

ORIGINAL RESEARCH

Implementation of evidence-based nursing practice: nurses' personal and professional factors?

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Abstract

Aims. This paper is a report of a study conducted to explore the relationship between nurses' personal and professional factors and evidence-based nursing practice.

Background. Like most health-related professions, nursing is shifting from the traditional intuition-based paradigm to evidence-based nursing practice.

Methods. A cross-sectional survey was conducted in 2007 with a convenience sample of 243 nurses from northern Israel, who worked in hospitals or in the community. Associations between background variables and evidence-based nursing practice were examined. For the purpose of finding factors that predicted behaviour, a logistic regression analysis was conducted.

Results. The self-reported professional behaviour of nurses with a degree was more evidence-based than that of those without a degree. Moreover, evidence-based nursing practice was more likely where there was access to a rich library with nursing and medical journals, and opportunities for working with a computer and for searching the Internet in the workplace. The variables emerging as predicting evidence-based nursing practice were: education, skills in locating various research sources, support of the organization for searching and reading professional literature, knowledge sources based on colleagues and system procedures (inhibiting variable), knowledge sources based on reading professional literature, and knowledge sources based on experience or intuition.

Conclusion. The findings point to the need for research-based information, exposure to professional journals and, in particular, organizational support for evidence-based nursing practice.

Keywords: attitudes to research, evidence-based practice, graduate nurses, nursing, organizational support, research implementation

Introduction

Over the past decade, in accordance with most health-related professions, there has been a growing focus on quality improvement including moving from a traditional intuition-

based paradigm to evidence-based nursing practice (EBNP) (Melnyk & Fineout-Overholt 2005). EBNP refers to the application of the best evidence in clinical decision-making by integrating clinical expertise with recent research findings, while taking into consideration the values and preferences of

patients (French 1999, Coopey *et al.* 2006). EBNP is derived from the general movement toward evidence-based medicine in general healthcare (Sackett *et al.* 1996) and has had a profound impact on several disciplines, such as medicine (Soltani & Moayyeri 2005) and mental health (Drake *et al.* 2005), influencing practices (Straus *et al.* 2005) and behavioural healthcare (Titler *et al.* 2009).

Background

The EBNP process consists of five stages: (1) formulating a question that will yield the most suitable answer; (2) gathering the most relevant information by systematic search of the literature or clinical guidelines; (3) performing critical evaluation of the evidence and its validity, relevance and feasibility; (4) integrating research evidence with clinical experience, patients' values and preferences and (5) assessing treatment outcomes (Melnyk & Fineout-Overholt 2005).

Implementing EBNP is potentially beneficial for patients and healthcare systems, and for nurses. It enhances patients' access to and information about effective treatment (Melnyk & Fineout-Overholt 2005). EBNP can improve the healthcare system by facilitating consistent decision-making and advancing cost-effectiveness (Le May 1999). Finally, EBNP can help nurses by facilitating informed and evidence-based clinical decision-making, helping them to keep updated with technologies, and enabling greater efficiency (Youngblut & Brooten 2001). These new competencies, in turn, can raise nurses' status in multi-professional teams (Tod *et al.* 2004) and the profession in general. Nurses who are involved in EBNP have been found to express a sense of professionalism and growth, which contributes to their professional identity (Hutchinson & Johnston 2004, Newhouse 2006).

Despite the advantages of EBNP, research reveals that nurses prefer to be informed by colleagues, rather than using the Internet or nursing databases, and that most rely only on what they learned during their nursing education and from experience (Estabrooks 1999, Egerod & Hansen 2005, Pravikoff *et al.* 2005). Few nurses appear to use library services (Pravikoff *et al.* 2005), and even when knowledge is acquired through journal reading, it is rarely systematically applied (Retsas 2000, Banning 2005). However, a recent study revealed that the sources of nurses' professional information are literature searches, research, medical journals and reports of controlled experiments (Banning 2005).

The consensus on the importance and benefit of EBNP, along with evidence that actual implementation of EBNP is rare, has generated efforts to develop strategies to facilitate dissemination of EBNP at the organizational and individual

levels. Kitson *et al.* (1998) developed a model to identify variables influencing the implementation of EBNP and found the organization to be the most important factor. Funk *et al.* (1995) proposed an integrative approach emphasizing the importance of research synthesis, access and dialogue, and the structure and support of practice institutions. Similarly, Thompson *et al.* (2007) conducted a systematic literature review about activities performed to enhance the use of research findings in nursing practice and found organizational training to be the most important factor.

A number of large institutes in the United States of America (USA) have declared that EBNP is the formal policy of their organization, and their management has made special efforts to implement EBNP by engaging a nursing research coordinator, operating a nursing research committee and offering a course in EBNP to head nurses. These efforts were effective, as these institutes were found to display greater use of research results in practice (Estabrooks 1999, Egerod & Hansen 2005, Pravikoff *et al.* 2005). A notable example is the Iowa Model of Evidence-Based Practice to Promote Quality Care (Titler 2007), which approaches EBP from an organization perspective and uses a variety of evidence, with a focus on evaluating and implementing EBP to bring about improvements in care.

Parahoo (1998) examined whether attitudes towards research had an impact on implementing study findings. He found that despite nurses' positive attitudes toward research, only few implemented study findings in the course of their work. Specifically, no relationship was found between attitudes and implementation. Studies of nurses' attitudes towards research have revealed mixed results. On the one hand, several studies have demonstrated nurses' positive attitudes towards research and agreement that research and EBNP are relevant for their daily practice (Nagy *et al.* 2001, Sanzero-Eller *et al.* 2003, Wallin *et al.* 2003, Milner *et al.* 2006). Others have claimed that evidence in nursing exists, and that EBNP indeed advances nursing practice (Parahoo 1998, Veeramah 2004, Egerod & Hansen 2005). In other studies, however, researchers have reported that nurses held negative attitudes towards research, and few maintained that the research in its current form is applicable to their work (Nagy *et al.* 2001). Furthermore, nurses' attitudes towards research were found to be less positive than those of other healthcare professionals (Sanzero-Eller *et al.* 2003).

In a systematic literature review, a positive correlation was found between practice according to research findings and attitudes towards research, and between educational level and reading professional journals. Moreover, these nurses

reported being engaged in reading professional journals more frequently than other nurses (Milner *et al.* 2006).

In addition to organizational factors and personal attitudes, research has focused on nurses' knowledge and experience with EBNP. Several studies have revealed that nurses have little knowledge of evidence-based practice (Melnyk *et al.* 2004, Olade 2004), especially about research evaluation (Adamsen *et al.* 2003, Gerrish & Clayton 2004, Hutchinson & Johnston 2004), research methods and statistics (Nagy *et al.* 2001, Veeramah 2004, Milner *et al.* 2006). However, even nurses with substantial knowledge about evaluating research evidence find themselves powerless and with limited authority to introduce changes in their workplaces. Some researchers claim that this derives from nurses' insufficient exposure to discussions on clinical and nursing topics (Cooke *et al.* 2004, Gerrish & Clayton 2004). Furthermore, French (2005) identified that clinical nurse educators have difficulty in adapting research evidence to their practice and the specific needs of patients. In another study, Caine and Kenrick (1997) reported that while clinical nurse managers expressed their wish to advance EBNP, they did nothing to promote it and to integrate it into their daily practice, and even hindered this.

A number of researchers have focused on ways to improve nurses' knowledge in the EBNP domain. A study conducted in Britain showed that nurses who underwent a university programme reported improvement in their critical evaluation ability in relation to research, enhanced search skills, ability to use and apply study findings and discuss research with others (Veeramah 2004). As a rule of thumb, nurses who had degrees were found to hold more positive attitudes to EBNP implementation than those who did not (Parahoo 1998, Shemy & Mashiach Eizenberg 2004, Veeramah 2004). Furthermore, nurses with degrees implement study findings more frequently than other nurses in the sample (Rodgers 2000, Shemy & Mashiach Eizenberg 2004, Veeramah 2004).

Around the world there is a growing appreciation both of how important and how difficult EBNP is. As part of international efforts to facilitate the dissemination of EBNP, research has focused on identifying barriers to implementation. Identifying such barriers can help international efforts to develop strategies to overcome these. One of these barriers was found to be lacking the knowledge and skills to evaluate research findings. Studies have emphasized the importance of educating nurses in research and in critical reading of professional journals (Estabrooks 1999, Egerod & Hansen 2005, Pravikoff *et al.* 2005, Thompson *et al.* 2007). Additional research has pointed to the importance of organizational support.

The study

Aim

The aim of this study was to explore the relation between nurses' personal and professional factors and EBNP.

The research questions were:

- Is there an association between nurses' background variables (gender, age) and EBNP implementation?
- Is there an association between professional variables (workplace, role, seniority and academic education) and EBNP implementation?
- Is there an association between availability of system resources (the option of finding scientific material in the workplace and working with a computer) and EBNP implementation?
- What are the factors predicting EBNP implementation?

Design

A cross-sectional survey design was used and the data were collected in 2007.

Participants

Due to lack of access to a target population list, a convenience sample of 243 nurses, who worked in hospitals or the community, was used. The research design was based on a comparison between two groups, those who did and those who did not implement EBNP. Because this was a survey and not an experimental design, it was impossible to predict the size of the two groups. According to Stevens (2002), a sample of 100 participants in each group is sufficient to identify statistically significant differences. The current survey, therefore, included groups of 102 (implementers) and 141 (non-implementers). Questionnaires were distributed to post-basic nursing students in three different academic institutes. These students also invited their colleagues in various workplaces (hospitals and clinics) to participate in the study. Questionnaires were distributed only to nurses who expressed willingness to participate; therefore, assessment of the response rate was impossible.

Data collection

The questionnaires were distributed amongst Registered Nurses who held diplomas in nursing and who were studying towards a BA degree at three different academic institutions. Approximately 150 nurses completed the questionnaires and returned them on the spot. One hundred additional

questionnaires were distributed to the same students, who volunteered to distribute them to other nurses with whom they worked (some of which were also students). Data collection was completed over a period of 4 weeks.

The structured, self-report questionnaire included four sections adopted from different sources. The first concerned demographic data, the second covered attitudes towards research in nursing (Shemy & Mashiach Eizenberg 2004), and the third asked about sources of knowledge and barriers to EBNP implementation skills and work environment support (Gerrish & Clayton 2004). The last part was developed specifically for this study and was aimed at assessing actual implementation of EBNP. The sections of the questionnaire were as follows;

- Personal details (demographic and professional) of respondents (age, origin, number of years in Israel, family status, religion, workplace, role, seniority and education). Other questions added to this part dealt with participants' options of finding information in the workplace (library, available computer, Internet access, participation in discussion groups, and whether the participant subscribed to professional journals).
- Attitudes towards research in nursing (Shemy & Mashiach Eizenberg 2004). This part consisted of 12 statements that referred to attitudes towards research, on a Likert scale from 1 = totally disagree to 5 = totally agree. The statements were divided into three domains:
 - 'Implementation' – attitudes towards implementing research results to raise the level and quality of the professional practice (four statements). For example: 'The profession will advance only if we implement the professional studies'. Shemy & Mashiach Eizenberg found Cronbach's α reliability coefficient to be 0.72. In the present study, Cronbach's α was 0.69.
 - 'Status' – the impact of research on the status of the profession (two statements). For example: 'Research into nursing will raise the occupation's professional status amongst the other health professions'. Shemy & Mashiach Eizenberg found a significant positive correlation between two statements ($r = 0.294, P < 0.001$). In this study, a stronger correlation was found between these two statements ($r = 0.698, P < 0.001$).
 - 'Integral' – attitudes towards research as an integral part of the nursing profession (six statements). For example: 'The nurse should apply follow her heart and intuition, and not implement research'. Shemy & Mashiach Eizenberg found Cronbach's α reliability coefficient to be 0.71. In this study, Cronbach's α was 0.65.

The content validity of this part was considered by three healthcare experts and accepted as the agreement on the

relevance of items exceeded 90%. (Shemy & Mashiach Eizenberg 2004).

- Knowledge sources, barriers to EBNP implementation skills and support (Gerrish & Clayton 2004). This part included the following:
 - Seventeen statements relating to various knowledge sources used by respondents in nursing practice, such as: 'The knowledge that I use in my practice is based on my personal experience of caring for patients over time'. Respondents were requested to grade the statements on a scale from 1 = never to 5 = always. Internal reliability was established previously based on Cronbach's α , which was 0.79 (Gerrish *et al.* 2007). The items referring to knowledge sources were divided into four dimensions: (A) Knowledge based on experience (or intuition) – five statements. In the current study, the Cronbach's α reliability coefficient was 0.80. (B) Knowledge based on colleagues or the system – five statements. In the current study, the Cronbach's α was 0.69. (C) Two statements referring to knowledge based on professional training. In the current study, a significant positive correlation was found between the two statements ($r = 0.646, P < 0.001$). (D) Knowledge based on professional literature – five statements. In the current study, Cronbach's α was 0.85.
 - Sixteen statements referred to barriers to realizing EBNP. For example, 'I do not know how to find appropriate research reports'. Respondents were requested to grade the degree of their agreement with each of the statements on a Likert scale from 1 = totally disagree to 5 = totally agree. In this part, another statement, relevant to non-English speakers, was added: 'I find it difficult to read literature in English'. The 16 statements were divided into two domains. The first domain examined barriers to finding and reviewing study reports and information about procedures, for example: 'I find it difficult to understand research reports'. Internal reliability was established previously based on a Cronbach's α of 0.84 (Gerrish *et al.* 2007). In the current study, Cronbach's α was 0.86. The second domain examined barriers to introducing changes in nursing practice based on research evidence, for example: 'I do not feel confident about beginning to change my practice'. Internal reliability was established previously, based on a Cronbach's of 0.81 (Gerrish *et al.* 2007). In the current study, Cronbach's α was 0.84. Gerrish and Clayton (2004) included three statements in their questionnaire referring to barriers related to colleague support. These items were inserted into part D of our questionnaire, which examined the level of colleague support in implementing research results at work.

- Six statements referred to skills in finding, reading and applying various research sources. Respondents were asked about their experience in finding, reading and applying articles (from 1 = totally inexperienced to 5 = totally experienced). For example, 'How experienced are you in finding research evidence?' Internal reliability was established based on the previous Cronbach's α of 0.91 (Gerrish *et al.* 2007). In the current study, Cronbach's α was 0.89.
- Nine statements referred to work environment support when implementing research results in practice. For example: 'In the institution where I work, nursing management, encourages reading professional literature'. Respondents were requested to indicate how true these statements were for their workplace (1 = not at all true, 2 = not true, 3 = sometimes true, 4 = true, 5 = very true). The statements relating to level of colleague support when implementing research results in practice were divided into two domains: (A) 'Support – research' – four statements referring to colleague support in searching and reading professional literature. In the current study, Cronbach's α for this domain was 0.77. (B) 'Support – change' – five statements relating to colleague support in nursing practice change. Internal reliability was established based on the previous Cronbach's α of 0.73 (Gerrish *et al.* 2007). In the current study Cronbach's α for this domain was 0.85.

The scales (Knowledge sources, barriers to EBNP implementation skills and support) were validated by Gerrish *et al.* (2007) to investigate factors associated with evidence-based practice among nurses in England.

- Respondents' behaviour – behaviour was tested using two questions. First, respondents were asked how often, during the previous month, they had searched professional literature to find research evidence for matters associated with their work. Second, they were asked if, during the previous month, they had used research results when making decisions in their work. A respondent who responded positively to at least one of these questions was classified as demonstrating professional EBNP. However, a respondent who responded negatively to both questions was classified as demonstrating non-EBNP.

Ethical considerations

At the time of data collection, no formal ethics committee existed at the college. Thus, all necessary measures were used to ensure ethical conduct of the study. Specifically, each potential participant received a brief written explanation of the study and their right to refuse or discontinue at any stage

without penalty or the need to give an explanation. The data were anonymized and no personal identification was used in the questionnaires.

Data analysis

The data were analysed using the Statistical Package for the Social Sciences (SPSS), version 14.0 (SPSS Inc., Chicago, IL, USA). Data analysis was conducted in three stages. The first stage tested the impact of background variables on self-reported evidence-based nursing practice using chi-square tests for categorical variables and *t*-tests for quantitative variables. The second stage tested the means for enabling respondents to enrich their knowledge of professional research results in their workplace using chi-square tests. The third stage consisted of a logistic regression analysis to predict EBNP implementation. The following variables were entered into the model: role, education, attitudes towards research, knowledge sources, barriers, support and skills. Predictive variables were selected using the forwards method until no further variables were significant at the 5% level. The odds ratios (ORs) for using EBNP per unit increase in the predictive variable are presented with 95% confidence intervals.

Results

The sample included 89% women, 78% of whom were married. The average age was 36.9 years (*SD* = 8.8). Table 1 presents the respondent demographics.

Table 2 demonstrates the findings of the tests conducted in the first stage to examine associations between background variables and behaviour. The 'work place' includes two categories, nurses who do and do not work in a hospital setting, the later referred to as 'community'.

The background variables found to be statistically significantly associated with EBNP were the nurse's role and education. It was identified that the group reporting evidence-based behaviour (EBNP) were more likely to be in managerial roles or to have a degree than those not reporting evidence-based behaviour (Non-EBNP).

The second stage tested the means of enabling respondents to enrich their knowledge of professional research results in their workplace. It was found that a library rich in medical journals was available to 49% of respondents at their workplace, but only 32% had a library rich in nursing journals. Forty-one per cent had no opportunity to work with a computer at their workplace, and 42% had no Internet access for the purpose of obtaining information. Only 9.5% of respondents participated in study group discussions related

Table 1 Participant demographics (*N* = 243)

Gender	
Female	216 (89)
Male	26 (11)
Missing	1 (0.4)
Age (years) – mean (SD)	36.9 (8.8)
Min–max	22–57
Workplace	
Hospital	159 (65)
Community	67 (28)
Nursing home	11 (4.6)
Other	5 (2)
Missing	1 (0.4)
Roles	
Non-managerial role	182 (75)
Managerial role	51 (21)
Other	6 (2)
Missing	4 (1.5)
Years in profession – mean (SD)	12.8 (8.3)
Min–max	0.5–36
Years at current workplace – mean (SD)	9.2 (7.3)
Min–max	0–36
Years in current role – mean (SD)	9.0 (6.6)
Min–max	0–32
Education	
Practical Nurse	3 (1)
Registered Nurse (RN)	29 (12)
RN + BA studies	169 (69)
RN + BA in Nursing	25 (10)
RN + MA studies	8 (3.5)
RN + MA in Nursing	8 (3.5)
RN + PhD studies	1 (0.5)

Figures are number (%) unless stated otherwise.

to research results, and only 27% were subscribers to professional journals, nearly all to a non-peer-reviewed Israeli journal. Only three respondents reported subscribing to a peer-reviewed journal and 12 reported subscribing to two journals. Only seven (3%) participated in a forum discussing clinical research results.

In addition, the relationship between the means available to respondents at their workplaces and evidence-based professional practice was examined. Table 3 presents the tests conducted to examine this association. This demonstrates statistically significant associations between EBNP and the following variables: existence of a library rich in medical journals, opportunity to work with a computer and Internet access at work. On the other hand, no statistically significant correlation was found between practice and the existence of a library rich in nursing journals.

In the third stage, a logistical regression analysis was conducted to predict EBNP behaviour. The following variables were entered into the model: role, education, attitudes towards research (three criteria), knowledge sources (four

Table 2 Associations between background variables and evidence-based nursing practice (EDNP) (*N* = 243)

Variable	EBNP (<i>N</i> = 102)	Non-EBNP (<i>N</i> = 141)	<i>P</i> value*
Gender			
Male	13 (13)	13 (9)	0.34
Female	88 (88)	128 (91)	
Age – mean (SD)	37.3 (9.7)	36.6 (8.2)	0.56
Workplace			
Hospital	65 (64)	94 (67)	0.71
Community	36 (36)	47 (33)	
Role			
Managerial	31 (31)	22 (16)	0.01
Non-managerial	70 (69)	116 (84)	
Years in profession – mean (SD)	13.8 (9.1)	12.1 (7.6)	0.11
Education			
With degree	26 (25)	16 (11)	0.02
BA students	65 (64)	104 (74)	
Without degree	11 (11)	21 (15)	

Figures are number (%) unless stated otherwise.

*Differences between the groups were tested with chi-square test for categorical variables and with two sample *t*-test for continuous variables.

Table 3 Relationship between demonstrating evidence-based nursing practice (EBNP) and workplace facilities (*N* = 243)

Variable	EBNP (<i>N</i> = 102)	Non-EBNP (<i>N</i> = 141)	<i>P</i> value*
Existence of a library rich in medical journals			
Yes	58 (57)	61 (44)	0.04
No	44 (43)	79 (56)	
Existence of a library rich in nursing journals			
Yes	39 (38)	39 (28)	0.10
No	63 (62)	100 (72)	
Option of working with computer			
Yes	68 (67)	73 (53)	0.03
No	34 (33)	65 (47)	
Option of searching the Internet			
Yes	68 (67)	69 (49)	0.01
No	34 (33)	71 (51)	

Figures are number (%).

*Chi-square test *P* value.

criteria), barriers (two criteria), support (two criteria) and skills. The background variables that were not found statistically significant in the first stage were not entered into the model (gender, age, workplace, years in profession). Table 4 presents the results, and demonstrates that six variables were found to distinguish between respondents whose professional practice was evidence-based and those whose professional practice was non-evidence-based. The ORs are presented in

Table 4 Logistic regression analysis predicting evidence-based nursing practice ($N = 230$)

Predictive variable	OR*	95% CI	P value
Research Skills [†]	1.96	(1.29–2.99)	0.00
Knowledge – literature [†]	2.55	(1.63–3.99)	0.00
Education [‡]	3.20	(1.37–7.50)	0.01
Support – research [†]	1.48	(1.06–2.07)	0.02
Knowledge – colleagues and system [†]	0.39	(0.20–0.75)	0.01
Knowledge – experience [†]	1.75	(1.03–2.99)	0.04

$R^2 = 0.34$.

*Odds ratio of reporting evidence-based nursing practice use per unit increase in the predictive variable.

[†]Variable took values between 1 and 5.

[‡]Variables took two values: 0 = without degree (include BA student), 1 = with degree.

the table with 95% confidence intervals. The first variable entering the model was finding, reading and applying various research sources (skills). The greater the respondents' belief in their skills, the higher the probability that their practice would be reported as evidence-based (OR = 1.96). The second variable entering the model was knowledge based on professional literature (Knowledge – literature). The more the sources of knowledge were based on reading professional literature, the higher the probability that the respondent's practice would be reported as evidence-based (OR = 2.55). The third variable entering the model was education. It was found that nurses with a degree had a higher probability of reporting evidence-based practice (OR = 3.20) than those without a degree. The fourth variable entering the model was colleague support in searching and reading professional literature (support – research). The greater the support received from the system, the greater the probability that the respondent's practice would be reported as evidence-based (OR = 1.48). The fifth variable entering the model was sources of knowledge based on colleagues and the system (knowledge – colleagues and system). The more the sources of knowledge were based on colleagues and system, the smaller the probability that the respondent's practice would be reported as evidence-based (OR = 0.39), i.e. this was an inhibiting factor. The last variable entering the model was knowledge based on experience or intuition (Knowledge – experience). The more the sources of knowledge were based on experience or intuition, the higher the probability that the respondent's practice would be reported as evidence-based (OR = 1.75).

Variables that did not distinguish between respondents whose professional practice was and was not evidence-based included role, attitudes towards research and barriers.

Discussion

Study limitations

While this study yielded a number of interesting findings, two limitations should be noted. First, the questionnaire was based on self-reports, which can introduce biases such as desirability. Second, although the research population was diverse (workplaces, role, age and seniority), the group was relatively highly educated as the vast majority (86%) were either currently enrolled on or had completed higher education. This may have influenced the results in the direction of positive attitudes towards research and EBNP.

Influences on evidence-based practice

First, there was no relationship between the nurses' background variables (gender and age) and EBNP. The second finding was that there was no relationship between nurses' workplace (hospital or community) and EBNP. These findings are inconsistent with those of previous research (Olade 2004), which showed a distinction between community nurses in rural areas and nurses working in large medical centres. This difference may be due to the fact that nurses working in rural areas in the USA experience more professional isolation and are rarely exposed to academic studies and professional academic literature, while in the current study most of the nurses who worked in the community studied in academic settings and were in constant touch with medical centres where clinical studies take place and professional literature is available.

The unadjusted cross tabulation revealed a statistically significant relationship between the nurse's role (managerial and non-managerial) and EBNP. Groups reporting EBNP were more likely to be in managerial roles or to have a degree than those not reporting EBNP. However, after controlling for the other variables, this finding was no longer statistically significant. Previous research has emphasized the importance of nurses' professional and managerial roles in advancing the knowledge and research culture in organizations. It has been reported that organizations often employ nurse managers who lack research skills in advancing EBNP, and some who neither comprehend the importance of EBNP nor believe the topic to be important (Caine & Kenrick 1997, Udod & Care 2004, Milner *et al.* 2006).

The last professional variable dealt with nurses' education. The group reporting evidence-based behaviour (EBNP) was more likely to have a degree than that not reporting evidence-based behaviour (Non-EBNP). This finding is consistent with recent research revealing that nurses with degrees have a

What is already known about this topic

- Many studies have been conducted to test ways of encouraging nurses to implement research results in clinical decision-making.
- Recent studies reveal that previous research training and critical reading of professional literature are correlated with greater use of evidence-based nursing practice.
- Studies also point to the importance of information, positive attitudes of nurse managers towards evidence-based nursing practice and organizational support in implementing evidence-based nursing practice.

What this paper adds

- The self-reported professional behaviour of nurses with a degree was more evidence-based than that of those without a degree.
- Evidence-based nursing practice was more likely where there was access to a rich library with nursing and medical journals, and opportunities for working with a computer and for searching the Internet in the workplace.
- The variables predicting evidence-based nursing practice were education, skills in locating various research sources, support of the organization for searching and reading professional literature, knowledge sources based on colleagues and system procedures (inhibiting variable), knowledge sources based on reading professional literature and knowledge sources based on experience or intuition.

Implications for practice and/or policy

- There is a need to improve access to libraries, computers and Internet to facilitate evidence-based nursing practice.
- There is a need to increase organizational support and incentives for implementing evidence-based nursing practice.

greater tendency to read research literature and implement its findings in their practice (Rodgers 2000, Shemy & Mashiach Eizenberg 2004, Veeramah 2004).

Another analysis was conducted to assess the relationship between availability of resources (opportunities to find material in the workplace and to work with a computer) and EBNP. To implement EBNP, various models have been built at the individual and organization levels. Most

researchers point to the great importance of the organization's role in implementing EBNP. In the present study, the organization's function was tested using questions dealing with the opportunity offered by the workplace to look for research material, to use the library (medical and nursing), and to work with computers and search the Internet for answers to clinical questions. The rate of evidence-based practice found amongst nurses employed by organizations that made these opportunities available was higher than in organizations that did not facilitate or support such activity.

The last research question dealt with factors predicting EBNP. Six predicting factors were found. The first was skills in finding, reading and applying various research sources. The greater the respondents' belief in their skills, the higher the probability that their practice would be self reported evidence-based. The second predicting variable was sources of knowledge based on reading professional literature. The more the knowledge sources were based on reading professional literature, the higher the probability that the respondent's practice would be self-reported as evidence-based. The third variable entering the model was education. The more education the participants had, the higher the probability that their reported practice would be evidence-based. The fourth predicting variable was system support in searching and reading professional literature. The greater the support within the system, the higher the probability of self-reported use of EBNP. These findings are consistent with the integrated approach proposed by Funk *et al.* (1995), which emphasized the importance of accessibility and readability of information.

The present findings advance the body of knowledge by providing empirical support for the impact of factors which appear to facilitate EBNP. It is encouraging that these particular factors can be susceptible to change. For example, providing supports such as Internet access and libraries may be costly but are possible. Similarly, organizational support can be a target of change. While the data on which these findings are based were collected in a specific context, namely northern Israel, and caution is needed with regard to the inferences which can be drawn, this pattern may be identified in other countries also. As reported in the literature, this study also demonstrated that organizational support plays the strongest role in advancing EBNP.

The fifth predicting variable was sources of knowledge based on colleagues and system procedures. Nurses whose sources of knowledge were based mainly on colleagues and procedures had a lower probability of self-reported EBNP, i.e. this was an inhibiting factor. These findings support Shirey's (2006) study, which showed that nurses often apply knowledge that originates in tradition and experience at

work, and less in research findings. The last predicting variable was knowledge based on experience or intuition. The more the sources of knowledge were based on experience or intuition, the higher the probability that the respondent's practice would be reported as evidence-based.

Although it was hypothesized that a relationship between attitudes towards research and EBNP implementation would emerge, such a factor was not found to be predictive. Previous research (Parahoo 1998, Melnyk *et al.* 2004, Egerod & Hansen 2005) has shown that nurses' positive attitudes towards EBNP were expressed by agreeing with the following attitudes: nursing must become a research-based profession, and research is relevant to nursing in general and to nursing in daily practice in particular. These researchers identified positive attitudes towards research, especially towards the impact of research on the profession's status (amongst the healthcare professions and the public). Results of the current study also revealed positive attitudes towards research as an integral part of nursing. However, no correlation was found between attitudes towards research and EBNP implementation.

Conclusion

The findings point to the need for research-based information, exposure to professional journals and, in particular, organizational support for evidence-based nursing practice. Further research is needed to investigate the impact of personal and professional factors on actual EBNP behaviour evaluated by observations rather than self-report.

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Conflict of interest

No conflict of interest has been declared by the authors.

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