

SUPPORTING EVIDENCE-BASED NURSING

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Introduction

The growing demand for evidence-based nursing is a challenge for us information professionals in hospitals as it is our task to teach information literacy for nurses. Often their schooling has included none or very little education on library skills or information retrieval though information systems can be seen as a key to evidence-based health practice. The paper discusses the role and responsibilities of information professionals in promoting research utilisation in nursing and in supporting nurses' continuing education and life long learning.

As there has been a dramatic increase in nursing research, there have been increases in ways to use this research, and finding usable evidence requires effort(1). Hence, it is important that librarians and other information professionals teach and train the nursing staff in searching library and Internet databases. It is vital to the practice of evidence-based nursing that nurses are information literate.

In order to find out the educational needs, the knowledge about, and the attitudes towards evidence-based nursing and information retrieval of the nursing staff in Kuopio University Hospital, a small survey was conducted in May 2007.

Key concepts: evidence-based nursing and information literacy

Evidence-based practice means integrating the best available research evidence with information about patient preferences, clinician skill level, and available resources to make decisions about patient care.(2) Evidence-based nursing is the process by which nurses make clinical decision using the best available research evidence, their clinical expertise, and patient preferences. Evidence-based nursing practice involves six demanding steps: 1) *formulation of an answerable question to address a specific patient problem or situation*; 2) *systematic searching for the research evidence that could be used to answer the question*; 3) *appraisal of the validity, relevance, and applicability of the research evidence*; 4) *decision making regarding the change in practice*; 5) *implementation of the evidence based practice decision*; and finally, 6) *evaluation of the decision outcome*.(2) Library certainly has to do with step two, and, at least to some extent, also step three.

Information technology is an essential tool for each step of the evidence-based nursing process.(3) Evidence-based practice is a systematic approach to define the most relevant evidence on which to base patient care decisions. If evidence does not direct nurses' clinical judgement, nursing practice can become outdated and as a result patient care could suffer.(4) One of the varied skills required in practicing evidence-based is the ability to locate and critically evaluate clinically relevant research literature(5), and here the concept of information literacy comes up.

According to Brady and Levin(6) many sources of evidence – such as systematic reviews, meta-analyses, clinical trials, experimental and quasi-experimental studies, qualitative studies, case studies, and clinical practice guidelines – are available to nurses. Using them is relatively easy to English speaking nurses, but in Finland (and many other countries) the language barrier is in some cases high enough to keep the busy nurses away from reading research articles. Fortunately, now also Finnish journals focusing on nursing research exist. In addition, the barriers to the use of research-based evidence described by Ciliska et al.(2) occur when time, access to journal articles, search skills, critical appraisal skills, and understanding of the language used in research are sparse or lacking.

Evidence-based nursing does not stop at information retrieval, and it is *not just a process of critically appraising research publications but the connection of internal evidence, or patient-related understanding, and external evidence, or knowledge from studies, where the internal evidence comes first*, as Berg, Fleischer and Behrens(7) put it. In my opinion, information literacy greatly helps in both seeing the difference and making the connection between the internal and the external.

Information literacy is *the ability to recognize that information is needed, to find it, evaluate it, and use it in practice, and these skills are part of the process of evidence-based practice*.(8) Information literacy skills are necessary for the successful implementation of evidence-based nursing, and to continuing professional development. In contemporary nursing education and clinical practice, it is essential to be able to connect information from a selection of knowledge bases and to use that information efficiently to achieve specific health care and learning goals. Information literacy competencies are a foundation for critical thinking. Therefore professional development courses have to maintain, and expand information literacy skills. Achieving information literacy means lifelong learning can be initiated, extended, and sustained through abilities that may use technologies but are independent of them.(9) Information literacy is also an essential aspect of health professional education in preparation for working within a changing global information environment.(10)

Nurses are increasingly expected to use computers to plan, implement, and evaluate nursing care and to use high-quality research information to inform their clinical decisions, but great variation exists in quality of computer systems, access to computers in clinical areas, and skill level of practicing nurses. Computer skills are essential in the ability to access and use the best information for evidence-based practice.(11) Though information technology makes it possible to bring best practices and evidence-based contents to the disposal of students and clinicians(12), it is important to realise that computer literacy does not mean the same as information literacy which is a much broader concept. Computer literate persons understand computer basics and use a variety of applications to handle data and create documents. Being good at using computers does not automatically generate a knowledgeable information user, even if that information is in electronic form. Yet, computer skills are needed in information retrieval from electronic resources, requiring both abilities and possibilities to access information as well as knowledge to recognise information needs and to assess the quality of the information. Not only the competencies of nurses, but also the availability and usability of databases have to be taken into account in the demand of easily combined evidence-based research and clinical data in practice.(13)

Evidence-based nursing in the University of Kuopio and in Kuopio University Hospital

Cooperation between teaching faculty and librarians must be promoted in meaningful ways for information literacy to be cultivated.(9) Both in the University of Kuopio and in the Kuopio University Hospital the demand of evidence-based nursing has been taken seriously, and the role of information professionals in the process is expanding.

The Department of Nursing Science in the University of Kuopio is profiled nationally as a preventive nursing science research and education unit. Students are studying nursing science, whose main objective in education and research is to improve public health. University of Kuopio was the first university in Finland to start with a degree program in Health Administration with nursing science as a major in 1979.

Department of Nursing Science has three educational programmes: Nursing Leadership and Management, Preventive Nursing Science and Nurse Teacher Education. The department also coordinates Finnish Post-Graduate School in Nursing Science.

The Department of Nursing Science has a four ECTS credits course *Evidence based nursing* for first year students in spring term. The contents of the course include basic concepts in evidence-based nursing, retrieval of evidence-based research from databases, critical evaluation of research evidence, products of evidence-based nursing (clinical guidelines in health care and nursing), and theories of research spreading and factors influencing on it. The teacher is a senior lecturer in nursing science but information specialists have now for several years been involved in teaching information retrieval for the course.

In the spring term of the third study year, there is a course called *Development of Evidence Based Nursing* taught by the professor in nursing science. The contents are development of scientific knowledge, its' nature and usefulness, nursing outcomes, and effectiveness in health care. The teaching methods are lectures, seminar paper and seminar presentation. As a majority of the students have at this point completed the Information Retrieval and Library Skills course, compulsory for all undergraduate students aiming at degree, organised and conducted by the university library, information specialists have not been teaching at this course. Yet, many of the students make appointments with information professionals in order to get assistance in formulating their search profiles or finding the most suitable key words for their topics of interest.

As e.g. Klem and Weiss(5) note the integration of information skills into curricula has several benefits when it directly connects the skills with course work in a relevant and important way so that the students are motivated to learn and retain information skills and finally rewarded for the learning if they successfully complete their tasks. Students probably also see the high relevance of information skills when they understand the meaning of choosing a suitable database or refining a search statement by broadening, limiting, or using truncation. Information retrieval skills are much better learned in connection to real tasks and assignments instead of make-believe situations.

Though many of the students on these courses are members of the nursing staff of Kuopio University Hospital, education and training must also be organised in the hospital, aimed at all members of the nursing staff, whether they have just recently completed their graduate studies, or are close to their retirement, or somewhere between. It is clear that nurses cannot use the library nor appreciate the available services unless they are aware of what is offered.

Kuopio University Hospital has the longest nursing research tradition in Finnish hospitals. Nursing research has been systematically developed for more than fifteen years, and stretches from the practical development activities of the nursing units to academic dissertations. The definition of policy for the nursing research is updated every three years. A special research and development working group for nursing practice was established in the beginning of 1990s, and it works in cooperation with the nursing management group. To support research and development a voluntary tutor system has been organised, the tutors being members of the nursing staff that have Master's or higher university degree.

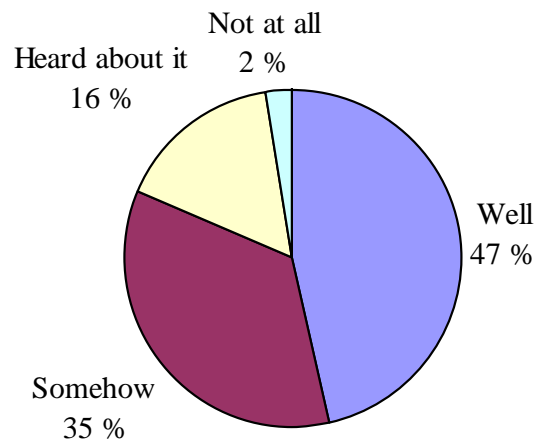
A nursing workforce able to access and effectively use information-retrieval systems is necessary for efficient and effective information use, and libraries have a crucial role in this. In order to help in such creation, the library personnel have to know the current situation. *For nurses to incorporate higher percentages of evidence-based nursing into their practice, several important components must be in place. --- It is necessary to point out that nurses in clinical practice will never have time to find the appropriate evidence at the time of need unless there is a clinical information and decision support system available at the point of use. --- Every health organization must have quick access to available evidence-based information, along with the computerized clinical information system.*(1)

Survey results in Kuopio University Hospital

To further develop the information retrieval training Kuopio University Hospital, and to find out what the educational needs, the knowledge about, and the attitudes towards evidence-based nursing, use of research, and information retrieval of the nursing staff are, a survey was conducted in May 2007. The link to the electronic survey was put on the hospital intranet and also sent to several in-house mailing lists of the nursing staff. During the rather short period, less than two weeks, that the questionnaire was available, 162 answers were gathered. As no background information was collected, all the answers are presented together without dividing them into groups according to the age, status (nurse, nursing head, midwife, assistant nurse etc.), department or speciality of the respondents.

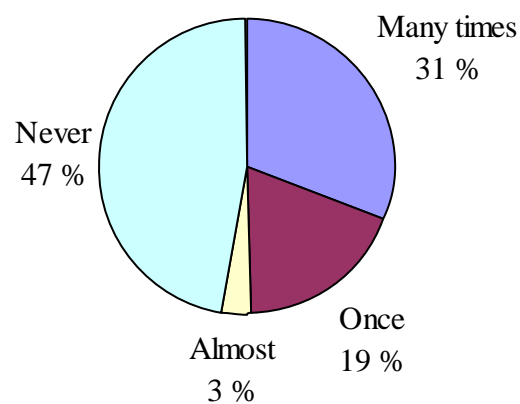
When asked whether they know the concept of evidence-based nursing, almost half (47 %) of the respondents (N=162) answered that they know it well, 35 % that they know it somehow, and 16 % that they have heard about it. Only 2 % said they did not know the concept at all. (Figure 1.) This seems rather surprising as, according to Pravikoff(8) 50% of the nurses in the United States are not familiar with the concept of evidence-based practice, nor had they received training in search techniques or the use of search tools and did not value research as a source of evidence.

Figure 1: Knowledge about EBN



The answers to the second question in my survey – *Have you had training in evidence-based nursing?* – give a slightly different picture, as almost a half (47 %) of the respondents (N=162) has never, almost a third (31 %) has many times, and almost a fifth (19 %) has once attended training in evidence-based nursing. A few, 3 %, almost attended evidence-based nursing training, which can be translated into e.g. that they considered attending, or that they would have if the shift schedule would permit attending. (Figure 2.)

Figure 2: EBN training



Interest to evidence-based nursing training is noteworthy as 64 % of those who have not attended evidence-based nursing training would certainly or probably like to attend, and only 6 % said they would not attend. (Figure 3.) The majority (82 %) of those respondents who have attended evidence-based nursing training would certainly or probably attend again, and only 4 % would not. (Figure 4.)

Figure 3: No EBN training, would attend

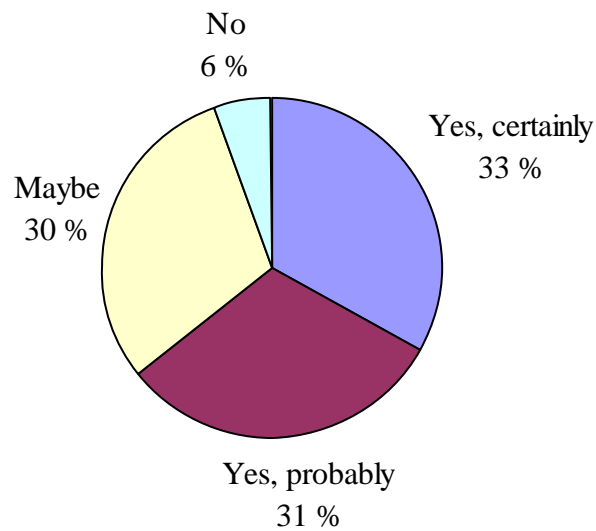
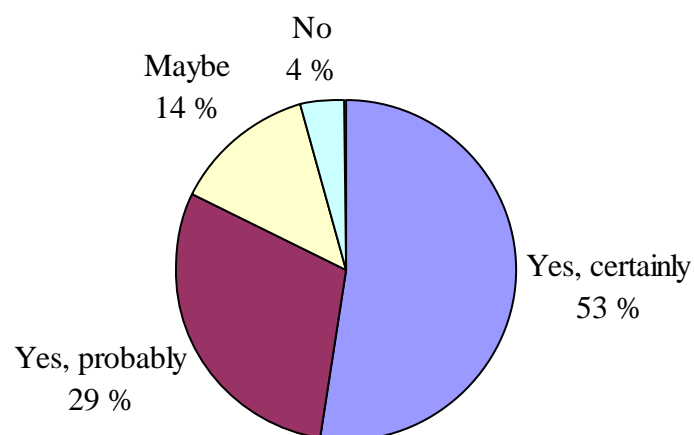


Figure 4: Would attend EBN training again



To the question about training in information retrieval (IR) the answers are quite similar as almost a half (49 %) have never attended information retrieval training (Figure 5), 70 % of those who have not attended (N=99) would certainly or probably attend (Figure 6), and 81 % of those who have attended (N=93) would certainly or probably attend again (Figure 7).

Figure 5: Information retrieval training

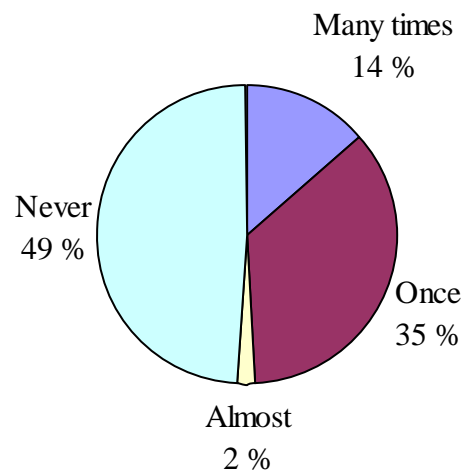


Figure 6: No IR training, would attend

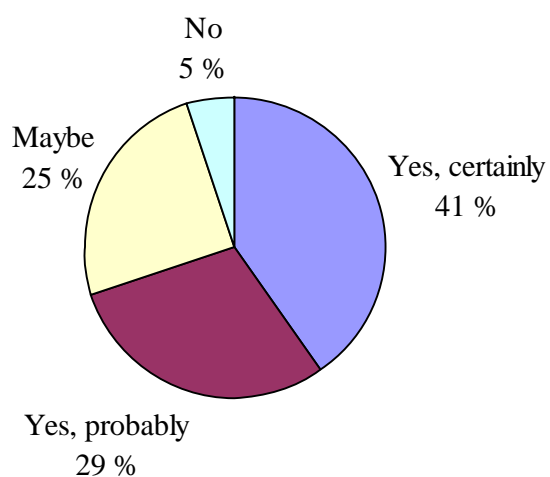
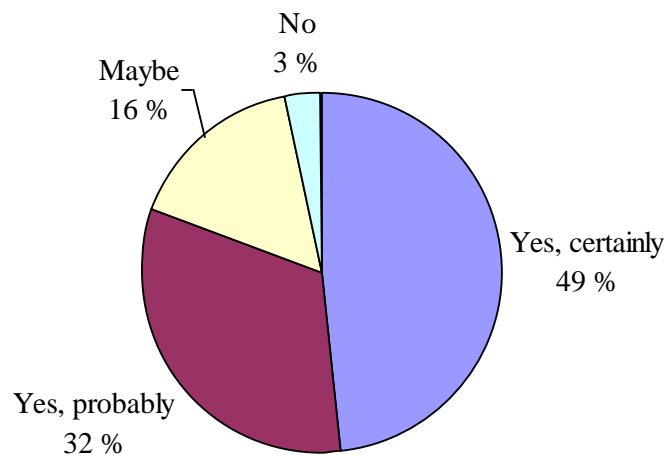


Figure 7: Would attend IR training again



When asked whether the nurses search nursing research in connection to their professional tasks, 93 % of the respondents said they do search, half of them rarely, and 14 % weekly. (Figure 8.) It appears that searching the Internet is quite popular (28 % weekly, 31 % monthly) though 5 % said they never search the Internet in connection to professional tasks. (Figure 9.)

Figure 8: Searching in general

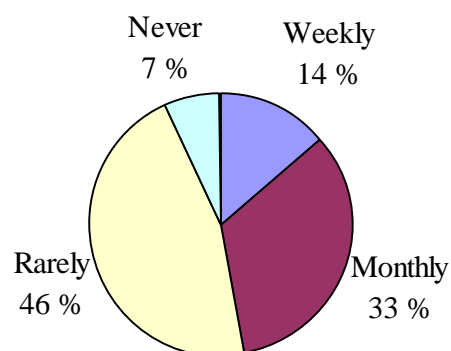
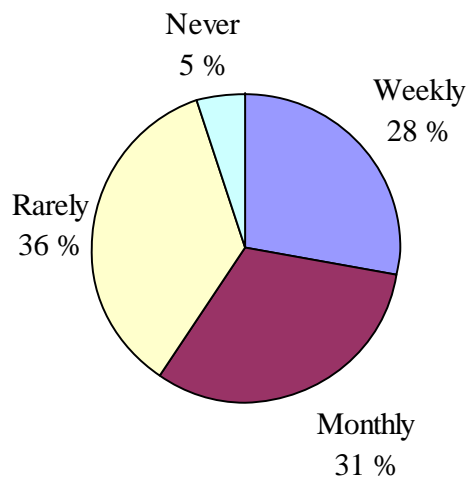
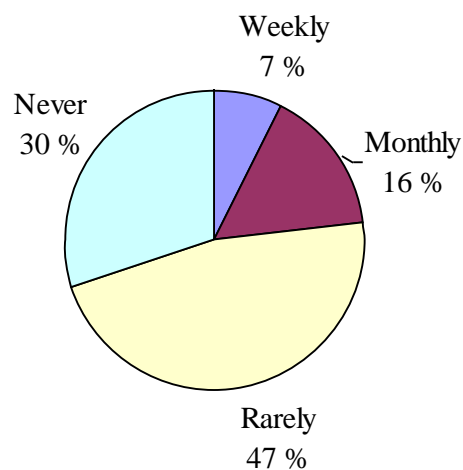


Figure 9: Searching Internet



According to this survey nurses are not very eager to search library catalogues to find nursing research. Almost a third (30 %) of the respondents never searches OPACs, and less than a quarter (23 %) search OPACs weekly or monthly. (Figure 10.)

Figure 10: Searching OPACs



Searching Finnish reference databases is not very popular either. More than a quarter (28 %) of the respondents never search them, almost a half (45 %) use them rarely, and a little more than a quarter (27 %) weekly or monthly. (Figure 11.) Even less used

are the international databases, as 40 % never search them, and less than a fifth of the respondents (17 %) weekly or monthly. (Figure 12.)

Figure 11: Searching Finnish databases

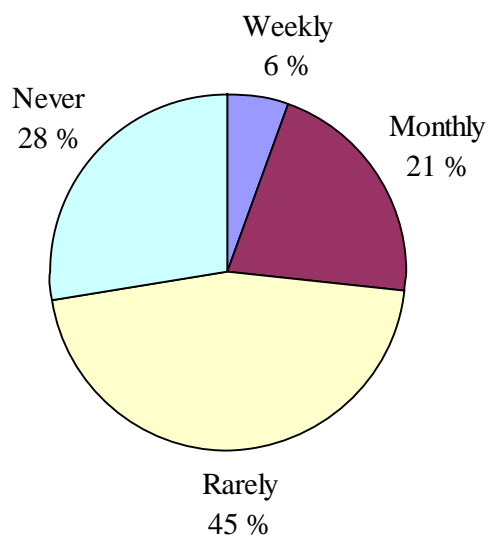
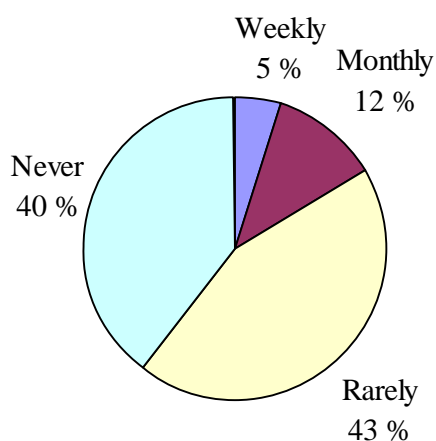
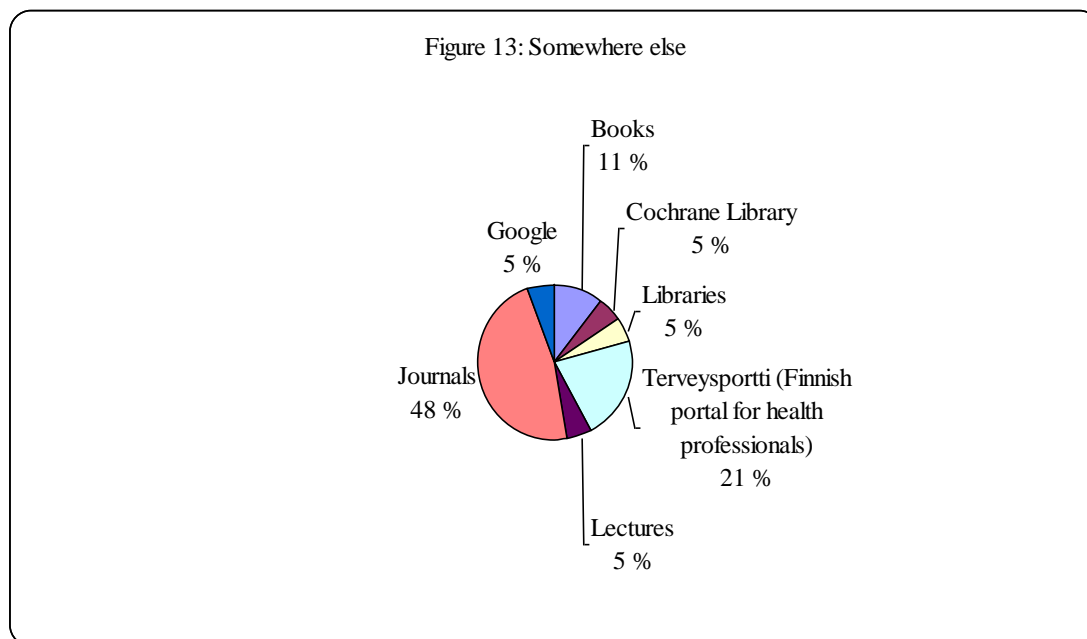


Figure 12: Searching international databases



Nineteen respondents answered to the question about searching somewhere else for nursing research. Almost half of them (48 %) use journals for searching purposes (they probably mean hand searching by looking through reference lists of articles), and a little more than a fifth (21 %) use Terveystietä (a Finnish portal of databases,

journals, news etc. for all health professionals). The Cochrane Library, Google, lectures and libraries got five percent each (Figure 13).



Perhaps the mentions for Google should be added to the numbers of searching the Internet (Figure 9), and the mentions for libraries to the numbers of searching OPACs (Figure 10) but as they were given as so called open answers they are represented separately.

It might be noteworthy that no one mentioned colleagues etc. in my survey, as Secco et al.(11) found out that interpersonal information was the most frequently used source compared with both non-computer-based and computer-based information, and state that their findings are consistent with previous research. If this is a cultural difference, a matter depending on how the question was put, or something else, is not clear. Also the language barrier, which I assumed to be rather high and expected to get answers about, based on my discussions with practicing nurses and students of nursing science, was not mentioned at all.

When asked why the respondents never search if they said they do not, fourteen answers were given (Figure 14). According to these answers, lack of time is the main reason (58 %, 8) but three respondents (21 %) said they do not have the skills. Thirty answers were given to the question *If you have not attended training in information retrieval, why not?* (Figure 15). More than a half (54 %, 16, N=30) said they did not have information about the training, about a quarter (23 %, 7, N=30) said they did not have the time, and as many that they have no need to – leaving it unclear whether they already have the skills, or whether they think that they do not even need the skills.

Figure 14: Why never search

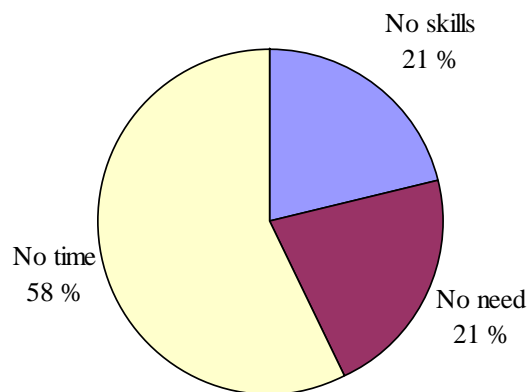
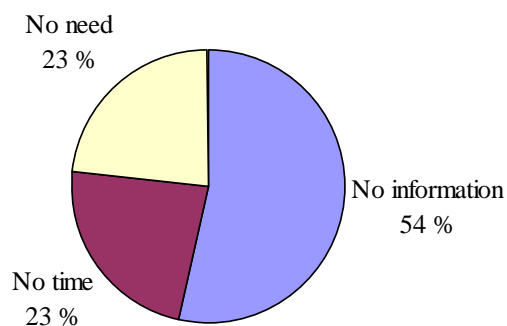


Figure 15: Why not IR training?



Other open comments include several remarks about the importance of both evidence-based nursing, and information retrieval skills, such as *very important for all nurses, more and more in the future*. There are also some respondents who demand more encouragement and motivation from the nursing heads – *very important; library can help, but nurses should be encouraged by nursing heads* – as well as many of those who complain about the constant lack of time: *I would like to search but often other tasks come first and finally there's no time left*; and, *I should visit the library more often but there's no time*; and, *it would be great if nurses could use work time (1 hour per month) for information retrieval. I have had to use the library on my days off*.

Here I would like to quote first Pravikoff(8) who states that *[I]ncorporating EBP into a culture requires complete administrative support, not only of the importance of EBP, but of developing a culture of inquiry or inquisitiveness, openness, and encouragement of learning new skills. If the management is not encouraging the nursing staff, there is small chance that the efforts of the library will be of much value*, and then Ciliska, Pinelli, DiCenso and Cullum(2) explaining why all nurses do not base their practice on evidence: *The process of incorporating good quality research findings into nursing practice is not straightforward. --- nurses have difficulty in accessing and appraising published research, either because they do not have access to journals and libraries, or because they have not been taught how to find and appraise research*. It is clear that the barriers and challenges are the same everywhere, and that my survey confirms what I learned from the literature on the subject.

Discussion

Brady and Lewin(6) find it surprising that, according to their references, the majority of nurses are not aware of the latest research findings available to optimise their nursing care, and that nurses, instead of relying on research findings, rely on intuition, tradition, and the authority of policies and procedures for direction in particular situations; but I find the situation quite understandable considering the boundary conditions like lack of time, limited access to computers, inadequate computer skills, insufficient language proficiency, or lack of superior support. Often, nurses also have been taught to just follow the procedures, and changes in organisational cultures do not happen overnight.

This does not mean that I would not agree with Brady and Lewin(6) as they explain why it is critical that nurses understand the process of moving toward an evidence base for their practice. They refer to Bostrum and Suter's research from the year 1993 saying that only 21% of nurses had incorporated recent research into their patient care but, of course, and to the benefit of patient care, the situation has changed in fourteen years. My small survey indicates that approximately half of present-day nurses already do – and almost all are eager to, though not yet able – practice evidence-based nursing.

According to Brancato(4) inadequate skills in conducting literature searches can overwhelm and intimidate both practicing nurses and students, discouraging them from seeking the latest research studies and reports. Many have negative attitudes about research because of lack of familiarity with terminology, statistics, and information technology. In this we can and must help as effectively as possible by lowering the library threshold, by taking the library services to the customers instead of waiting for them to visit the library, and by assisting and training the nurses on their way to information literacy. Brice and Muir Gray(14) state that it is essential to get librarians closer to clinicians in order to learn to understand decision-making and consultations, the key drivers of 21st century healthcare. Brady and Levin(6) give good advice to nurses as they tell them to introduce themselves to a librarian and make that person their best friend, but I am afraid that we do not have time to be best friends for all the nurses; at least, I know I do not. Perhaps we, nurses and librarians, should first try inventing as diverse and variable ways as possible to at least make the acquaintance of each other.

Removing information barriers – lack of user-friendly computers, database access, library services, and computer support – may raise the level of information used in clinical practice settings. Successful implementation of evidence-based nursing care depends on organisational plans and commitment to systematically create the appropriate clinical culture. This culture requires an information infrastructure that widely supports evidence-based approaches. An organisational, system-wide approach can be used to make evidence-based information more readily available at the point of nursing care and clinical decision making(11) Systematic reviews can be used to overcome the barriers of lack of time, lack of access to articles, and lack of critical appraisal ability in supporting evidence-based nursing as the reviews, compared to original articles, give a more complete picture about the effectiveness of an intervention and result in better quality clinical decisions.(2) Should we consider putting the effort on teaching how to search Cochrane Library, and on how to find systematic reviews in CINAHL and MEDLINE? It is also important, in my opinion, for the nurses to be aware of and have access to the journal *Evidence-Based Nursing* as the purpose of the journal is to select (from more than 150 peer-reviewed healthcare journals) and summarise in structured abstracts, with commentaries by clinical experts, those articles that warrant immediate attention by nurses attempting to keep pace with important advances in their profession.(2)

Conclusion

To ensure provision of safe and effective nursing care, nurses need to base that care on the best available information. Nurses must be able to access an ever-expanding information base, develop skills required for information retrieval, and use the information appropriately in order to answer clinical questions. To be an effective and discerning user of information is an expected competency of any graduate, but is particularly important for nurse graduates.(10)

The plan of action in my library is to arrange three kinds of training for the nursing staff in Kuopio University Hospital.

First, we organise short and open-to-all – without enrolment in advance – introductions in a lecture room to demonstrate the services and resources the library has to offer. This is one way to answer the demand for at least basic knowledge of what we have to offer for those who have little or no knowledge about library OPACs, databases, electronic journals etc. This kind of general introductions to library services have earlier been arranged a couple of times, but very few people appeared. If this was due to bad timing, or insufficient information, cannot be known, but this time the introductions are organised once a month, scheduled on different days of the week and different hours of the day in order to reach nurses regardless to their shifts and days off. Also the dissemination of information about the training is now more efficient, using e-mails, hospital intranet, inter-hospital bulletin, leaflets, and the grapevine.

Second, we regularly arrange hands-on-training sessions in computer class-rooms, giving an opportunity to get familiar with the databases, practice information retrieval, and ask for assistance. This kind of training has earlier been organised only

occasionally, not more than once in a year or two. Enrolment is now being organised very carefully in order to reach those in most urgent need for this kind of assistance.

Third, we continue visiting the departments, attending nurses' meetings, sitting in study groups etc. So far, this has been the most popular way to spread information about library services, but has been based on demand, that is, the we have expected to be asked to visit in the meetings and groups. Information about the possibility has been available but apparently not widely known about. Now we have changed our style and are more active and visible in presenting our services to the nursing staff.

In addition to these actions, we will of course go on helping and assisting personally those library patrons that come into the library and ask not only for materials but also for assistance in the use of the computers, the electronic journals, the databases etc.

Both the literature on the subject and the results of my little survey encourage us librarians to rise to the challenge of supporting nurses in evidence-based practice by providing not only access to information but also assistance and training in information retrieval. It is part of our role as health information professionals to promote research utilisation in nursing and to support nurses' information literacy and life long learning.

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