Organization in the late 1970's.

View : Patient care history

	Interdisciplinary care process		Admission & Status					Nursing discharge summary	
	Nursing process	Data collection and analysis *	Planning		Action	Assessment			
Structure	FICND 2.01 FICNO 1.0	-	FICND and assessment scales	FICND	-	-	FICND, FICNO and assessment scales	Includes: Summary of the nursing process data exploiting the structured documentation and the patient care intensity grade.	
	FICNI 2.01 FICNO 1.0	-	-	-	FICNI	FICNI and assessment scales	FICND, FICNO and assessment scales ** Measurement of patient care intensity (OPCq)		
	Nursing core data	Inter-disciplinary core data	Nursing needs			Nursing interventions	Nursing outcomes	Nursing discharge summary	Patient care intensity **

*Includes data of personal identification, risks, medication, medical diagnosis, examinations, operations and activity
060608 K. Tanttu

Figure 1. The nursing documentation model in Finland

The national minimum data set (NMDS) in Finland includes information on the

- nursing diagnosis/needs
- nursing interventions
- nursing outcomes
- nursing discharge summary
- patient care intensity.

FinCC includes the Finnish Classification of Nursing Diagnosis (FiCND), Finnish Classification of Nursing Interventions (FiCNI) and Finnish Classification of Nursing Outcomes (FiCNO). The Finnish Classification of Nursing Diagnosis (FiCND) comprehends 19 care components, 88 main categories and 179 subcategories defining caring needs. The Nursing Interventions Classification (FiCNI) comprehends the same 19 care components, 164 main categories and 266 subcategories defining planned and performed nursing actions. Nursing outcomes (FiCNO) can be described using three qualifiers: improved, stabilized, or deteriorated. When comparing nursing diagnoses and outcomes of nursing care it is possible to evaluate the care process and measure the care outcomes.

The components of the classification are:

Activity	Physical regulation
Coping	Respiration
Elimination	Role relationship
Fluid volume	Safety
Health behaviour	Self care
Health services	Psychological regulation
Medication	Sensory
Nutrition	Skin integrity
Continued treatment	Life cycle

The FinCC is a translation of the Clinical Care Classification (CCC) (www.sabacare.com) and it was implemented after a cultural validation. (Ensis 2001.) The CCC is approved by the American Nurses Association (ANA) and is cross-mapped to the International Classification for Nursing Practice by the International Council of Nursing (ICN) and to the (Unified Medical Language Systems). The CCC is also a part of the international Snomed CT classification and it can be used together with ICD-10. Clinical LOINC (Logical Observations, Identifiers, Names and Codes) has integrated the CCC of Nursing Diagnoses Outcomes in its clinical application. ABC Codes for Complimentary and Alternative Medicine (CAM) has adapted selected CCC of Nursing Interventions for billing codes.

Oulu Patient Classification (=OPCq) is used to measure the patient care intensity. The OPCq is built on the basis of the following areas of needs:

- (1) Planning and co-ordination of care
- (2) Breathing, blood circulation and symptoms of disease
- (3) Nutrition and medication
- (4) Personal hygiene and secretion
- (5) Activity/movement, sleep and rest
- (6) Teaching and instruction in care/follow-up care and emotional support

In each these areas, the nurse classifies from A=1 point to D=4 points once a day. The care intensity of a patient can be scored between 6 and 24. The higher the score, the higher is the care intensity of the patient. (Onnela E. & Svenström R. 1998.)

The end product in the project was a cross-mapped classification material (FiCND, FiCNI and OPCq) in the national code server.

(Liljamo & Kaakinen 2009.) The databases enable evaluation, analysis and utilizations of data for administrative and research purposes.

Usability and benefits of the model

Based on the experiences and evaluation results the Finnish Care Classification can be implemented and used among all kinds of wards (primary care, special care, elderly care).

Overall, the quality of the nursing documentation has improved as a result of a unified model to describe nursing activities. They are more uniform, patient-centered and based on guidelines accepted for care. The length of oral reports has decreased, giving more time for actual care. The national nursing documentation model and FinCC can be used to:

- Multi-professional search for information => use in decision making
- Predict care needs and resources
- Develop evidence-based practice models
- Develop clinical plans of care, clinical pathways and guidelines as well as for research and educational purposes
- Statistical reports for managerial and administrative purposes

Conclusions

There is no desire to return to the old model of recording patient data among nurses. The users have begun to see the benefits of the systematic nursing documentation and use of the EHR. The experiences of the systematic model of recording patient data are promising. Statistics and reports of nursing process by systematic

documentation benefit nursing management, planning, education, research and quality assessment.

It was important that all EHR suppliers in Finland were involved in the project to have equal core data structure in every EHR. Most important obstacles to be overcome were technical problems (e.g. failures/problems in new EHR versions), learning and accepting the new documentation model, which takes time approximately 3 months to become routine and the commitment of the whole organization.

Future developments

The Finnish nursing documentation model has now been introduced to nurses all over the country and nurses have adopted the model mostly with satisfaction. An expert group has been established to take care of the up-dates of the FinCC as well as to organize continuous assessments.

Information sharing from the databases is still in its infancy and nurse managers mostly use frequencies from the databases. Thus more sophisticated data acquisition - statistical analysis and tools for reporting are in development process to be used in benchmarking at organizational, regional and national level. There are also visions how to implement clinical pathways and guidelines into the documentation model to be able to support evidence based nursing. From the technological progress' point of view nurses would also like to have decision support actions – alarms, into the systems. As always, a lot of development work is still needed in

information systems' usability factors.

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2. Quality of Nursing Care after Standardisation and Measuring.

J. Weijers, J. de Groot. (Netherlands).

Introduction

In 2008 a methodical nursing dossier has been introduced at Atrium Medical Center Parkstad. The high level of implemented standardization in the nursing documentation provides a measuring tool for the care given.

In 2010 research was done to establish whether the quality of care and patient safety were increased/improved due to this method. (target group: patients 70 years of age and older).

Background of the nursing documentation

During the development of the new nursing chart the following objectives were applied



In order to realize methodical nursing documentation, classification is necessary. It was decided to classify based on Marjorie Gordon's 11 Functional Health Patterns. Uniformity is an important but not easily achievable objective. The nursing chart has been completely worked out into standardized nursing care plans (300) plus the possibility to compile an individual nursing

care plan, using a automated nursing library of 190 nursing diagnosis. Modified and extended NANDA diagnoses served as a basis for the nursing diagnoses.

As a result, the nursing documentation in the clinical wards (except the Intensive care units, daycare and neonatology) is methodical, uniform and single interpretable in method as well as in use of language. The standardized nursing care plans are based on NANDA, NIC en NOC. The nursing library secures the uniformity and unequivocality in the nursing dossier.

The nursing documentation uses indicators based on the NOC classification system.

Many of the indicators were extracted from screening tools, protocols or nursing observations.

Scoring increases the objectivity and makes the delivered care measurable and enables datamanagement in order to evaluate the care. Charting against the indicators increases the chance of timely signalling of a complication. As for the interventions (Nursing Interventions Classification) the evidence and best practice has been found.

Preventing a potential nursing diagnosis from becoming an actual nursing diagnosis is the primary aim of the nursing care. As a large number of the potential diagnoses are based on medical problems or treatment we consider them joint problems. Sometimes the reason for introducing a nursing diagnosis can be the patients age, a congenital physical disability or an intervention and not so much the medical problems or an actual illness or complication.

The reason for this research

More than 25% of the patients who are admitted to the hospital are 70 years of age or older (400.000 annually in the Netherlands). In many cases it concerns vulnerable elderly people. These are the elderly who have 3 or more afflictions/signs who are called the "geriatric giants". The Groningen Frailty index helps to map these afflictions/signs.

Mobility
Physical fitness
Vision
Hearing
Nutrition
Co- morbidity
Cognition
Psycho - social aspects

Groningen Frailty Indicator , Nanda Stevering e.a.
The Gerontologist, 41, blz. 236-237

This index is used to develop the standard nursing careplan with the appropriate nursing diagnosis.

Risk of falling
Risk of intoxication
Risk of fluid deficit
Risk of malnutrition
Risk of incontinence
Reduced mobility
Self- Care deficit in ADL
Risk of acute mental confusion
Risk of transfer stress

Standardized nursing care plan: Admission and 70 years of age or older

In 2009 a safety program was started for Dutch hospitals. The purpose of this program is to realise a 50% reduction of preventable/avoidable, unintentional harm/damage to patients.

Research in 2007 has shown that 5,7% of the 1.3 million people annually admitted to a Dutch hospital are confronted with unintentional harm/damage. This research was one of the reasons for developing 10 safety programs hospitals can use to improve safety and the quality of care.

The basis for developing one of the safety programs were the health risks the elderly run while being admitted to a hospital. Research has shown that the problems related to old age (as classified by the Groningen Frailty index) increase the chance of unintentional harm due to hospital admission. These have been worked out in the safety program based on the 4 "Geriatric Giants" posing the biggest threat.

Risk of acute confusion
Risk of falling
Risk of malnutrition
Reduced mobility
Self- Care deficit in ADL

In view of this fact the question arose whether effectively directed charting, based on a standard nursing care plan with nursing diagnosis and documentation against indicators and nursing outcomes, contributes to improved care as a result of timely recognition of the deterioration of the patients condition.

Research

In the research 10 patient files have been screened for the activation of the standard nursing care plan of patients 70 years of age and older. The research is limited to the 5 nursing diagnosis which have been activated from the safety program.

In the nursing dossier 4 screening tools have been incorporated

into the patient assessment.

Fall risk scale
Malnutrition Universal Screening Tool
The Barthel ADL Index
Delirium Observation Screening Scale (Dos)

Some items from the scorelists are also an indicator which is being charted against in the progress reports and evaluation.

Research questions are:

- have the 5 nursing diagnosis been activated?
- were the screening tools from the assessment used in the process?
- do the activities against the indicator scores in the progress notes and assignment demonstrate continuity of care?
- are the activities in the interventions current, complete and purposeful?

Results

The standard nursing plan for patients 70 years of age or older comprises 9 nursing diagnosis. 5 nursing diagnosis have been researched. In addition to the 5 nursing diagnosis the diagnosis risk of fluid deficit en risk of incontinence were found to be frequently activated. Risk of intoxication and risk of transfer stress were not activated.

The malnutrition screening (Must) was always done. This is a mandatory part of the assessment pathway. It is not possible to skip it. The Delerium Observation screening (Dos) was done once and based on a physician's order. The other 2 screenings were not done since the initial charting served as a baseline.

In all dossiers the continuity of care was secured through consulting other disciplines or incorporating them in the treatment plan. The transfer of care to another healthcare facility was documented in all dossiers by way of a transfer report.

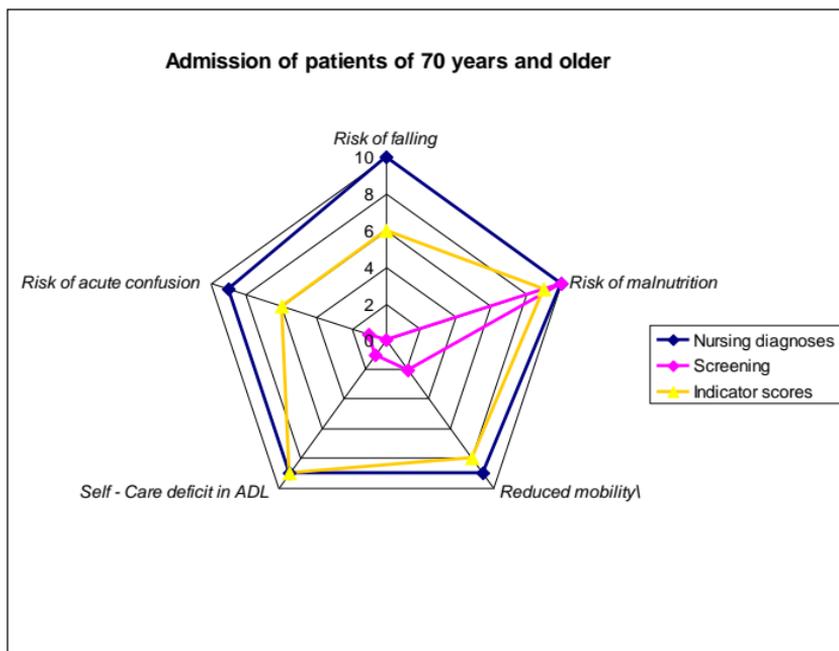
The activities incorporated in the standard nursing care plans were either too limited or too extensive. In some dossiers the admitting diagnosis hampered the execution of the the intervention activities as required by the nursing diagnosis, and yet they were activated. In some dossiers the activities based on the standard nursing care plan were insufficiently activated.

Conclusions

- The standard nursing care plan offers surplus value in providing preventive nursing care.
- The activated nursing careplan based on the admitting diagnosis requires adjustment within some of the nursing diagnosis in the standard nursing care plan for patients of 70 years and older.

- The length of stay of some of the patients sometimes is too short to sufficiently determine or remedy the cause of deterioration or complication. As a consequence one does not use the current nursing diagnosis which then should be activated.

The usage of screening tools will have to get more attention in order to implement activities more effectively as part of the intervention.



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3. Translation, Transcultural Adaptation and Validation of the Quality of Diagnoses Interventions and Outcomes (Q-DIO) for its Application in Brazil.

G.F.D.C. Linch. E. Rabelo. M. Müller-Staub. (Brazil/Switzerland).

Introduction

Along with the knowledge about nursing taxonomies application to everyday clinical practice is the need for the assessment of such classifications. Instruments that measure the quality of nursing diagnoses, interventions and outcomes are becoming interesting issues to be explored.

In this context, the *Quality of Diagnoses, Interventions and Outcomes* (Q-DIO) instrument was developed. Q-DIO is an instrument that measures quality of documented nursing diagnoses, interventions and outcomes (nursing documentation) with or without standardized nursing language⁽¹⁾. It can be applied to electronic or non-electronic records. For this reason, it can be used to assess the quality of nursing documentation (as an indicator); to compare the quality of nursing records with and without standardized nursing language; to define goals; to assess the impact of the implementation of educational programs (training); also, it can be used as a system to audit quality of nursing records⁽¹⁾.

Since its development and validation, studies with Q-DIO have been demonstrating efficiency and utility in the assessment of

nursing records with or without standardized nursing language⁽²⁻⁴⁾. This instrument presupposes that the quality of nursing documentation reflects/affects directly the patient care⁽¹⁾.

In some Brazilian medical centers, there are medical records but without standardized language based on classification systems⁽⁵⁾.

Nurses identify that difficulties and easiness while carrying out a nursing process (NP) are generally related to theoretical and practical knowledge⁽⁶⁾. A recent study points out reasons why nurses are not applying in practice one of the steps of nursing process, the diagnoses. The reasons are related to agitated after-hour care, to the number of patients per nurse and to the involvement of the nurse in administrative tasks⁽⁷⁾.

The use of NANDA-NIC-NOC is an important step in NP, helping in the integration of studies on assistance, teaching and research⁽⁸⁾. Some advantages are well known for being derived from the use of this classification, such as the improvement in communication among nurses, the recognition by other professionals, ease in care assessment, the development of electronic systems, among others⁽⁸⁻¹⁰⁾.

The effective performance of NP positively results in quality of health care and stimulates the theoretical and scientific knowledge construction based on the best clinical practice⁽¹¹⁾. Accordingly, it allows for greater development, improvement and recognition of the assistance provided.

Therefore, the lack of standardized instruments to assess the quality in nursing documentation in Brazil and considering that

this aspect is necessary in the current context, this study has as objective to adapt and validate Q-DIO for its application in Brazil. The application of this instrument will provide an important tool to evaluate what is offered to patients and, specially, the efficiency of nursing interventions in real clinical environment.

Objective

To translate and transculturally adapt Q-DIO in a sample of patient records from a Brazilian university hospital.

Methods

This is a methodological study⁽¹²⁾. After designing this research, the main author of Q-DIO was contacted by e-mail. The author gave permission for the process of translation, adaptation and validation of the instrument. Also, the author offered the original version of the instrument for the study.

Due to cultural differences and language boundaries between the countries involved, it was necessary to proceed a rigorously translation, adaptation and validation of the instrument⁽¹³⁾. For this process, the methodological steps suggested by an author were followed⁽¹³⁾: translation, synthesis, back translation, expert committee review, pretest.

The initial translation of Q-DIO into Portuguese was performed by two freelance translators who dominated the original language of the instrument (English) and who have as native language Portuguese. They also have different professional profiles.

The synthesis was elaborated based on the analysis and discussion of the material with the translators, which lead to a final consensual version.

The synthetic version was submitted to a new translation (back translation), in this case, from Portuguese into English. As requirement, the translators participating of this step had to have as native language English (as the instrument was designed in English) and, specially, had no orientation about the objectives and concepts involved in the material.

The final version of the back translation was submitted to the main author of the instrument for evaluation, which was later approved.

The equivalence analysis (semantic, idiomatic, functional and conceptual) between versions was performed by a committee of experts, in order to consolidate the final version to be applied in the pretest.

Q-DIO evaluation was performed by the Committee of Experts. First, e-mails were sent containing the original instrument, the synthesis in Portuguese and the instructions about how it should be evaluated. After this previous contact and return, a meeting among experts and researchers was realized. During this meeting, all items were discussed considering equivalencies and modified items were justified. In this way, a new version was produced and again submitted to the main author for evaluation and contribution.

The analyzed version produced by the committee will be applied to a sample of 30 to 40 records for pretest. In this study, Q-DIO will be applied by the researcher based on nursing records.

For this study, it would be eligible all nursing records containing documented nursing diagnoses, interventions and outcomes expected in a sample of patient records at a university hospital in Brazil.

Pre-test shall be assessed all the items, and their understanding, and shall be calculated internal consistency Q-SODIUM and its four areas by means of Cronbach's alpha coefficient. For the analysis of the reliability shall be used in the test of significance for the kappa and the coefficient of Pearson's correlation. All items will be evaluated in pretest, as well as its understanding. Also, the internal consistency of Q-DIO and its four domains will be assessed using Alfa Cronbach Coefficient. For reliability analysis, Kappa Test and Pearson's Correlation Coefficient will be used for significance test.

Ethical Considerations

The research project was approved by the Ethical Committee of Hospital de Clínicas de Porto Alegre under the registry 100144. The Data Use Agreement was elaborated in accordance with RN 01/97⁽¹⁴⁾ and signed by researchers, affirming their commitment with the use and preservation of the material.

Preliminary Results

Until this moment, translation, synthesis, back translation and committee of experts review were realized. In the committee, semantic equivalencies were evaluated. At this moment, Q-DIO is being reviewed by the main author, who is evaluating the suggestions given by the committee of experts.

Considerations

By ending Q-DIO pretest step, a study for its validation in Brazil will be carried out, and for that its psychometric properties will be evaluated.

However, it is expected from this instrument to be a useful and feasible tool to assess quality of nursing records in Brazilian clinical practice.

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Chapter 10 – Applications of the ICNP

1. Nurses and Nursing Students Co-Operating through ICNP.

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Introduction

Even if there is much research going on worldwide, the use of this evidence to improve practice and the quality of care seem to fail (1-8). When nurses are using the best available research evidence together with their clinical expertise and the patient preferences in the setting of available resources, it is called evidence based nursing(9). Evidence based nursing is a goal both in nursing practice and in nursing education (10-12).

Research and different experiences claim that nursing documentation is incomplete and ambiguous (13-18) and that use of nursing care plans improves documentation of care (13-15, 19). Nursing care plans are also found to change the nurses focus from medical-technical to a clearer focus on nursing (15). A nursing care plan will show problems, outcomes and interventions for each patient. Structured nursing care plans may be constructed by using terminologies like International Classification of Nursing Practice (ICNP®). The Norwegian Nurses Organisation (NNO) recommends that the ICNP® is integrated into all electronic

medical records related to nurses' documentation (20). ICNP® is intended to be evidence based (21).

Objective

The objective of this study is to facilitate the cooperation between nursing students and registered nurses in nursing homes in developing structured evidence based nursing care plans in nutrition. The nursing care plans will later be integrated through ICNP® in the medical health record (MHR).

Methods

During the students 1st year they have participated in the project “nutritionDay”(22) where they have gathered information about the patients' nutrition in nursing homes.

Data from the “nutritionDay” database is used together with local experiences in the nursing homes to assess necessary nursing diagnoses. These diagnoses are results of the cooperation and consensus between nurses in the nursing homes, students and teachers at Bergen University College. Using their skills in evidence based practice (EBP) acquired during their 2nd year (23) each student is required to find outcomes and interventions for one of the presented nursing diagnoses. They have to find best evidence in research articles, assess and present outcomes and interventions in their bachelor's degree assignment (24).

These results will be assessed by the registered nurses in the nursing homes to consider their usability. The nurses will be encouraged to discuss with the patients and their next of kin,

whether or not this is suitable for this particular patient. The interventions will then be adapted into an ICNP® catalogue by the project leader and sent to the international ICNP® committee for review. Finally the results will be implemented in the nursing home MHR.

Discussion

Students at Bergen University College learn to use the evidence based methods (23). They learn to search for and assess scientific papers and to write an assignment based on a specific problem. They have time, skills, some clinical experience and a supervisor to guide them to obtain answers to their specific problem (24). When students choose a topic for writing their bachelor's degree assignment they do not always consider the needs for information in the clinical field. They rather pick an issue they themselves find interesting. The further use of their findings besides being necessary for passing their final exam is seldom considered.

Nurses have gained clinical expertise during their work. Nursing practice is information intensive and with the rapid growth of research, knowledge acquired when they were students will often be outdated (2). Even if research is easily accessible, their working days are filled with different essential tasks and there is seldom time to spend searching for research articles, assessing and discussing them with colleagues. The result is that practice will continue unchanged even when it is neither best practice nor safe for the patient (7, 8, 25). Quite a few nurses at Løvåsen Teaching Nursing Home are familiar with EBP through the course Evidence Based Practice which all nurses are encouraged to participate in.

Still there is no satisfactory system to ensure that EBP gained by one may easily be used by another.

In Norway as in the rest of the world the population is aging. Even if we are one of the countries spending the most on health services per capita we have to change the way we use our resources (26). It will be required to use best practice and everyone working in health care need to know that they use best practice even if they are not able to assess research themselves (6). One way to face this challenge is to use evidence based nursing care plans structured from a terminology like the ICNP®.

In this cooperation between Faculty of Nursing at Bergen University College and Løvåsen Teaching Nursing Home we want the students and the registered nurses to profit from each other's advantages; the students' knowledge in EBP and the registered nurses experiences in practice. The goal is that nursing students and the registered nurses in nursing homes cooperates in working evidence based, and that the results may be useful outside the classroom and the nursing home. This might also result in bridging the theory-practice gap.

Conclusion

There is great potential for using student compulsory work in development of evidence based nursing care plans with cooperation and supervision from registered nurses and nursing teachers. We want to use ICNP® for structuring the language in developing nursing care plans in nutrition to ensure good quality of care.

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2. ICNP in Public Health: A Narrative Review.

L.K.A. da Silva Nascimento. F.S.V. Tourinho. S.K.D.C. Mesquita. S.V.O. Dutra. A.L.B.D.C. Lira. B.C. Enders. (Brazil).

Review of scientific literature on the International Classification of Nursing Practice in Public Health - CIPESC. It is a survey of complete and online publications between 2000 and 2010 of electronic databases, which were analyzed for the type of study, the use of theories and the contribution of CIPESC in nursing practice in public health. From the 14 articles, there was a larger publication in 2007, the descriptive-exploratory method was prevalent and 72% did not use theories. Its use improves the nursing practices, bringing visibility and autonomy, to promote a way of thinking consciously and systematically in the areas of practice.

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3. ICNP and Nursing Indicators in Madeira.

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Summary

In late 2007, the Portuguese Nursing Order emanated a set of guidelines for production of Nursing Minimum Data Sets and defined a Core of indicators for the National Repository of Nursing Data.

With this paper, the authors aim to present some results from its implementation in Madeira.

Keywords Nursing Information Systems (NIS); International Classification for Nursing Practice (ICNP); Electronic Nursing Records (ENR); Nursing Minimum Data Set (NMDS); Nursing Indicators (NI).

Introduction

Globalization has transformed organizations aim, making them more agile, in turn imposed upon all: competition, challenges and responsibility. With the opening of the market there is no longer defined boundaries, so organizations have thought of new management strategies to improve competitiveness. They have used several methods to achieve the effectiveness and efficiency in management. With competition comes the need to launch new products, create new solutions and services, therefore, in organizations it is essential to make fast decisions and changes. For

this reason, it is essential to have a methodology to properly manage these changes in order to provide a smooth transition from one state or situation to another.

To cope with this reality, the Health Service of the Madeira Autonomous Region of (SESARAM) had to use new information technologies, creating a NIS. The SESARAM also had to invest in ENR to tackle the lack of adequate systems used to record the information required by nurses to allow the continuity of nursing care, and the automatic extraction of indicators sensitive to nursing care as one of the great difficulties of the nurse professional relies on the measurement of the standard of living of the population which they work. Many of the actions and health services have intrinsic validity, certainly, but more and more administrators and managers look for evidence of what benefits are derived from investments. It is very difficult to distinguish and monitor the impact of health services and nursing care in improving health conditions.

This question has been studied internationally, because of the need to compare living standards between different countries or even in a country in a time series. According to the European Commission (EC 2008): *"A key objective of the Public Health Programme (2008-2013) is to provide comparative information about the health of European citizens through health indicators and data collection. This collection should cover conduct population, health-related diseases ...The health system collecting such data will be based on comparable health indicators and applicable across*

Europe, as well as definitions and methods agreed on the collection and use of data. "

Nursing Information Systems

They are part of the System Information, Health Care, which deals with aspects of nursing, particularly the maintenance of nursing register.² The NIS should incorporate the data used by nurses, to infer user needs in nursing care, prescribe interventions, assess the results, which calls for the use of a common language - ICNP, allow the extraction of NMDS. And obtain three types of benefits: the need to describe nursing care, developing databases and sharing information.

ENR/ICNP

The quality of data used in the construction of an indicator is, among other characteristics, crucial to the quality of the desired result. Because the quality of an indicator depends largely on the quality of its original components, including the data used in its construction as well as the systematic use of operational definitions and methods for measuring and collecting uniforms. In this sense, the Nurses Order of (NO) at the national level, identified a core of 22 phenomena according to ICNP³: airway clearance, pregnancy, pain, dehydration, aspiration, urinary incontinence, insomnia, malnutrition, fear, parenting, stiff joints, take care, pressure ulcers, acceptance of health status, contraceptive use, adherence to vaccination, breastfeeding, self care, fall, drug regimen adherence/dietetics, child development, excess weight. We

prioritize the core of the 22 spots listed above, for the extraction of indicators.

As recommended by NO, the ICNP Versão 1.0 are incorporated into the ENR.

Indicators of Health/Nursing and NMDS

Most indicators used in health originate from data and individual information and clinic data. Epidemiological analysis of such data and information charged generates indicators. According to the (NIS/RMD - Order of Nurses, 2007)⁴ indicators are: *“Specific markers of health status of populations, capable of translating the unique contribution of professional nurses to population's health, gain”*.

The choice of indicators depends on the objectives of the evaluation methodological aspects, ethical and operational concerned. According to these considerations and needs arose in the Madeira Autonomous Region (MAR) following the implementation of the project EIS the creation and identification of indicators for different user levels, inferred from the NMDS. The clinical indicators, laboratory or epidemiological studies, are approximations to knowledge that enables us to diagnose the situation, monitor it's progress and measure the impact of interventions. The NO (2007) defined indicators of the components of quality assessment proposed by A. Donabedian (2003)⁵: Structure, Process and Outcome of type and another to incorporate in the epidemiological NMDS. Standardized names, definitions and general formulas for different types of indicators:

Structure	Process	Result	Epidemiological
<p>E1- Hours of nursing care per day</p> <p>E2 – Other Indicators of Patient Classification System</p> <p>E3 – Nurse Satisfaction</p>	<p>P1 – Rate of Effectiveness Diagnostic Risk</p>	<p>R1 – Rate of Effectiveness in Preventing Complications</p> <p>R2 - Positive Changes in the State of Nursing Diagnoses (real)</p> <p>R3 – Rate of Possible gains/ Expected Effectiveness</p> <p>R4 – User Satisfaction the For Nursing care</p>	<p>Epd 1 – Incidence Rate</p> <p>Epd 2 – Prevalence Rate</p> <p>Epd 3 – Rate of Relative Frequency</p>

Indicators of Computer Application taken from ENR

Is now available automatically to: frequency, the average, the rate of phenomena and action types of customers with records in the application, except the E1 and E2, which are extracted through the Patient Classification System. The indicators are calculated in hospital services, by episode of hospitalization and at Health Centres for User / Period and the relationship between the first and last clinical trial inherent in the given interval. This capability is

due to the fact that there is a prior parameter, according to the general formulas for each indicator (NO October 2007).

Example:

Result - R2 - Positive changes in the state of nursing diagnosis (real).

General Formula:

$$\frac{\text{N}^{\circ} \text{ of cases decided that a phenomenon or diagnosis particular, and had at least one intervention documented in a period given}}{\text{N}^{\circ} \text{ of cases with this phenomenon/ diagnosis in the same period documented}} \times 100$$

Case study:

$$\frac{\text{N}^{\circ} \text{ of cases decided that the deficit on Self-monitoring Knowledge, and had at least one intervention documented in a period given (31)}}{\text{N}^{\circ} \text{ of cases lack of knowledge about Self-monitoring, documented in the period same (314)}} \times 100 = (9,87\%9)$$

The Future

In 2011 it is planned to gradually integrate epidemiological indicators in as the application of ENR and its improvement. In addition to indicators defined by NO (2007), it may be considered

other of distinct nature and typology, for use at any point along the continuum of care or the scale of aggregation at the local, regional, national or international.

Conclusion

We can conclude, that SESARAM strategy to tackle the lack of adequate documentation systems to record the desired information by professionals, was the emerging need to invest in ENR, promoting this way the continuity of care and the extraction of indicators sensitive to nursing care.

The automatic extraction and use of indicators to measure quality and productivity after the parameterization are possible from ENR, thus it is important to define the NMDS, the indicators and the core focus of the work that best characterize the work of nurses, or is reflecting the gains in health at different levels.

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4. Nursing Information Systems, ICNP and Electronic Nursing Records: from Attitude to Practice.

C. Caldeira. F. Reis. M. Andrade. M. Pedro. R. Freitas. (Portugal)

Aim

This study seeks to assess the attitudes and practices of the nurses of RAM, towards the Nursing Information Systems, ICNP and Electronic Nursing Records. Background: The importance given to information is increasing due to the need of controlling costs, improving efficiency, optimizing management and mainly of promoting the quality of care. Nursing Information Systems have therefore become indispensable to the enhancement of Nursing. The ICNP has proved itself useful and has been successfully incorporated in to the information program, allowing effective information processing in the context of nursing electronic patient records system.

Methods

An exploratory-descriptive and longitudinal study was performed in three stages. The participating nurses were selected with the non-probabilistic accidental stratified sampling method. In the first stage of the study, for the nurses working in Madeira that had not yet attended the education programme, a three-part questionnaire was applied to assess the study variables - attitude and practice - and to characterize the population. Data collection took place from the 15th of October until the 15th of November of 2005, having

participated 631 nurses. In the second phase another questionnaire was applied to evaluate the attitude and practice of the nurses whom had already attended the programme. Data collection began on the 24th of July and ceased on the 8th of August of 2006, having been collected 663 questionnaires. Presently we are in the third phase of the study. Data collection takes place in the hospital wards that already have Nursing Electronic Patient Records.

Results

Results revealed that the nurses attitude towards Nursing Information Systems, ICNP and Electronic Nursing Records prior to the education programme was positive, being further manifested in the second phase of the study, where all three dimensions of the variable attitude revealed a significant increase in proportion. Analysis of the nurses practices demonstrated that all the dimensions of this variable showed an increase from the first to the second phase, which was more obvious for the components of utilization and resources. These findings were presented in the 6th European Conference of ACENDIO in Amsterdam, Holland. Presently we are in the third phase of the study, collecting data in 6 wards of the Madeira Central Hospital. To organize and analyse data we use the content analysis method and the computer program Statistics 7.0. The conclusions of the third phase of the study shall be presented in the 8th European Conference of ACENDIO.

Relevance to Clinical Practice

We hope that this investigation findings might help evaluate the impact of the project and support effectively the implementation of the Nursing Electronic Patient Records and the ICNP in the Madeiraâ Health Service.

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Chapter 11 – Nursing Health Records

1. Setting up of a Health Centre in Madeira for Implementing Electronic Nursing Records.

*A.L.S. Barcelos. S.R.P. Catanho. A.R.C. Gonçalves. C.P.S.F. Freitas.
(Portugal).*

Abstract

The Autonomous Region of Madeira, since 2003, has been developing activities that aim implementing a system of nursing information standardized to the whole Health System (Primary Health Care and Hospital Care).

With this work, we pretend to share the experience of the activities that are being developed, in order to implement de application, in Dr. Rui Adriano de Freitas Health Center (which is the pilot unit in Primary Health Care, in this Project of Nursing Information System).

Keywords

Nursing Information System; International Classification for Nursing Practice; Electronic Nursing Records.

Introduction

Nowadays, nursing information is each day more relevant to guarantee the quality/continuity of Health Care, for Health Administration, research, and the recognition of nursing care in health gains. For that reason, Order of Nurses (OE) (2007) declares that *“...it is necessary to ensure that health information systems incorporate nursing data. Furthermore this is an imperious necessity in an area where the citizen needs to be monitored throughout the life cycle, geographical and local mobility...”*

In Autonomous Region of Madeira (RAM), has been taking place the development of a project in order to enable the electronic data of the health care process, taking in consideration the rules defined by OE.

Prospects are that it will be reduced the documentation in paper files with the construction of an application, from the root, standardized to the whole Public Health Care System.

This application allows the documentation and parameterization, by Health Care Units, of the diagnosis/ expected outcomes/ interventions and nursing outcomes, having as a resource the International Classification for Nursing Practice (ICNP) Version 1.0. It will also support to organize the planned nursing interventions, as it will include other modules allowing auto generated indicators.

It was implemented first in a pilot unit at Hospital Care, gradually it's being expanded to other units. It's predicted to be implemented in Primary Health Care in 2011.

Our Unit was defined as pilot unit for implementing Electronic Nursing Records in RAM. Considering that, we outlined this work, with the purpose of revealing the activities planned and accomplished in the Health Center, to help and allow the regular use of ENR.

Nursing Information System

In the health area, the nurse is the element that because of the nature of closeness, intimacy, contact with clients, greater information produces, processes, uses, and provides the information system and documentation of public health.

OE and the ICN jointly set standards for the development of the nursing information system to ensure the quality of it. OE (2007) also defined six key aspects in the structure and content of the nursing information system model, which are:

- The ICNP with referential language in the nursing information system ;
- The ability to customize the content per unit of care;
- The relationship between natural language and the language ranked
- The organization of nursing interventions to implement;
- Referential integrity between diagnostics, status, interventions, data from observation/ monitoring of the client and the results compared with Nursing diagnoses;
- The ability to respond to short Nursing Minimum Data

Our Daily Practice

In our daily practice, in Dr. Rui Adriano Health Center, we face several obstacles regarding the register of Nursing Care. In the present moment, data is registered in a Nursing gateway, according to data collection, diagnosis and interventions. The data is collected in free text, for each of the items described above.

In an attempt to incorporate language classified in the spaces corresponding to the diagnosis and nursing interventions, make the second record the ICNP Version 1.0.

Advantages/Disadvantages

It's a tool that has several advantages, such as better planning of nursing activities; as well as easier access to information from all the patient either from that Health Center or other area. Still, we keep facing difficulties, specifically in the analysis of anterior relevant data for planning activities according to Professional or Institutional Projects.

Implementation Strategies ENR at the Health Centre

With that in mind, we adopted some strategies as:

- Assigning one nurse as a reference member in the unit, responsible for the setting up of all the activities inherent to the project;
- Training of the team, according to their needs;
- Identifying the relevant and most common focus on nursing practice;

- Elaborating the most important and frequent diagnosis/ expected outcome/ interventions and outcome, per unit;
- Implementation of standardized care plans, initially in patients followed in pain therapy unit, and later in the ones with chronicle wounds.

In Future

We will continue to invest and work in this area with the implementation of such plans, initially followed in the users of home nursing, and monitor the risk of pressure ulcer, then the users with wounds and later / go gradually extending to other areas.

Therefore, we keep the improvement of our data register, in paper files, in a way to start, in the near future, the content and catalogue concepts of ICNP Version 2, (Portuguese translated edition in October 2010).

Conclusion

To present this work, we intend to share the results inherent to the implementation, in our unit, of the previously listed strategies, emphasizing the adaptability of the application to the Primary Health Care. By sharing this information in between Health Professionals, we are sure to be promoting the continuity and quality of nursing care, even regarding mobility of the patients in between Health Centers and Hospitals in RAM. Nurses are health professionals who produce more clinical information, processing, use and provide information systems and information about citizens' health.

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2. Theory-Based Electronic Nursing Documentation.

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Background and Purpose

Evaluations of electronic health record systems show a lack of theory-based nursing process tools (Just, 2006). No systems were available linking theory-based nursing assessments with NANDA-I diagnoses, nor with interventions or desired patient outcomes. Research also shows that nurses miss linking assessment data with diagnoses, which leads to inaccurate diagnoses missing defining characteristics/related factors (Mueller-Staub, 2009). To achieve high quality outcomes nurses depend on support tools for assessing patient care needs, and for choosing effective nursing interventions. This presentation describes the development of an Electronic Nursing Process Documentation System based on the NANDA-NIC-NOC Taxonomy (NNN).

Methods

A multi-step approach was applied to develop an intelligent electronic expert system that supports nurses in clinical reasoning for care planning and documentation. The system contains all phases of the nursing process: Assessment, Nursing Diagnoses, Desired Outcomes, Interventions, and Outcome Evaluation. Results First, by using Gordons Functional Health Patterns (2006), an assessment tool was implemented and linked with nursing diagnoses based on the NNN-Taxonomy (NANDA-I, 2009). The

first version contained 55 assessment questions according to NANDA-Is defining characteristics. Second, the tool was tested for validity and applicability in clinical practice. As a result, the number of questions was reduced to 26. Third, an intelligent expert system was developed using algorithms based on NANDA-I diagnoses and linked with a database including 3204 free text assessments/diagnostic statements. When the nurse enters paraphrased (free text) defining characteristics the system automatically proposes theory-based, hypothetical nursing diagnoses. The system then leads the nurse in documenting all phases of the nursing process. It reminds to evaluate hypothetical diagnoses based on an in-depth patient assessment. Hypothetical diagnoses remain hypothetical until the nurse confirms or denies their validity. The system proposes theory-based interventions and patient outcomes (Doenges et al., 2009). After completion of nursing interventions, the tool supports the evaluation of outcomes by comparisons of pre-and post nursing intervention data.

Conclusions

Theory-based linkages and intelligent expert systems can support clinical reasoning and nursing process documentation.

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3. Automatic Guideline-Based Reminders: What do Primary Care Nurses Say after One Year.

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Summary

This study explored implementation and use of automatic, guideline-based reminders and related factors among primary care nurses. After one year, nurses reported only minor use of the new clinical decision support service as well as many practical barriers for the implementation of automatic reminders. Active implementation efforts should be continued for facilitate uptake in the future, and first of all, to develop CDS reminders to better fulfill nurses' information needs in primary care.

Key words: automatic reminder, clinical decision support, guideline, implementation, primary care nurse

Introduction

Computer-based clinical decision support (CDS), e.g. automatic guideline-based reminders, combines medical evidence with individual patient data and produces recommendations for aiding professionals' decision making in patient care (1). From reviewing of the literature it appears that CDS can improve healthcare professionals' performance and, in some cases, patient outcomes (2-4). However, these evaluated systems varied greatly in design, the majority of targeting only a single and specific disease or a clinical circumstance, e.g. management of asthma or anti-coagulant therapy (5). There is a lack of evidence as to how well a more

general computer-based CDS works, particularly in primary care, where there is a wide variety of clinical areas (6, 7), and in nurse practice (8). There is also a need for qualitative evaluation, e.g. how professionals feel about CDS and its impact on their work (9, 10).

Evidence-Based Medicine electronic Decision Support, EBMeDS, is a new Finnish information technology service (11). There are around 300 guideline-based reminder descriptions in the EBMeDS database (12). Many more reminders are generated using available drug databases, e.g. those on interactions, contraindications and indications. The EBMeDS service was integrated within the Mediatri patient record system (13) and introduced into clinical practice in Sipoo primary care in June 2009. Patient-specific automatic reminders (see table 1) and diagnosis-based guideline links are shown on computer screen for nurses, physicians, and physiotherapists (altogether 46), when they use the Mediatri while seeing their patients.

Objectives

The study aims were to assess the use of automatic reminders and guideline links among nurses and to clarify their opinions about factors helping or hindering the uptake of the CDS in primary care.

Methods

The data were gathered using multiple methods (14); the Mediatri-based feedback system, questionnaires, and focus group interviews. By using the Mediatri-based feedback channel professionals were able to send their spontaneous feedback messages immediately to researchers without any extra work. The feedback data were

planned to analyze with descriptive method, but in the study period, there were no feedback messages from the nurses.

Message to intensify dyslipidaemia therapy in patients with established cardiovascular disease (script 437)	This patient has cardiovascular disease and an LDL-cholesterol concentration above the target value – the target value is below 2.5 mmol/l, and the optimal value is below 2.0 mmol/l. [Intensify dietary intervention. Consult a doctor if it is not successful within 3 months.]
Reminder of elevated fasting blood glucose (script 110)	This patient's fasting glucose is significantly increased suggesting diabetes. Consider repeating the test or carrying out an oral glucose tolerance test. Encourage weight reduction and exercise. [Consult a doctor if the result is repeatedly abnormal.]
Diabetes risk test for patients with BMI above 30 (script 86)	This patient is overweight and his/her blood glucose has not been measured during the last two years. Consider having the patient fill in the diabetes risk test questionnaire. Consider preventive lifestyle changes if the risk of diabetes is increased (score 12 or higher).

Table1. Patient-specific reminder with additional guidance for nurses in brackets; three examples that were hypothesized beneficial for nurse practice

A before-after design survey with a questionnaire was performed in April 2009 and in September 2010. The first round questionnaire was designed by the EBMeDS study group based on previous study (15). It was composed of 26 questions with specific items; use of the Mediatri, care of patient with increased blood glucose, job content and background. In the second round questionnaire, ten questions

concerning of the EBMeDS service were added. Comparative analysis had been planned, but because of respondents' drop out and turnover between the rounds only descriptive statistic was performed.

In January 2010, after six months of introducing the EBMeDS, focus group interviews were convened in the health centre. Altogether five nurses (at least one representative from preventive care, general nurse practice, and two wards) participated with two groups. A broad discussion theme was used, and the group discussion was audio taped and transcribed (16). The data were content analyzed with NVivo 8 software.

Results

The survey participants were 24 out of 26 nurses in the first round (response rate 92%) and 14 out of 24 nurses in the second round (response rate 58%). The nurse representatives in focus groups as well as the survey respondents reported only occasional use of the EBMeDS service, and 29% of nurses reported that they did not use reminders at all (table 2).

	Often	Occasional	Not at all
Reminders	7%	64%	29%
Guideline links	14%	43%	43%

Table 2. The EBMeDS service use among nurses (n = 14)

A majority of the nurses chose "I can not say" option for the questions concerning the EBMeDS service's capacity, quality and usability (table 3).

	Yes	No	Can not say
Easy to use (n = 13)	31	8	61
Rapid enough (n = 13)	46	-	54
Reliable (n = 12)	58	-	42
Quality (n = 12)	25	-	75
Helps my work (n = 12)	25	25	50
Effects on my decisions (n = 12)	8	33	59

Table3. The EBMeDS service's capacity, quality and usability: percentage value

Barriers for implementation and use of automatic CDS were identified: 1) existing reminders and guideline links were not essential for preventive care work, 2) reminders were impractical for call centre work of nurses, 3) limited time per patient for general practice nurses, 4) old habits for seeking and using information in general, and 5) extra work load with swine flu epidemic and vaccination between October 2009 and January 2010.

Also facilitators for implementation and use were reported: 1) positive attitudes towards use and usefulness of computer-based CDS, 2) more training and time for learning to use a new service, 3) dedicated nurse practice in future e.g. asthma nurse practice, and 4) personal experience with the use of CDS.

Discussion

Nurses reported minimal use of the automatic guideline-based reminders as well as many practical barriers for uptake these in nurse practice. From the identified barriers, only work load and limited time per patient features were absolutely comparable with the previous studies (17-19). The swine flu epidemic was an

external factor, which had a unique influence on the nurse practice for many months.

Most of the participated nurses could not say where automatic reminders were or could be beneficial for their work. In addition, there was zero spontaneous feedback from the nurses. These indicate a failure of the EBMeDS service's implementation for nurse practice. However, the nurses, who responded to use automatic reminders often or sometimes, also reported that these were of good quality and reliable, and the EBMeDS service worked rapidly enough. These features have been previously demonstrated successful factors of the CDS systems (4).

In conclusion, the developers' hypothesis of easy to use and self-direct reminders was not fulfilled. On the contrary, more attention should be paid to instruct nurses on utilizing the CDS service in practice, and first of all, to develop CDS reminders to better fulfill nurses' information needs in primary care.

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Chapter 12 – Data Sets and Classifications

1. Validation of the Safety Domain Outcomes of the Peri-Operative Nursing Data Set (PNDS) in Finland.

E.M.L. Lamberg, S. Salanterä, K. Junttila. (Finland).

Introduction

Surgical safety is of global concern (WHO 2008). The World Health Organisation has published the Surgical Safety Checklist to enhance accepted safety practices and force better communication and teamwork between clinical disciplines. The Checklist divides the operation into three phases: 1) phase before induction of anesthesia, 2) phase before skin incision, and 3) phase before patient leaves operating room. For each phase, certain tasks need to be completed and confirmed before proceeding further. (WHO 2008.) Also in perioperative care, the main focus is in patients' safety (Hutchisson et al. 1998; AORN 2003; Silen-Lipponen et al. 2005; Brown-Brumfield & DeLeon 2010).

Most surgical patients are exposed to risk of infection (due to a planned break in skin integrity), risk of physical injury (due to perioperative positioning, extraneous objectives, chemicals, electricity, transfers and transports), risk of changes in cardiac and pulmonary status, and risk of changes in fluid and electrolyte status

(Petersen 2007). The adverse events (or complications or unpleasant symptoms) may lead to prolonged hospital stay, prolonged post-discharge recovery, readmission, increased costs, moderate or greater disability, or even death (Vincent et al. 2001; Healey et al. 2002; Wu et al. 2002; Cho et al. 2003; Zalon 2004). In teamwork, everyone in an operating team has the responsibility for errors (WHO 2008). In the research on potential errors and their prevention (Silen-Lipponen et al. 2005), three main categories were found: demanding teamwork practice, shared responsibility in teams and organized teamwork.

The use of standardized terminologies like Perioperative Nursing Data Set (PNDS) to describe the patients' actual or potential problems, the nursing interventions used to address the problems, and the nursing outcomes of care can indicate the accomplishment of safety practices in patients' care. PNDS is divided into four domains: safety, physiologic responses, behavioral responses (knowledge) and behavioral responses (rights and ethics). Nursing outcomes in the PNDS are positive statements reflecting the goals that patients are expected to achieve during the perioperative care continuum. The measurement of perioperative outcomes base on outcome indicators that provide clinical, administrative and fiscal measures of performance. For example, the outcome indicators for the outcome "The patient is free from signs and symptoms of injury related to use of electrical devices" are: 1) skin condition (e.g. smooth and intact skin, and free from cuts), 2) neuromuscular status (e.g. the patient flexes and extends extremities without assistance), 3) cardiovascular status (e.g. heart rate and blood

pressure) and 4) pain perception (the patient denies acute pain or discomfort at dispersive electrode ground site. (Petersen 2007.) This paper presents results of the validation of safety domain outcomes of PNDS in Finland.

Aim and Objectives

The study aimed at producing new tools for describing and evaluating perioperative nursing care in Finland. The objective was to determine the applicability of the outcomes and selected outcome indicators of the PNDS in Finland.

This presentation will introduce the results concerning the safety domain. The outcomes of that domain specify that the patient is to be free from signs and symptoms of: injury caused by extraneous objects; chemical injury; electrical injury; injury relating to positioning; laser injury; radiation injury; and injury relating to transfer/transport. Furthermore, the patient is to receive appropriate medication(s), safely administered during the perioperative period. (Petersen 2007.)

Methods

The study was conducted with Delphi method. The data were collected with structured questionnaires from October 2009 to January 2010 in one university hospital district in Finland. An electronic survey and analysis software was used in data collection. The questionnaire for the first Delphi round consisted of the original PNDS outcomes (N=28) which were translated into Finnish. In addition, the questionnaire included a demographic data sheet. For the second round, the questionnaire included

outcome criteria of nine outcomes that were accepted in the first round and were also found important in earlier validation study of PND5 (Junttila 2005). In both surveys, a 4-point Likert scale was used. The consensus between experts was calculated by Content Validity Index (CVI), acceptable value ≥ 0.80 (Lynn 1986; Polit & Beck 2008).

The expert panel (N=39) consisted of perioperative nurses representing clinical practice or management (n=29), surgeons and anaesthesiologists (n=10) from fourteen operating departments. The panelists were chosen by their superiors according to the following criteria: registered nurses with perioperative working experience for at least two years or medical specialists in surgery or anaesthesiology, good knowledge in Finnish language, willingness to participate in the study and recommendation of their superiors. The response rates were 82 % (n=32) for the first and 75 % (n=24) for the second round.

Results

Of the eight safety outcomes, seven were assessed as acceptable and one was not; the outcome relating to radiation injury. CVI-values for the accepted outcomes varied from 0.84 to 1.00. The consensus was unanimous for the outcome describing appropriate and safe medication (Table 1).

The outcome indicators were validated for injury relating to positioning, electrical injury and laser injury. The expert panel accepted one fifth of the outcome indicators for electrical injury, third of the indicators relating to positioning and third of the

indicators for laser injury. CVI-values of single indicators (n=37) varied largely (0.32-0.96). The outcome describing the lack of signs and symptoms of injury related to positioning had the most such indicators that were accepted by the panel (38 %). Outcome indicators of the aforementioned outcome are presented in Table 2.

Outcome	CVI-value
The patient receives appropriate medication(s), safely administered during the perioperative period	1.00
The patient is free from signs and symptoms of injury related to positioning	0.97
The patient is free from signs and symptoms of injury caused by extraneous objects	0.94
The patient is free from signs and symptoms of electrical injury	0.90
The patient is free from signs and symptoms of chemical injury	0.87
The patient is free from signs and symptoms of injury related to transfer/transport	0.87
The patient is free from signs and symptoms of laser injury	0.84
The patient is free from signs and symptoms of radiation injury	0.50

Table 1: Outcomes of the safety domain and their CVI-values

Discussion

The outcomes of PNDS safety domain were found acceptable in Finnish perioperative nursing but the outcome indicators need further validation. This study explored the outcome indicators only for three of the eight outcomes in the safety domain. Further examination is needed to assess the applicability of the indicators for the other five outcomes. Those five outcomes relate to injury caused by extraneous objects, injury relating to transfer / transport, appropriate medication, chemical injury and radiation injury. The outcome relating to radiation injury was the only one in

the safety domain that was not accepted by the expert panel although the radiation safety is one of the main concerns in perioperative care.

Indicator (CVI-value)	
Skin condition	<ul style="list-style-type: none"> - smooth skin (0,42) - intact skin (0,75) - skin is free from ecchymosis (0,88) - skin is free from cuts (0,79) - skin is free from abrasions (0,88) - skin is free from shear injury (0,67) - skin is free from blistering (0,83)
Cardiovascular status	<ul style="list-style-type: none"> - heart rate within expected ranges (0,33) - blood pressure within expected ranges (0,42) - peripheral pulses present and equal bilaterally (0,54)
Neuromuscular status	<ul style="list-style-type: none"> - skin warm to touch (0,50) - the patient flexes and extends extremities without assistance (0,83) - the patient denies numbness or tingling of extremities (0,92)

Table 2 Outcome indicators of the outcome “The patient is free from signs and symptoms of injury related to positioning” and their CVI-values

The high consensus on the outcomes demonstrates the importance of safe perioperative care being consistent with earlier literature (Huthcisson et al. 1998; AORN 2003; WHO 2008). The acceptance of the outcomes was quite similar between nurses and doctors in the expert panel, which reflects the common goals and way of thinking in teamwork. This has been found to be an essential factor in successful teamwork (Silen-Lipponen et al. 2005). One reason for the large variation in the opinions regarding the outcome indicators might be that many of the complications appear hours or days after surgery, thus they are difficult to be detected during or immediately after the surgical procedure. The

further research will focus on clinical testing of the safety outcomes in Finnish perioperative nursing.

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2. Finnish Care Classification for Nursing Documentation: Users' Voice.

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Introduction

Nursing documentation has moved from paper to electronic format during last 15 years. In addition documentation templates have been standardized. Patient specific data has been produced and stored in the Electronic Patient Record (EPR) - systems using both standardized terminologies and narrative texts. [1] Receivable large electronic databases allow evaluation, analysis and utilisations of data for administrative, education, and research purposes in health care. [2, 3] Patient care processes and the quality of nursing care, for example, can be assessed and developed using this information. [4, 5]

Previous studies have shown that standardized nursing documentation effects positively to the content of the nursing documentation. [6, 7] Standardized nursing documentation gives accurate, informative and comprehensive data of patient care. The legal demands will also be fulfilled and patient safety secured, when all the significant that has been done for or with the patient has also been documented. [8] However, there are doubts whether all have been recorded. [8, 9, 10, 11]

According to an Italian study [12] only 45 % of the observed nursing interventions were documented. Researchers highlight that documentation systems should be user friendly. The results of a Finnish nursing homes' documentation study showed rapid need

for the development of documentation practices. The research group suggests the implementation of the standardized documentation model. [10] Lee with her research group (2002) has enumerated factors, which affect users and should take into account when implementing an EPR system. They are, for example, termination of paperwork, standardized documentation, and easy use of nursing diagnosis and guidelines for nursing practice. [13]

The Finnish Care Classification (FinCC) is based on the Clinical Care Classification (CCC) developed in the USA by Virginia Saba [14]. The structure of the FinCC follows the structure of the CCC and it consists of three-level hierarchical format. The FinCC includes three separate classifications: Classification of Nursing diagnoses (FiCND), Nursing interventions (FiCNI) and Nursing Outcomes (FiCNO). The development work started in the late 1990s by defining nursing interventions and diagnoses at the University Hospital of Kuopio in Finland. The development activity expanded considerably in 1995 when The Ministry of Social Affairs and Health launched the broad project with health care organizations. In the next four years the common model for the nursing documentation grew up and was implemented in different electronic patient record systems. The model is based on the defined nursing core data (NMDS), the process model in decision making and the FinCC. The documentation has been changed more in structured form and it gives several possibilities to meaningful use of the nursing documents. [15]

The national evaluation of the FinCC was fulfilled in 2005 before the national project started. [16] Hospital Districts or Primary

Health Care organizations (N=26) planned in 2009 the implementation schedule for the use of documentation model. Now in 2010 the documentation model is included in the nursing curriculum at the Universities of Applied Sciences and nursing students exercise to use the model at different stages of their studies. Students at the University of Eastern Finland (earlier The Kuopio University) have used the electronic data bases in writing their master thesis. The research questions have focused on the content of nursing documentation in some specific patient group or in some special issues of nursing care. The feedback from the users of the FinCC has been collected in 2007 and 2010.

The latest FiCND and FiCNI versions 2.0.1 contain 19 components (Table 1), which are divided into a number of main categories and further into subcategories. The development and maintenance of the FinCC has been organized at the University of Eastern Finland, at the department of Health and Social Management. The 10-member-expert group of the terminology, comprising members from different health care organizations in Finland, supervises the terminology development, network with the users and researchers, and continuing evaluation of the FinCC. Also the translation in Swedish has just been completed.

Activity	Health services	Metabolic	Sensory
Elimination	Medication	Role relationship	Skin integrity
Coping	Nutrition	Safety	Continuity of care
Fluid volume	Respiration	ADL	Life cycle
Health behavior	Cardiac	Psychological regulation	

Table 1. FinCC components (version 2.01)

This study is a part of a larger development study of the FinCC. The aim of this study was to find out the experiences of the FinCC users. The especial aim was to deepen the knowledge of how usable the 19 components of the FiCND and FiCNI are, and how the terminology should be further evolved. The research questions concerning all 19 components were as follows:

- 1) Is the component useful at your unit?
- 2) Is the component unambiguous to nurses at your unit?
- 3) Is the component unambiguous in your multiprofessional care group?
- 4) Is the content of the component comprehensive?
- 5) Is the component concrete enough?

Material and Methods

The data was collected electronically. A link to the electronic questionnaire was sent by an email to the FinCC contact persons to Finnish hospitals and health care centers in which the FinCC was in use. The inclusion criterion was that the FinCC versions 2.0.1 had been used in the hospital for at least six months. The email was sent in February and the dead line for the answers was at the end of May. Answers were first gathered to the Excell, after that the SPSS 17.0 was used.

Results

The answers (N=124) via the e-questionnaire were given by a group of nurses or by one nurse at a time. The FinCC had been in use in four different electronic patient record systems. According to the results the FiCND had been used for at least one year in 40% of units, and the FiCNI for at least one year in 35% of units. Only few nurses had experience in using the outcome classification (FiCNO) and the analysis consists of the answers concerning the FiCND and the FiCNI. When asking about the components' usefulness, 17 components (N=19) had 64-92 % consensus in usefulness of components. The unambiguousness to nurses attained 63-93 % consensus. The unambiguousness to other health professionals was a difficult question, because nurses who answered did not know others' opinions.

The most useful components of the FiCND were Medication with 85 % agreement, Continuity of care (81%), Cardiac (81%), Health service (80%) and Skin integrity (84 %). Equally results were with the components of the FiCNI, Medication (92 %), Health service (88 %) and Continuity of care (90 %). Components Medication and Elimination alike FiCND and FiCNI were the most unambiguous to nurses (Medication 88% ND and NI 93%, Elimination 81% ND, 82 % NI). When asking about the comprehensiveness and concreteness of the components the same results as above were found out. The most comprehensive components of the FiCND were Medication (84%), Elimination (82 %) and Skin Integrity (81 %) and of the FiCNI Medication (88 %), Elimination (79 %) and Fluid volume (79 %). Nurses thought that Medication and

Elimination were the most concrete (agreement 84 – 88 %) components, while Role Relationship (FiCND 56 %, FiCNI 51 %), Coping (FiCND 49 %, FiCNI 48 %) and Life Cycle (FiCND 39 %, FiCNI 36 %) had the lowest agreement in concreteness.

Discussion

This study was designed to get feedback from the FinCC users for further development of the terminology. Different versions of the Finnish Care Classification (FinCC) have been used in nursing documentation in Finland nearly 10 years. The implementation of the National Documentation Model has been proceeded quite well. Among other components, the content of Coping, Role Relationship and Life Cycle must be considered and evolved. The evaluation based on users' comments and the updating made by the expert group will be conducted at least every second year. End users', in other words nurses' opinions are very important when developing the content of the terminology.

The best agreement of components Medication, Secretion and Skin Integrity can be a consequence of the situation today in Finnish health care. Nurses have time to do acute and must-do –works and it is easy to document patients' physiological needs and interventions to the care plan. Despite of the education of the holistic care and useful nursing terminologies, it is not simple to nurses to name nursing diagnoses or interventions of psychosocial and social areas.

The use of the nursing documentation model and the FinCC has expanded in different nursing environments. In the future the

challenge is to develop a terminology that offers users the possibility to document patient care adequately in any unit multiprofessionally. Also, it has to be assured that the documented information is useful also in further reuse.

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3. Nursing Outcomes Classification for the Altered Thought Processes Nursing Diagnosis in Psychiatric Clinical Practice.

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Introduction

The care for patients in the health service is developed by professionals of different areas, who contribute with their attributions to the results of the patient. However, there is a lack of objective criteria to measure in a standardized form the results of the patient influenced by nursing care (Gudmundsdottir, Delaney, Thoroddsen, & Karlsson, 2004). The use of a standardized language has become one of the priorities of the profession, since it's visible and recognized the know-how of nursing by the other areas of knowledge (Crossetti, & Dias, V., 2002).

Considering the increasing needs of the nurses to describe and measure the results of the practice some terminologies were created with standardized language, being *Nursing Outcomes Classification* (NOC), initiated in 1991, the most developed and utilized. The Nursing Outcomes from *Iowa Outcomes Project* have been constantly tested to verify its validity and reliability in various specialties (Moorhead, Johnson, Maas, & Swanson, 2008).

The NOC is complementary to two other classifications, the *North American Nursing Diagnosis Association International* (NANDA-I), which develops *Nursing Diagnoses* (ND), and *Nursing Interventions Classification* (NIC), which contains interventions

and activities of nursing. These three terminologies complement each other and can be used in automated systems to the application of interrelated stages (Assessment, Nursing Diagnosis, Planning, Implementation and Evaluation) of the Nursing Process (NP) (Nóbrega, Garcia, Chianca, & Almeida, 2010).

Many variables comprehend the actions realized by other professionals; organizational and environmental aspects that are taken into consideration in the selection and implementation of the interventions according to the characteristics of the patient; their physical and emotional health; existential circumstances lived by them, among others. It is up to the nurse defining which results of each patient, family or community are more sensitive to the nursing interventions (Moorhead, Johnson, Maas, & Swanson, 2008).

The NOC comprehends the results that describe the state, behavior, reactions and feelings of the patient in response to the provided care. Each result has a name, a definition and a list of indicators that describe the state of the patient, the care person or the family. The results provide Likert scales of five points to evaluate the listed indicators. The scales allow the measuring of any point of a continuum facilitating the identification of the alterations of the patient's state through different punctuation along the time line. This way, it allows to monitor the improvement, worsening or stagnation of the state of the patient during the period of care (Moorhead, Johnson, Maas, & Swanson, 2008).

Thus, the Nursing Process of the Hospital de Clinicas de Porto Alegre (HCPA) has a story of over twenty years of experience. This

method can be understood as a deliberate intellectual activity that aids the nurse in the decision making process, which focus resides in getting the expected outcomes. (Alfaro-Lefevre, 2010).

The automated model of NP in HCPA was introduced in the year 2000 and looked to the ND according to the NANDA-I taxonomy together with the Human Basic Necessities Theory by Wanda Horta (Horta, 1979). Since then we have worked with the nursing diagnoses, which have been updated according to taxonomy II of NANDA-I (NANDA-I, 2008) in systematized form. The prescriptions of automated nursing and the prescribed care are based on literature, experience in clinical practice of the nurses in the hospital and more recently in the interventions described by NIC. However, despite these advances, the results achieved by the patient submitted to the implemented nursing care cannot measure by pre-established criteria.

As of the acknowledgement of NOC applicability in HCPA a research project was begun entitled “Validation of Nursing Outcomes According to *Nursing Outcomes Classification* in Clinical Practice at a University Hospital”. The general objective of the project is to validate the Nursing Outcomes NOC selected from a link NOC/NANDA-I to the most frequent Nursing Diagnoses in patients hospitalized in the institution. Firstly, it was identified in the automated system the Nursing Diagnoses most frequent in hospitalization of patients of HCPA, considering the specificity of Medical, Surgical, Intensive Therapy, Pediatric, Psychiatric, Maternity-Infant and Emergency Nursing Services. After this stage it was initialized the validation stage in each service.

Therefore, this study is part of the research project above mentioned. It was verified that the prevalent diagnosis in psychiatric patients in HCPA, during six nonconsecutive months, was Altered Thought Processes. This diagnosis is defined as “a state in which an individual lives a rupture in the cognitive operations and activities (NANDA-I, 2008). It is important to highlight that this diagnosis was extracted from NANDA-I 2009-2010 (NANDA-I, 2010).

Considering that the diagnosis mentioned was the most utilized by nurses in the institution and that it was excluded from the classification, it is important to emphasize the relevance of this study. Besides that, it is also important to encourage the research of NOC in the Brazilian context, since this classification still is an incipient theme in the nursing reality of the country (Garbin, Rodrigues, Rossi, & Carvalho, 2009). The relevance of this investigation is to describe the NO proposed by NOC likely to be used in psychiatric practice at the HCPA.

Objective

To validate the Nursing Outcomes NOC, selected from the link NOC/NANDA-I, to the ND most utilized in the psychiatric practice of the hospital: Altered Thought Processes.

Method

This is about a study of quantitative character, the descriptive transversal type, consisting in a study of validation of content.

The present research was developed in Hospital de Clínicas de Porto Alegre (HCPA), which is owned by the University Hospital Chain of the Ministry of Education and it is academically attached to the Universidade Federal do Rio Grande do Sul (UFRGS). It provides assistance following the principles of equity, equality and gratuity, inherent to the health system Sistema Único de Saúde (SUS).

The population is made up of nurses who work at the admittance of the psychiatric ward or at the psychosocial attention center - Centro de Atenção Psicossocial (CAPS) of HCPA. The sample is constituted by the totality of the population of nurses who fulfill the criteria of inclusion of the study and answer the data collection tools being considered experts. As a criteria for the inclusion of expert nurses it was defined: to have professional experience of minimum two years; to have been working at HCPA for at least one year with psychiatric patients utilizing the Nursing Process. As for exclusion criteria, it was defined: not to return the forms filled out within thirty days of the hand in date; to be under temporary contract.

The Collection of Data is realized the validation of nursing outcomes (NO) suggested and associated additions proposed by NOC to the ND Altered Thought Processes. The Collection of Data is realized by use of tool elaborated by the researchers.

The validation tool is a table with seven columns. In the first column are listed the results suggested and associated additions to the ND Altered Thought Processes and its definitions. From the second to the sixth column it is presented a Likert scale of five

points (1=not important; 2=little important; 3=important; 4=very important; 5=extremely important) to measure the importance of each result in relation to the ND. In the seventh column there is a space for the experts to write suggestions, critics and observations.

The data will be analyzed through descriptive statistics, calculating the media pondered of the grades given by the nurses to each result and each indicator in which were considered the following figures: 1 = 0; 2 = 0.25; 3 = 0.50; 4 = 0.75; 5 = 1 (Fehring, 1987). Cut score was defined at 0,70.

The project was approved by the Research Committee of the Nursing School of UFRGS and by the Ethics Committee in Research of HCPA.

Results

Out of the 24 nursing outcomes for the studied diagnosis, seven were had a higher weighted mean than the cut score. They were: Decision-making, Communication, Medication response, Substance withdrawal severity, Identity, Information processing and Personal safety behavior.

Nursing Outcomes for Altered Thought Processes (N=24)	SCORE / F (%)
VALIDATED NURSING OUTCOMES	7 (29,17)
Decision-making	0,86
Communication	0,82
Medication response	0,82
Substance withdrawal severity	0,79
Identity	0,75
Information processing	0,71
Personal safety behavior	0,71

Final Considerations

Findings of this research will provide the basis on NOC to update the hospital's informatized Nursing Process. The study is believed to help both improve the quality of care given and record the activity of nurses so that it may be visible in the patient's records. Besides, knowledge on the Altered Thought Processes ND is hoped to be deepened and more developed to contribute to its permanence in Taxonomy II of NANDA-I, for it has been greatly used in nurses clinical practice.

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Chapter 13 – Nursing Diagnosis and Decision Making

1. Training in Nursing Diagnosis: A Tool for Improvement of Clinical Reasoning.

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Introduction

The clinical decision making in nursing is a complex task that requires a high level of critical thinking, clinical decision-making ability, and a substantial knowledge base (Grossman, Zachary & O' Connor, 2010). All these factors are important to guarantee that nurses be able to collect data and name them in an appropriate manner. Beside this, accurate interpretation of patient data is complex and is dependent on the context, including patients' and nurses' characteristics (Levin, Lunney & Krainovich-Miller, 2004).

Considering nurses' interest in finding out the patient's clinical state, identifying clinical evidence, or even correctly using the available material to obtain it and record data, the result originated from such initial stage of nursing process may or may not lead to correct interpretations.

It is well known that nursing diagnoses are used as a planning tool to guide the care in specific situations and organized the nursing knowledge (Carpenito-Moyet, 2010). Currently, there are several diagnoses classifications, however, the most often used is NANDA-International (Lopes, Barros & Michel, 2009). Despite this classification have emerged in the early 70's and have been translated to portuguese in 1990, is not widely used in clinical practice (Barros, Michel, Nóbrega & Garcia, 2000). In some cases, nurses point the difficulty of using the taxonomy, because they not have the basis in the graduation.

In fact, the introduction of nursing diagnoses in the curriculum of nursing schools occurred recently, in Brazil. Moreover, the content of the disciplines regarding nursing process and nursing diagnoses varies significantly. As consequence, in our hospital, nursing staff is compound by nurses with many degrees of expertise. Indeed, we have been observed that their knowledge base and ability in naming nursing diagnoses varies widely.

In this context, we considered the need to improve the nurses' basis to use NANDA-I classification.

Purpose

To evaluate the knowledge retention and the effect of a training model for diagnostic clinical reasoning for nurses working in a cardiology and pneumology hospital.

Methods

This is an exploratory and descriptive study. First of all, nurses attended a two hours training session that consisted of a theoretical class regarding the diagnostic process (Lunney, 2009): collect data, use of logical reasoning to cluster the cues, analyse the importance of cues, diagnostic hypotheses, seek information from NANDA-I book, apply standards to determine if the diagnosis and its defining characteristic are present, analyse the importance of related factors to diagnostic hypotheses, relate the context of the situation to the possible diagnoses, select the most accurate diagnosis and prepare to provide justification for decision. The content were elaborated by nurses with experience in nursing process and in the use of nursing standardized language.

After theoretical class, nurses attended practical activities using case studies, also with a two-hours program. Case studies were elaborated by a nurse with domain in nursing classifications. Each case study was submitted to consensus validation by experts. For each case study, experts identified the nursing diagnoses individually. Then, they discussed about the diagnoses and entered in a consensus about what were the most accurate for each case using the scale for degrees of accuracy (Lunney, 2009).

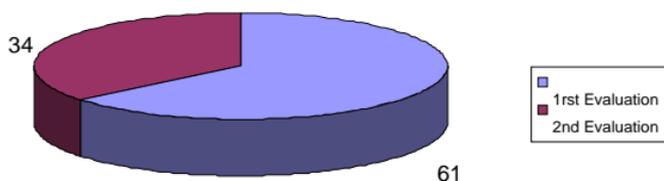
To evaluate the effect of training on improvement of diagnostic reasoning, a “case study-test” was used, and the process for their elaboration and validation was the same cited above. In this case, there was consensus on three diagnoses: “Anxiety”, Risk for Infection” and “Risk for Unstable Blood Glucose Level”. “Anxiety” was considered as the main diagnosis. The “case study-test” was

applied on two occasions: before theoretical class and after the practical training. The diagnostic reasoning was assessed based on the assertiveness of diagnoses and on the identification of the more accurate diagnosis.

Results

Two hundred and thirty four nurses were trained. In the first evaluation nurses identified a greater number of diagnoses compared with the second evaluation (figure 1).

Figure 1 - Number of diagnoses identified in the first and the second evaluation

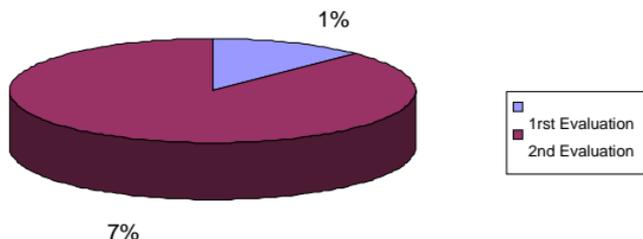


The mean number of diagnoses identified in the first evaluation was 10; and in the second one was 8.

It was observed that in the first evaluation, 89% of nurses identified the diagnosis “Anxiety”, 65% “Risk for Infection” and 61% “Risk for Unstable Blood Glucose Level”. In turn, in the second training, 92% identified the diagnosis “Anxiety”, 86% “Risk for Infection” and 55% “Risk for Unstable Blood Glucose Level”. There

were nurses that identified only these diagnoses in the first and second assessment, however was more assertiveness in the second evaluation (Figure 2).

Figure 2- Number of nurses that identified the only of three diagnoses



In relation to assertiveness of more accurate diagnosis, 28% of nurses identified the “Anxiety” in the first evaluation and 34% in the second.

Discussion

During all nursing actions and decisions, the clinical reasoning is present: in the identification of nursing, in the choosing of appropriate interventions and in the evaluation of outcomes (Cerrulo & Cruz, 2010).

Our training program was planned and implemented based on the practice and experience of the participants. For the improvement of clinical reasoning is necessary to use multiple strategies. There are some evidences in the literature that individuals enjoy applying

knowledge to critical-thinking exercises to apply the information and obtain further comprehension (Bean, 2001).

In nursing, one of the activities to stimulate the improvement of clinical reasoning are discussions of case patients (Cerrulo & Cruz, 2010). Our experience showed that case studies offered possibilities to nurses to discuss about their practice and about the diagnostic process with each other and with instructors. Nurses increased the assertiveness of diagnoses and showed more ability in identifying the main diagnosis. These results suggest that nurses were able to improve their own skills on clinical reasoning.

Although there are many instruments that measure critical thinking, all of them have limitations for their use in nursing, because they do not capture the specific nature of nursing, do not incorporate nurses' practical reality, are usually applied to populations of students, are not randomized and do not have well-established psychometric properties (Cerrulo & Cruz, 2010). Regarding this context, authors decided to measure the improvement of nurses' diagnostic clinical reasoning using a pre and post test.

It is known that diagnostic accuracy depends on several factors, as knowledge and ability to use the classifications (Lunney, 2009). Thus, the development of continuing education courses related to critical thinking and clinical reasoning are needed to improve the accuracy of diagnosis.

Conclusion

The training showed that nurses had an improvement in clinical reasoning and in the identification of nursing diagnoses.

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2. Dyspnoea and Fatigue: Predictors of the Nursing Diagnosis 'Disturbed Sleep Pattern' in Patients with Heart Failure.

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Introduction

Patients with heart failure (HF) experience numerous responses to their primary condition that are expressed in many spheres of their experience. Nursing diagnoses referring to sleep are common in HF patients⁽¹⁻³⁾, and therefore, should be a focus of nursing care. This study explores the predictors of the nursing diagnosis 'disturbed sleep pattern' in HF patients.

HF affects the patients' quality of life differently, even when in treatment. Changes in identity, social function, and physical capacity are common experiences among HF patients⁽⁴⁻⁵⁾, which directly influence their daily activities^(4,6). The poor prognosis of the disease has progressively been the focus of research addressing the quality of life of these patients. Diminished quality of life accrues from various factors, especially symptoms inherent to HF. These patients are frequently limited in their functioning by dyspnea and fatigue, symptoms that indicate worsening condition as the disease progresses⁽⁷⁻⁸⁾.

Recent studies highlight the importance of the relationship between disturbed sleep patterns and the processes of the development of HF, poor quality of life and functional performance⁽³⁾. Sleep disorders are frequent among HF patients

and negatively influence their quality of life; it is one of the most uncomfortable problems for this population^(2,9). Poor sleep can compromise cognition and interfere in self-care practices. Hence, disturbed sleep patterns can influence the management of a patient's therapeutic regimen and increase the risk of an unplanned hospitalization. Understanding disturbed sleep patterns in the context of HF is necessary to the design of a therapeutic plan that includes the disease's multi-dimensional aspects, aiming to contribute to improved quality of life and care delivered to HF patients. Knowledge concerning the predictors of disturbed sleep patterns in HF patients is necessary to better understand the interaction and importance of factors related to disturbed sleep patterns in this population.

Objective

To describe the predictors of the nursing diagnosis 'disturbed sleep pattern' in HF patients.

Method

Cross-sectional descriptive study carried out with a non-probabilistic sample of 400 outpatients (average age 57.8 years old, SD=11.6; 64.8% men; with 6.1 years of education on average, SD=3.9; 82.5% in functional class II or III) under heart failure treatment in a university hospital in São Paulo, Brazil. Data were collected through interviews in which participants answered a set of instruments addressing: characterization of personal and heart failure data; evaluation of sleep patterns (Pittsburg Sleep Quality Index PSQI); fatigue (Dutch Fatigue Scale – DUFFS), exertion

fatigue (Dutch Exertion Fatigue Scale - DEFS), physical activity (International Physical Activity Questionnaire) and data on dyspnea, smoking, medication therapy, and body mass index (BMI). The instruments displayed good internal consistency in this study's sample (PSQI $\alpha = 0.73$; DUFS $\alpha = 0.90$; and DEFS $\alpha = 0.92$).

PSQI was developed to provide a valid, reliable and standardized measure, easy to answer and to be understood to evaluate sleep quality and discriminate between good and poor sleepers among the studied subjects⁽¹⁰⁾. The questionnaire consists of 19 self-administered questions and five questions answered by the roommates or bed partners of those who answered the questionnaire. The latter are used only for clinical information. The 19 questions are grouped into seven components with scores on a scale from 0 to 3. The seven components of PSQI are standardized versions of areas routinely evaluated in clinical interviews of patients with sleep complaints: subjective sleep quality, sleep latency, sleep duration, sleep disorders, use of sleep medication, and daytime dysfunction. Scores of the seven components are summed into a global score that ranges from 0 to 21; the higher the score, the worse the sleep quality. Global scores > 5 indicate that the individual is facing difficulties in at least two components or moderate difficulties in more than three components. Good sleepers are those who obtain scores ≤ 5 and bad sleepers those with scores > 5 ⁽¹⁰⁾. For this reason, scores > 5 in this study determine the presence of a disturbed sleep pattern.

Non-parametric tests were performed to analyze the association of disturbed sleep patterns (PSQI scores higher than 5) with selected variables. The variables that were significantly associated with disturbed sleep patterns in the univariate analyses were included in the adjustment of the logistic regression model to investigate the predictors of disturbed sleep patterns.

Results and Discussion

The average global score of the seven components of PSQI was 8.70 (SD = 4.39) and median 9.0. The PSQI cutoff score that defines good and poor sleepers was used in this study to define the presence of disturbed sleep pattern; scores higher than 5 indicated the presence of a disturbed sleep pattern. Of the 400 studied outpatients, 274 (68.50%/CI95% 0.64; 0.73) had disturbed sleep patterns. The following table summarizes the sleep characteristics of the studied patients.

The variables associated with the presence of a disturbed sleep pattern in the univariate analysis were: female ($p=0.009$); unemployment ($p=0.013$), fatigue ($p=0.000$), exertion fatigue ($p=0.000$), dyspnea ($p=0.000$) and HF functional class ($p=0.000$). There was no association of disturbed sleep pattern with level of physical activity, medication therapy, IMC or smoking.

Sleep characteristics	Disturbed sleep pattern		Total N=400
	Yes	No	
	n=274	n=126	
Poor/Very poor sleep quality	180(65.7%)	6(4.7%)	186(46.5%)
Sleep duration < 5 hours	84(30.7%)	-	84(21%)
Sleep efficiency < 65%	152 (55.5%)	1(0.8%)	153(38.2%)
Use of sleep medication more than three times a week	26(9.5%)	2(1.6%)	28(7%)
Difficulty keeping awake during the day	130(47.4%)	20(15.8%)	150(37.5%)
Nocturia	211(77%)	78(62%)	289(72.2%)
Respiratory distress	143(52%)	19(15%)	162(40.5%)

Table 1: Main characteristics of the sleep patterns of HF patients. São Paulo, Brazil 2010

The following variables were entered in a binary logistic regression model to identify predictors of disturbed sleep patterns because they presented p-values below 20% in the Chi-square test: gender (male/female), dyspnea (yes, no), exertion fatigue (DEFS <12.5 or DEFS ≥12.5), fatigue (DUFS <14.5 or DUFS ≥14.5), use of digitalis (yes, no); functional class (I, II, and III/IV) and working situation (employed/not employed), were modeled as a binary logistic regression and the dependent variable was “disturbed sleep pattern”. The adjusted model was significant ($p = 0.000$) and Table 2 presents the results for the two variables with statistical significance.

Variable	β	Wald	p Value	OR	IC 95%	
					Inferior	Superior
Dyspnea	1.17	13.27	0.000	3.23	1.72	6.07
Fatigue (DUFs \geq 14.5)	124	14.59	0.000	3.45	1.82	6.49

Table 2: Results from the logistic regression for disturbed sleep patterns. São Paulo, Brazil - 2009

Fatigue and exertion fatigue were associated with disturbed sleep pattern ($p= 0.000$). Fatigue is a frequent and important clinical manifestation of HF. A study with a sample similar to this study showed that the intensity of fatigue were statistically higher in patients with disturbed sleep pattern⁽¹¹⁾. The authors of a study carried out with 138 HF patients⁽¹²⁾ observed that quality of sleep was significantly higher in patients who presented lower intensity of fatigue or exertion fatigue.

Similar to fatigue, dyspnea is a common symptom in HF⁽¹³⁾. Dyspnea, which frequently limits the functioning of HF patients, is a symptom that indicates a worsening condition as the disease progresses⁽⁸⁾; it is known that respiratory disorders can interfere with sleep⁽²⁾. Therefore, verifying whether there is association between dyspnea and the sleep patterns of HF patients is a relevant undertaking. A significant association between dyspnea and disturbed sleep patterns was found in this study's sample ($p = 0.000$). The causes of insomnia in HF patients are attributed to dyspnea, orthopnea and paroxysmal nocturnal dyspnea since these lead to fragmentation and difficulty in maintaining sleep⁽²⁾; paroxysmal nocturnal dyspnea is considered a risk factor for disturbed sleep patterns⁽¹⁴⁾.

The results of the logistic regression showed that dyspnea and fatigue are significant predictors of 'disturbed sleep pattern' (Table 2). This study demonstrates that both fatigue and dyspnea independently increase the probability of a patient experiencing a disturbed sleep pattern. However, other studies addressing predictors of sleep quality of HF patients, including psychosocial variables and other physical symptoms, are needed to better understand this interaction and the importance of factors correlated to sleep problems in this population.

Conclusion

Many factors are associated with disturbed sleep patterns, suggesting that sleep is a complex variable related to various spheres of life. Early detection of sleep problems in HF patients and the adoption of measures to control them can benefit patients. Nursing diagnoses regarding sleep are frequent in patients with chronic diseases. There are four nursing diagnoses in the NANDA-International classification⁽¹⁵⁾, however fatigue and dyspnea are not among the related factors. The results of this study will support a proposal to review sleep disorder diagnoses with the inclusion of dyspnea and fatigue as related factors.

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3. Using Detailed Clinical Models in Nursing.

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Introduction

Healthcare faces challenges in information management urging the nursing profession to sort out information requirements to meet the different professional objectives. One particular problem encountered in modern healthcare information technology (HIT) is the effort for information requirements gathering and defining. ISO 13606 archetypes, Health Level 7 (HL7) templates, care information models, clinical templates all are synonyms that try to support requirements setting. These separate out clinical data specification and technical operations in computers.

These approaches allow clinicians to involve in data element specification that incorporate their knowledge and experience. Frequently, information modelers report on developments and recommend that nurses should be involved in the creation of information requirements. However, templates and archetypes require adaptation to a specific technology. Not every health care organization is able to do so. Also, many efforts are put in the creation of templates and archetypes, which is a valuable resource. Hence, both HL7 and the International Standards Organization (ISO) TC 215 health informatics decided to accept project proposals for the creation of Detailed Clinical Models (DCM). The question addressed here is: Can nursing professional knowledge, evidence

base, guidelines, terminology, outcomes, and required data be represented in DCM that allow deployment in different technical standards and HIT implementations?

Methods

Ongoing projects at ISO and HL7 analyze and compare different formats of representation of data, information, and knowledge in HIT. Their focus is on semantic interoperability of data. This can be applied to nursing. The approach to DCM includes the specification of three categories of content: data elements, professional knowledge, and meta-information, among others.

Results

For nursing information representation in DCM, the following types of standards are relevant.

- * Via meta-analyses, it is possible to analyze and represent the nursing knowledge for use in HIT. Evidence based guidelines, validated measures and instruments, and use of decision rules and decision tables propose valid and quality content for DCM for nursing.

- * The ISO 18104 reference terminology model for nursing helps to compare concepts from different (nursing) terminologies and determine their level of semantic interoperability. In DCM, there is a slot binding for each data element for the concept to specific terms and unique codes from different terminologies.

- * The data elements specifications follow the approach in standardized HL7 information classes and ISO 13606 archetypes.

Each data element gets a name, data type specification (e.g. text, picture, date, number), unique code, and where applicable the specified value set. This approach renders it possible at the conceptual level to relate nursing content expressed in DCM to standardized information models.

* The dynamics of the nursing process can be optimized via clinical pathways and continuity of care approaches. Via for instance the clinical pathway approach, it becomes possible to manage patient outcomes. The patient outcomes can be defined in DCM, the dynamics are represented in standardized behavior models, such as activity diagrams.

* Finally, DCM needs representation in technical standards. Examples include reference models for information and technology architectures, and standards for information security, standards for authorization, technical data exchange among many others.

Conclusion

There is a need to include nursing content in HIT. A recent approach based on DCM allows standards based representation of nursing data, information, and knowledge in HIT. DCM includes key components of clinical information and terminology and deploys different types of standards, in particular to ensure exchange of meaning between nurses and other professionals.

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Chapter 14 – Documenting and Teaching Effective Care

1. Documenting Anaesthesia. Handwritten Anaesthetic Records Compared to Records Delivered by an Anaesthesia Information Management System (AIMS).

E. Reine. (Norway).

Purpose

The handwritten anesthetic record is the traditional way of documenting for the nurse anesthetist (Feldman, 2004). Handwritten anesthetic records have been proved to be inaccurate and incomplete in several studies (Cook, McDonald and Nunziata, 1989; Thrush, 1992).

Anaesthesia Information Management Systems (AIMS) are designed to provide an accurate documentation of events during anaesthesia. By collecting and presenting data in a digital format, AIMS can facilitate documentation and improve patient care (Muravchick et al., 2008; Williams, 2005).

Electronic documentation and AIMS have been associated with higher degree of accuracy and completeness which is important for

medical legal purposes and patient safety (Egger Halbeis et al, 2008; Muravchick et al., 2008).

Several hospitals in Norway are using anesthesia information management systems (AIMS) to increase quality, efficiency and communications.

This retrospective study was conducted in an anesthesia department in a Norwegian University hospital. The department had adopted AIMS 6 months prior to the study. Nurse anesthetists were responsible for most of the documentation assessed in the study although anesthesiologists and operating room nurses also used the system.

The aim of the study was to investigate changes in accuracy, completeness and content on the anesthetic record after adoption of AIMS. The AIMS in use in the department was the Meta Vision Suite system.

Ethical considerations

The anesthetic records studied were anonymous, patient's names or other sensitive data were not collected or registered. The study was approved by the hospital's Research Department.

Method

Retrospective method with descriptive design was used in this study. Handwritten anesthetic records (n=50) were compared to anesthetic records delivered by AIMS (n=50). Inter-rater-reliability was tested for 20% of the material. Kappa varied from 0.53- 1.00. The journals were analyzed using crosstabs and chi-

square tests. The AIMS records were collected in May 2008 and the handwritten anesthetic records studied were from May 2007 (6 months prior to adoption of AIMS in the department).

Findings

The AIMS journals were more accurate and complete on eight out of twelve variables assessed in the study. Documentation of the patients surgical positioning, vital signs during anesthesia, medication and assessment of the patient airways proved to have changed significantly ($p= 0.01-0.03$). Documentation of infusions and check of anesthetic equipment was more complete in the AIMS, however the changes were not significant. The handwritten records contained more accurate vital signs prior to anesthesia ($p= 0.01$).

Patient identity verification, surgery and fasting were well documented in both AIMS and handwritten journals (96-100 %). Documentation of loss of blood was incomplete in both systems of documentation. Only 14 % of the AIMS and 8 % of the handwritten records had registered estimate of patient blood loss during surgery.

Documentation of nursing evaluations was low in the handwritten records and remained low after implementing the AIMS. In fact the AIMS was associated with less documentation of nursing evaluations (44%) than the handwritten anesthetic journals (62%), however this was not significant ($p= 0,07$). Nursing evaluations (preoperative nursing assessment) is documented in free text in both systems of documentation. Other studies have indicated that

free text documenting is reduced when documenting electronically (Driscoll, Columbia and Peterfreund, 2007).

Conclusion

The study proved that the AIMS journals were more complete and accurate than the handwritten journals in most of the variables assessed. Deficiencies were discovered in the AIMS, especially regarding pre-anesthetic vital signs and documenting the patient's loss of blood during surgery. Documentation of nursing evaluations remained low after implementing AIMS.

On the whole the system has proved to give more accurate and complete documentation consistent with the legal demands that exist in Norwegian Health Laws. However we have also experienced user faults and technical flaws using AIMS. Further studies on how to increase the quality of electronic anesthesia documentation are required. We are conducting a follow up study in 2011 where we will be looking in to the quality of the AIMS after using the system for 3 years.

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2. Construction and Validation of an Interactive Tool to Facilitate the Care of Dependent Patients.

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The nurse should focus its attention on the family caregiver in order to facilitate the acquisition in the learning and knowledge of skills.

Aim of the Study

Develop and evaluate an interactive tool to improve teaching and effectiveness of care to be provided by family caregivers to dependent patients.

Methods

Quantitative and qualitative study, quasi-experimental field, with two study groups. To be implemented in an Oporto`s hospital. Consisting of three phases:

1. - Identify the needs and difficulties of family caregivers to care for dependent patients. We made a literature review and semi – estrutured interviews
2. - The construction of the interactive tool to be accessible in the web to the caregivers
3. - Evaluating the effectiveness of the interactive tool.

Results

We have finished the interviews with nurses and family caregivers (Phase 1). We made 14 interviews to the nurses and 12 interviews to the caregivers. Generically, the preliminary results pointed and identified by both, emerges needs in the instrumental and emotional domain. The results are overlap to literature.

Practical Relevance

It is intended that this tool could be a resource that allows the family caregivers feel more competent in the task of caring.

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3. What Factors Influence the Prevalence and Accuracy of Nursing Diagnoses Documentation in Clinical Practice?

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Aim

To identify what determinants influence the prevalence and accuracy of nursing diagnosis documentation in clinical practice based on a systematic literature review.

Background

Nursing diagnoses guide nursing care. They are the basis for goal setting and provide the foundation for interventions. The literature mentions several factors that influences nurses' documentation of diagnoses, such as a nurse's level of education, patient's condition, the use of computer tools, and the ward environment.

Methods

MEDLINE and CINAHL databases were searched using the following headings and keywords: nursing diagnosis, nursing documentation, hospitals, influence, utilisation, quality, implementation and accuracy. The search was limited to articles published between 1995 and October 2009. Studies were only selected if they were written in English and were primary studies addressing factors that influence nursing diagnosis documentation.

Results

In total 24 studies were included. Four domains of factors that influence the prevalence and accuracy of diagnoses documentation were found: (1) the nurse as a diagnostician, (2) diagnostic education and (computer) resources, (3) complexity of a patient's situation and (4) hospital policy and hospital environment. In our analyses, we distinguished two classes of factors that influence nursing documentation: (1) general factors, which influence the reasoning and documentation process in general; and (2) specific factors, which specifically influence the prevalence and accuracy of nursing diagnoses documentation, as we stated in a conceptual framework.

Conclusion

General factors, which influence decision making and nursing documentation and specific factors, which influence the prevalence and accuracy of nursing diagnoses documentation, need to be distinguished. To support nurses in documenting their diagnoses accurately, we recommend taking a comprehensive perspective on factors that influence diagnoses documentation. A conceptual model of determinants that influence nursing diagnoses documentation, as presented in this study, may be helpful as a reference for nurse managers and nurse educators.

Relevance to Clinical Practice

This review gives nurses and the hospital management an overview of determinants for possible quality improvements in nursing

diagnoses documentation that needs to be undertaken in clinical practice.

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Chapter 15 – Educating Nurses and Patients

1. Teaching Standardized Nursing Language: Fostering Critical Thinking Using a Case Study Method.

M. Müller-Staub. (Switzerland).

Background/Purpose

Meaningful use of Standardized Nursing Language (SNL) requires complex thinking processes of nurses, but clinical decision-making and critical thinking are underestimated in nursing education. Research reveals nurses educational needs to properly apply SNLs in practice, which relies on knowledge about classifications, diagnostic concepts and clinical decision-making. This paper describes the method, process and evaluation of a case study method applied in continuous education sessions to support nurses in the use of SNLs.

Methods

Case study sessions were provided to a total sample of 72 nurses. The duration of each session lasted one day (7 hours) and was provided ten times over a duration of 1.5 years. Case study sessions were led by two nursing educators both holding advanced degrees in nursing and counselling. The case study method (CSM) bases on

Balint's theory of case supervision. It was further developed and combined with the nursing diagnostic process by the author. CSM is an interactive method, using iterative hypothesis testing on actual patients' situations. It provides a means of clinical decision making to foster critical thinking in nurses. Critical thinking is described as an intellectual, disciplined process of active conceptualisation, application and synthesis of information. It is gained through observation, experience, reflection and communication, and leads thinking and action. Case study sessions contain different phases: Pre-phase, selection phase, case delineation, case work and case evaluation. The case provider narratively tells the situation of a patient, then the group analyzes and clusters signs /symptoms, states nursing diagnoses and derives nursing interventions. Each case study session was validated by applying NANDA diagnoses, standardized interventions and outcomes along with critical appraisals of the case provider. To evaluate the effects of CSM, nurses answered semi-structured, qualitative questionnaires that were analyzed using Mayringá's qualitative analysis method.

Findings

Findings revealed nurses' learning effects including application of SNLs in clinical practice. Findings were thematically categorized: a) Accurate nursing diagnoses were stated in care plans and effective nursing interventions implemented. b) Patients' problems were perceived in a more patient centred way. c) Professional nursing tasks were perceived more purposefully and formulated more precisely. c) Nurses improved their professional nursing

relationships with patients, and enhanced their communication skills and caring behaviour.

Discussion

CSM led to higher accuracy in stating nursing diagnoses and in implementing effective nursing interventions. The second aim of CSM enhancing nurses' professional relationship with patients was also met. Findings of this study are supported in literature reporting enhanced clinical decision making, clinical knowledge and higher diagnostic accuracy. Conclusions: Meaningful use of SNLs requires educational strategies to support clinical nurses. CSM provides an interactive method that can foster diagnostic accuracy. CSM showed to be an innovative teaching method, putting high demands on educators by taking an active role in the learning process, and by stimulating nurses' active participation when applying SNLs. CSM is suggested for implementation into curricula of nursing education.

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2. Standardization of Documentation Practices and Data Contents in the Implementation of the Patient Information System – Propositions for Development.

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Summary

This article describes the challenges related to the standardization of documentation practices and data content in the implementation of the ICT system. In addition, propositions for development are presented. The material has been collected in connection with the project of reforming ICT systems in one hospital district in Finland.

Keywords: Nursing documentation, Nursing Informatics, EHR, ICT System

Introduction

Implementation of the National Archive of Health Information (KanTa) is currently under preparation in Finland (Kanta 2010). From the point of view of nursing, implementation of KanTa requires agreements on consistent content of documented data and consistent documentation practices. In health care practice, there is at present one collective structure and model for nursing documentation based on national guidelines. The Finnish Ministry of Social Affairs and Health has set the core data structure as a national goal for nursing documentation. The core data in nursing

includes nursing diagnoses, nursing interventions, nursing outcomes, intensity of care and nursing discharge summary. (Häyrinen & Saranto 2009.)

Nursing documentation has its complexities (Cheevakasemsook et al 2006). Current nursing documentation processes are substantially sub-optimal and contribute to work life dissatisfaction (Maryland Nursing Workforce Commission 2007). During the hospital period, the data concerning patient care is documented in many different forms and into several patient information systems (ICT system) (Cheevakasemsook et al 2006), which are not integrated (Maryland Nursing Workforce Commission 2007). Documentation and care habits are inconsistent. Documentation takes much time, charting is inappropriate, overlappings exist (Cheevakasemsook et al 2006), not all information on patients is in the official records (Voutilainen et al 2004) and finding the patients' data is difficult (Nykänen et al 2010). Nurses have to record on paper first and then transfer the data to the patient electronic health record (EHR) (Moody et al 2004). The whole picture of the patient's situation is difficult to understand (Nykänen et al 2010) and that may weaken the quality of patient care. However, the studies on standardized documentation have shown more positive than negative outcomes (Saranto & Kinnunen 2009). A significant increase in the quality of information processing has been noticed after the introduction of the nursing ICT system (Ammenwerth et al 2010). Standardized care plans have increased the nurses' ability to provide equal high-quality care for all patients and decreased documentation time as well as redundant

documentation (Fogelberg Dahm & Wadensten 2008). Standardized care plans have also helped the nurses to improve completeness, structure and content of the information in the nursing discharge notes (Hellesø et al 2006). Nevertheless, besides structured documentation also narrative text is still needed (Green & Thomas 2008, Nykänen et al 2010).

Satakunta Hospital District (SHD) is one of 20 hospital districts in Finland producing specialized medical care services for approximately 231 000 residents of its 23 member municipalities. The hospitals of the SHD locate in three towns at the western Finland with approximately 590 beds in use and 1629 nurses, 578 other care personnel and 294 physicians work there. The aim of this project named PotYdin is to reform the core parts of EHR at the SHD in Finland. The object is to develop unified care practices and standardize the data contents and documentation practices in connection with the reform of the ICT systems. The aim of this paper is to investigate two major issues:

1. What kind of documentation practices there exist in different medical units concerning patient data?
2. What kind of documentation forms of patient data are used in different medical units?

Material and methods

The material of this reform project was collected by interviews and mapping of documentation forms of patient data from head nurses during autumn 2008 and spring 2009. Nurses and secretaries were interviewed the current status of patient data processing and

possible problems on it. The issues that the interviewees especially emphasized were noted. The data was analyzed using content analysis. Analysis was made of the themes mentioned by the interviewees. The two themes that emerged from the preliminary analysis of data were the differences between units and the problems concerning data processing. Secondly 278 different forms have been collected and analyzed from 66 units from the different medical sectors of the SHD: conservative (n = 33), operative (n = 23), psychiatry (n = 7), first aid and emergency (n= 2) and commercial enterprise (n = 1) Moreover common forms at the SHD were listed (n = 27). The forms were divided by the purpose of use and time used.

Results

Background variables

	n
Position	
Head nurse	11
Nurse (RN)	6
Secretary	3
Other	2
Structure of medical sector	
Conservative	10
Operative	8
Psychiatry	2
Other	2
Structure of medical unit	
Medical ward	12
Outpatient unit	5
Specialized medical unit	3
Other	2

Table 1. Background information of the professionals interviewed in the project (n = 22).

Table 1 presents the background information of the professionals interviewed in the project.

Documentation practices

The character of nursing and thereby the needs for documentation in the ICT system are different depending on the health care units. Concerning patient care, the needs for documentation are different in different phases of patient care process. Many inconsistent practices and forms exist in different specialized sectors, wards and even amongst the professionals. The distribution of work between different professional groups concerning tasks and documentation varies. All the guidelines that were used were not documented but exist only in the form of tacit knowledge. Also guidelines which are not followed exist. The data was documented in several locations and transferred manually from one place to another. Therefore, the patient data is difficult to find and process because it is fragmented in different paper forms and located in many ICT systems which are not compatible. As well overlapping in nursing and medical documentation exist.

Types of forms

Figure 1 shows that concerning the purpose of use most of the used forms were different with respect to data gathering and monitoring. Most of the data gathering forms were different fever curves or then arrival, background and preliminary data forms. The data included in those forms was transferred separately for example to the patient's care plan, medicine lists or to the ICT system. Most of the data monitoring forms were fever curves used in only one unit and different forms measuring physiological quantities. Almost half of the care plans ($n = 20$) were structured in accordance with

nursing process. Also medication and guiding documentation had numerous various forms.

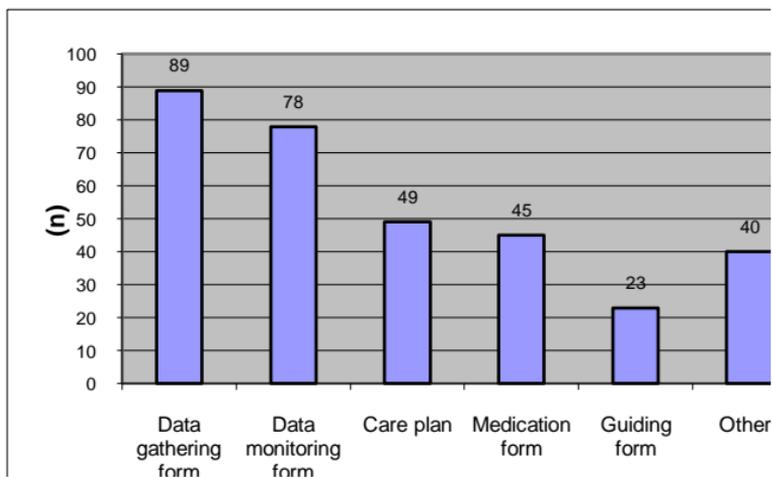


Figure 1. Forms (n = 278) examined on the basis of the purpose of use*.

* The joint amount is different than total amount, because the same form can have many purpose of use. For example fever curve is both and data gathering and monitoring form.

Figure 2 shows that over half of the forms were followed care periods. Both episode and duration of care forms were 20 % of all forms.

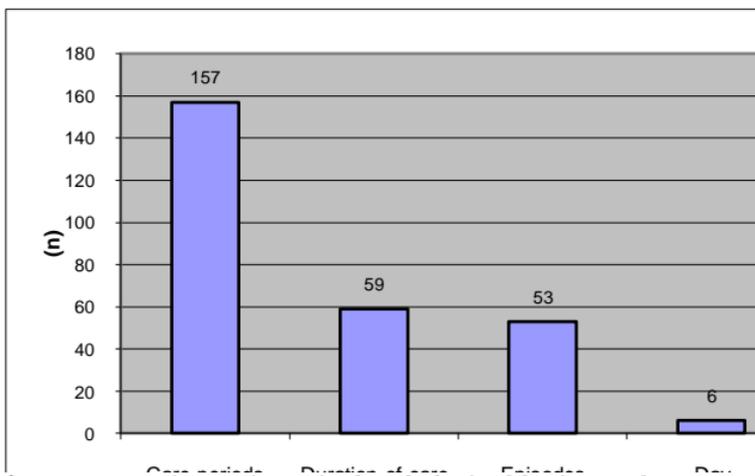


Figure 2. Forms (n = 278) examined on the basis of the time used.

Limitations

There are limitations in this project. The interviews were not done systematically at every type of units. Secondly, all the documentation forms of patient data used in SHD were not available, especially from the psychiatric units very few forms were received. This may mean that the problems at nursing documentation are even more complex. Thirdly, the grouping of the forms was difficult because of the multiple purposes of the forms, but it was done by the main purpose of the form.

Conclusion

The results of this project are in line with the results of earlier studies. Unsuitable documentation forms of patient data lead to double documentation (compare Cheevakasemsook et al 2006). The data was documented manually on separate pieces of paper

and notebooks (compare Voutilainen et al 2004). The biggest challenge is to develop the unified multidisciplinary documentation system that is consistent with the national requirements. In each organization the ICT systems should be of assistance in order to identify or find the best practices and to comply with the standards for improved or streamlined documentation of nursing care. The ICT systems should be user-friendly and support everyday clinical practices. The ultimate goals are to facilitate professionals' work, strengthen the quality and safety in patient care and save resources. The project aims to structured and principle time documentation. With structured documentation the objective is to abandon copying and transferring of data, double documentation and forms that are used in certain units only. The goal is that the data would be documented at one time and thereafter the data would be possible to process for different purposes. The agreement on coherent documentation practices is essential to achieve in order for the nursing documentation to follow the national guidelines (Häyrinen et al 2010, Nykänen et al 2010). The aim is to process the data coherently regardless of the ICT system in question.

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3. Definition of a Profile of Literacy, Technology Literacy, Availability and Acceptance of Technology in Clients with COPD, a Key Factor in the Selection of Didactic Resources for the Promotion of Self Care.

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Introduction

Clients with Chronic Obstructive Pulmonary Disease (COPD) are faced with the need to incorporate complex therapeutic regimens (GOLD, 2009) in their daily lives.

The fluid integration of a complex therapeutic regimen for daily use and development of mastery, are outcome indicators of health and illness experienced transition (Meleis, 1994). The development of mastery is closely related to client's involvement in the therapeutic process, trust in the intrinsic and extrinsic resources, the interaction established with health professionals, individual preferences for learning, and the perceived overall quality of the didactic resources available and their accessibility.

The didactic resources must be appropriate to: literacy; technological literacy; expectations; availability of technological resources and the health condition. These variables can influence the perceived usefulness, intention to use and ease of use of technological resources (Davis, 1986; 1989).

The widespread use of Web technologies, including e-health and e-patient, allow the use of these resources by nurses in promoting the involvement and empowerment of clients for self care (ICN, 2009). It is essential to support decisions on scientific evidence to be taken in defining the structure and contents of these resources.

To promote the management of therapeutic regimens in clients with COPD, we are faced with the need to make decisions about the types of technological supports to adopt and content of didactic resources to develop. To meet this need, we developed this study in order to make a characterization of this population, namely its socio-demographic characteristics, health status, literacy, technological literacy, the availability of technological resources, skills to use technology; type of use of technology and family support for the use of information and communication technologies.

Methodology

Exploratory and descriptive study, using a questionnaire based on the model of technology acceptance (Davis, 1986, 1989), and the theoretical model of the determinants of perceived ease of use (Venkatesh, 2000). We use a non-probability sample, and convenience, with two groups of clients, a group of a Hospital in Oporto, and another group from a Association of clients with COPD. Data collection was conducted between June and July 2010.

Participants

The questionnaire was administered on paper to clients of the Hospital (n=33) and online to clients of the Association (n=75), total clients sample (n=108).

Data analysis procedure

We use descriptive statistics and nonparametric tests to analyze the data obtained in PASW 18.

Results

Socio-demographic

The average age of the total sample (n=108) is 62,43 years with a standard deviation of 11,5 years around the average. The more often observed age is 73 years. Half of the clients have until to 61 years and the remaining more than 61 years. The population sample has a maximum of 88 years and a minimum of 28 years. We note a significant difference in age between the two sample groups ($p=0,019$), and that the clients of the Hospital has more years. We found no statistically significant differences between groups regarding sex.

Health condition

On average, clients have 15,81 years of disease evolution, half of customers have until to 10 years of disease, and the remaining more than 10 years, the number of years of evolution of the disease more observed is 10 years. These clients have an average of, one episode of hospitalization in last year, with no statistically

significant differences between groups. Over 50% of clients have other associated comorbidities, the most frequent, are the cardiovascular diseases.

We verified the existence of a positive association between: age and years of illness $r_{sp}(76)=0,270;p=0,05$, and between age and number of episodes of hospitalization in the last year $r_{sp}(72)=0,272;p=0,05$.

Literacy

In the sample we found that 25% of clients have until four years of schooling, and that 50% of clients have until twelve years, and the remaining more years of schooling. There is a significant difference in schooling between the two groups ($p<0,001$), with a higher schooling between the clients group of the Association with COPD.

We note that in this sample, the clients with more schooling have higher literacy $r_{sp}(71)=0,708;p=0,01$. In this sample we found that with increasing of age diminishes the schooling of clients $r_{sp}(76)=-0,278;p=0,01$ and literacy $r_{sp}(74)=-0,312;p=0,01$.

To characterize the literacy, was used three questions (related with: difficulty reading and writing; understanding texts; understand written instructions) evaluated on a Likert scale of three points (1-a lot of difficulty, 2-less difficulty,3-no difficulty). To facilitate the analysis of the results we present a new variable (Literacy) that is the arithmetic average of the results obtained ignoring the missing values in the three questions.

Literacy average	Data source		
	Hospital	Association	Total
1	n=1(3,22%)	n=1(2,27%)	n=2
1,33	n=2(6,45%)	n=0(0%)	n=2
1,67	n=3(9,67%)	n=1(2,27%)	n=3
2,00	n=7(22,58%)	n=1(2,27%)	n=8
2,33	n=7(22,58%)	n=1(2,27%)	n=8
2,67	n=8(25,8%)	n=1(2,27%)	n=9
3,00	n=3(9,67%)	n=39(88,63%)	n=42
Total	n=31(100%)	n=44(100%)	n=75

Figure 1 - Analysis of the frequency of the average literacy in the groups

We verified the existence of significant differences in the literacy of the respondents, with higher literacy found in the group of clients of the Association. Clients of the Association, have more schooling ($p<0,001$), less difficulty in reading and writing ($p<0,001$), less difficulty understanding the texts ($p<0,001$) and less difficult to understand the instructions of the package inserts of drugs ($p<0,001$) than the clients of the Hospital.

Technological literacy

Clients of the Association, have a greater availability of telephone at home ($p=0,044$), greater availability of mobile phones ($p=0,03$), greater availability of internet at home ($p<0,001$), more access to email ($p<0,001$) than clients of the Hospital.

Resources	Data source			
	n	Hospital	n	Association
Home phone	n=33	n=22(66,6%)	n=43	n=35(81,4%)
Mobile phone	n=33	n=27(81,8%)	n=44	n=42(95,5%)
Internet at home	n=33	n=12(36,4%)	n=43	n=40(93%)
Email	n=4	n=4(12,2%)	n=40	n=40(100%)

Figure 2 - Analysis of the frequency of availability of resources by group

In the analysis of skills for the use of resources, we verify that clients from the Association group are the ones who most often refer able to use the resources. In this sample, clients with higher technological literacy are younger $rsp(65)=-0,347;p=0,01$, with higher schooling $rsp(66)=0,749;p=0,01$, and higher literacy $rsp(75)= 0,688;p=0,01$.

In analyzing the type of resource, we verify the existence of a significant difference between groups in the use of the Internet for leisure activities ($p=0,022$), and for search information about the health condition ($p<0,001$), verifying a greater use among respondents of the Association.

There are no differences between groups in perception of recreation in the use of computers and internet ($p=0,214$), but there are differences with statistical significance between groups, when they state that the use of these scares them ($p=0,033$), being this state higher among clients of the Hospital.

Family support for the use of resources

We observed a positive correlation with statistical significance among clients who report living with someone who knows how to use SMS and clients that live with someone who know how to use the Internet $rsp(47)=0,620;p=0,01$ and email $rsp(47)=0,664;p=0,01$.

Technological resources	n	Living with someone who knows how to use the resource		n	The person is available to help	
		Yes	No		Yes	No
SMS	n=6	n=42 (70%)	n=18 (30%)	n=44	n=33 (75%)	n=11 (25%)
Internet	n=5	n=39 (73,6%)	n=14 (26,4%)	n=40	n=28 (63,6%)	n=12 (27,3%)
Email	n=5	n=40 (75,5%)	n=13 (24,5%)	n=40	n=30 (75%)	n=10 (25%)

Figure 3 - Family support for the perceived use of resources

Conclusion

The study points to two different profiles of clients with COPD, about the potential of using Information Communication Technologies as a resource to be mobilized in the therapeutic processes. In this sample there are two distinct groups of clients. A group of clients more older and with less literacy, where literacy is not constituted as an obstacle to the development of teaching resources on traditional media, but where there is technological illiteracy. These clients have a high perception that familiar support, knows how to use the resources in question and that is available to assist in its use. There is another group of clients that in literacy and technological literacy, the availability of technological resources and intention to use Web technologies, are promoting factors in the use of these technologies.

We found that in clients with COPD, there is availability of resources; literacy; technological literacy; and family support, which justify the available of these resources, for the promotion of self care. It is now essential to develop and empirically test traditional didactic resources and Web-based technologies that

enable the involvement and empowerment of the client and care providers in the self care.

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4. Computerization of the Nursing Records in Belgian Hospitals: Review and Evolution between 2008 and 2010.

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In 2008, in the context of the attractiveness plan for the nursing profession in Belgium, the Minister of Health has allocated an additional and annual budget of 16 million Euros to hospitals globally to enable them to computerize the nursing records.

To measure the impact of this great investment over time, a first appraisal of the situation of the country's nursing records was carried out between December 2008 and February 2009, using a questionnaire survey of all nurse directors in the country (88% response rate). 60% of hospitals said to be in the state of reflexion with an internal ad hoc expert group, 43% made a clear investment plan, and 31% had projected to give learning to nurses to use it properly.

Two years after the first installment of this budget, in July 2010, a new survey is conducted to verify whether the investment has really improved this computerization (93% response rate).

Participants at ACENDIO 2011 will find interest in this paper because the survey questionnaires has been constructed more in relation to the logical of nursing care (a conceptual step by step delivery of nursing care) than only on the technological point of view.

By examples, we have been able to measure how much the files are

currently assisting nurses to collect clinical data (partially for 78%), to analyze and interpret these data (17%) to plan the necessary nursing interventions (12%), to document their outcomes (23%), to assess their effectiveness (9%) and to transmit information to colleagues and other health professionals (26%). Results concern too a lot of potentials secondary application of nursing records like automatic extraction of NMDS, logistic services connection, medical prescriptions, etc.

Results between parentheses are in proportion of hospitals with computerized records in 2008. Results for 2010 are not yet known at time of submission of this abstract.

The most important results of these two investigations and developments will be presented.

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Chapter 16 – Informatics and Communication Technology for Practice

1. From Technology Driven to User Driven Development of ICT Solutions in the Health Care Sector – the ELIN-K Project.

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Introduction

To achieve continuity in health care we need well designed systems that ensure transmission of timely and updated patient information (The Norwegian Ministry of Health and Care Services, 2008). However, it is often the case that technology is not adapted to health care professionals' information needs or work processes. The development of ICT systems in health care have mostly been driven by technology (Christensen & Grimsmo, 2005). The ELIN-k project (electronic interchange of health information in community care) is focused and designed from the health care professionals' perspective.

Background

Norway has a population of 4,9 million people (SSB, 2010), and there are 430 municipalities and 80 hospitals. 9,6% of GDP is used on health expenditure (Nationmaster, 2010, 1), and 85,6% of this is

publicly financed (Nationmaster, 2010, 2). There are 4000 GPs and 110 000 nurses that work in the health care sector. Nurses have, through their coordinating role, responsibility for communication within their own profession and towards other health professional groups. It is estimated that GPs are using approx. 25%, or 800 man-years of their time interacting with others (Norwegian Medical Association, 2003). Similar estimates have not been conducted for nurses, but there is reason to believe that they use considerable time communicating with others (Rotvold et al, 2002). At this point the methods of communication have been paper-based, or through meetings and telephone calls. The content of the information has not been standardized. There are a countless number of different paper based transmission notes between hospitals and community care services, and it has been up to individual hospitals or individual municipalities to determine their content (Hellesø & Lorensen, 2005). Nor has there been sufficient focus on what type of information health professionals need to provide quality health care.

In 2002 and 2003 The Norwegian Centre for IT in health and social services (KITH) developed templates for the content of medical information in the so-called “good discharge summary” and “the good referral note” on behalf of the Norwegian Directorate for Health. These templates provide a recommendation for the medical content and structure to be included in physicians’ electronic discharge summaries and referrals. Such recommendations were not developed for nursing and other health-related content and structure in electronic messages.

Therefore the Norwegian Nurses Organisation initiated this project in 2005 to standardize the electronic interaction between the community care sector and its partners.

Overall aim

ELIN-k's overall aim was to develop a framework for ensuring correct health information, to the right person, to the right time.

Aim

The aim of the project has been to:

- develop national standards for electronic information exchange (electronic messages) between nurses in community care services, hospitals and GPs
- test and pilot the solutions in all major electronic patient record systems in Norway
- achieve widespread use

Project method

To reach our aims a two-step approach including a pre-project and a main project phase was applied. To ensure that the electronic health care communication solutions should be based on common standards, common professional content, and structure, the project was organised with a steering board committee, representing inter professional participation, an informatics skilled nurse as project manager and a project team for supporting the developing process. The project team consisted of three nurses from hospitals, five nurses from community care services and two GPs.

We applied and modified a Business Oriented IT (BIT) project method, developed by Innovation Norway and the Norwegian Medical Association (Christensen & Grimsmo, 2005). This approach was further developed by the Norwegian Nurses Organisation specifically for fulfilling our purpose. The current project method ensures a stronger user involvement and management than usually described (Kensing & Blomberg, 1998). This means that all who have been involved have contributed with knowledge, expertise and financial support.

The Pre-project

In the pre-project we focused on development of requirements and technical standards of desirable properties for the ICT systems that support information exchange from the perspective of health personnel. During six workshops the following themes were discussed;

- Content – what information is needed to provide good health care?
- Structure – how should the information be structured, and in which format?
- Workflow – how can the functionality be designed to support the workflow and be user friendly?
- Presentation – in which way can the information be presented so that it is easy access?

As a result of this process the project team has drawn up recommendations for the "good messages in community care services". These consist of nearly 18 requirements with detailed content. On this basis, five specifications for different supplier

groups (GP systems, hospital systems and community care systems) were developed in cooperation with KITH (Norwegian Centre for Informatics in Health and Social Care). We also drew advantage of an editorial committee which consisted of technical expertise, research skills, legal knowledge and practical skills. The editorial committee quality assured the work from the project team. All documents have been distributed to other experts and institutions for an extensive review. Input was received from the authorities, municipalities, hospitals and professional organizations. The specifications were then aligned with the responses. On the basis of the review some of the requirements were omitted.

The specifications formed the basis for the revision of "Standard for electronic communication for community care services" and contributed to the development of "Standard for dialogue message".

It was decided to proceed with the project with the described requirements.

The Main project

The main project has been organised in two phases; development of solutions between community care services and GPs, and development of solutions between community care services and hospitals. We invited all the major electronic patient record vendors in Norway to participate in the project. Seven of eight vendors accepted the invitation. All the solutions have been tested and approved according to technical standards which was adopted

in the pre project, and according to usability. We also invited nine municipalities, sixteen GP offices and five hospitals to pilot the solutions in real time.

Results

We have developed a set of electronic messages to be used when patients are hospitalized and discharged or when nurses in home care and GPs need to communicate about a patient. The electronic messages are:

From community care to GPs	Messages
From GPs to community care	<ul style="list-style-type: none"> • Orientation about community care services • Updated nursing and health information to the GP • Medications list • Requests for renewal of prescriptions • Booking doctor's appointment
From community care to hospitals	<ul style="list-style-type: none"> • Updated medical information • Medications list • Response for requests of renewal of prescriptions • Notification of doctor's appointment
From hospitals to community care	<ul style="list-style-type: none"> • Admission summary • Admission message • Ready for discharge • Cancellation of ready for discharge • Discharge message • Application for community care services • Interdisciplinary discharge summary

We have also developed guidelines for the use of the solutions.

Discussion and conclusion

This project method is quite similar to the participatory design described by Kensing & Blomberg (1998). We experienced that this contributed to cooperation between health care professionals and vendors in the development of the solutions. Health care professionals in the project described their requirements, including content, structure, presentation of information in open standards for messages, and usability in the electronic patient record systems. The vendors then developed the solutions. This approach is based on an iterative process which means that the solutions are adjusted and improved several times throughout the development and pilot phases.

Nurses who have tested the e-messages report of more timely and precise health care information, with fewer errors in prescribed treatment and medication. They also report the use of less time in the transmission of information, and there are fewer telephone calls and meetings. By using e-messages, in contrast to previous practice, where oral communication was the common method of information exchange; most of the information exchange is now documented. This could indicate that the solutions lead to improved working processes (Melby & Hellesø, 2010). It is expected that electronic information exchange leads to fewer mistakes and unforeseen events, more time directly to patients and increased patient safety (Kaelber and Bates, 2007) The solutions are now about to be implemented in the health care service in Norway.

Ownership and finance

The project is owned by the Norwegian Nurses Organisation (NNO) and KS (Association of Local and Regional Authorities). The Directorate of Health, Innovation Norway, NNO, KS, and National ICT financed the project. The vendors have contributed to 50 % of the development costs.

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2. The Challenge in Meeting Needs of Persons with Dementia with Assistive Technology.

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Introduction

There is today an increased interest in participatory development of technology based assistive devices to meet unmet needs for persons with dementia. These needs has by several authors been identified as a need of early diagnoses, to be heard, information and knowledge, safety, emotional and cognitive support, communication and psychological distress (Bossen, Pringle Specht & McKenzie, 2009; Van der Roest et al., 2009). Other reported subjective needs are to be accepted as you are, a need to find adequate coping strategies and the need to come to terms with their situation (Van der Roest et al., 2007), as well as a need for daytime activities and company (Miranda-Castillo, Woods & Orrell, 2010). An example of an assistive device to meet some of these needs was developed in the COGKNOW project (www.COGKNOW.eu, 2009). The device consists of a stationary and a mobile device, which integrates functions to support needs in the areas of reminding, social contact, daily activities, and enhancing feelings of safety, and could also be adjusted to individual needs. The prototype was tested and evaluated among twelve persons with dementia in three European countries. Already in the second test it was apparent that even though the need assessment was thorough, and the functions were adjusted to match individual needs in a participatory process,

different functions of the device was not often used by the participants. There was a need to get a deeper understanding of the reason for hid discrepancy between expressed needs and the observed usage of the device. The aim of this case study was therefore to get a deeper understanding of how individual needs were expressed in daily life activities, and in what way an assistive device could meet these needs.

Methods

Based on the experience of the second test cycle of the COGKNOW project a qualitative case study was performed with two persons who had participated in the COGKNOW test.

Subjects

The inclusion criteria was that the participants had been part of the COOKNOW project, have a diagnosed dementia with an MMSE score (Folstein, Folstein & McHugh, 1975) between 17 and living in their own home. The participants are in this presentation called Alice and Sven (fictitious names).

Observations and interviews of the person with dementia and their partners

Data collection was based on a semi-structured interview questionnaire and observations guide, which included areas of activities of Alice and Sven normally used to do. The focus during the observations was how Alice and Sven conducted the task in focus, their reactions, their strategies in case of insecurity and their way of communicating. The observations were documented as

reflected field notes in direct connection with the observations. Directly after each observation a tape recorded interview based on the notes from the observation was conducted. Initial observations were performed shortly after the second test cycle of the COGKNOW project and a second interview was conducted 18 month later. Alice's and Sven's partners were interviewed in connection to the evaluation of the COGKNOW device. All data was analysed separately for each participant, using a method for qualitative content analysis. The text about the observed activity was combined with text from the interview concerning the same activity, and followed a structure where condensed meaning units were coded, sorted, and stepwise grouped (cf. Graneheim & Lundman, 2004) and interpreted as needs.

Results

Alice

Alice was 60 years old, have had the Alzheimer's diagnose for three years and a score of MMSE of 17/30 points (Folstein, Folstein, McHugh, 1975) when included in the study. She had been married to her husband for 35 years, lives in a house and has two adult daughters who live nearby. Before her retirement she had been working in the social care. Her husband is still working, which means that she spends her days at home alone, filling them with household duties. Alice had no problem to manage the functions when she tested the COGKNOW device. Despite this she only used the music function in which her favourite music was added. Her general opinion was that device was good and easy to handle but she

stated that she was not in need of most function in her life at that stage.

Identified needs in Alice's daily activities

Alice's needs in daily activities were shown in several domains. Her *need of daytime activities* was obvious. In order to maintain control and pass time she was doing things she was capable of, like cleaning the house or doing the laundry, necessary or not. She avoided things that were too complicated, like to cook or bake, and most of the household appliances were too difficult to handle for her. Another domain was her *need of support to manage activities*. Many of the household activities were performed by Alice's partner, such as cooking, doing purchases and maintenance on the house, and Alice used several excuses for not doing these tasks anymore. When visiting unknown environments she became totally dependent on her companion. When visiting shops for smaller purchases, she was very determined in what to buy, but had no notion of the value of money. Alice's *need of safety* became obvious when visiting less known environments, she very soon lost her orientation, got stressed and became inattentive to traffic. She had a *need of social interaction* and enjoyed company. She chose to socialize with friends one at the time, since it seemed hard for her to interact with several persons at the same time. Alice had a great *need of memory support*. She had no problem recognizing people, but had forgotten the names of many of them. She generally had problems to keep track of time. Normally she forgot to eat anything else but breakfast, and had problems to remember to take her medicine. Important events her partner wrote down in a calendar, and year, date and day

she identified through the daily newspaper. One of the most important things for Alice was her *need to maintain self-image*. She was very keen to not show her memory problems and not to lose face seemed important to her. Often she compared herself with others, who she said had it worse and remembered less than her.

Changes in Alice's need 18 months later according to her partner

Alice's *need of daytime activities* had increased significantly since her initiative to start activities had decreased. Things took longer time to perform and were not as well performed as before. Alice and her partner had talked about her starting visiting a day care centre which Alice didn't want to hear of. Her *need of support to manage activities* and dependency on her partner had increased, and she asked for more support when he was around. Alice had become unwilling to leave the house, and her partner anticipated it was because she was worried not to find her way home. He often got an indication that she had no idea where they were even in very familiar areas, which meant that her *need of safety in unknown environments* had expanded to include also the familiar surroundings. When it comes to Alice's *need of social interaction*, she still seemed to enjoy company. Her contact with her female friends remained, but she met them more rarely. She had started to be afraid of being alone and was sometimes crying when her partner went to work. He was worried that this loneliness might harm her, and saw the possibility of Alice visiting a day care centre could fulfill not only her need of daytime activities, but also her need of company. Alice's *need of memory support* had increased in many ways, even though she still recognized people. Her *need to maintain*

her self-image was still as strong as before. She often stated that the disease had not affected her, since she saw her self capable of doing things as before.

Sven

Sven was 78 years old when he received the diagnose Alzheimer's disease, and had 22/30 points on the MMSE (Folstein et al., 1975) when he got involved in the study. Sven and his wife have been married for over 50 years and their marriage is marked by mutual love and friendship. They live in the house they built when they were newly married, and they have a son and three grandsons living in the same town. All his life Sven was employed as an administrator at a large industry. When Sven tested the COGKNOW device he did not use many of the functions. He expressed how his high expectations turned into disappointment when he realized that the device could not solve his problems.

Identified needs in Sven's daily activities

Sven had a *need of occupation* since his physical distain hampered more demanding activities, and he was not used to do house hold courses. He was still able to read the newspaper, but had problem watching TV due to hearing problems and difficulties to follow the plots. For several years Sven used to go bowling once a week with his former colleges, but chose to withdraw when he to his embarrassment discovered that he no longer managed to count the points. One of his favourite occupations he still managed was to take walks in a nearby recreation area, since he enjoyed visits in the nature. Sven's *need of support to manage activities* was in many

ways met by his partner, of whom he was very dependent. When Sven was taking his regular walks he had no problem to orientate, even though he admitted that there were times when he got lost and that frightened him. When visiting the centre of his home town he had problems to orientate. In this way his *need of safety* was shown. Sven has a great *need of social interactions*. and enjoys company with family and friends. Sven had no problem with recognizing and remembering names of significant others, but there were occasions when he didn't recognized people which he found very embarrassing. Sven used the newspaper and a calendar to keep order on time. In that way his *need of memory support* got obvious. Sven was aware of his disease and how it affected him, but was very keen to *maintain his self-image*. He did his best not to expose his need of assistance. He showed difficulties to identify himself with other persons with dementia. When visiting the day care centre he identified his role more as an assistant to the staff.

Changes in Sven's need 18 month later according to his partner

Sven was no longer capable of doing much in the home anymore, related both to the progression of the Alzheimer's disease, but also due to that his physical condition has decreased. The newspaper was no longer of interest, nor the TV or the radio. Twice a week he visited a day care centre, which he appreciated a lot. In that way his *need of daytime activities* was satisfied. Besides these visits his days consisted of personal ADL, eating and sleeping. Sven's *need of support to manage activities* from his partner had increased significantly. His ability to orient himself did no longer exist, not even in the immediate surroundings, so his *need of safety* was very

obvious. Sven's interaction with friends and relatives had decreased further and were limited to his immediate family. He appreciated their visits, even if he rarely took part in the conversations. Both the visits from his relatives and his visits at the day care centre now fulfilled Sven's *need of social interaction*. Sven's *need of memory support* was shown as he didn't recognize faces of friends and many relatives. He was still eager to *maintain his self image*, but commented his loss of skills and expressed sadness about it.

Discussion

The findings in this study show that there are several factors that influence the usage of an assistive device among persons with dementia. One important factor is the users expectations and own perception of in what way they were in need of an assistive device. Alice's denial of the disease made it hard for her to see the usefulness of many of the functions, and Sven declared his disappointment when he realized that the device not could solve his problems. The need to maintain self-image was obvious for both Alice and Sven, and there is a risk that the users might see themselves stigmatised by using an assistive device. This can be avoided by an encouraging environment. The implementation of an assistive device can by some persons with dementia be perceived as something odd and scaring, when it disturbs their normal routines. This requires the attention of practitioners, since the user might need extended instruction and support to accept and get use to the device. Former experience of using technology can also have an impact on in what extend and assistive device will accepted and used. In the development process of an assistive device, it is

necessary both to be able to individualize the functions, and also to adjust the functions as the disease progresses. This can be achieved by inviting the users to be a part of the process, in a so called user-driven development. The support from carer is important, since the carer often needs to spend much time both to teach, but foremost encourage the person with dementia to use the device, which also was stated by the partner's of Alice and Sven. If the factors mentioned above are taken into account in both the development and the implementation process, assistive devices can be a help to meet individual needs of persons with dementia.

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3. Usage and Satisfaction Level of the ICT Infrastructure and Software by Nurses in Belgian Healthcare Institutions with Focus on Registering and Consulting Nursing Data and Information.

J. Kellen. M. Nyssen. R. Buyl. (Belgium).

Introduction

Recent developments in the world of medical ICT make the nursing profession information-intensive and information-dependent. The theory and practice of nursing computer science are fundamental within the discipline. ⁽¹⁾ To cope the growing flow of nursing data, a variety of software systems are being developed. Mastering a basic level of computer skills is a direct and required consequence of this development so nurses can use the software to plan, implement and evaluate patient care. ^{(2) (3)}

Nursing data comprises many aspects and contains patient information, nursing records, observations, care plan, bed management, evaluations, fluid balance, clinical variables, medication records, billing records, coordination and management of medical orders, medical-technical data like radiologic protocols and images, laboratory data like results of blood tests, and many others... ⁽⁴⁾ Quality of care is directly related to the quality and availability of nursing data. Registering nursing data is an essential part of the daily tasks of a nurse. Furthermore nurses are the most prominent collectors of patient information due to the high

frequency of patient contact. Completion of a nursing record is in most cases supervised by the nursing staff. ⁽⁵⁾

Since two decades clinicians are supported by computer systems to give care consistent with standardized protocols and clinical-practical-guidelines. Literature indicates a significant impact of these computer systems when software packages are presented in an integrated manner. Yet most caregivers are confronted with clustered software packages on clinical workstations. ⁽⁶⁾ ⁽⁷⁾ The majority of software problems in a nursing environment manifest themselves in a cluster of different software packages. Only a minority of healthcare institutions offer a fully integrated software platform to their nursing staff. In this clustered environment the need of thorough evaluation in context of relevance and work relief is crucial.

When processing an evaluation of the implemented software the evaluator has to keep in mind that the functioning of the system itself is not the only aspect. A correct evaluation has to be done in the context of who is using the system and what it is used for, in this case nursing. ⁽⁴⁾ Nurses don't only expect the system to think as fast as them, but even expect the system to think as a nurse. ⁽⁸⁾

Documenting nursing data is a necessity in nursing, though considered a devaluated aspect, even by nurses themselves. The causality of poor quality of registered data can be found in the large amount of time consumption while registering the data, the low clinical relevance and frequent system problems, which devalue the user experience within an electronic nursing record. ⁽⁹⁾ ⁽¹⁰⁾ Other studies indicate the necessity of a fast system response time, high

uptime and consistent availability of the ICT support department to reach a high level of obligingly with nurses.⁽¹¹⁾

Furthermore the maintaining of an electronic nursing record requires, in contrast with a paper record, typewriting skills, a standardized way of registering data and clicking through multiple windows. Those factors are a source of cognitive load and extra stress which raises the workload.^{(12) (13)} Another factor is the underestimated need of education, especially in time, by employers to get the nurses to work on an efficient and comfortable way with the implemented software.^{(14) (15) (16)} Finally literature also indicates the importance of this comfortable way of working with the implemented software so nursing data is registered in an acceptable way by nurses since a study done by Urquhart et al. shows that physicians claim to follow up electronic patient information in a much higher level then paper based information.⁽⁵⁾

Aims and Goals

This study explores the aspects of digital nursing data registering and the frequency of their occurrence. Furthermore the level of satisfaction of ICT infrastructure and software within the perception of Belgian nurses is measured. We try to get an answer on the following research questions: 1) *Which aspects of nursing data are digitally registered in the Belgian healthcare institutions?* 2) *What is, in the perception of nurses, the satisfaction level of the offered ICT infrastructure and software on clinical workstations in the Belgian healthcare institutions?*

Design and method

A literature study is performed by a thorough search on the PubMed database with following MeSH terms: “clinical information systems”, “hospital information systems”, “nursing information systems”, “nursing records”, “evidence-based nursing” en “evidence-based practice”. In a second phase an electronic survey was setup by means of the Limesurvey platform where unique records were distinguished by IP address and email address. Analysis of the gathered data was performed with PASW18. Description of discrete variables has been done using frequency tables and crosstabs. Causality of discrete nominal and ordinal variables are analyzed by means of the chi2 test and Fishers exact test ($\alpha=0.05$).

Results

The survey was completed by 413 nurses where 85.7% of the responses were valid (n=354). A sex ratio of 61.6% female and 38.4% male respondents was noted. In the assessment of computer usage expertise we observed the following distribution: 6.7% “beginners” (0.8% ♂, 5.9% ♀), 30.2% as “advanced beginners” (7.9% ♂, 22.3% ♀), 49.5% “advanced user” (20.1% ♂, 29.4% ♀) and 13.6% “experts” (9.6% ♂, 4% ♀). The male/female ratio and distribution indicates that there are more advanced users and expert users in the male group, 22.8% beginners vs. 77.2% advanced, compared with the female group, 45.8% beginners vs. 54.2% advanced ($p<0,001$). Where 99.2% of the nurses working in a hospital report to have a clinical Workstation available, only 40.8% says to have a laptop and 7.8% a PDA.

We noted the remarkable fact that only 65.6% of the non-academic hospitals are using an electronic nursing record vs. 84.4% of the university hospitals ($p=0,002$). Furthermore, from all institutions where a digital nursing record is available, the university hospitals are registering patient observations for 89.2% where only 74.8% of the non-academic hospitals are doing this in digital way ($p=0,018$). More significant is the registration of medication policy and events which are done in an analog manner in 30.2% of the non-academic hospitals vs. 10.8% of the university hospitals ($p=0,002$). Nursing acts, 20% and 34.5% ($p=0,035$), and nursing planning, 20% and 34.5% ($p=0,035$), are registered on paper-based way for respectively the university and non-academic hospitals. The registration of diet and nutrition is registered in analog way in 54.7% and 30.8% for respectively the non-academic and university hospitals ($p=0,001$). MVGII-scores (which represent minimal nursing data for the Belgian government for statistical and budgetary purposes) are only registered in digital way for 58.5% and 33.1% of the respectively university and non-academic hospitals ($p=0,001$). Moreover 69.8% and 33.8% of the nurses report to register their data on a simultaneous paper-based manner in respectively the non-academic and university hospitals.

In relationship to the importance and level of user satisfaction within the context of infrastructure and software on clinical workstations we noted the following results. Importance of a pc on the work floor: 77.5% very important, 19.5% important, 2.1% neutral and 0.9% not important. Importance of internet access on the work floor: 48.8% very important, 34.1% important, 12.3%

neutral and 4.8% unimportant. Importance of an electronic nursing record: 64.3% very important, 27.6% important, 4.8% neutral and 3.3% unimportant. Satisfaction of the ICT-infrastructure: 19% very satisfied, 44.4% satisfied, 28.7% average and 7.9% dissatisfied. Satisfaction of the software on clinical workstations: 14.5% very satisfied, 44.1% satisfied, 35% average and 6.4% dissatisfied.

Discussion

Apparently nearly all healthcare institutions in Belgium have clinical workstations available on the nurses work floor. Only half of the respondents report to have a mobile station. If 50% of the nurses have to write the information down before they can register it digitally, extra workload is created for them as bedside registration is not possible.

The majority of the nurses seem to be skilled in computer usage, although the majority of the advanced users are male nurses; yet most nurses in Belgian hospitals are female as also reflected in the sex ratio of the survey. On the topic of satisfaction with the offered infrastructure 74% of the respondents situated their satisfaction level in the classes “satisfied” and “average”. On the topic of satisfaction about the software we see about the same result, 79.1% in the classes “satisfied” and “average”.

These results indicate that nurses are not completely satisfied with the given software in their work field and the usage of the software not always helps reducing the workload. The question arises if the causality of this satisfaction level is to be found in the quality of the

software itself or the lack of education and training to use it. Training personnel to work efficiently with software is sometimes underestimated by the employer.

It is clear that university hospitals are developing their electronic nursing record system in a more integrated software package compared with non-academic hospitals. Probable cause could be the tighter budgets available for IT development in non-academic institutions. The fact that the rate of dual registrations (digital/analog) in non-academic institutions is high could be explained as the awareness of the need of digital registration, but these institutions are in the development phase and therefore also keep paper copies of their records.

The specific and mandatory Belgian MVG2-records could be extracted in an automated way from a “complete” electronic nursing record. Since these MVG2-scores are kept every quarter, for every patient, per day during a period of two weeks, the extra workload of completing these records must be a burden. Extrapolation of this information from the digital nursing record would imply a more efficient way of working and reduction of the workload. Secondly the analog registration of medication events and policy creates room for human errors. A third aspect, the registration of diet and nutrition information, seems less important to developers to incorporate in the digital record although this component is equally important to quality of care than other aspects. The digital registration of patient observations, nursing acts and nursing planning seem to be prominent in most healthcare

institutions and appear to be the core business of the developers as they should be.

Conclusion

We can conclude that the university hospitals in Belgium are active players in the development of electronic nursing records. Non-academic hospitals are lacking behind but are aware of the need of an electronic nursing record. In non-academic hospitals who are actively developing a nursing record, the existing format seems to be less complete and more dual (digital/analog).

The majority of responding nurses indicate their satisfaction level in the classes “satisfied” and “average” if asked about the quality of implemented hardware and software on their clinical workstations. There is room for improvement and evaluation. Moreover, involvement of nurses in the planning and evaluation of software on clinical workstations is necessary to increase the level of user satisfaction and to reduce the workload as such.

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4. Trust and Relationship when Using Mobile Distance-Spanning Technology in Healthcare at Home.

B.M. Wälivaara. S. Andersson. K. Axelsson. (Sweden)

Introduction

Healthcare at the person's own home has become a more common model for organization of health care (Duke & Street, 2003; Magnusson, Severinsson & Lützén, 2003; Molin & Rom, 2009). The changes in the organization can be a result of people's desire to be cared for in their own home and also a consequence of political decisions. Healthcare at home could be a challenge both for a person in need of healthcare at home and the healthcare professions when the person's individual needs have to be met. Therefore there is a need for different solutions in order to create the opportunities for persons to stay and get healthcare at home. The use of mobile distance-spanning technology (MDST) could be a solution to support persons in need of healthcare and general practitioners (GPs) (Shepperd & Iliffe, 2005). Before implementation the views about the use of MDST have to be described by persons in need of healthcare at home as well as by DNs and GPs.

Aim

The aim of this presentation is to describe views and experiences about trust and relationship when using mobile distance-spanning

technology in healthcare at home from the perspectives of persons in need of healthcare at home and general practitioners.

Method

Within the qualitative research paradigm, the reality is not a fixed entity, rather it is about exploring experiences and how persons make sense of their subjective reality and the values they attach to it (Denzin & Lincoln, 2005). Therefore a qualitative approach was used. Individual interviews (n=9) with persons in need of healthcare at home and group interviews (n=5) with GPs were carried out. The persons in need of healthcare were in ages between 51 and 91 years old and 3 women and 6 men participated. The GPs were in ages between 38 and 61 years old and constituted 6 women and 11 men. The persons in need of healthcare were living in ordinary homes and all had experiences of MDST when district nurses (DNs) were caring for them at home. The GPs were responsible for the healthcare of people living in ordinary homes and sheltered living like nursing homes and for the healthcare at the healthcare centre. The GPs in three of the group interviews had experiences of MDST and one of the three groups represented highly experienced MDST users in healthcare. Two interview groups had no such experiences in healthcare at home. The interviews were tape-recorded and later transcribed verbatim and the text was analysed by using the qualitative content analysis (Berg, 2006) and qualitative thematic content analysis (Baxter, 1991).

Results

The participants described opportunities, possibilities and risks when using the MDST at home. This presentation is focused on trust and relationship described during the interviews. The persons in need of healthcare expressed a great trust and a relationship with the DNs. They trusted the DNs' capacity to handle the MDST more efficiently after training. The persons in need of healthcare at home described that MDST gives possibilities when it is used by the staff, but not by themselves or their relatives. The staff should make the decision when it is safe to use the MDST at home. The access to the patient records at home was viewed valuable if the staff handled the information confidentially. The results of the individual interviews indicate the importance of a trusting relationship with the DNs. Even when the MDST sometimes failed to function properly the persons expressed trust. The trusting relationship with the DNs could be understood as one explanation for great trust in MDST. In spite of this great trust they also described limitations for using MDST as in emergency situations and when they wished to talk with the GP privately. An examination at home by MDST without a DN or a GP seeing the person was considered as not properly.

The group interviews with the GPs resulted in the theme 'MDST should be used with caution'. The theme is based on trust and relationship to the person in need of healthcare and to the DN. The GPs expressed that compared with phone consultations meeting the person by video-communication was seen as supporting decisions but a human meeting was expressed as a way to verify the

decision. Human meetings in healthcare between the person and the caregivers were described as most important in healthcare. Virtual meetings were described as more formal and the communication with the person and the DN were then restricted. Some virtual meetings could be used when the person is familiar and has a well known medical condition but unknown persons should be met in human meetings. The risk that the use of MDST could become routine and reduce human meetings with known persons was described as unfortunate. The virtual meeting with a well-known GP could give a placebo effect for the person in need of healthcare and a virtual meeting with an unknown GP provides less trust. The overconfidence in what MDST can do was also described by the GPs as common among persons and their families.

The use of MDST could lead to DNs doing what GPs usually do and that expanded the DNs' responsibility. The expanded responsibility requires trust and a good relationship between the GP and the DN. When using the MDST in healthcare at home the GPs preferred a DN they know and could trust. The GPs expressed that the relationship always must be maintained and nothing is allowed to disturb the trust and the relationship between the person, the DNs and the GPs. The persons in need of healthcare and the GPs described the importance of knowing each other and knowing the DN when using MDST at home.

Discussion

The persons in need of healthcare at home (Wälivaara, Andersson & Axelsson, 2009) and the GPs (Wälivaara, Andersson & Axelsson, 2010) expressed many aspects about the use of the MDST in

healthcare at home. During the interviews the trust and the relationship to each other and to the DN appeared clearly (Wälivaara, Andersson & Axelsson, 2009; Wälivaara, Andersson & Axelsson, 2010). In different ways the persons in need of healthcare at home expressed trust for the DNs and the GPs, and trust in their decisions when using or not using the MDST in healthcare at home. The great trust and the relationship with the DNs and the GPs could be one explanation for the confidence in the MDST when used at home. It seems that the persons put the MDST and the responsibility in the DNs and the GPs hands (Wälivaara, Andersson & Axelsson, 2009). Barnard (1997) argues against the thought that the influence of technology in nursing practice is neutral. The technology will always affect the practice in some way and therefore it is important in healthcare practice at home that the MDST is used in a way that maintains the trust and the relationship. According to Nilsson, Skär and Söderberg (2008) physical presence in nursing care at home is vital and important for building up a trusting relationship between the person and the DN. To know each other is described as important before starting to use technology for communication at distance in nursing at home. The interaction between nurses and physicians in teleconsultations changes traditional roles and tasks and the interaction must be based on trust (Sävenstedt, Bucht, Norberg & Sandman, 2002) which is in agreement with the GPs' reasoning in our study (Wälivaara, Andersson & Axelsson, 2010). When using MDST in healthcare at home it is important to be aware and not misuse the trust and the relationship between the person in need of healthcare, the DN and the GP.

Conclusion

The condition for using MDST in healthcare at home is the established and maintained relationship and trust between the persons in need of healthcare and the DNs and the GPs. Without the relationship and the trust there is a risk for harm in healthcare at home. When implementing MDST the view on trust and relationship when using MDST in healthcare at home is important from the persons' in need of healthcare and the GPs' perspectives. The focus on trust between the DN and the GP is also important and the condition for the use in healthcare at home. The trust and relationship in healthcare always must be maintained. The relationship may not be disturbed whatever new technology introduced in healthcare.

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Chapter 17 – Workshops

1. Using Technology to Enhance Rural Assertive Community Treatment Mental Health Services.

D.C. Jones. (United States of America).

D. Cherrey Jones is the co-founder and former practicing psychiatric nurse of this innovative company. It began providing services to the severely mental ill in their homes in 1988 through an Assertive Community Treatment approach. PS began its services by dispatching Interdisciplinary Mental Health Teams, with Psychiatric Nurses as integral part, to provide care in “an vivo” setting. These Assertive Community Treatment Teams and other community mental health services have effectively been providing such services for many years in Urban areas but the available rural mental health treatment models has been severely hampered by geography and lack of access to patient information at the point of service which essentially limits the quality and effectiveness of the service in less accessible areas. Ms Jones will describe how by addressing these issues and the additional challenges faced by the company rapid linear expansion to 43 service locations across Maryland, Delaware, North Carolina, Georgia and Florida, resulted in the development and implementation of a electronic medical management system and medical record; and lead to the proposed innovations in the use e-technology in rural ACT Teams.

The presenter will describe how the need for interconnectivity of the company at large spurred the development of E- Technology to Enhance Rural and other Mental Health Services.

Further, Ms. Jones, will briefly describe the ACT model and the challenges faced in its efforts to provide intensive mental health services to the severely mentally ill residing in rural communities. She will offer an overview the barriers such as: distance, ensuring billing continuity, documentation compliance, quality management; and most importantly the lack of availability of timely patient information such as: medical, medication, laboratories, demographics and assessment information. Additionally, she will offer her perspectives on the difficulties in communications among staff nurses, psychiatrists and other mental health professional working in isolation. The presenter will briefly describe a possible revised ACT approach integrating E-Technology to create remote access to the Electronic Medical Record at patient homes, utilize a variety of e-technologies to provide psychiatric nursing assessment, care and monitoring of patients living in homes in remote rural area; electronic prescriptions and pharmacy delivery of medication to the patients house, use of tele-nursing and psychiatry using natural supports and paraprofessional staff to support it; video conferencing of daily triage and treatment team meetings are planned.

Learning Objectives:

Gain a basic understanding of the challenges in implementing “in vivo” rural mental health. Gain a basic understanding of possible innovations planned for ACT using e-technology.

2. Nursing Terminologies and Meaningful Use.

V. Saba. K. Saranto. A. Ensio. U. Kinnunen. (United States of America/Finland)

Abstract

The paper focuses on the ‘meaningful use’ requirements in the US which calls for health data capture using standardized coded terminologies in the electronic health record (E H R)systems. Two areas will be discussed representing two goals of the Stage 1 ‘meaningful use’ which is part of the comprehensive healthcare reform package signed by President Obama on March 23, 2010. The Stage 1 ‘meaningful use’ objectives are a) Implement Computerized Provider Order Entry (CPOE) for all orders and b) Maintain a List of Diagnoses/Problems’. To accomplish these goals require medical and nursing terminologies. This presentation will also described how the Clinical Care Classification (CCC) System can be used in CPOE and E H R systems to support implementation of ‘meaningful use’.

Background

Meaningful Use

Meaningful Use is a new federal regulation in the United States (US) that attempts to address performance measures using information technology as part of the Health Information Technology for Economic and Clinical Health (HITECH) Act of 2009 to promote the adoption of electronic health record (E H R)

systems (Cartwright-Smith, Thorpe, Burke, Rosenbaum, 2010). One major objective of the Act is to determine healthcare outcomes that can improve quality, safety, and efficiency with care goals that provide access to comprehensive patient healthcare data using evidence-based order sets and computerized provider order entry (CPOE) systems.

Meaningful Use impacts on the electronic documentation for the Stage 1 Objective for Health Outcomes by implementing: a) CPOE and b) Maintaining a Problem List of Active and Current Diagnoses. Both of these requirements impact on medical and nursing practices and the services they provide which should be integrated into a patient plan of care (PPOC) for use by all healthcare providers. The integrated PPOC will use the Clinical Care Classification (CCC) System terminologies for the documentation of the patient healthcare services with the medical terminologies required for the electronic documentation of the CPOE in the E H R.

Nursing Terminology

Clinical Care Classification (CCC) System

The Clinical Care Classification (CCC) System, which is the first national nursing terminology standard approved in 2007/8 by the Secretary of Health and Human, can be used for 'meaningful use' requirements (Saba, 2007). The CCC System consists of two interrelated nursing terminologies: CCC of Nursing Diagnoses and Outcomes, and the CCC of Nursing Interventions and Actions; both of which are classified by 21 Care Components. The Care

Components provide the framework that links the two terminologies to each other and enables them to be mapped to other health-related classification systems. The CCC System is designed to identify the discrete elements of nursing practice. It provides a unique framework and coding structure for capturing the 'essence of patient care' in all healthcare settings.

The CCC System was developed from a national research study of almost 10,000 live patient records. The CCC System terminologies were empirically developed from the statistical analyses of approximately 40,000 problems/diagnoses and 70,000 interventions, treatments, services collected from text phrases related to an episode of patient care.

The CCC System is a standardized framework of the four levels designed to allow atomic-level concepts (data) to flow upward as well as downward. At the highest level the CCC System Framework consists of four healthcare patterns: 1) Health Behavioral, 2) Functional, 3) Physiological, and 4) Psychological each representing a different set of Care Components. The second level consists of the 21 Care Components which serve to classify the two terminologies and defined as a cluster of elements that depict one of four healthcare patterns. The Care Components represent holistic classes of patient care and provide the framework to facilitate computer processing in the E H R . The third level consists of: 1) 182 nursing diagnosis concepts representing concrete patient problems; and 2) 792 nursing interventions and actions (198 interventions each with one of 4 action types (assess, perform, teach, and manage) each depicting a unique single atomic-level

concept. The fourth level is represented by the expected and actual outcomes 182 diagnoses each with one of 3 outcomes (improved, maintained, and deteriorated).

The CCC System was designed for electronic documentation of patient/nursing care in E H R systems in any healthcare setting and consists of atomic-level concepts, which are coded with a unique identification number and definition. The CCC is interoperable, integrated into SNOMED-CT, conforms to the ISO Reference Terminology Model for Nursing, recognized by the ANA, and several other characteristics of a terminology. It is being used in nursing practice, education, administration and research See the CCC web site for further information: <http://www.clinicalcareclassification.com>

Computerized Physician Order Entry

Computerized provider order entry (CPOE) systems are currently being mandated by the US federal government for inpatient hospitals as part of the HITECH Act of 2009. Electronic CPOE Systems are being required to reduce errors, improve communication among and between healthcare providers etc., as the patient moves through the continuum of care. This requirement--conversion from paper to electronic documentation of healthcare services--is a new initiative to implement the E H R.

Traditionally, a patient is admitted by a physician because the patient has a medical or surgical condition that needs to be treated in an inpatient hospital. The admitting physician primarily focuses on the specific patient's medical, surgical, and/or other healthcare

condition at that point in time. On the other hand, the admitting professional nurse focuses on the patient holistically and conducts a ‘head to toe’ physical assessment on admission as required by The Joint Commission. The admission assessment collects comprehensive data pertinent to the patient’s specific condition as well as the patient’s holistic health status. The admitting nurse also develops a plan of care for the patient that follows the professional standards of practice, namely the nursing process, which includes: assessment, diagnoses, outcome identification, planning, implementation and evaluation (ANA, 2003; Kinnunen & al 2009). The nurse includes in the plan of care a list of nursing orders using the CCC Nursing Interventions and Actions which are based on nursing diagnoses, the patient’s medical condition, and other nursing orders that the nurse is legally responsible for professionally.

Usually the two assessments and two sets of patient care orders [Current Procedural Terminology for medical orders and CCC of Nursing Interventions and Actions for nursing orders) overlap and provide a duplication of effort (AMA, 2010; Saba, 2007). An E H R can correct this effort by mapping and unduplicating the medical admission assessment with the nursing admission assessment. Together that can be used to develop a Patient Plan of Care (PPOC) which can include a combined unduplicated set of physician and nursing orders. Thus, the Stage I Objective requiring a CPOE would include medical and nursing coded (CCC System) terminologies for the admission assessment and patient care orders that can be an integral part of a PPOC for an E H R.

Maintaining a Diagnosis/Problem List

Maintaining a Problem List of Active and Current Diagnoses is second part of the ‘meaningful use’ Stage 1 Objective for Health Outcomes. The generation of both the physician diagnoses using the 10th Revision of the International Classification of Diseases (ICD) coded disease conditions and nursing diagnoses using the CCC of Nursing Diagnoses also overlap with each other (Saba 2007). It is of interest that generally there are more than one nursing diagnoses for each medical diagnosis which occurs because the nurse assesses the patient holistically whereas the physician primarily identifies only the specific admitting diagnosis. Also the Stage 1 Objective requires the distinction between current or admitting diagnoses/problems and active diagnoses/problems generally identified by the nurse that represent other patient healthcare conditions not being treated. (For example: A patient admitted for pneumonia may also have a visual condition e.g. Glaucoma which may need nursing care but is not listed as a medical diagnosis, but is listed as a nursing diagnosis). Once developed the Maintained Problem List can also be an integral part of the PPOC where it can be maintained and updated as the patient moves through the continuum of care in an E H R.

It should be noted that to develop a reliable ‘Diagnosis/Problem List “a method or process is needed to electronically reconcile and unduplicate the list of current and active diagnoses. Generally, a patient may have many different diagnoses, by many different specialists/ consultants for many different diagnoses, and from many different hospital admissions. These all have to be reviewed

and evaluated using electronic processes to separate and unduplicate the current from the active diagnoses.

Patient Plan of Care (PPOC)

The Patient Plan of Care (PPOC) emerged from a standards development group who identified that a standard was needed for the documenting nursing practice during a hospitalization. This resulted in the selection of the CCC System which met the standards criteria and was approved as the first national nursing terminology by the U.S Department of Health and Human Services (HHS). The PPOC was designed and developed by the Integrating the Healthcare Enterprise (IHE), an organization which takes the approved healthcare standards and prepares the code for their input in an E H R. The PPOC was developed by the IHE in 2007-2009 which follows the six steps/standards of the nursing process as the model for professional documentation of patient care by nurses and other allied health professionals using the CCC System as the terminology of choice.

The PPOC also contains the content necessary for appropriate interoperable exchange of patient information in the EHR between different healthcare settings. The IHE determined that the PPOC could be used for a **status report** at any point in time, primarily: (a) change in shifts, (b) change in departments, and (c) change in systems. The PPOC does not replace the detailed 'head to toe' nursing admission assessment and/or discharge summary but rather provides a quick look at the patient's status at a given point in time.

CCC and Meaningful Use

The CCC System is the appropriate nursing terminology for supporting the implementation of Meaningful Use based on the CCC System's standardized framework, coded structure, and interoperable capability for documenting of nursing practice in the E H R. The CCC System can be used to implement 'meaningful use' Stage I Objectives. And, used to develop and integrate the nursing portion of the PPOC for the documentation of the continuum of care in the E H R. The E H R makes electronic data possible and for the CCC System to integrate nursing practice with medical practice for effective patient care.

Meaningful Use: Use Case

A physician admits a patient to an inpatient hospital with a medical diagnosis of 'Pneumonia' and the nurse also admits the patient with a nursing diagnoses of 'Respiration Alteration' and 'Visual Alteration'. Together they can be integrated and listed together for the "Maintaining a Problem List of Diagnoses. Based on the physician assessment the physician requests the following patient care orders: 1) provide oxygen therapy, (if shortness of breath); 2) give injection (penicillin) administration (if temperature over 100 degrees). Based on the nursing assessment the nurse agrees with the physician orders but adds a specific nursing order, 3) to assist patient with activities of daily living' (ambulation, eating, walking).

Together these orders provide the beginning PPOC. The outcome measures can easily be obtained; that is the patient 'improved' since the Pneumonia has been cured – no temperature, no

shortness of breath and no need to assist patient with activities of daily living.

The nursing interventions actions can also provide several outcome measures: a) length of time and degree of oxygen therapy; b) amount and number of penicillin injections, c) number and type of activities of daily living assistance provided.

All of the above diagnoses, actions, interventions and outcomes can be coded using CCC System and ICD. This is a simple example of the integration of the medical and nursing patient care diagnoses, interventions (orders), and outcomes.

Objectives of Session

1. Describe Meaningful Use and its use in the United States.
2. Highlight the two Goals of Stage I Objective for Meaningful Use
3. Describe the value of the Clinical Care Classification (CCC) System as a nursing terminology standard.
4. Outline how the CCC System can be used in Meaningful Use.

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Chapter 18 – Posters

1. School nurses - the benefits of a digital database.

J. Neves-Amado. C. Festas. C. Braga. M. Vieira. (Portugal).

Introduction

Catholic Nursing Center integrated in the Nursing Teaching Unit from the Catholic University of Portugal, develops the Health School Project to achieve gains in health in basic and elementary school communities. This project includes teaching aims, services in community and research.

In academic year of 2008/2009, nursing activities were handmade registered. To improve the quality of this process it was necessary to evolve into a digital format. This upgrade allows teachers and students to data enter and, in real time, facilitate consultation and obtaining the necessary data for a structured and consistent intervention across the different places.

Material and Methods

We used Microsoft Access® for its accessibility, ease of creating complex databases and data export. The database was built to use International Classification for Nursing Practice (ICNP ®). The data entry interface is divided in: Academic, Health, Therapy, Nursing Diagnoses, Nursing Interventions, Nursing records. The minimum data set on the parameterized system arose from a prior

systematic most frequently nursing diagnosis and interventions (30 focus and 25 interventions) during the previous school year, where the project took place.

Results

At the end of the academic year of 2009/2010, we obtained from the digital database the following outcomes: 1832 clients from six different intervention places with 3778 nursing appointments, 4456 nursing diagnosis and 8227 nursing interventions.

Discussion

The development of digital database allows the data entry to become more systematic, safe and accessible via an intuitive interface.

Counts of attendances outbreaks and nursing interventions are now possible by using queries and reports. These queries and reports make possible, at any time, counts of nursing appointments, focus and nursing interventions.

The outcomes have proved to be essential for planning and justification of implemented actions for health project coordinators, educational institutions and nursing staff. Also, for students and nursing teachers, the outcomes enhanced the monitoring of higher complexity cases, continuity of care and research throughout time.

By systematic use of digital data entry form, other needs had been identified. We are already developing a family assessment module,

a resource management of the "nursing offices" and an improvement of the automatic reports.

2. Being nursing student: beginning nursing care process documentation with ICNP.

C. Pestana. M. Bettencourt. P. Câmara. R. Figueiredo. (Portugal).

The clinical nursing teaching is an ideal area of training and development of future nurses. Their primary purpose is to break down the knowledge acquired in theoretical context into real problems related with practice to allow the development of know-how associated with the process of care.

A key component of this process is the documentation of care, whose importance has been widely discussed in nursing literature. Furthermore, the need for computerization of nursing records has challenged nurses and the nursing students to use a classified language. Some countries, including Portugal, have chosen to adopt ICNP.

From this perspective, during the first clinical teaching, is asked to nursing students to appoint the diagnoses and nursing interventions they are able to identify at this stage of the process of teaching and learning (1st year), with reference to the content taught in the classroom and the theoretical model underlying the nursing academic curriculum.

In this context, this project has been developed from the following research questions: Which diagnoses and nursing interventions

were documented by Students of Nursing in the first experience of clinical teaching? What are the axes of the ICNP appointed in diagnoses and nursing interventions documented by Students of Nursing in the first experience of clinical teaching?

Our aim is to identify the diagnoses, interventions and axes of ICNP documented by the nursing students in their first clinical teaching experience.

Method

Exploratory-descriptive study.

Participants

Care plans developed by Nursing Students of ESESJCluny in their first experience of clinical teaching in 2009.

Procedures for collecting and analyzing data

Content Analysis of the care plans developed by the Nursing Students in their first experience of clinical teaching.

Results and Conclusions

A preliminary analysis of data suggests that the most frequently identified axes by students in nursing diagnoses are the focus (Eg: ability to eat, ability to communicate and pressure ulcers) and the judgment. In terms of nursing interventions, aside from the axis of action, the most identified axes are means and location. It appears that some axes are seldom appointed, at the level of diagnoses or interventions, such as the axis time.

Importance of the Study

The study results are an important source of information for teachers, regarding the need to work more closely with students the documentation concerning some of the axes often neglected in the formulation of diagnoses and nursing interventions, taking into view the promotion of a global approach to the person that is being taken care of.

3. Family transition.

M.J. Campos. (Portugal).

The appropriate way to develop nursing minimum data set (NMDS) is nurturing nursing practice with knowledge on nursing focus of attention and nursing therapeutics. Pereira highlighted the need of knowledge development on Parenting, Family Caregiver, Self-Care, and Prevention of Body Processes Complication. This focuses of nursing practice, included in International Classification for Nursing Practice (ICNP®), were assumed as the main focuses for structure nursing indicators. The results of this study point out the concept of sensitivity to nursing care: the ICNP® focuses for the domains of practice, the different types of nursing indicators and the set of information items for the NMDS. So, after this important large approach several studies have started.

The aim of this poster is to present the dimensions of the transition when someone becomes self-care dependent from others or something and this integration in a family.

Interviews and observation were used as a data collection technique. Six families were interviewed, three times in one month, at home, after discharge from hospital. The data were analysed using NVivo7.

This complex transition is changing over time. There is a tendency for an increasing awareness of the families about the situation. The changing and the difference are marked by the dependency of a family member, preventing him/her from performing his/her familiar roles and making impossible self-care activities. Since one of the members has changed, the nuclear family feels involved, their daily lives change as there is a focusing towards the dependent person and the care he needs. Concerning problems and difficulties at home, people experience lack of information and capacity, that is to say, they need training and skills, which, on the one hand makes them learn through trial and error and on the other hand produces lack of confidence and low perception of efficacy, which makes transition more difficult. The nursing therapeutics that emerged from the research, able to influence the experience of transition in a positive way, are: a regular contact anticipates the family's needs; promoting the integrity of the family process, by helping families to be aware of the transition; helping to organize the family activities, planning cares with them and establishing a care schedule; giving families not only information and skill training about care but also knowledge about autonomy promotion relating the dependent person, at last nurses should help families managing the community resources.

Understanding the properties and inherent conditions in a transition process will lead to the development of nursing therapeutics congruent with the experiences of clients and their families. In the case of a dependent client on self-care and this (re)integration in a family, the nursing therapeutics intent to develop people's awareness of their condition, skills on making decision, taking action, accessing resources and knowledge.

4. Research of the nursing diagnosis sedentary lifestyle among students.

J.S.M. Oliveira. A.C.B. Santos. K.L. Rabelo. V.M. Silva. B.A. Beltrão. D.B.R. Chaves. C.S.M. Marques. T.A. Leandro. (Brazil).

The prevalence of habits related to physical inactivity has increased among children and adolescents. Researches highlighted the high frequency with which this behavior can be observed among individuals in this age group. For NANDA-I, Sedentary Lifestyle can be defined as a lifestyle characterized by a low level of physical activity. This diagnosis allows an adequate planning of nursing interventions aimed at modifying habits while still in ages of children and adolescents, thereby reducing morbidity and mortality related to cardiovascular diseases. This study aims to investigate the occurrence of nursing diagnosis Sedentary lifestyle among schoolchildren in a public school education. Cross-sectional study carried out with 58 elementary school students of a public school in Fortaleza, Ceará, Brazil. For data collection, an instrument based on defining characteristics and related factors of the diagnosis was

elaborated. The diagnostic inference was performed according to the analysis of information obtained during an interview, adopting the steps of diagnostic reasoning recommended by Gordon. The children were aged between 7 and 14 years and were enrolled between grades 1 and 9. The diagnosis Sedentary lifestyle was identified in 15.5% of the children. They presented two characteristics proposed for diagnosis: "Chooses a daily routine lacking physical exercise" and "Verbalizes preference for activities low in physical activity". The defining characteristic "Demonstrates physical deconditioning" was not observed in any of the children. Regarding the characteristic "Chooses a daily routine lacking physical exercise", it was observed that only the students who presented the diagnosis reported a practice of no regular physical activities (15.5%). Children who did not have the diagnosis reported that they adopted different exercise routines at least three times per week and an average duration of an hour. Among the activities reported, soccer was mentioned most frequently (73.5%). The practice of activities that require minimal efforts was also investigated, and the finding shows that 25.86% of students watched television for more than 4 hours daily. The presence of characteristic "Verbalizes preference for activities low in physical activity" was detected in 6.90% of children who, besides reporting watching television for more than four hours, also referred to not practicing physical activities routinely. Regarding the related factors, children who had the diagnosis mentioned the "Lack of interest" as the main reason to not perform physical activities (44.4%). "Lack of motivation", as well as lack of company, consisted in excuses presented by 22.2% of the students. Although the

diagnosis Sedentary lifestyle does not present a high prevalence among the children and adolescents evaluated, it is necessary to adopt actions to modify some of the observed behaviors. Among these behaviors the prolonged stay in front of television and the lack of interest in physical activities reported by students are highlighted.

5. Clinical indicators of caregiver role strain in caregivers of individuals with stroke.

V.M. Silva. A.R.S. Oliveira. A.G.S. Costa. V.E.C. Sousa. R.C. Rodrigues. D.B.R. Chaves. M.V.D.O. Lopes. T.L.D. Araujo. (Brazil).

When a functional decline occurs due to some pathological process, is common that family stays involved in many aspects of the supervision and provision of direct care. The stroke is a chronic degenerative disease that represents the third leading cause of death in industrialized countries. It is also the leading cause of disability among adults that represents an urgent need for the caregiver - the focus of this study. It aims to improve this with nursing care, making it more individualized and specific and, in the case of stroke, that can brings different consequences for caregivers. The identification of clinical indicators or defining characteristics can contribute to a better accuracy, improving the reliability on the diagnostic inference. The purpose of this study was to analyze the accuracy of the defined characteristics of the nursing diagnosis Caregiver role strain. This cross-sectional study was conducted among 42 caregivers of individuals with stroke. It was carried out in

Fortaleza, Brazil, in 2010, in a Home Care service. A formulary based on the defining characteristics of NANDA was built to identify Caregiver role strain. Six evaluators participated in the study and decided about the presence of the diagnosis and clinical indicators. The software Excel and SPSS version 15.0 were used. The level of significance was set in 5% ($p < 0.05$). All the ethical recommendations were fulfilled. Caregiver role strain was identified in 73,8% of the sample. The defined characteristics more prevalent were Apprehension about future regarding care receiver's health (100%), Withdraws from social life (81, 0%), Changes in leisure activities (81.0%), Inability to complete caregiving tasks (73.8%), Increased nervousness (73.8%), Disturbed sleep (64.3%), Concerns about family members (64.3%), Lack of time to meet personal needs (61.9%) and Increased emotional lability (61.9%). The more sensitive defining characteristics were Withdraws from social life (93.55%) and Changes in leisure activities (93.55%), and both presented high negative predictive value (75.0%). However, the characteristics that were considered more specific were: Apprehension about care receiver's care if caregiver unable to provide care, Apprehension about future regarding care receiver's health, Fatigue, Low work productivity, Hypertension and Anger (all with 90.9%). The defining characteristic Increased emotional lability showed higher positive predictive value (92.3%). Studies that can contribute to outline the profile of the most frequent defining characteristics in a specific population should be stimulated. Such research can be useful as a guide for nursing practice. Nursing actions have to be implemented during the entire

hospitalization period, so the family can acquire the knowledge necessary for continuing care at home.

6. Nursing diagnoses of domain nutrition identified in patients with stroke.

V.M. Silva. A.R.D.S. Oliveira. A.G.S. Costa. V.E.C. Sousa. D.B.R. Chaves. F.E.C. Alves. M.V.D.O. Lopes. T.L.D. Araujo. (Brazil).

Primary prevention is essential to control the stroke and this can be accomplished through the management of several factors, including the nutritional care. Prospective studies show that an adequate nutritional intervention has a positive impact in reducing the incidence of stroke. Malnutrition predicts a poor outcome in the evolution of the disease and difficult feeding, what is common in patients with stroke. This condition is determined by the extension of the injury and by the brain affected area. Moreover, malnutrition, besides being considered a predictor of mortality, is usually associated with the presence of pulmonary infections, disability and long periods of hospitalization. To NANDA, there are four nursing diagnoses concerning nutrition that can be present in patients with stroke: Imbalanced nutrition: more than body requirements, Imbalanced nutrition: less than body requirements, Risk for imbalanced nutrition: more than body requirements, Impaired swallowing. Anthropometric measurements, laboratory analysis and clinical signs measurements are useful to identify human responses on nutrition. The objective of this work was to identify the nursing diagnoses of domains nutrition's of the Class ingestion of NANDA

Taxonomy II. A cross-sectional study was conducted among individuals with stroke. It was carried out in a Home Care service of Fortaleza, Ceará, Brazil, in 2010. A formulary was built in order to identify defining characteristics of the nutritional nursing diagnoses of NANDA, also considering anthropometric measures. The software Excel and SPSS version 15.0 were used. The level of significance was set in 5% ($p < 0.05$). All the ethical recommendations were fulfilled. The sample consisted by 62 patients, the average of age was 73,57 years ($\pm 15,54$) and 59% were women. Half of the sample had studied for one year, the time after the last stroke was 17 months and the average of strokes was two. The mean body mass index was around 16.51 (± 4.47). To accomplish the activity feed: 70.5% were totally dependent, 19.7% needed help and 9.8% were independent. It was found that 45.9% of patients were using enteral nutrition and 11.5% were tracheostomized. This study identified the nursing diagnoses: Impaired swallowing (72,1%), Imbalanced nutrition: less than body requirements (64%) and Imbalanced nutrition: more than body requirements (1,6%). The diagnosis Risk for imbalanced nutrition: more than body requirements have not been identified. The results show the relevance of home health care of nurses and caregivers on nutritional status. Strategies in the support of nutrition should be precocious in the care of patients with stroke.

7. Risk factors for falls in aged group: a case-control study.

B.A. Beltrão. A.G.D.S. Costa. A.R.D.S. Oliveira. T.L.D. Araujo. M.V.D.O. Lopes. C.M.B. Ximenes. J.D.P. Vasconcelos. G.F. Holanda. M.B.L. Ramos. H.C.C. Moraes. T.A. Leandro. (Brazil).

The objective was to identify the main risk factors of the Nursing Diagnosis Risk for Falls, as well as to check the statistic association between the risk factors from a fallen aged group and another group with aged persons without falls in the last six months. A case-control study with 30 elderly in each group, with similar characteristics as gender, age and stroke occurrence (because this pathology is very common to this population, with many physical consequences that could increase chance of falling). The data were collected from January to March 2010 with elderly people of two Associations of Rehabilitation and a Social Center at Fortaleza, Ceará. A form with questions about risk factors of Nursing Diagnosis Risk for Falls, from NANDA-I, was used. The tests and auxiliary scales used to identify the intrinsic risk factors were: the Balance and gait Tinetti Scale (Performance-Oriented Mobility Assessment), the Snellen Scale to check visual capacity and the Mini-Mental test. The ethic aspects were obeyed and the population was oriented about the study objective. The research was approved by an Ethic Committee of Ceará Federal University with protocol number 314/09. The data was organized in worksheets by Excel 8.0 and analyzed with SPSS software, using the McNemar statistical test. Each group was composed mostly by women (66.6%) with average age of 70.4 years among fallers, and 70.7 years in non-

fallers group. Most of the elderly was retired; just 7.7% of fallers participants had a job, while 17.7% of non-fallers worked. The average scholaryty was slightly bigger in the fallers group (4.7 years \pm 3,5), than the non-fallers group (4.2 years \pm 3,3), while the average income of fallers was slightly less (397 reais \pm 271) than the non-fallers (448 reais \pm 343), but beneath the minimum wage received by the majority of the population. Therefore, this result suggests that the income of these elderly is not sufficient to meet their needs. Among the 47 risk factors of the investigated diagnosis, 33 (70.2%) were present in at least one participant. The “diminished mental status” and “visual difficulties” were the most expressive factors, perceived in 73.3% of the elderly with falls in the last six months, and in 80% of the non-fallers. The risk factors statistically significant according to the McNemar test were: “foot problems” ($p=0.021$), “proprioceptive deficits” ($p=0.057$) and “impaired balance” ($p=0.092$); these last two factors were next to the p value regarded ($p\leq 0.05$). The data found has showed higher relation of intrinsic factors and falls occurrence in aged population.

8. Ineffective airway clearance in asthmatic children: analysis of the effectiveness of an intervention.

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This work has the thesis that the nursing care with the use of an intervention facilitates the clearance of the airways of asthmatic children. This study aimed to analyze the effectiveness of an

intervention for nursing diagnosis ineffective airway clearance (IAC) in asthmatic children. It was developed a research of type clinical, controlled and randomized trial, of an intervention applied to nursing diagnosis IAC of asthmatic children and were observed their effects on outcomes. The survey was conducted in a children's hospital network in the Fortaleza – CE in months of July to September of 2009. The sample consisted of 42 asthmatic children of both sexes in hospital in that institution (21 in each group) who met the eligibility criteria. The children selected were randomly divided into two groups by simple random sampling: the case group and control group. The control group consisted of those children who received only standard treatment of unit hospital internment. The intervention group was composed of children who also receive the standard treatment, received the intervention proposed in this study. The data were organized in tables and analyzed on the basis of absolute and percentages frequencies and measures of central tendency, measures of dispersion and tests of association (chi-square and Fisher) and mean differences (t test) and correlation coefficients Pearson and Spearman. Was considered as statistically significant those with $p < 0,05$. Anticipating the study, the research project was approved by the Ethics Committee of the Federal University of Ceará. The main findings of this study show that there was a prevalence of males in the sample as a whole. The children studied had an average age of 20.90 months ($\pm 10,382$), average weight of 11.3 kg ($\pm 2,739$) and a median of 2 days of hospitalization. With respect to medication use by children during the hospitalization, the medication was more used by both groups was dipyrone, followed by fenoterol and hydrocortisone. We can observe

that the defining characteristics prevalent in both groups were adventitious respiratory sounds, ineffective cough and decreased breath sounds. The nursing diagnosis IAC submitted by participants was related to factors bronchial secretions, excessive mucus, spasm of the airways and hyperplasia of the bronchial walls. According to data from this study can be noted that before the intervention there was no statistically significant difference in health status of children in both groups. Already, after the intervention is applied, two indicators, choking and breathing sounds, had an average of more jobs in the intervention group, thus demonstrating the improvement in airway obstruction of children who received the intervention. In the intervention group, the difference between the health status of the child before and after intervention was higher than the control children, demonstrating the effectiveness of intervention.

9. Accuracy of clinical indicators of ineffective airway clearance.

V.E.C. de Sousa. M.V.D.O. Lopes. T.F. Oliveira. R.V. do Nascimento. A.R.D.S. Oliveira. A.G.D.S. Costa. (Brazil).

The use of good clinical indicators contributes to the assignment of nursing diagnoses making the care plan more effective. Accuracy determines the direct relationship between defining characteristics and the presence or absence of a specific nursing diagnose. The need for research focused on diagnoses' accuracy motivated the development of this study, whose purpose is to examine the

accuracy of clinical indicators of "Ineffective airway clearance" (IAC) in patients in post-operative period of cardiac surgeries. Cross-sectional study developed in the post-operative unit of a specialized hospital of Fortaleza-CE. A sample of 98 patients was selected consecutively and it was composed by individuals of both genders, age above 18 years old and evaluated in the immediate post-operative (up to 48 hours). The data collection occurred within the period of January to April/2010 from a form, which had been subjected to a pre-test and applied by research project participants, focused on nursing terminologies, after training and evaluations. The components of the nursing diagnose IAC were evaluated according to the NANDA-I Taxonomy. Clinical cases were formulated after the data collection and five specialists performed the diagnostic inference. For the organization and statistical analysis of data collected, the software Excel and PASW were used. The level of significance adopted in the study was 5%. The proportion of men and women was equal in the sample, with predominance of people with low income and low scholarship, with average of 55.89 years old and living with a partner. The clinical diagnosis angina and coronary diseases were more prevalent, increasing the incidence of reconstructive surgeries in the sample. The high incidence of smoking was showed as a favorable factor for dysfunction in the process of airway clearance. The prevalence of ICA was 33.7%. Four of thirteen defining characteristics have significant associations with the studied diagnosis: "dyspnea", "absence of cough", "adventitious breath sounds" and "ineffective cough", and the last two were accurate. Some of related factors were more specific that sensitive: "asthma", "hyperplasia", "allergic

airways" and "infection", and the last two were the most accurate. The related factors: "smoking", "retained secretions" and "excessive mucus" increased the risk for IAC. Peculiarities of post-operative period and the high incidence of smoking were identified as elements linked to the incidence of clinical indicators. Contributions left by specialists were suggestions concerning the modification of the nomenclature and the inclusion of a related factor for post-operative period. The study demonstrated the existence of difference in the specificities and sensitivities, which are influenced by population characteristics. The need of further studies development in other contexts was emphasized. Changes in the trial of clinical indicators were attributed to the differences in the specialists' interpretation.

10. Imbalanced nutrition: more than body requirements in pregnant women.

E.R.F. Moura. M.M.Q.P. Valente. M.V.D.O. Lopes. (Brazil).

Cross-sectional study carried out in Itaitinga-CE-Brazil, which objectives was to identify the socio-economic and obstetric profile of pregnant women, to verify the prevalence of Nursing Diagnosis: "Imbalanced nutrition: more ingestion than body requirements" in pregnant women, to verify the defining characteristics and the factor related to the referred diagnosis, and to describe the predictive power and accuracy of defining characteristics and related factors to diagnosis. The sample of 146 pregnant women was established with a confidence level of 95%, sample error of 5% and

Prevalence of 50%. Data was collected from April to September 2009. They were organized in Excel, version 2003, analyzed in the Predictive Analysis Software (PASW) version 18.0 and R version 2.8.1. Absolute and percentage frequencies of nominal variables were calculated. For the quantitative variables, the mean and standard deviation were presented. For independence verification between nominal variables the Pearson's chi-square test was applied. Fisher exact probability test or Fisher-Freeman-Halton test were applied when at least 25% of expected frequencies were below five. For the magnitude of association between nominal variables, Odds Ratio (OR) was calculated. For the mean deviation analysis the Kruskal-Wallis test was applied. For accuracy verification of defining characteristics, sensibility, specificity and predictive values were calculated. Pregnant women average age was of 24.34 years, mean family income of R\$ 168.30, 126 (86.3%) reported common-law marriage /married, 96 (65.8%) were of home, 77 (53.4%) had fundamental education. Average parity was 1.24, 60 (41.1%) were nulliparas and 87 (57%) were in the second quarter of pregnancy. Twenty (13.0%) pregnant women presented low weight, 89 (61.0%) appropriate weight, 23 (16.0%) overweight and 14 (10.0%) obesity. In pregnancy, low weight was reduced in 50.0%, eutrofism in 51.7% and the cases of overweight increased in 160.8% and obesity in 135.7%. Seven (4.8%) pregnant women presented triceps skin fold thickness greater than 25 mm. The consumption of the food group A prevailed, 141 (96.6%) pregnant women were sedentary, 55 (32.3%) eat for internal suggestion besides hunger, 80 (42.5%) to follow the food schedule, 73 (42.0%) eat while watching television and 38 (26.0%) eat beyond metabolic requirements. There was statistically

significant association between pre-gestational nutritional and gestational state ($p=0.034$); gestational nutritional state and age ($p=0.001$), parity ($p=0.026$) and gestational age ($p=0.002$). The more sensitive defining characteristics were sedentary lifestyle (97.10%), eating in response to internal stimulation (86.98%), obesity/overweight and triceps skin fold thickness (> 25 mm) (100%). There was low specificity, eating in response to external stimulation as the most specific (70.13%). There was statistically significant association in: eating in response to internal stimulation besides hunger ($p=0.022$), overweight/obesity ($p=0.000$) and triceps skin fold thickness (> 25 mm) ($p=0.014$).

11. Profile of nursing diagnoses in stroke patients.

V.M. Silva. R.P. Moreira. T.F. Cavalcante. N.G. Guedes. T.L.D. Araujo. M.V.D.O. Lopes. (Brazil).

Nursing care is essential throughout the process of treatment and rehabilitation, because it helps in the prevention or early detection of complications, making it possible to achieve the well-being of patients. The establishment of the profile of nursing diagnoses contributes to the formulation of evaluation instruments, as well as the planning, implementation and evaluation of nursing care. The aims of this study were to analyze the profile of the nursing diagnoses in the acute phase and the profile of the class activity/exercise in the rehabilitation phase of stroke patients. This was a cross-sectional study carried out with 212 patients, who presented a medical diagnosis of stroke. Of these, 91 were in the

acute phase and 121 in the rehabilitation phase. For the collection of information, interviews, physical examination and consultation of the records were used. For naming the nursing diagnoses, the Taxonomy II of the NANDA-I was used as a reference. It is emphasized that, for patients in the rehabilitation phase, only the diagnoses for the class Activity/Exercise were formulated. In the acute phase, the majority of stroke patients were female (54.9%). Regarding education, the median years of schooling was 1.0 year (± 3.4) and 75% of the patients had up to five years of schooling. The mean age of stroke patients was 64.2 years (± 14.2). Each patient with stroke had a median of 10 nursing diagnoses (± 3.7). The patients presented a mean of 11.7 (± 6.2) defining characteristics, 6.8 (± 3.4) related factors, and 5.7 (± 3.4) risk factors. The most frequent nursing diagnoses in the acute phase were the deficits of self-care and the diagnoses of risk related to immobility. In the rehabilitation phase, there was a predominance of males (52.9%), of patients without a partner (52.9%) and of retired or pensioners (83.3%). The mean age was 61.6 years (± 12.4) with most of the patients up to 70 years old. Half of the study sample attended school for up to five years and had monthly incomes of up to US\$ 123.20. In relation to nursing diagnoses, half of the study sample had up to seven diagnoses present and the mean of the defining characteristics was 25.1 (± 15.4). Concerning related factors, there was a mean of 4.6 (± 2.4) factors per person and risk factors an mean of 10.1 (± 3.2) occurrences per individual. The patients had all of the eleven nursing diagnoses of the class Activity/Exercise of NANDA. Seven nursing diagnoses were often above 50%. The most frequent nursing diagnoses in the rehabilitation phase were Risk of falls and

Impaired physical mobility. This study favors the understanding of the profile of nursing diagnosis that contributes to more effective nursing interventions and evaluations in different contexts of the practice.

12. Nursing diagnoses profile presented by renal transplanted patients.

A.L.B.D.C. Lira. M.V.D.O. Lopes. (Brazil).

The nursing diagnoses identification in renal transplant patients is an adequate and important instrument, because it provides an own nursing language, facilitates the communication between the professional and the patient and defines the nurse competence working scope. This study aimed to analyze the nursing diagnoses distribution presents in renal transplanted patients of an academic hospital of Fortaleza. The population was formed by the renal transplanted who are accompanied in the renal transplant ambulatory of this hospital. It was a cross-sectional study of exploratory and descriptive character. Fifty eight renal transplant patients were evaluated between months of december/04 and april/05. The data collection instruments were: an interview script and a physical exam. The results show the masculine sex predominance, with age average about 40 years, the majority being married, with average about 2 children. The origin was of the countryside cities of the Ceará or of other country states, they had familiar income of four minimum wages on an average, they did not use any contraceptive method. The majority was retired, with low

education, catholic, without alcoholic drink and tobacco use. They had a medium duration of 52 dialysis months, mostly the hemodialysis. The most had as renal graft donor a corpse and average six year and half of transplant. Were identified 39 nursing diagnoses, 10 of which above of percentil 75, with the presence of six domains of the 12 investigated. Regarding the associations among nursing diagnoses, we find relation between sleep Pattern disturbed and sexual Dysfunction, sleep Pattern disturbed and ineffective sexuality Patterns, sexual Dysfunction and ineffective sexuality Patterns. In the diagnoses disturbed sensory Perception: visual and disturbed sensory Perception: auditory were found media differences with the age and time of dialysis respectively. The first diagnosis manifested itself in renal transplanted patients with more advanced age. The second diagnosis was present in patients with larger time of dialysis. We realize that the nursing diagnoses study provided us a larger knowledge of these patients' reality, contributing for a possible implementation of effective nursing actions for the resolution of the identified problems. This can contribute to guide the nursing assistance to the renal transplanted and to provide a better life quality to this clientele.

13. Review the nursing outcome behaviour for falls prevention: concept analysis and validation by experts.

T.L.D. Araujo. A.F. Vitor. M.V.D.O. Lopes. (Brazil).

The construction and evaluation of constitutive and operational definitions for the nursing outcomes, such as the Behavior for Falls

Prevention, by the use of scientific rigor, are increasingly required. The correct assessment of the risk of falls in the patient provides a suitable and essential substrate to improve the plan of preventive care. Therefore, the development of parameters to measure the risk of falls, specifically in the hospital setting is essential, because it is an important indicator of the quality of care. The general objective was to review the nursing outcome Behavior for Falls Prevention, concerning the nursing diagnosis Risk of falls for patients within a hospital. Methodological study approved by the Ethics Committee on Research and developed from April 2009 to June 2010. The constitutive and operational definitions were previously constructed by integrative research method and analysis of the concept "falls", by Walker and Avant model and by the use of seven criteria of psychometrics: Behavioral, Simplicity, Clearness, Accuracy, Authenticity and Ampleness. Subsequently, the constructed definitions were evaluated by experts into two phases. Experts were selected according to Fehring criteria, adapted for the study. We were submit 28 indicators to the content validation, of which 18 belong to the latest issue of NOC, five were new indicators, three were confounding variables and two were indicators of previous editions. Thus, we consider the behavior under the Prevention of Falls appropriate to evaluate the individual conduct to prevent falls and, therefore, recommend its preserve as a label of the NOC result; we were appreciate its inclusion in the Domain 4 / Class T as appropriate. Seventeen of eighteen indicators of the latest NOC issue were considered valid about the content except, Holds small rugs and those related to confounding variables, which were excluded. Therefore, 20 indicators were presented appropriate

content to evaluate the behaviors of prevention of falls in hospital. Referring to the final product of the proposed review of the NOC nursing outcome Behavior Prevention of Falls, we emphasize the benefits of its implementing in the nursing practice, to manage the risk of falls in hospitals, to prevent the development of this adverse event and its complications.

14. The development and implementation of the EHR at the University Hospital of Iceland.

H. Gunnarsdóttir. H.K. Guðjónsdóttir. (Iceland).

Introduction

LUH (Landspítali, University Hospital) is the national hospital of Iceland which serves a population of 310.000 people. In 2008 LUH had 28.600 discharges, 530.000 ambulatory visits, 14.600 surgical procedures and 3.400 deliveries. Employees are roughly 5.100.

Objective

The EHR system SAGA has been in use at LUH for twenty years. In 2007 a contract was renegotiated between the hospital and the vendor, aiming to strengthen the relationship and cooperate on developing SAGA into a more efficient software solution that LUH could use as the backbone for its modular HER.

Method

LUH and the vendor committed themselves to cooperating on designing, developing, testing and implementing specific new

functionalities or modules of SAGA. The main functional requirements with respect to documentation of nursing care were the following: (1) nurses should be able to document all data relevant to the planning of nursing care; (2) all patient data should be available in one place, be reusable and accessible to all health care professionals involved in the care of the patient; (3) overview of patients' status and treatment should be easy and complete; and (4) patient data should be accessible for retrieval and analysis for the purpose of quality improvement and administration. In 2008 a Nursing Documentation Steering Committee was established. The committee's role was to manage the development of electronic nursing documentation within the EHR and a project manager was hired. The new modules in the EHR system SAGA developed in cooperation between the committee, IT department and the vendor were:

- Vital signs and bedside use of scales and measurements
- Invasive devices
- Nursing assessment
- Discharge planning
- Nursing care plans
- Family tree to support family nursing

Results

In the year 2010 a successful implementation of some of the modules had been established at the LUH at 50 wards at the

hospital. A careful preparation was needed before the implementation. New work procedure guidelines were in place addressing electronic documentation instead of paper documentation. Emphasis was on diverse instructions for managers and contact person in the wards who were likely to be successful spokesman for changes in SAGA implementations. The goal was to promote further safety in handling medical and nursing records, systematic real time documentation and treatment of patients, promote better accessibility and communication of information regarding treatment of patients and to minimize disruption in nursing care.

Conclusion

The commitment to the SAGA EHR system at a government health policy level has made it possible to bring nursing practice to a standard based on the nursing process, evidence, and standard care plans supported by a terminology standards and structured data.

15. Implementation of the electronic nursing records in Madeira: an experience.

S.R.P. Catanho. I.M.P. Rebolo. S.M.F. Gonçalves. E.H. Jesus. S.C.L. Faria. (Portugal).

Nurses, in their practice, face hindrances documenting nursing care, sharing information and in continuity of care. The Health Information Systems (HIS) and Nursing came about due to the development of new health policies aiming at the articulation and communication between health professionals/ institutions.

However "Never before has such a need for information adequate to giving care been felt. The way this information is supplied and used has changed rapidly with the development of specific diagnostic and support applications and, still, due to the pressure generated by the need to be increasingly efficient toward health costs". (Direcção-Geral da Saúde, 2002).

Nurses in the Autonomous Region of Madeira (ARM) have been developing projects for the use of International Classification for Nursing Practice and its incorporation into the daily paper-based documentation. Recently, they have undertaken efforts towards allowing electronic documentation of the care process. In this context, comes this document that has a purpose to divulge our experience in implementing Electronic Nursing Records.

In 2003, for its implementation, a coming together of different health professionals, the uniformization of their language and creation of a software that allowed nurses to document their practice were all necessary. A fresh informatics application was developed, uniquely for primary and differentiated health care, that allows for the documentation and parameterization by units of health care of diagnoses/expected outcomes/interventions/nursing outcomes, based on continuous evaluation, related factors and observable facts. It has ICPN, version 1.0, as language of reference, articulated with natural language. It organizes interventions to implement, allows for integration of other modules and contemplates the Nursing Minimum Data Set (NMDS), with automatic indicator creation.

In November 2008 the following modules were implemented in a pilot service of differentiated health care (neurosurgery): Electronic prescription of drugs and monitoring data. The integration of ENR module and respective service parameterization followed. Worthy of note is that the nursing team joined the project with enhanced motivation, once it went straight to their need for documenting practice and allowed the continuity of care. Gradually, the application is being implemented in other differentiated health care services and the integration of the afore-mentioned modules is expected, for 2011, into primary health care services.

To accomplish this project, a few strategies were defined:

- Identification of elements of reference in each care unit and health centres to cooperate with the group implementing ENR;
- Description of most frequent and important focus/diagnostics/expected outcomes/ interventions and results per service;
- Parameterization of each service;
- Training nurses and integration into services of monitoring, electronic prescription modules and ENR module.

Perfecting the application as to integrate contents of ICNP Version 2 and Subsets. When presenting this work, results inherent to the implementation of informatics applications in the services with ENR inside RAM, which refer to the production of nursing indicators and to the adhesion of Nurses will be presented.

16. Nursing diagnosis in adolescents.

F.S.V. Tourinho. C.D.F. Dutra Pereira. J.L.D.S. Ribeiro. L.G.G.

Fernandes. P.D. de Medeiros. S.B. de Medeiros. A.L.B.D.C. Lira. A.F.

Vitor. M.A. Ferreira Júnior. (Brazil).

Introduction

The profile of the health professional, historically occupied with the disease, are inefficient for meeting the demands of society. The new health care strategies to take us to overcome the institutional walls to get to people where they are prior to considering patients. In this new context, the adolescent's health emerge as relevant. Adolescents in Brazil represent 21.69% of the total population of the country and belong to the age group less demand Health Services Adolescence represents a critical phase, which is characterized by profound physical, functional, social, psychological, environmental determinants with, genetic and psychological disorders. The application of nursing process in this sector allows defragmentation of care as it makes use of a clear and objective communication about the client's needs in its environment and represents a way to structure the assistance making it more scientific. The Nursing Diagnosis is clinical trial on the responses of individual, family or community health procedures / processes of life, actual or potential, which provide the basis for choosing interventions that aim at obtaining the results for which the nurse is responsible. For its worldwide application in the field of nursing knowledge, the taxonomy of NANDA-I is used as the choice of topic.

Objectives

Raise the nursing diagnoses in adolescents attended in nursing consultations from March to May 2010.

Methodology

The assessment of individual health of adolescent students in elementary school, using an instrument constructed based in the Functional Health Patterns as proposed by Gordon (1994), followed by the lifting of nursing situations or problems, culminating in diagnostic reasoning based in the taxonomy of NANDA-I. The analysis and synthesizing data to formulate nursing diagnoses were made by researchers themselves. We included the diagnoses for which there was consensus among the authors of this study.

Results

The results refer to a population of 326 adolescents, mean age 13 years, being 65.6% male. Labels nursing diagnoses of NANDA-I identified more frequently in the population were: Anxiety; Altered nutrition: more than necessary; Altered nutrition: less than required; Insomnia, knowledge deficit, risk of delay in development; compromised family coping, body image disturbance.

Conclusion

Given the importance of implementing the Nursing Care System (NCS), the data collected and the results of this survey enabled the survey of interventions based on nursing diagnoses of allowing customers the necessary guidance and resolution of the diagnoses raised. The work of nurses in health education is necessary in the

prevention of health problems and warned that this population regarding the role of nurses, we must redesign the work process and education of new professionals for this assistance.

17. Medical history taking and physical examination models: the nursing students' feedback.

A.L.B.D.C. Lira. F.S.V. Tourinho. C.M.B.D. Silva. A.F. Vitor. E.D.A. Saldanha. (Brazil).

The acting and thinking related to the human assistance should be priorities in health, especially for the nursing, because it considers the care an essential element in its practice. The Nursing Process (NP) is the successful method used to organize and to individualize the client, family and community care. Several authors believe that PE is presented by five phases: data collection, diagnosis, planning, implementation and evaluation. The first phase, data collection, is a very relevant step considering it provides information to subsidize the remaining steps of the process. Furthermore, it provides objective and subjective data to the physical examination. In the education field, the data collection is an important instrument to guide the student to practice anamnesis and clinical evaluation. However, we've found that the students have presented difficulties to perform this phase. The development of tools to facilitate the student learning in relation to this issue is increasingly necessary. The aim was to investigate the opinions of federal university students about an anamnesis and physical examination model, used in the Semiology and Semiotics class in the 2010 first half. An

exploratory and descriptive research, and the participants were nursing students enrolled in that course. The investigation was developed between March and April of 2010 and the data collection was performed by applying a semi-structured questionnaire. 50 questionnaires were delivered, 21 were received and reviewed. The participants were informed about the purpose of the study and they signed the consent form. The results showed that, concerning the sex, most participants were female, the age mean was 21 years, and only one was married. All students was at the fourth quarter of the Nursing college, and only one of them had experience as a practical nurse. After an extensive reading of the questionnaires and from the similarities and differences between the discourses, we developed two categories: Perception of students about the standard history and physical examination, and the influence of that model in care of the student. The model used in Semiology and Semiotics course is based on the NANDA-I Taxonomy II, and the questions were divided by areas. Part of the students considered that model complete (42.8%); 23.8% of them considered that instrument offers a global view of the patient and facilitates the diagnostic reasoning. Most of them considered the instrument organized (52.3%) and a minority a minority considered it as extensive (9.5%). All of them reported the model may help healthcare practice as a guide for the interview (38, 1%); to know the patient as a whole (14.3%) and to map the nursing diagnoses and plan care (57 1%). This model as a method to guide the development of critical thinking in students and to increase the holistic view of the patient by the students has been perceived.

18. Nursing diagnoses in patients with unstable angina in a specialized hospital.

A.F. Vitor. M.V.D.O. Lopes. A.L.B.D.C. Lira. F.S.V. Tourinho. (Brazil).

The nursing diagnoses identification in Unstable Angina patients contributes to know these patients' human answers, collaborating to the best interventions, enabling the systematization of the nursing assistance. This study aimed to analyze the nursing diagnoses distribution presents in Unstable Angina patients of a cardiac diseases specialized hospital. The population was formed by the Unstable Angina clients, cared in this hospital. It was a cross-sectional study with a quantitative analysis. Fifty seven patients were evaluated, between months of January and October 2006. The data collection instrument was a form performed during interview and physical exam. The results show the masculine sex predominance, with age average 61 years, and the majority being a single life. The origin is of the countryside cities of Ceará and coming from Ceará's capital; and the majority has a low familiar income. The majority is retired, had studied for four years on an average, catholic. The hospital stay of these patients, until the data collection, was five days, on an average, and they had been, in majority, in the first Unstable Angina episode. The main clinical characteristics were: High Blood Pressure, Tobacco, Previous Cardiac Catheterism and Menopause. The Waist-hip Ratio of these patients was high, independent of sex and age and the majority was above of the ideal weight for their height and corporeal constitution. On an average, five nursing diagnoses, twelve defining characteristics, four related factors, and seven risk factors were

identified for each patient. The more frequent nursing diagnoses were consequence of Unstable Angina or favored its appearance, and the most present of these was Risk for falls. The more present related factors were related to diagnoses of Acute pain, Intolerance for activity, Sleep pattern disturbance, and Sedentary Lifestyle. This study could identify aspects of Unstable Angina patient care which have refinement possibility, through the nursing diagnoses analysis. This research can contribute to become aware about this kind of investigation importance and to encourage the nursing professionals to develop more scientific studies not only about Unstable Angina, but also about the others ischemic heart diseases, to guide the nursing assistance to this population.

19. Swedish district nurses` experiences on the use of information and communication technology for supporting people with serious chronic illness living at home - a case study.

C. Nilsson. L. Skär. S. Söderberg. (Sweden).

The aim of this case study was to describe two District Nurses' (DN) experiences of using information and communication technology (ICT) to communicate with chronically ill people in their homes. An electronic messaging program via computers and mobile phones with an Internet connection was used, enabling DNs and the ill people to exchange messages to and from anywhere. The program comprised different virtual rooms, and communication was via text messages. The DNs in this study used the program two to four times

each week from November 2003 to March 2004. Semi-structured interviews were performed before, during and after the implementation of the new technology and were analysed using thematic content analysis. The results showed that the DNs felt that the technology increased accessibility to nursing care through a more direct communication with the ill person meaning that a more trusting relationship could be created. The DNs also experienced that the use of ICT saved working time. This study indicates that the use of ICT for communication allowed the DN to better support a chronically ill person at home leading to improved home nursing care. This method of communication cannot replace physical presence, but can be seen as a complement to nursing care at home.

20. e-Health - a tool for providing support to families with prematurely born infants.

B. Lindberg. (Sweden).

Background

Parents of infants born prematurely have to face many stressors and when it is time for taking their infant home, new demands and increased parental responsibility are created.

Objectives

To describe if real-time videoconferencing can be used for providing support to parents of preterm born infant after the families' homecoming. Introduction of videoconferencing was considered

being important to follow from both parents' and certified paediatric nurses' perspectives.

Methods

Narrative interviews were conducted with nine couples of parents with an infant born preterm and ten paediatric nurses. A qualitative thematic content analysis was used to describe the manifest and latent content of the text. Separate analyses were made from the perspective of parents and of nurses, but the result is presented jointly.

Results

Using videoconferencing provided increased security. The importance was to have the access but less important was how often it was used. It was almost like a meeting in reality, allowing face-to-face supportive meetings. The significance of communication with body language was stated. Other benefits were that both parents and staff could be involved in the conversation. The use of videoconferencing was a tool to assess the situation. Technology was experienced as user-friendly, but when technical problems occurred meetings were less fruitful. The technology opens up other opportunities for use, for example, establish contact with child health services. Changes need to take time, although they were convinced that this technology must be a part of the upcoming care.

Conclusions

Videoconferencing is one among other possible ways to support parents after returning home with their preterm infant.

21. Differences between nurses and diagnostic technicians in the use of information systems.

V.M.C.P. Rodrigues. M.C.A. Rainho. M.J.F.S.P. Monteiro. A.M.F.M. Rodrigues. I.M.A.R.C. Barroso. (Portugal).

Introduction

Information systems are complex systems, consisting of a set of specialized modules, and supports activities undertaken by each of the professional groups working in the health institution. Increasingly, we know that information systems are critical to the functioning of any organization.

Objective

Identify the differences with respect to the use of health information systems between nurses and diagnostic technicians; Check the constraints are pointed out by nurses and diagnostic technicians on the use of health information systems

Methods

This is a descriptive cross-sectional study. The sample consisted of 236 individuals (165 nurses and 71 diagnostic technicians, from the Central and North of Portugal). The data was collected using a sociodemographic questionnaire, the Satisfaction with the Use of the Information System scale (SUSI) and the Overall Evaluation of the Information System scale (AGSI).

Results

There were no differences in the Satisfaction with the Use of the Information System scale and the Overall Evaluation of the

Information System scale regarding gender. On the contrary, there were differences in the Satisfaction with the Use of the Information System scale (nurses = 28,3; diagnostic technicians = 30,75; $p= 0,004$) and the Overall Evaluation of the Information System scale (nurses = 18,19; diagnostic technicians = 17,44; $p= 0,002$) regarding the profession. There are also differences in the Satisfaction with the Use of the Information System scale regarding institution of origin and the formation process. 47,3% of the nurses considers the benefits of information system in reducing the use of paper are not relevant, and 81,2% of the nurses considers the benefits of information system for users are not relevant.

Discussion

It is clear that the introduction of information systems in the daily practice of health professionals, especially nurses, has opened prospects for advanced forms of carrying out normal activities. However, we must be alert to the effects that information systems cause the performance of nurses and the consequences that information systems have to either users or even for health organizations.

22. Mobile IT services and information and communication technology to improve access to care.

S. Söderberg. L. Skär. (Sweden).

Introduction

People with serious chronic illness spend most of their time in the home because of a shift of care from hospitals to home care. This has influenced the work for district nurses and has led to a challenge to find new ways to support and take care of these people.

Aim

The aim of the project was divided into two parts; first to describe what it means for people with serious chronic illness and their relatives to have the opportunity to communicate directly with the district nurse through information and communication technology independent of time and space. Second, to describe the district nurse experiences of using mobile IT services to prescribe minor medical tasks to home care personnel's according to people with serious chronic illness needs.

Method

The project had a qualitative approach including field trails and interviews to optimize the understanding of the research question. Participants in the project will be; twenty people with serious chronic illness, their relatives, six district nurse and ten home care personnel. The field trail gave the participants opportunities to communicate with the district nurse through an information and

communication technology in form of a videoconference program. The videoconference program consists of a virtual room and enables direct communication independent of time and space through use of picture and sound in real time or as saved messages. The videoconference program enables the people with chronic illness and their relatives to get into contact with the district nurse and to communicate about their (the person with chronic illness) health status. The field trial included also the use of mobile IT services where the district nurses could prescribe minor medical tasks to home care personnel. The mobile IT services gave the district nurse access to the community planning system and an opportunity to communicate directly with the home care personnel and access to the patient record which imply that questions and commissions would be handled within a shorter time. The participant's experiences were evaluated through interviews.

Preliminary result

The preliminary results showed that using information and communication technology in form of the videoconference program improved the access to care. All participants experienced the technical solution as positively. However, the district nurse found it difficult to judge the patient's condition via the technique without knowing the patient's prior condition. The preliminary results showed further that mobile IT services imply that information exchange about people with severe chronic illness health status become stringent and easy to interpret with minimal risk for misunderstandings.

23. Validity of operational definitions for outcome indicators related to ineffective breathing pattern.

V.M. Silva, B.A. Beltrão, M.V.D.O. Lopes, T.L.D. Araujo. (Brazil).

Introduction

Nurses are responsible for the early detection of patient complications and problems, and should work toward initiating actions that produce positive outcomes in the patients. In many scenarios, these outcomes are used to evaluate the efficacy of a nursing practice. An adequate measurement of nursing outcomes can be obtained by using nursing classifications and terminologies developed for a specific objective. Many health indicators in the Nursing Outcomes Classification call for the development of operational definitions. Developing operational definitions contributes to accurate assessments of health condition. Aim: To determine the validity of operational definitions of indicators for nursing outcomes that assess respiratory status in children with congenital heart disease.

Methods

A methodologic study included 45 children who were diagnosed with congenital heart disease and hospitalized at the pediatric clinical unit of a referral center for cardiopulmonary diseases, and eight nurses. Children who presented with an ineffective breathing pattern (IBP) were consecutively sampled. In the first phase of the study, definitions were created for 26 different indicators. These definitions included a conceptual definition for each indicator and operational definitions for each level of the five-point Likert scale.

Nurses were organized into teams of two nurses each, to perform evaluations of children either with or without knowledge of the operational definitions of indicators; both members of team were part of the same condition. Each child was evaluated by pairs of nurses both with and without knowledge of the operational definitions. The objective of this phase was to observe whether operational definitions assisted nurses in conducting a more precise evaluation. The statistical analysis included median difference, intraclass correlation, and cluster analysis. Ethical approval was obtained from the institution's Internal Review Board.

Results and Conclusions

We found a difference in evaluations among appraisers to the point that such differences included a relatively large number of indicators. The non-use of definitions produced different evaluation results among nurses, a fact that was not observed in the group that used operational definitions. Considering the median differences and cluster analyses, a total of nine indicators presented statistical significance in at least one of these analyses between the two groups. In regards to intraclass correlation analysis, a total of 19 indicators presented a significant correlation with the nurse' evaluations that used operational definitions. Two indicators presented significance in all analyses: asymmetrical chest expansion and percussed sounds.

24. Accuracy in documentation of peripheral venous catheters in paediatric care: an intervention study in electronic patient records.

U. Förberg. E. Johansson. B.-M. Ygge. L. Wallin. A. Ehrenberg. (Sweden).

Background

As a basis for quality improvement, for research purposes and to ensure patient safety, accurate clinical data need to be easily accessible in patient records. The insertion of a peripheral venous catheter (PVC) is a common procedure in hospitalised children which can cause complications, such as infection and extravasation. Although health care organisations are obliged to report outcomes and adverse events there is currently no comprehensive register of the occurrence of PVCs and complications at local or national level in Sweden.

Aim

The aim of this study was to compare the accuracy and completeness in the recording of peripheral venous catheters (PVCs) before and after implementing a template in the electronic patient record (EPR) in paediatric care.

Method

A before and after study took place at a large paediatric university hospital in Sweden. Inclusion criteria were patients who were admitted to one of the 14 included wards, had one or several PVCs and were available at the ward at the time for data collection. Data were collected by observations and record audits before (n= 54) and

then 4 (n=50) and 10 months (n=37) after the introduction of a template for recording PVCs in a structured and standardised way. The template included the headings; insertion date, side, PVC site, PVC size, removal date and removal cause. Insertion and removal dates needed to be manually entered. The other fields provided multiple drop-down options in which one option had to be selected.

Results

A significant increase of PVCs with complete recording was observed 10 months after as compared with before the intervention. The percentage of PVCs with recording of any kind was relatively stable (85-93%). The overall recording of PVC insertion did not improve, but there was an increase in the recording of side and size after the intervention. One of the 22 complications observed before the intervention was documented and none of the complications (n=17 in 2009 and n=9 in 2010) after.

Conclusion

The EPR did not provide accurate and complete data on PVCs in paediatric care neither before nor after the intervention. Some improvements in the recording of PVC insertion were achieved by introducing templates in the EPR, which suggests that supporting recording in a structured and standardised way may increase the accuracy and completeness in the recording of PVCs.

25. Computerized register of surgical nursing.

M.A. Lopez. M.T. Peix. E. Salas. J. Miranda. M.L. Bassols. R. Santacatalina. (Spain).

Introduction

The different laws that legislate health care have been based mostly on clinical documentation. These laws dictate the legal responsibility over the activities of health professionals. Such responsibility of professional nursing records is reflected in Chapter V of the ETHICAL CODE OF SPANIARD NURSING, and Chapter X of the Rules of the profession, articles, 56-57-58-73.

It is through nursing records that we can transform the common knowledge about care, contributing to scientific knowledge on disciplinary and conceptual development of the profession. The quality of the information recorded mediates the efficiency of professional practice, so the basis must meet nursing standards to improve the quality of information, based on ethical principles and professional and legislative fundamentals as the right of privacy, confidentiality, right to autonomy and patient information.

Objective

To register in digital form all actions aimed at care and patient safety in the surgical area of Hospital Clinic de Barcelona.

Methods

For the preparation of a computerized registry of nurses in the surgical area we based our information in three records in paper format:

- Check-list of anesthetic material.
- Record / document check-list for surgery safety.
- Operating room nursing registry.

And the protocols:

- Histopathology.
- Tallies.

The method used was the direct work of two nurses in the SAP computer system, they created a record that was first revised and validated by the 18 surgical nurses and coordinators / supervisors of the various and then a registry was finally made.

The implementation process was as follows:

- Presentation and approval by the Director of Nursing.
- Presentation and approval by the Quality Department.
- Training of 18 nurses (6 hours).
- Presentation of nursing staff and delivery of documentation.
- Introduction to various surgical services.
- Definitive establishment.

Results

We present a record in form of a computerized database for the SAP platform specified as "registration anesthesia nurse " and

"registration circulating nurse", intended to be used by the nursing professionals who develop their work in the surgical area and which contain the items down for the work of the staff nurse in the specified area.

Record Items in nursing anesthesia:

1. Anesthetic equipment checklist.
2. Validation.
3. Intraoperative.
4. Postoperative.

Record items for surgical nursing.

- Home intervention.
- Tallies.
- End intervention.

These registries emit two records of nursing in the patient history.

- Report of operating room nursing.
- Report of check-list "Safe surgery".

26. Integration of development, research and learning of nursing documentation.

E. Ora-Hyytiäinen. O. Ahonen. H. Ikonen. E. Rajalahti. M. Takaluoma. E. Huovila. P. Klimenko. (Finland).

Public health care organisations in Finland are joining the national patient record archive by the end of 2011. They are committed to use structured Electronic patient record. Nationally unified and standardized nursing care documentation model has been developed. Finnish nursing documentation is based on the nursing decision making process, nursing core data and Finnish Care Classification. New kind of competence is needed to the nursing documentation using EPR and FinCC.

The education of nurses is organized in 23 universities of applied sciences. Integration of research and development to learning is a model to create the competence and models of daily documentation. The model is called Learning by Developing. The integration is put into practice in mutual development projects between health care and educational organizations.

Several challenges were noticed in creating the required competence. Only few teachers had the competence. The implementation of the documentation model was understood as technical challenge. The transformation from theory to practice was considered as a simple process. Yet all the evidence gathered from the national pilots 2007-2010 indicated that the implementation is demanding.

Finnish universities of applied sciences (n = 19) did realize the project eNNI 2008 – 2010. The Ministry of Education and Culture is financing the project. The goals of eNNI are creation of competence, promotion of change required in working processes of nursing care and development of competence needed in constant improvement of nursing action.

The method of the project is based on the model of LbD. The phases are: building the regional partnership, creation of new competence and models, implementation, evaluation. The model of action is realized in two stages; the national project group coached 45 regional work groups to plan, organize, realize and evaluate development projects in their regions. The regional work groups consist of teachers, information specialists and representatives of working life organizations.

The learners and developers in this process are nurses and nurse students. They are examining same phenomena from different perspectives, describing, evaluating and creating new knowledge and competence. They are also constructing together new models to realize documentation in nursing practice in the specific context. Nurse educators and nurse managers are facilitating the LbD process.

The evaluation of eNNI project is based on the framework of realistic evaluation. Qualitative and quantitative data has been gathered from the participants to describe the process, results and effects of the project.

The expected results of the regional projects are the nursing informatics competencies created by the nurses and nurse students. Also the reported and evaluated new habits/models of actions of documentation are expected results. The expected effects of the regional projects are the changes of work processes in daily nursing care and the changes of nurse teachers' pedagogical work in higher education.

26. Instrument for implementing the processo nursing patients with congestive heart failure.

N.P.D.N. Mendes. F.S.V. Tourinho. (Brazil).

The nursing process in Brazil has been distinguished as the method of work in preparing the plan of care based on identifying the needs of patients, family or community, and comes over time by filling a space organization and implementation of actions that leads assistance based on scientific principles and evidence. An effective approach for professionals to patients with chronic degenerative diseases has over the last decade becoming an emerging need in global health because the growth of diseases classified as, and among them Congestive heart failure (CHF) that highlighted the growing number of hospitalizations and mortality. CHF is a disease of a structural functioning of the heart causing a syndrome that affects the body's vital capacity bringing injury due to decreased cardiac pump process occurs where the reduction of pressure before and after loading or excessive increase of the pressure imposed on the cardiac muscle, bringing physical disabilities and change the

lives of acometidos.As Evidence shows that nurses can achieve good results in the approach to these patients, obtaining meaningful responses in the modification of the profile, so it was up to the nursing consultation in the cardiology service order to promote excellence in care and improve quality of life. The study deals with the reporting of experience building instrument for nursing consultation to patients with CHF in a university hospital in Natal-RN Brazil. As a result we built a roadmap containing: history, diagnosis, planning, implementation and evaluation of patients. In history the information concerning the patient and his family, signs and symptoms, complaints, underlying disease, severity of CHF, level of physical disability, drug therapy, diet and diaries, family history and comorbidities. The nursing diagnosis requires the professional clinical reasoning and critical trial for initial implementation and subsequent classification according to this classification adopted by the institution (CIPE or NANDA), and with this information to describe the care planning, where the evidence shows that is a guide for patient education geared to self care, and through him and establish whether there is adherence pharmacological or nonpharmacological; control electrolytic water daily, changing eating habits, daily weight monitoring, detection of signs of congestion and decompensation cardiac performance or restriction of physical activity according to the classification of the CHF in which the patient falls. Following the action are to guide, monitor and follow up by phone for monthly schedule planned actions. And finally the evaluation of every step to building own indicators using data to identify the results achieved based on

established planning, so as to continue the plan or revising and closing the cycle of the nursing process.

27. Health through the global functionality estimation of the elderly in a continuing care unit.

P.C. Marques. I. Oliveira. (Portugal).

Introduction

Work performed under the Stage Specialization in Medical-Surgical Nursing in Integrated Continuing Care Unit (ICCU), in order to describe the health gains achieved with a program to stimulate the overall functionality, adapted to the degree of physical dependence patients and the psychological profile.

Benefits of mobility stimulation

The Portuguese Health General Direction (HGD, 2001) states that the increased mobility improves the well-being and self-autonomy, help increase the ability to perform tasks in diary activities. The practice of regular exercise contributes to an improvement in: posture, look, strength and vigor. According to WHO (2003) physical activity is important to the elderly health, because it promotes and maintains the quality of life, and their autonomy and independence. These were the arguments that supported the planning and implementation of a project to stimulate the overall functionality of a sample of patients from an ICCU.

Elderly group initial evaluation

In the first stage of the plan we proceeded to physical and cognitive evaluation of a sample of patients, in which was applicated the Barthel Index and Mini Mental State Exam (MMSE) and recording clinical history and pathological findings of a 5 seniors homogenous group, with ability to respond to simple commands and walking capacity.

Diagnoses identified

This assessment allowed us to identify some nursing diagnoses like social isolation, unproven treatment regimen adherence and ineffective adaptation, impaired mobility, body balance changes, sleep changes, the global pain (psychological, physical, social, spiritual), some fall risk, decreased will to live and anxiety, self-care dependency.

Interventions implemented

Our role like nurse was to direct the group, but without showing "directive" attitude, being empathetic and available, but without paternalism, being attentive to the needs of group and individual needs, knowing the group, regarding the type of activities they liked most making by providing a session time communication, relationship and listening.

In a second phase, were implemented psycho-motor stimulation exercises planned for 4 weeks, like warm-up muscle and knuckle-bone exercises, movement activities - "Geometric figures", "Mirror", "Dancing", "Shoot the ball", Exercises with balloons and

scarves", "Exercises with ball of wool" and relaxing activities -"Feel the music", "Conducted imagery exercises", "Laughter Therapy".

Outcomes

The evaluation of the Barthel Index has shown improvements in the ability of feeding, clothing, bladder and bowel elimination and using the toilet more autonomously, while evaluating the MMSE showed improvements in guidance, information retention, language, attention and calculation. We observed overall improvement in relations among pairs and with professionals, increased self-esteem, prolonged wakefulness, improved balance and mobility, feelings of joy and satisfaction.

Conclusion

Nursing interventions in this study showed positive outcomes in response to some nursing diagnoses common in the elderly. Thus, exercise is evident in improving the training of the elderly to self-care.

28. The application of NANDA-I, NOC and NIC in the nursing plan care of a patient with impaired urinary elimination.

L. Pruinelli. G. Santos. C. Magro. M. Ferreira. (Brazil).

An elderly patient was admitted with prostate hypertrophy in a University Hospital in the south of Brazil to be submitted to total prostatectomy. Prostate Hypertrophy cause prostate enlargement,

that enlarges enough that compress urethra and cause urinary obstruction.

He presented urinary retention with dysuria, hesitancy and nocturia. After surgery patient presented urinary catheter with bloody urine and clots, irrigating system was maintained continuously with saline solution.

Following the signs and symptoms was defined the principal nursing diagnosis. The hypothetical diagnosis opened was Impaired Urinary Elimination defined as dysfunction in urine elimination belonging to Elimination and Exchange Domain, Urinary Function Class. The diagnosis was based on the following defining characteristics: retention, dysuria and nocturia and the related factor was anatomic obstruction.

As a goal to be achieved to improvement or resolution of this nursing diagnosis was utilized the outcome proposed by NOC Urinary Elimination located in Physiologic Health Domain, Elimination Class. The Indicator selected for it was: Urine clarity, starting from 1 (severely compromised). For this indicator the goal was maintain in 5 (not compromised). Another indicator was Visible Blood in Urine starting from 1 and increasing to 5.

To nursing care plan, nurse takes in consideration the nursing diagnosis opened and the NIC interventions linked to NANDA-I diagnosis, as well as clinical judgment. The priority intervention that were selected to achieve these outcomes and address the nursing diagnosis were Bladder Irrigation defined as instillation of a solution into the bladder to provide cleansing or medication,

belonging to the Elimination Management Class of the Physiological: Basic Domain.

The activities elected to nursing prescription were: explain the procedure to the patient, set up sterile supplies with sterile technique, cleanse site of entry or end of Y-connector with alcohol wipe, instill irrigating fluid, monitor and maintain correct flow rate and record amount of fluid used, characteristics of fluid, amount returned, and patient responsiveness.

In the first day after the surgery the urinary flow was with blood and clots, the amount of fluid instilled was in high speed. After four days of irrigation occurred a diminished amount of blood in the urine and no presence of clots. In the seventh day postoperative the urine was clear and the patient received discharge from the hospital to home with urinary catheter and orientation about the catheter care.

To the outcomes proposed by the nurse, Urinary Elimination patient got the subject of increase his punctuation from 1 to 5 after nursing interventions in both indicators. Outcomes proposed and interventions implemented help nursing plan care got the results proposed, although patient went home with the urinary catheter because the institutional protocol. The nursing care focused in the nursing process help the patient assistance, once that systematized actions of planning care goes to best nursing practice.

29. Imbalanced nutrition: more than body requirements: a practice application.

L. Pruinelli, M.R. Gouvea, M. Bahm. (Brazil).

A female patient, with obesity degree III (IMC=47), couldn't control herself and ate more than her needs. Had tried dietary intake, medicines without loss of weight. She had chronic gastric disease, hypothyroidism, and apnea periods. She didn't do any physical activity. She was evaluated by the multiprofessional team and was indicated for surgery. She was admitted in a University Hospital in the south of Brazil, reference service for Obesity Treatment Program to be submitted to bariatric surgery. The procedure promotes reduction of food intake and fullness sensation.

Following signs and symptoms presented was defined the principal nursing diagnosis. The hypothetical diagnosis was Imbalanced Nutrition: more than body requirements defined as an intake of nutrients that exceeds metabolic needs, belonging to Nutrition Domain and Ingestion Class. It based on the following defining characteristics: eating in response to internal cues, sedentary activity level, weight 20% over ideal for her height and frame and the related factor was excessive intake in relation to metabolic need.

As a goal to be achieved was utilized the outcome proposed by NOC Weight Loss Behavior located in Health Knowledge & Behavior Domain, Health Behavior Class. The Indicator selected for it was: Control food portion, starting from 1. For this indicator the goal

was achieved 5. Another indicator selected was Monitor's body weight starting from 2 and increasing to 5.

To nursing care plan, nurse takes in consideration nursing diagnosis opened and NIC interventions linked to NANDA-I diagnoses, as well as clinical judgment and practice experience with these patients. The priority intervention to achieve these outcomes and address nursing diagnosis were Weight Reduction Assistance defined as facilitating loss of weight and/or body fat, belonging to the Nutrition Support Class of the Physiological: Basic Domain.

The activities elected were: weigh patient daily, set a realistic plan with the patient, determine current eating pattern by having patients keep a diary, develop a daily meal plan and determine with the patient the amount of weight loss desired. The most important activities is control and orient the fractionary food intake.

In the third day postoperative she was recovery from the surgery and was orientated about the dietary intake that she would have to follow at home as well as control weight. She had been referred to follow ambulatory appointments.

To the outcomes proposed by the nurse, Weight Loss Behavior, patient got the subject of increase her punctuation 5 in both indicators. The nursing care focused in the nursing process help the patient assistance patient, once that systematized actions of planing care goes to best nursing practice. In this way, the use of nursing diagnoses classifications, outcomes and interventions are important tools to qualify process care. Adding to this, the

experience in the management of these patients defines the best approach for nursing planning care.

30. Diagnoses characterizations and interventions of elderly nursing in an emergency service.

M.D.G.O. Crossetti. C.G. Silva. M. Antunes. T. Tancini. (Brazil).

The aim of this study was to identify the most prevalent nursing diagnoses in elderly, its respective related factors and nursing intervention in an emergency service. Method: transversal study carried on an university hospital in Porto Alegre city, Rio Grande do Sul state, southern Brazil. Sampling was made through the analysis of medical records of elderly patients admitted to the adults observation room in the Emergency Service from August 1st 2007 until July 31st 2008. A total of 147 records were analyzed. Diagnoses data as well as defining characteristics and interventions information were get from nursing prescription during the patient admission in the adult observation room and were processed by the statistical software SPSS version 14, by descriptive statistics. The project was approved by the ethics and research committee of the study field-institution, under the register number 06463. Results: the prevalent age was 70-79 years old, representing 40% (575) of the study subject being 54.6% (290) male and 49.2% (285) female individuals. It was identified 25089 nursing diagnoses distributed in 51 different categories. Representing 78.9% of the total identified diagnoses, the ten prevalent ones were: self care deficit syndrome (15.7%-3933) related to impaired neuromuscular activity (18%-

4504) ; ineffective breathing pattern (14.6%) related to airways infectious process (4%-986); self care deficit: bath or hygiene (9.4%-2353) related to the disease evolution (5.9%-1490); altered comfort (8.3%-2092) related to vascular disorder (8.6%-2166); imbalanced nutrition: less than body requirements (7.9%- 1984) related to dietary restriction and or eating habits (2.7%-668); liquid volume deficit (6.9%-1737) related to bleeding (2,8%-706); trauma risk (6,0%-1517) related to neurological alteration (5.2%-1293); alteration in urinary elimination (4.2%-1052) related to lesion in the urinary tract (2.0%-496); acute pain (2.9%-723) related to disease evolution (5,9%-1490) followed by vascular disorder (8,6%-2166); acute confusion (2,6%-660) related to hydroelectrolitic and metabolic disturbances (2.3%-580). The prevalent interventions were: verifying vital signs (10.6%-2647); maintaining high headboard (5,1%-1271); providing vascular bed bath (3,1%-780); keeping the bed rails (2,9%-720); communicating alterations on ventilatory pattern (2.5%-620); performing total fluid balance (2.1%-515); keeping constant vigilance (2%-504); report signs of pain (1,9%-486 changes in level of consciousness (1.8%-452) and monitoring sensory (1.8%-444).

Conclusion

Self care deficit syndrome (20%-3933) and ineffective breathing pattern (18.6%-3658) were the most prevalent among the ten identified diagnoses. Regarding the etiologies, it was possible to observe that impaired neuromuscular activity and vascular disorder represented respectively 32.5% and 13.6% of the total identified etiologies. Considering the interventions it was possible to highlight

as the most prevalent: verifying vital signs (10.6% -2647) and maintaining high headboard (5.1% -1271). Knowing the nursing diagnoses, its etiologies and interventions of elderly patients in emergency enable accurate decision making and provides support to guide the practices of care to this population.

31. An integrative review of methodology for validating studies nursing diagnosis of contents.

M.D.G.O. Crossetti. C.G. Silva. M. Antunes. T. Tanccini. (Brazil).

The content validity of diagnoses is one way that leads to accuracy of results and nursing intervention, being essential for clinical practice. The methodology of integrative literature review (IR) is an appropriate tool for conducting validation studies content. This presentation seeks to describe the methodological procedures on integrative review.

Objectives

To identify and characterize the methodological procedures of IR.

Methods

Study of IR type which was developed in 5 steps. Formulation of the problem - questions: Who are the authors proposing the methodology of integrative literature review of nursing research? How the methodological steps for integrative literature review on research in nursing are characterized? Data sampling- databases: LILACS, Web of Science, MEDLINE and CINAHL.

Keywords

Integrative review and nursing. Inclusion criteria: national and international nursing articles; results of quantitative and qualitative researches and theoretical reflections; online access of full text and which contained a description of methodological procedures for IR; language: Portuguese, English and Spanish, published in the period 1987 to 2008.

Data Evaluation

It was elaborated an instrument for recording information on attention to the guiding questions. Analysis and interpretation of data: a synoptic table was elaborated for the synthesis, comparison and discussion of information.

Results

It was selected 194 articles of which 154 were excluded for not meeting the inclusion criteria. The sample consisted of 41 articles, from which 16 proposed methodology of IR. With regard to the authors it was observed that in 07 studies the methodological procedures of IR were structured in phases defined by the authors, therefore, were characterized as original. In 09 other studies the methodologies were characterized by integrating methodological procedures proposed by different authors. This application form is justified by the authors due to the fact of assigning more scientific criticism to the study. It was found that Cooper¹ was the author of IR with the highest number of citations, applied in 10 publications, followed by Whittemore & Knafl in 08 articles, 07 studies in Ganong and Broome in 02 studies. The proposed methodology of IR of

Rodgers & Knafl, Sparbel & Anderson e Galvão & Sawada, were cited in three different articles. Regarding the methodology definition of IR common features were evidenced in the articles: concepts, goals, objectives, procedures, objects of research . Concerning the steps, the number ranged from 4 to 10, and although they presented some common features they also presented different nomenclatures. The steps considered basic and cited by the authors were: Step1: problem formulation, step2: data collection, Step3: evaluation of data, Step4: analysis and interpretation of data, Step5: Presentation of results and conclusions.

Conclusions

The methodology of IR has been used by nurses in different contexts of professional practice which demonstrates a methodology to validate the content of diagnoses.

32. Strategies for teaching critical thinking skills in clinical practice of nursing.

M.D.G.O. Crossetti. C.G. Silva. D. Schaurich. G.K.G.D. Bittencourt. M. Antunes. T. Tanccini. (Brazil).

Introduction

The ability of critical thinking is an initial condition of nurses who must make accurate decisions in clinical practice. Consequently, knowing the strategies applied by them in the nursing process is

very important to promote development in teaching and nursing care.

Objective

Characterize teaching strategies used in nursing to develop the skills of critical thinking.

Method

This was an integrative review of literature, which had the question: what are the characteristics of the teaching strategies used in nursing to develop the skills of critical thinking? Data collection occurred in the databases CINAHL and Web of Science with the keywords critical thinking, nursing, teaching. Inclusion criteria were articles that addressed strategies for teaching critical thinking in nursing, national and international publications, in English, Portuguese and Spanish, between 1987 and 2008. Exclusion criteria were: articles without access to full text, not available online and which did not approach the subject of study.

Results

196 papers were identified, which after undergoing the inclusion criteria resulted in 64 articles that constituted the sample of this integrative review. The data were recorded on a specific instrument. In the analysis and interpretation it was identified 27 strategies for teaching critical thinking in nursing. The five most frequently cited strategies on the analyzed productions were: questioning (9 articles), which is cited as a primary teaching strategy from which others can be used to develop skills of critical thinking; case study

(8 items), can assist students to become critically reflective nurses, providing the opportunity to analyze problems, phenomena and situations; online learning and interactive learning (8 items) is described as a teaching strategy that encourages students, the development of cognitive flexibility, stimulating discussion in small groups, facilitating active participation in discussion cases and provides a direct exploration of multiple cases and content with themes from different perspectives; conceptual map (8 items) is a graphic description of the flow of thought process and requires the student's capacity for analysis, synthesis and evaluation of information to determine a nursing intervention; and problem-based learning (7 items), which motivates the search for information, developing communication and aggregating knowledge from experience.

Conclusions

This integrative review of nursing literature has identified that there are different strategies of critical thinking applied in clinical practice and the development of these skills through them enables the training of more critical, reflective and competent professionals capable of making appropriate clinical decisions according to the needs of the patient. It is believed therefore that the formation of a critical nurse should begin in nursing education, whence comes the opportunity to develop critical, creative and transformative attitudes. Therefore, it is necessary to know and implement strategies that encourage critical thinking skills in order to expand the cognitive processes and the expressive knowledge of the profession.

33. The clinical role of the nurse: concept development.

M.A. Mendes. D.A.L.M. Cruz. M. Ângelo. (Brazil).

The nurse's clinical role concept is often mentioned in literature, but seldom explored in conceptual terms and there aren't any explanations about the nature of such role. This study had the objective of developing the concept of the nurse's clinical role. The Qualitative Methodology of Concept Development has been applied in its three phases: Qualitative Analysis of Concept, Verification of the Attributes and Identification of the Concept Manifestations. In the first phase, abstract and universal attributes of the nurse's clinical role concept, present in literature, have been identified using the method of Critical Analysis of Literature. In the second phase, Grounded Theory has been applied to understand and develop the concept of the clinical role in the nurse's experience, using theoretical references of both the Role Theory and Symbolic Interactionism. In this phase, a study has been carried out with seven assistential nurses from the Sao Paulo University's Hospital, in Brazil. Data has been collected through non-structured interviews, analysed and interpreted in interrelated categories, and permitted the construction of theoretical model of the nurse's clinical role's experience. In the third phase, the data of the previous phases were compared and integrated, permitting the inedit theoretical formulation of the nurse's clinical role. The results of the study have proved that the nurse's clinical role is a complex psychosocial process, which integrates three interactional domains: the patient, the context of the experience and nurse own himself. Clinical autonomy has configured itself as the central element in

the interaction of the nurse with the patient in the clinical role's experience. The meaning of the clinical role's experience was expressed in the empowerment of the nurse exercising clinical autonomy, which shows the range of achieved results shown in the nurse's own interaction with the patient, with himself or with the context. The clinical role is an ability, which through clinical autonomy, is articulated as a form of power. Clinical autonomy concedes to the nurse the power to think, to imagine, to make care plans and to participate in the changes of the patient's health. The analysis of the clinical role's concept will help to have reflections about the dimensions involved in the practice and teaching of nursing and to inform, not only the policies of educational and professional practice, but health policies as well.

34. Nursing diagnoses: methods and criteria for selection and validation of experts in the Brazilian reality.

M.D.G.O. Crossetti. C.G. Silva. G.K.G.D. Bittencourt. M. Antunes. T. Tancini. (Brazil).

The diagnostic accuracy is a condition that is related to the validation of appropriate nursing diagnoses. Validation studies are imperative for the clinical practice of nursing. Objectives: to identify the methods and to characterize the selection criteria of the experts used in the validation studies of nursing diagnoses in Brazil (NANDA).

Methods

Integrative review of the literature in nursing, which had the question: what are the methods and criteria for selection of experts in the validation studies of nursing diagnoses in Brazil? To collect the data it was analyzed the abstracts of theses and dissertations indexed in the database CAPES-Brazil.

Keywords

Validation and nursing diagnosis. Inclusion criteria: theses and dissertations on validation of nursing diagnoses from 1990 to 2008. For evaluation of the studies, it was developed an instrument for recording the information comprising identification data summaries (author, title, objectives, validation model, description model, experts). Analysis and interpretation: occurred from the recording of information in a data sampling instrument, which included the following aspects: name of authors, the study objective, validation model, description model and experts. The relevant information to the research question was summarized in a synoptic table, which was the basis for discussion and presentation of results.

Results

It was identified 83 abstracts in the database CAPES of theses and dissertations and, after application of inclusion criteria, 57 abstracts were excluded, leaving about 28 scientific productions about nursing diagnoses validation. After the analysis and interpretation of the studies it was found that: 02 were of content validation, 17 of clinical validation and 09 of clinical and content validation. The most used methods were: Fehring(1986,1987,1994) with 15 studies;

Gordon y Sweeney(1979) with 04 studies; Fehring (1994) and Sweeney(1979) with 01 study; Hoskins(1989) with 01 study; Fehring(1994) and Hoskins(1989) with 01 study; Walker and Avant(1988) with 01 studies; 05 studies did not report methodology. Concerning the criteria for selection of experts, the ones proposed by Fehring predominated: the experts' clinical experience and knowledge and understanding of the nature of validated nursing diagnoses. The period from 2005 to 2008 was highlighted by the number of publications, which presented 10 studies. Another point highlighted is related to the Southeast region of Brazil, which presented the largest number of publications on the subject, with 19 published studies.

Conclusion

The method of nursing validation of Fehring (1986, 1987, 1994) is the most used in Brazil, but there is no uniformity to the selection criteria for experts, because what determines this selection is the type of diagnosis that is being validated, the nature of validation, content validation or clinic validation. It was found that there is a tendency for selection of nurses in clinical practice as experts for the validation of nursing diagnoses.

35. Prevalent nursing diagnoses in a psychiatric nursing service of a university hospital.

M.D.A. Almeida. A.T.G. Nomura. L.N. Menna Barreto. A.P.D.O. Siqueira. J. Parraga. B.P. Panato. (Brazil).

Introduction

The Nursing Process (NP) encompasses the scientific methodology that nurses use to guide individual and human care to each patient. In the institution of this study, NP is developed in five stages, and is informatized. In the nursing diagnoses (ND) stage the North American Nursing Diagnosis Association - International (NANDA-I) terminology is used. According to this association an Actual Nursing Diagnosis (ND) is comprised of a label, related factors and defining characteristics, and is considered a complex process that involves interpreting health-related human behavior. This diagnostic process has been described as gradual, interactive, heuristic and intuitive. It requires critical thinking in order to obtain qualified nursing assistance.

Objective

To identify the five prevalent Nursing Diagnoses in patients with psychiatric behavior.

Methodology

Quantitative, transversal descriptive study. The research was performed by gathering data referring to the five most frequent NDs present in patients hospitalized in a psychiatric unit of a university hospital in the south of Brazil; these data were collected

in an informatized database of nursing prescription. The sample is comprised of six non-consecutive months between August 2007 and July 2008. The data were analyzed by means of a descriptive statistic, in which frequency (f) and percentage (%) of the studied ND were present. The project was approved by the Institution's Ethics and Research Committee.

Results

The research pointed out the five prevalent NDs in Nursing Psychiatric Service: Altered Thought Process, with 255 occurrences (32%), followed by Impaired Social Interaction with 135 (17%), Risk for Aggression with 89 (11%), Risk for Suicide with 74 (9%) and Ineffective Denial with 44 occurrences (6%). The total number of occurrences was of 798 selected diagnoses for hospitalized patients during the analyzed period. Even at such a high rate of occurrences, the Altered Thought Process ND is amongst the to be excluded NDs in the next edition of NANDA-I. The group of nurses responsible for the revision of NDs in this institution is arguing the possibility of this ND being an etiology rather than a diagnostic label.

Final Considerations

Investigating the five prevalent NDs in the Psychiatric Nursing Service offers ground to identify the main needs of these patients, directing the most adequate interventions. Besides, it will be responsible for validating Nursing Outcomes for each one of these NDs from the suggested and associated outcomes proposed by the Nursing Outcomes Classification (NOC). Later on, NOC indicators

shall be validated for each Nursing Outcome validated in the previous stage. With this, it will be possible to obtain data to describe and measure the outcome of nursing actions in the future.

36. Diagnostic content validation of the nursing diagnosis elements "non-compliance" in people with arterial hypertension.

C.J. Oliveira. T.L.D. Araujo. D.B.R. Chaves. T.R. Machado. F.B.C. Costa. (Brazil).

The early identification of nursing diagnosis "Noncompliance" can promote the correct choice of interventions implemented by the health team with the patient and family. Moreover, it is clear that nurses present difficulties in the use and definition of nursing diagnoses, especially in identifying defining characteristics and related factors, that can be explained by the differentiation in indicators related for NANDA-I from those directly observed in patients. In Brazil, to minimize these problems, there is growing trend in developing research projects related to validation of diagnoses or yours components, recognizing the importance of searching more and more elements of the nursing process that are the basis of ratings for their use in care, research and teaching. The objective of this study was to conduct a content validation by experts of the elements of diagnosis "Noncompliance" in people with hypertension, basing on the assumption that when promoting the validation of a nursing diagnosis, the nurse will have concrete data to help the individual adequate follow up therapy. Currently,

the diagnosis “Noncompliance” presents six defining characteristics and 28 related factors, divided into individuals, related to health care plan, the network and the health system. After an integrative literature review, defining characteristics and related factors were reviewed and their constitutive/operational definitions were developed and followed by assessment of their adequacy for 29 nurses, specialists in nursing terminology and/or adherence, using the Ferhing’s model Diagnostic Content Validation (1987). The experts proposed the modification of some defining characteristics and related factors, the exclusion of some of those elements and creating new components of the diagnosis, being composed by six characteristics (Behavior indicative of compliance failures; Inadequate management of drug treatment, Inadequate management of nonpharmacological treatment; Difficulty in complying with agreed decisions with the health team; Evidence of developing complications; Evidence of exacerbation of hypertension) and eleven related factors (Loss in personal skills; Knowledge deficit for the monitoring of treatment regimen; Individual’s beliefs and values related to the health/disease; Cultural influences; Lack of support from significant persons; Complexity of medication regimen; Financial cost of treatment; Prolonged duration of treatment; Failed to cover healthcare; Lack education ability of health professionals; Relationship customer-health professionals impaired). For nurses to devise interventions for patients with chronic diseases, in order to facilitate follow up in their treatment and to prevent complications from these diseases, should be guided by clinical indicators for prediction of the diagnostic occurrence, contributing to the nursing use them with

more accurate, both in research as in clinical practice, basing decisions that favor the development of healthy environments and positive promotion of health of these people.

37. Validation of nursing interventions for the diagnosis of the risk for impaired skin integrity in patients under risk of ulcer by pressure.

T. Bavaresco. A.F. Lucena. (Brazil).

Introduction

The qualification of the nursing process has been occurring by the use of classifications of standard languages, during the diagnosis stage, intervention and results. This condition will promote the communication and the register of the clinic practice. Such classifications might be applied in different contexts, which make necessary legitimating certain clinic situations, through the study validation. The connection between NANDA-I (classification of diagnosis) and Nursing Interventions Classifications (NIC) happens when the nurse makes a diagnosis of nursing, finding necessary the intervention and the recording of the actions. In the treatment of the skin and wounds, the valuation of the risk for ulcer by pressure tends to decrease its incidence, treatment costs and the complications to patients, relatives and health system. The ulcer by pressure is a cutaneous change, generated by the lack of oxygen and nutrition of the tissues. The ulcer presents a multifaceted etiology, partially associated to the quality of nursing care. The risk identification of ulcer by pressure is essential during the nursing

care, which requires an accurate investigation, with the use of risk identification instruments, like Braden Scale and the implementation of appropriate interventions. NANDA-I presents the Risk for impaired skin integrity, which might be selected for these patients. Considering this diagnosis of nursing, NIC presents, in the connection with NANDA-I, 48 nursing interventions, being considered 3 of them as priority, 28 of them as suggested and 17 of them as optional to the problem solution. In order to contribute with the improvement of the use of such classifications, considering the care for patients under the risk for ulcer by pressure, it was suggested a study to validate the nursing interventions of NIC.

Objective

Validating the interventions and activities of nursing, suggested by NIC, considering the diagnosis of nursing to “Risk for impaired skin integrity”, from the connection NIC-NANDA-I to adult patients under the risk for ulcer by pressure.

Methods

Descriptive study with validation of content, basing in Fehring’s model, which will be developed in two Brazilian hospitals belonging to universities. In these hospitals, nurses were found with clinic and search experiences with patients with problems related to skin. These nurses also belong to groups of study in this area and they use protocols of prevention and treatment of ulcer by pressure. Hence, they are considered specialists and will make part of this study. An instrument of data collect will be used, containing the interventions and activities of NIC. First, nursing interventions will be validated

through scores given by specialist nurses, using Likert Scale. Second, activities belonging to interventions previously validated as main ones, will be validated too. The analysis of data will be statistic and descriptive.

Results and Conclusion

This is a search in development stage.

38. Implementation of an electronic register of cardiopulmonary arrest attendance.

F.G. Ferreira. R.C.G. Silva. M.M.C. Gonzalez. J.S.H. Palomo. M.A. Gutierrez. J.L. Lopes. (Brazil).

The adequate attendance of cardiac arrest is important to guarantee patient survival and to possibility better quality of life after hospital discharge. The implementation of Rapid Response Team (RRT) is a strategy to diminish the occurrence of cardiopulmonary arrest, as well as the time between the collapse and the initial attendance. Beyond the primary objectives of RRT, the register of the circumstances involved in the collapse is one of the functions of RRT. Considering the relevance of cardiopulmonary arrest register, the aim of this study was to describe the implementation of an electronic register of cardiopulmonary arrest and of the clinical conditions of the patients before and after the collapse. The electronic module was developed by Informatics Department of Heart Institute (InCor) based on Utstein model. This model standardizes the register of resuscitation outcomes, involving four variables: hospital, patient, cardiopulmonary arrest (event) and

outcomes (clinical evaluation after the collapse). In relation to the hospital, the information that should be registered are: the local where the collapse occurred, the categories and the number of professional that attended the patient and if they had been trained in advanced cardiac life support. Regarding patient, data that should be collected are: identification, medical diagnosis, procedures that were realized before cardiopulmonary arrest (peritoneal dialysis, mechanical circulatory support) and patient clinical conditions in the moment of the collapse. Indeed, there are other information that may be provided: the presence of cardiac monitoring and the realization or not of cardiopulmonary resuscitation. In the case of cardiopulmonary resuscitation had not been realized, justification is needed (terminal patients and irreversibility signs). The information that should be registered in relation to event are: the causes; if was or not witnessed; the times of collapse; the call and arrival of the RRT; the cardiopulmonary arrest confirmation; defibrillation; obtaining the advanced airway; drugs and their respective doses and way of administration; other procedures performed, such as pacemakers; and the end of CPR. Besides these information should be recorded the initial rhythm of cardiopulmonary arrest; if the return of spontaneous circulation was sustained or not in less than 20 minutes and if there was another collapse within 24 hours. In relation to outcomes, the information needed are: date and hour of death or when patients survived, date and hour of recovered consciousness, hospital discharge and his/her destination, his/her clinical conditions and the level of Glasgow Scale. Moreover, surviving patients are monitored after six months and one year after cardiopulmonary

arrest in terms of his/her survival and clinical conditions. Including the module of cardiopulmonary arrest attendance in the electronic patient record will be useful to monitoring the process of cardiopulmonary resuscitation as well as the prognosis of patients.

39. A study of the defining characteristics of nursing diagnosis “risk-prone health behaviour” of dialysis patients. A qualitative study of the defining characteristic clues from dialysis nurses.

C. Kamiya. I. Honda. K. Kasaoka. T. Egawa. (Japan).

Introduction

The Japan Academy of Nephrology Nursing (JANN) conducts research into the specifics of nursing diagnoses and development of treatment for diabetes patients. For this kind of treatment development it is desirable to have the active involvement of DLNs) Dialysis Leading Nurse: these nurses are Specialist Dialysis nurses) with five years or more dialysis nursing experience and recognised certification.

Purpose

This study clarifies what sort of information or clues DLNs are using as clinical validations for “Risk-Prone Health Behavior” nursing diagnoses.

Method

We carried out an interview survey on 11 DLNs using a semi-structured interview form based on clinical validations of nursing diagnoses. The interviews were transcribed and their contents analysed. During the analysis we received advice from co-researchers.

There are 4 defining characteristics of “Risk-Prone Health Behavior” according to NANDA-1 2007-2008, DNLs found all the defining characteristics indices as clues.

It was thought that this nursing diagnosis (a label) considered it from definition and classification domain, shown references as a problem in nursing caused by a disease and treatment. In other words it is "the situation that the psychological problem and stress that a patient has cause it, and cannot take the appropriate health behavior".

Some clinical validations indicating the defining characteristics "Demonstrates nonacceptance of health status change" were behavior such as " Does not associate with the healthy person" , and the words such as “It does not matter”, “That I cannot keep dieting is that other people are bad”. The reason why I cannot do it by a health behavior adequately is that your treatment is bad." "Because it is not cured anyway" were caught as a clue for "Failure to achieve optimal sense.

Some clinical validations indicating the defining characteristics “failure to take action that prevents health problems” were behavior such as "The dialysis does not talk with a medical person",

"explain inspection data, do not look". "I think that this is all right", "It is all right even if I eat last year because I was all right" were assumed to be as a clue for "Minimizes health status change".

Conclusions

DLN is interested in the reason why a patient takes such an action and a reason to speak and collects information. "Risk-Prone Health Behavior" was problems in the nursing that did not appear by objective data such as the numerical value, but DLN took the behavior of the similar patient as a clue.

40. The electronic records in nursing: ethics and legal imperatives in Portugal.

A.J.P. Mendonça, C.A.R. Costa. (Portugal).

Currently, the use of computers in several areas of human activity is common, and the benefits of its use are so significant that it is unthinkable to develop certain activities and tasks without this technological resource. At present, it is increasingly agreed that information in nursing is important for the health governance. Such relevance is not limited to the ethics and legal imperatives of information systems as those that result from its importance for clinical decision, and to promote continuity of care and quality. In this sense, it is necessary to ensure that health information systems incorporate data on nursing care. In this article we aim to clarify the ethical - legal requirements inherent to nursing electronic records, exposing a brief literature review about the theme.

The review shows us information from the distant year of 1976, when the protection of personal data, related to information technology is enshrined in the Portuguese constitution. Portugal was the European country pioneer in establishing a legal framework to regulate electronic records of personal data. Later, in 1998, came the Law of Protection of Personal Data (Law 67/98 of 26 October), which transposes to the Portuguese legal system the Directive 95/46/EC of the European Parliament and Council of 24th of October of 1995 that establishes the protection of individuals with regard to the processing of personal data and the free movement of such data.

However, the relationship between health personal data and information and communication technologies is sensitive to ethical and legal questions, because of the critical issues associated with the data of each citizen and the impact that their not controlled or authorized disclosure of this data may have. Computerized health data belongs to each citizen, and must respect the principles of confidentiality, integrity and availability of security. In fact, the code of ethics contains some articles that protect the customer from information sharing and ensure data privacy. The code of ethics is an essential pillar for nurses' practice because it sets out the professional duties, rooted in the rights of citizens and communities rights to whom they are addressed in nursing care, as well as the responsibilities that the profession has assumed. As such, taking into account the ethical aspects of electronic records in nursing there are three articles that have some emphasis on this issue in particular, No. 84 - the duty of information, No. 85 - the

duty of confidentiality and No. 86 - respect for privacy, which will be further developed and correlated with the subject in question. In conclusion, it is assumed that nurses are in a privileged position to manage this process of customer information by adapting to it, facilitating its integration in order to provide the best responses to the patient and the promotion of quality of life.

41. Belgian screening tools (BEST): a dataset of validated scales in attention of nurse professionals.

M. Gobert. C. Piron. L. Bulteel. E. De Wageneer. N. Filion. T. Vandurme. O. Caillet. M. Deam. K. Vanderwee. S. Verhaeghe. T. Defloor. (Belgium).*

Introduction

Each patient at hospital presents several health-related problems for which specific nursing interventions are needed. To decide the most appropriate intervention objective data are required. Only validated scales must be used to have objective data. Some nurses are unaware of the existence of validated tools. These tools are sometimes difficult to find and unknown by nurses professionals.

The goal of this project was to conduct a database with validated tools in which an overview of the psychometric characteristics of scales for use in nursing practice was given.

Methods and Materials

Firstly, a literature review was performed. Therefore, a search filter was constructed and used in several databases: The Cochrane

Central Register of Controlled Trials (CENTRAL), Medline and Cinahl. Following inclusion criteria were used: articles published in English, Dutch, French and German since 1993. The included themes were: pressure ulcer, catheter care, wound care, oral health, nausea and vomiting, nutrition and malnutrition, continence and incontinence, constipation, pain, fatigue, sedation, cognitive function, functional, mental and psychological evaluation, disorientation, neurological care, self care, quality of life,... Next, the selection of potential articles occurred based on the availability of the abstract, terms in the abstract related to the validity and reliability or data of psychometric tests. Articles accomplished by the snowball method were included.

Results

The database is freely accessible on a website (www.best.ugent.be) for health care professionals like nurses and physicians, universities or higher education institutions, students and other caregivers. The database represents a clear overview of existing validated tools per theme; actually, more than 200 validated scale were identified and disposal to health professionals. For each theme a description of the scale, the theme, the target group and the reference was specified. The instrument can be downloaded if permission of the author(s) was given. The results of all included articles were presented in evidence tables.

Conclusion

There are several validated tools for the included themes. The “Belgian Screening Tools” (BeST)-database is suitable for several

patient categories at hospital but also in nursing home or in the community. Although, this project has a great importance for all caregivers to get familiar with the existing and using of validated tools. The instruments, translated in French and in Dutch, can easily be selected and used in practice.

42. How relevant is the Cochrane database of systematic reviews for nursing practice?

B. Geurden. M. Gobert. C. Piron. G. Berckmans. (Belgium).*

Introduction

Barriers obstructing evidence-based nursing have been explored in many countries. Apart from lack of time, computer skills, limited access to high quality information resources, authority, support, motivation and resistance to change authors also report on lack of resources and evidence.

Aim

To identify all nurse related systematic reviews (SR) published by the Cochrane since 1996.

Method

A search strategy identified SR concerning the nursing profession in the Cochrane database of SR. Based on the abstract several data (PICO, care setting, nursing discipline, included studies, conclusion and type of publication) are collected.

Results

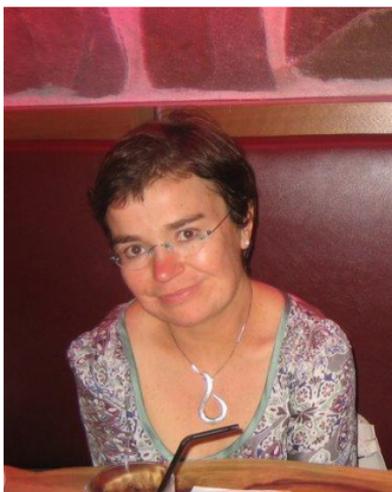
In December 2009, 1408 results out of 6244 records were identified. Since 2003 the number of nurse related SR with a meta analysis have been growing fast. Universities and general hospitals are the most important institutes of the authors; only 7 countries out of 56 produced 80% of all nurse related SR. The top 3 of most productive countries are UK, Australia and Canada. Mean number of included studies is 11 (SD 16, Range 0-131). 51% of the abstracts contained all PICO-elements. Most studied populations are newborns and adults. Main fields are care and cure and main topics are interventions, nursing profession and management. Most important nursing disciplines are internal medicine (34%) and mother and child care (25%) while geriatrics only scores 2,5%. In 57% of the abstracts the authors stated that there was no or limited evidence and further research was needed. 36% of the SR contained applicable evidence.

Conclusion

22% of the SR published in the Cochrane library are of direct interest for nurses. The relevance for nurses of the SR we obtained is not always obvious. We need more primary studies in nurse-related items (care-items) to produce systematic reviews relevant for nurses.

A better use by nurses of this source could be obtained by improving the Cochrane library visibility.

***Dr. Micheline Gobert MSc PhD RN**



ACENDIO joins our Belgian friends and colleagues in mourning the untimely loss of Dr Micheline Gobert, Researcher in Nursing Science at the Faculty of Medicine and Health Sciences, Université Catholique de Louvain, who died suddenly in November, 2010. Micheline contributed enormously to nursing and evidence based healthcare and will be sadly missed by her colleagues in Belgium as well as by all of us in ACENDIO.

43. Documentation of the nursing process at the point of patient care: what do nurses think about it?

J.S.H. Palomo. R.C.G. Silva. M.A. Gutierrez. (Brazil).

The documentation of clinical data is the main form of communication among members of the healthcare team. The electronic Patient Record (ePR) has been emerged as the framework to provide interesting solutions to the problems concerning the use of conventional patient record. However, some disadvantages have been reported, such as the need to collect and register the data using conventional methods and then transcribe them into the ePR. This is particularly true at the bedside, where the events occur far from a common desktop with access to the ePR. Although mobile computers were introduced in clinical practice, the small screens and keyboards, limited battery life and reduced robustness have been limited their use. In this context, the Informatics Department of Heart Institute (InCor), developed the Medkart®, that is a laptop adapted in a mobile and ergonomic console with extra batteries. This device allows access to ePR at bedside. The aim of this study was to evaluate the use of Medkart® as the main device to register the nursing process at the point of patient care. This is a cross-sectional and descriptive study with a quali-quantitative approach, conducted with 25 nurses who were experts in the use and application of nursing process. The inclusion criteria were: to work at least for three months in a specific ward; to be previously trained to access the computerized system; to agree to participate in this study. For data collection, a semi-structured questionnaire was used. Quantitative data were analysed through descriptive

statistics and qualitative ones through content analyses. All nurses were proficient in computer use. In general, 52% (n = 13) of nurses considered that the Medkart® facilitates their work. However, when nurses' perception was investigated, according to initial assessment or subsequent documentation the results showed some differences. Concerning the initial assessment, it seems that there were no differences in nurses' opinion about the use of Medkart®: 52% (n = 13) considered that this device facilitates the work but 48% (n = 12) disagree about that. Considering nursing interventions, the results were similar. Nurses did not consider that Medkart® was useful (64%) for the first documentation of nursing interventions, but considered that the device was appropriated to the subsequent documentation (84%). Nurses considered that the use of Medkart® facilitates the rapid access to other information about patient and offers more security in terms of data correctness and storage, because they are registered immediately, avoiding the loss of information. However, despite of these advantages, Medkart® interfered in the patient-nurse relationship. In conclusion, Medkart® overcome the main limitations of common mobile devices at the bedside, but also incorporates extra efforts to the nurses. In general, nurses considered that this kind of device was useful in their practice.

44. Platform science and practice: innovative online knowledge for every nurse in Flanders.

J. Adriaenssens. M. Foulon. (Belgium).

There is a strong need for continuous updating of professional knowledge in nursing care. However, research reveals that nurses (1) don't find an appropriate answer to their questions, (2) that knowledge is often fragmented or hard to find, and (3) only available when paid for. Moreover, (4) knowledge is frequently not provided in the right format for nurses on the work floor.

The platform Science & practice strives to professionalize nursing care in Flanders (Belgium), by optimizing and integrating up-to-date relevant scientific knowledge into the nursing practice. The Platform Science & Practice aims to realize its mission by (1) encouraging nursing oriented scientific research, (2) maximizing (in a scientifically correct way) the accessibility and implementation of actual, relevant, evidence-based knowledge for the nursing practice, (3) facilitation of bidirectional communication between the nursing work floor, the scientific domain and the educational field, (4) promoting an integrated multidisciplinary vision in patient care.

The main goal for the next years is the construction of an internet portal that provides all relevant knowledge to improve nursing care, and that will be available as a medium for 'every day use' (1) on the work floor for every nurse in every institution, and (2) in every nursing education center. This innovative project is a close

collaboration of the nursing field, the educational field, the scientific field and the Flemish government.

45. Distances travelled in the six-minute walk test: new defining characteristics for ineffective peripheral tissue perfusion.

R.C.G. Silva, F.M. Consolim-Colombo. (Brazil).

Ineffective Peripheral Tissue Perfusion (IPTP) is a nursing diagnosis that may be caused by narrowing of lower limbs arteries, leading to an imbalance between oxygen demand and consumption in skeletal muscles, known as claudication which is referred to limit patients' functional capacity. In the NANDA-I classification there are 12 accepted defining characteristics (DC). However, tests that evaluate patients' functional capacity have not been validated as signs of IPTP. The aim of this study was to verify if distances travelled in the six-minute walk test (6'-WT) may be considered as DC of IPTP. This was a cross-sectional, descriptive and correlational study. Participants were divided into two groups: group A, with IPTP (n=65), and group B, without IPTP (n=17) and were evaluated by an expert nurse. Participants were considered to have IPTP if they had claudication and an ankle-brachial index (ABI) <0.90. Those without IPTP had not any discomfort in the lower limbs during ambulation and had normal ABI (>0.90 and <1.30). To evaluate vascular function and functional capacity, participants performed three tests: pulse wave velocity measurements (PWV), that provides information about artery stiffness; vascular reactivity through

reactive hyperemia and sublingual administration of nitrate (0.45mg), that provides information about endothelial function; and 6'-WT conducted according to the guidelines published by the American Thoracic Society, in 2002. Additionally, 10 DC were selected to compound the physical examination of participants: diminished or absent pulses; femoral bruits; altered skin temperature, color, moisture, and hair; altered nails; altered capillary refill time; edema; shiny skin. Data were analysed using appropriate statistical tests. Both groups were similar in relation to age (62.2+8.1 vs 63.4+8.7, $p>0.05$), sex distribution (male: 56.9% vs 41.2%, $p>0.05$), body mass index (26.6+4.1 vs 26.8+4.4, $p>0.05$) and physical activity (24.6% vs 17.6%, $p>0.05$). History of tobacco use was more common in group A (81.6% vs 35.3%, $p<0.001$) and comorbidities only occurred in this group. In relation to DC, edema and shiny skin were not observed in any participant. The prevalences of altered skin hair and temperature were similar in both groups, whereas the other DC were significantly higher in group A. Participants of group A seemed to have increased arterial stiffness and worse vascular reactivity. Similarly, participants of group A travelled shorter total (265.1+77.4 vs 354.7+42.1 m, $p=0.0003$) and pain free distances (185.7+98.9 vs 354.7+42.1 m, $p=0.0014$) than those of group B. Indeed, an increase of one meter of pain free travelled distance reduced the chance of IPTP in 5% (CI=0.918-0.987, $p=0.008$). In conclusion, patients with IPTP travelled shorter total and pain free distances in the 6'-WT. Moreover, better performance in this test showed a reduction in the chance of IPTP occurrence. The distances travelled in this test may be considered as DC of IPTP.

46. Characteristics of the nursing process documentation at health agencies of the state of São Paulo, Brazil.

D.A.L.M. Cruz. R.M.C. Sousa. M.M. Maia. S.A.N. Araújo. E.M.T. Almeida. R.N.T. Turrini. L.R. Gnatta. M.A. Santos. (Brazil).

The Secretary of Health of the Estate of São Paulo (SES - SP), Brazil, in 2003, led an effort that aimed to encourage the use of nursing process in hospitals and clinics. An extensive program, coordinated by SES – SP, to support the adoption of the nursing process as a guide for clinical nursing documentation has been carried on since 2003, including the establishment of local committees entitled to manage the nursing process implementation. In 2008, a partnership between SES – SP and the School of Nursing of the University of São Paulo was established to evaluate whether the nursing process was adopted in public health agencies under SES – SP jurisdiction. Objective: This is an ongoing project to describe: a) local initiatives and strategies used to adopt the nursing process documentation, b) current characteristics of the nursing process documentation at health agencies of the Estate of São Paulo, Brazil. Methods: This is a cross-sectional, descriptive, and correlation study. All the 49 hospitals and ambulatory care settings under direct administration of the SES – SP will be invited to participate. Variables dealing with initiatives for the implementation of the nursing process and current status of the nursing process were defined and operationalized. Data will be collected at the unit and institution levels by means of structured and semi-structured interviews and structured observation of patients' records. Responses to the semi-structured interviews will be submitted to

content analysis. Data collected by means of structured questionnaires will be analyzed by descriptive statistics, according to the units of each health care facility. The results of this project will add knowledge on the nursing process use and inform decisions related to local and central policies on nursing process adoption. This project is supported by the São Paulo Research Foundation and the National Council of Technological and Scientific Development.

47. Consensus report on NANDA-NOC-NIC diagnoses, interventions and outcomes for heart failure patients attended at home.

K. Azzolin. A.F. Lucena. K.B. Ruschel. E.N. de Souza. C. Mussi. E. Rabelo. (Brazil).

Introduction

NANDA-NOC-NIC is defined as a relationship or an association between a diagnosis and an intervention or a nursing outcome. OBJECTIVES: To validate through experts' consensus the relationships among nursing diagnoses (ND), interventions and outcomes established by NANDA-NOC-NIC for patients diagnosed with congestive heart failure under home caring.

Methods

We used as method the consensus reached among six nurses with extensive cardiology experience. Initially, 8 ND were selected, all of them in agreement with NANDA-I, during a meeting attendance among the experts. After that, a consensus was reached in three

stages: validation of intervention, outcomes and activities of each intervention, as well as indicators for each outcome of each ND. The first and the second stages were conducted face to face, when were selected NIC interventions and NOC outcomes. In the following, we elaborated an instrument with ND, its interventions and outcomes, considering title and concept of each one of them. At the third stage, we validated the activities of each intervention and the indicators of each outcome. For that, we used another instrument with the title and the concept of the intervention or outcome, followed by a list of activities or indicators, respectively. We considered valid interventions, outcomes and indicators those with 80 to 100% of consensus. For activities, the valid ones obtained consensus of 70% or more.

Results

The ND previously selected by experts were Effective Therapeutic Regimen Management; Ineffective Health Maintenance; Ineffective Family Therapeutic Regimen Management; Excess of Fluid Volume; Risk for Imbalanced Fluid Volume; Fatigue; Readiness for Enhancement Self Health Management; and Impaired Home Maintenance. The ND Readiness for Enhancement Self Health Management and Impaired Home Maintenance were excluded because of the lack of validated interventions and outcomes. Interventions considered valid were Health Education; Self-Modification Assistance; Family Involvement Promotion; Fluid Monitoring; Nutritional Counseling; Teaching: Prescribed Medication; Energy Management; Family Mobilization; Behavior Modification; Telephone Consultation; and Teaching: Disease

Process. The valid outcomes were Knowledge: Treatment Regimen; Symptom Control; Fluid Balance; Knowledge: Energy Conservation; Activity Tolerance; and Family Participation in Professional Care. Eleven interventions were validated with 88 activities from a total of 96 preselected; seven outcomes were validated with 38 indicators from a total of 71 preselected.

Conclusion

Reaching a consensus among expert nurses provides qualification to the process of caring and to the nursing taxonomies knowledge. All validated diagnoses, interventions and outcomes will make part of a protocol, which will be applied as a pilot project in the context of home based nursing intervention given to heart failure patients.

48. Nursing Diagnosis Accuracy Scale: Version 2.

F.G.O.A. Matos. D.A.L.M. Cruz. E.S. Guedes. C.M. Predebon. E. Rabelo. M.A. Almeida. (Brazil).

The concepts involved in the Nursing Diagnosis Accuracy Scale (NDAS) are highly abstract and complex. Since its creation, the NDAS had low reliability estimates. Researchers and students of the School of Nursing of the University of São Paulo (EEUSP) and the Federal University of Rio Grande do Sul (UFRGS) implemented a training program to refine the tool. The objective of this study was to refine NDAS through a training program. The training program consisted of a face to face meeting, preceded by independent reading activity aimed to improve participants' knowledge on the

concepts involved in the NDAS. Nine nurses received reading material on the NDAS development. All of them had read the material before a face to face meeting in which the tool was applied in written case studies followed by a discussion focused on what changes could be made to the tool to improve agreement between raters. Interrater agreement on NDAS before and after the face to face meeting was estimated. Suggestions or comments of the participants were analyzed by the authors of the NDAS focusing the improvement of the clearness of the NDAS. The NDAS - Version 2 incorporated suggested modifications into the original tool. The following modifications were applied to the original tool: a) rewriting definitions of 'cues', 'relevance' and 'specificity'. Such modifications did not alter the meaning of the items, but enhance their clearness. It was proposed to avoid misunderstandings on the meaning of each item. b) inserting the definitions of each item as a footnote in the NDAS blueprint; c) deleting the term 'null' in the categories of responses, and replacing the response categories 'High/Moderate' and 'Low/Null' by 'High/Moderate' and 'Low', respectively, was done in order to minimize the idea of "all or nothing" in answers; d) assigning a score to the item 'presence of cue' was included with the purpose to discriminate the diagnosis that has no cue and the ones that have low relevance, low specificity or low coherence cues; and e) creating a new category of accuracy, 'low accuracy' . The collaborative work between researchers and postgraduate students of two academic institutions allowed a better understanding of the limits and possibilities of the NDAS. The NDAS-Version 2 is clearer than its first version. There was no suggestion of new items, neither to delete the existing ones. The

changes were incorporated to obtain a better understanding of the definitions of the scale items, to differentiate the diagnoses that do not have cues and to generate the category of 'low' accuracy. The NDAS–Version 2 was proposed to assess the accuracy of nursing diagnoses based on written data. Initiatives to improve the accuracy of diagnoses made by nurses can be benefited by using this tool.

49. Validation of the Patient Classification System for perioperative nursing in Finland – the research plan.

S.S. Rauta. S. Salanterä. K. Junttila. (Finland).

Background

Patient classification systems (PCSs) aim to categorise patients according to their caring needs; thus to give information about the intensity of nursing care. They generate information e.g. for resource allocation, productivity enhancement and quality improvement. In Finland, the so called RAFAELA™-system is widely used in specialised care in somatic wards. The development of perioperative PCS started in 2005 through national cooperation. The first draft of the PCS was developed by combining the theoretical knowledge of measuring nursing care with clinical expertise. Consequently, the perioperative PCS consisted of 6 factors each with 3-5 components that were seen to illustrate the core of perioperative nursing.

Aim

The aim of this presentation is to describe the validation process of the perioperative PCS in Finland.

Material and methods

To ensure the validity of the perioperative PCS:

1) Content validity will be confirmed by conducting a nationwide Delphi-study with experts representing clinical, managerial and educational practice and research. The interest will be on the relevance, clarity, objectivity, concreteness, simplicity, usability, and coverage and discrimination ability of the PCS.

2) Construct validity will be explored by using factor analysis as a statistical method. The data will consist of patient classifications gathered from three different types of perioperative environments.

3) Further validation will be conducted by testing the PCS in nine operating departments representing different clinical environments in five university hospitals. The reliability will be tested by inter-rater-agreement; required consensus 70 %. Simultaneously, the prediction validity will be evaluated: has the patients' acuity correlations with the time spent in the operating department or progress or outcome of the care. The criterion validity will be reviewed by comparing patients' ASA-classification to their acuity.

4) Finally the users' experiences when categorizing patients with the PCS will be explored by a survey. The purpose is to develop a valid and also a user-friendly tool for assessing the intensity of nursing care.

Results

As a result of the validation process there will be a tool to measure perioperative patients' caring needs and nursing interventions needed to correspond them.

Conclusions

It is essential to succeed in staff allocation to make sure that nursing care in operating departments is safe and of good quality and also to show the efficiency of nursing profession's contribution in patients' care. Uniform tools are needed both nationally and even internationally to enhance comparison of the nursing performance.

50. Can a standardised wound care record meet patients' desires on quality of care?

E. Törnvall. S. Wilhelmsson. (Sweden).

Aim

To evaluate an implementation of a standardised evidence-based electronic nursing wound care record for patients with leg ulcer emphasising nurses opinions, patients' desires and the content of the record.

Methods

Development and implementation of a standardised evidence-based nursing wound care record in 17 Primary Health Care Centres in Sweden that used electronic patient record; nine was an

intervention group and eight a control group. The intervention group included 77 nurses, 60 patients and 60 nursing records and the control group included 49 nurses, 41 patients and 41 nursing records. Data was collected at baseline through questionnaires to nurses and to patients in both the intervention and the control group, the same for intervention and control group. After three months nurses in both the intervention and the control group received a questionnaire modified from the first one and different between the groups. For the patients the questionnaire Quality from Patient's Perspective was used both at baseline and after three months. Audit of nursing records were performed at baseline and after three months. Both descriptive statistics and qualitative content analysis was used to analyse data.

Results

Results of questionnaires to nurses showed that the standardised nursing wound care record led to more informative, comprehensive and knowledge-intensive documentation than before. There was a discrepancy between what the nurses considered as important to document and the content of the records. The patients had desires of increased participation in care, continuity of care, and best practice in wound care, improved pain relief, possible to judge the wound healing process and improved communication between the care givers responsible for the care of the patient. At the three months evaluation the desires of the patients had not changed. The audit of nursing records showed a more complete nursing documentation most concerning nursing status and nursing planned intervention when the standardised nursing wound care

record was used. Nursing diagnosis were found significantly more often at the three months evaluation but was still rare.

Response rate was for nurses before intervention 92% in the intervention group and 89 % in the control group. After intervention the response rate was 67% respectively 73%. For the patients in both intervention group and control group the response rate was 57% before intervention and 90% respectively 93% after the intervention.

Conclusion

Standardisation of the nursing documentation would increase the safety of the patient and the continuity of care by the opportunity that necessary information is documented and could be shared by other care givers. A standardised evidence based wound record increase the possibility to implement research findings into daily care since the wound care record also worked as a check list.

51. Nursing interventions of patients with disorders of consciousness: practice applications related with communication.

A.C.G. Puggina. M.J.P. Silva. (Brazil).

Disorders of consciousness (DOCs) are clinical diagnostic entities where there are diffused psychological losses, most of the times being followed by a generalized reduction or alteration of the consciousness content, added to deficiencies for awakening. Coma,

vegetative state and minimally conscious state are DOCs with major clinical differences.

The aim of this study was to explore the aspects of nursing interventions for patients with DOCs, related to difficult diagnosis, communication with the patients and family.

Difficult diagnosis: Rigorous behavioral assessment - supported by structural imaging and electrophysiology - is usually sufficient to establish a patient's level of wakefulness and awareness. Proposal for nursing interventions: (1) to know and to incorporate behavioral scales in daily clinical practice, such as, Coma Recovery Scale-Revised (CRS-R), Glasgow Liege Scale (GLS) and Full Outline of Unresponsiveness Scale (FOUR).

Communication with the patients: A respectful care for a patient with DOC requires special attention by the nurse and a more adapted approach regarding the recognition of the human person. Proposal for nursing interventions: (1) Introduce yourself to the patient; (2) Guide and inform the patient about each care procedure that is performed; (3) Call the patient by her/his name on all of the occasions regardless the level of consciousness; (4) Do not speak too loud as if the patient with DOC were deaf; (5) Communicate with the patient by using the appropriate voice tone; sometimes, it will require to stay somewhat closer to the patient's ear; (6) Avoid parallel talks to your workmate while care procedures are performed to the patient; (7) Concentrate on the relationship and the activity that is performed. This action keeps the dignity of the patient and strengthens the professional-patient

linkage; (8) Use the affective touch as a way of non-verbal communication to the patients with DOCs.

Communication with the family: The nurse is responsible for the job of welcoming and guiding the relatives. Proposal for nursing interventions: (1) Guide and inform the relatives about the actual clinical status of the patient, looking for being both objective and careful; (2) Bring the relatives to a separate room when giving important information, preserving their privacy; (3) Pay attention to the reactions of the family members as regards to their loss; (4) Encourage the sharing of the feelings and the fears among the family members; (5) Prepare the key people for the physical and behavioral changes in the patients; (6) Consider the hope of the family as being a natural facing process, however, do not stimulating false hopes; (7) Stimulate the relatives to come close to the patient during the visitation times: talking to and touching the patient; (8) Recognize the importance of the spiritual needs of the relatives and supporte them if necessary; (9) Encourage how to face the situation and promote their sorrow release as well as supporting their decision making.

52. The problems and challenges of nursing documentation in the future electronic health record – the data basis for decision of purchasing ICT system.

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Background

Based on specific needs of nursing, in Finland there has been developed the Nationally Standardized Nursing Documentation Model (NSNDM) in international framework (Sabacare 2010). NSNDM is based on the nursing decision making process, nursing core data (NMDS) and the Finnish Care Classification (FinCC).

The nursing process model is the most often used to structure nursing documentation in Europe. Many standardized nursing terminologies are used in Europe but general use of this process in nursing has not taken place yet. That complicates the access to the nursing data. (Thoroddsen et al. 2009.)

In Finland NSNDM does not always respond to the professionals needs. NSNDM can be used in different ways and headings can also be used on different accuracy level. (Nykänen et al. 2010.) Nursing processes in Finland are structured into patient information systems (ICT system) also with other models than NSNDM.

Objective

The object of this project is to clarify

1. The most appropriate documentation structure in the future electronic health record system (EHR)
2. In what kind of heading level the documentation should be done?

Methods

Six ICT systems will be presented and tested during the autumn 2010. The testing will take place at the Satakunta Hospital District. In these presentations the vendor of the ICT system shows how the data of an example patient is handled in the ICT system in question. Five patient cases are to be used. The professionals (nurses N = 13, doctors N = 8, secretaries N = 4) from the different healthcare sectors assess the usability of the ICT systems with the patient case of their own special sector. These professionals will be trained before the case presentations. The data will be analyzed by content analysis.

Results

The preliminary results show that nursing has been structured with NSNDM in four ICT systems. These four ICT systems are used in Finland in different hospitals. In two other ICT systems used in other countries in Europe, but not in Finland, NSNDM has not yet been implemented. More results will be presented in the conference.

Conclusion

In purchasing of the ICT system, inter alia, the following issues shall be taken into account: adaptation of the ICT system to

different hospital environments and separate systems, sharing of data in the patient care processes, matters regarding the end-users and ICT management, flexibility, preparation to future challenges and costs. In addition, it must be taken into account, what kind of additional developments the new ICT system requires.

53. Care and use of assistive technology services in the future: old people's perspectives.

K. Axelsson. S. Sävenstedt. C. Harrefors. (Sweden).

E-health including assistive technology services (ATS) and information- and communication technology (ICT) is more and more accepted and used in home care. As values change over time it is necessary to illuminate values about the use of ATS in care. The aim of this study was therefore to describe healthy old persons' perceptions about care and the use of ATS.

Qualitative individual research interviews were conducted with twelve healthy couples 70 years of age or older, living in their own homes and receiving no professional care or social support. The interviews were conducted with support of vignettes where needs of care on three levels were described without ATS and with ATS. First the interview was focused on the person's possible future need of care and thereafter the person's view about what the partner would prefer. A qualitative content analysis was used to analyze the interviews.

Values about the home, the use of ATS in care and dignity were the main domains which concerned the participants when talking about possible future need of care. Regardless of whether participants discussed quality care in general or ATS supported care, they were convinced that the best place for care was the home. Values associated with the home were closely connected to the values associated with the couple hood. To maintain the home as a home the partner was seen as playing a vital role.

ATS as a tool to facilitate care was perceived as an asset as long as the couples were in control of their situation. The participants had limited or no experience with the use of ATS and they were both fascinated by the possibilities with assistive devices that could facilitate care at home, but they also expressed fear that they would not be able to handle the new devices due to lack of experience and their age. The fear could be easily overcome if the couple's relationship was intact. The use of ATS was viewed as an unavoidable development in a society.

Values associated with dignity were closely connected to maintaining identity, and being surrounded by people they trusted in and those knowing their life story. Dignity was associated with care by someone who could be their advocate and compensate for their reduced abilities. Regardless of other factors, dignity was highly valued, and had greater importance when other values like autonomy and independence were reduced.

These findings highlight old people's values about quality care and the use of ATS in care and should be taken into consideration when planning care of the elderly, and implementing new technology

related to their care. It is necessary that politicians and care planners give this aspect of elderly care serious attention and explore various options to deliver the best care, as perceived by the elderly.

54. Validation of the defining characteristic of the diagnostic labels "anxiety" and "fear" in patients undergoing cardiac surgery in Spain.

N. Rafi. M.T. Lluch. (Spain).

Introduction

Validation models that are in the nursing literature are those of Gordon and Sweney presenting retrospective and clinical models, and models of Fehring, derived from previous, which suggests three types of validation: content validation of diagnosis, validation of clinical diagnosis and correlation of etiological classifications.

Validation studies have been used if the NANDA diagnostic labels are studies in health care units, such as those by Quero or Gonzalez in the areas of mental health care, neonatology, intensive care and primary care.

Carpenito in her book Nursing Diagnoses. Applications to clinical practice, describes the diagnoses anxiety and fear can coexist in the person's response to a situation, for example, a person facing surgery may fear the pain and being anxious about a possible cancer diagnosis

One problem for content validation studies is to define the experts.

Material and Method

The objective was to select a group of professionals with knowledge on the use of nursing diagnoses anxiety and fear and clinical experience in the surgical area.

This selection was determined through a questionnaire that respondents completed following the requirements described by Guirao to be considered experts.

Forty-eight defining characteristics were analyzed for both diagnostic labels. Liker scale was used to classify each one of the defining characteristics of the diagnoses anxiety and fear, according to how representative they believed could have each of the features in surgical patients.

To obtain the degree of representativeness of each defining characteristic, the weight allocated to each one of the defining characteristics was joined with their counterparts and the average was calculated.

Results

The study results show that in the diagnoses anxiety and fear differ a series of defining characteristics that can be considered major, some minor and others are discarded to achieve a result less than 0.6.

Looking at the results we see that in both diagnostic labels, get a punctuation of 0.8 the defining characteristics "the patient reports that he feels scared" and "the patient says he has difficulty

concentrating”, therefore, be considered as higher defining characteristics.

As a minor defining characteristics with a punctuation of 0.6 are "the informed patient who has concerns," the patient has an increased pulse "and" the patient has an increased blood pressure. " The rest of the defining features would be eliminated.

Discussion

One of the limitations of the studies of both diagnostic content validity (UCD) as validation of the defining characteristics is the use of real experts in the field. That is why the results are exploratory in nature and hence the need for more research reviewing each and every one of the defining characteristics described in each of the diagnoses, performing a purge of them and develop tools to measure them more accuracy.

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