Nurses’ Perception of Evidence-Based Practice at the National University Hospital of Singapore

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Evidence-based practice is defined as the integration of best research evidence with clinical expertise and patient values and the conscientious, explicit, and judicious use of such evidence in making decisions about the care of individual patients (Sackett, Straus, Richardson, Rosenberg, & Haynes, 2000). It is expected that best evidence-based clinical practice will be promoted and adopted for health care (Miller, Jones, Graves, & Sievert, 2010).

Since the 1990s, several evidence-based practice-related survey questionnaires and studies have been conducted worldwide in a range of health care professions (e.g., Ahmad et al., 2009; Brown, Wicklines, Ecost, & Glaser, 2009; Gerrish, Ashworth, Lacey, & Bailey, 2008; Jette et al., 2003; Koehn & Lehman, 2008; McColl, Smith, White, & Field, 1998; Pravikoff, Tanner, & Pierce, 2005; Waters, Crisp, Rychetnik, & Barratt, 2009). Broadly, these and other studies collectively covered the following: (1) beliefs, attitudes toward, and knowledge of evidence-based practice; (2) skills and competencies involved in evidence-based practice; (3) barriers to promoting and implementing evidence-based practice; and (4) educational and training needs for evidence-based practice. The questionnaires used were almost all self-reporting and used a combination of a 5-, 7-, or 11-point Likert scale; “yes,” “no,” and “do not know” statements; and free text input to elicit responses. Content validation was generally established by nursing experts.

Background: A study was conducted at Singapore’s National University Hospital to elicit registered nurses’ attitudes, knowledge, barriers, facilitating factors, education, and training regarding evidence-based practice.

Methods: A 13-question survey that was administered to all registered nurses yielded 1,114 (75.4%) usable returns for analysis.

Results: Findings showed that Singapore nurses had a positive and supportive attitude toward evidence-based practice but lacked the competence and knowledge to conduct it. Time constraints were identified as the main barrier to implementing evidence-based practice. There is a need for proper training, mentoring by senior nurses, and adequate time for evidence-based practice. Nurses with a higher level of nursing education who indicated the greatest perceived barriers tended to have less difficulty applying evidence-based practice but identified a need for more training in information skills.

Conclusion: Evidence-based practice is still in its infancy in Singapore compared with hospitals in other developed countries.


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the use of psychometric methods, and pilot studies to ensure validity and reliability. Collectively, these studies covered findings from the United States, Canada, the United Kingdom, Sweden, Denmark, Finland, Saudi Arabia, Bahrain, Iran, Kuwait, Zimbabwe, Hong Kong, and Australia.

Although there would be obvious contradictions in the specific findings of these various studies, there are also clear common observations that are shown in the literature. Almost all studies reported positive attitudes toward evidence-based practice among both practitioners and managers, mainly as a result of the potential ability of evidence-based practice to provide consistently high-quality health care to patients. Most studies agreed that evidence-based practice is necessary, that literature is useful to improve practice, that evidence aids in decision-making, and that evidence-based practice helps to improve patient care (Jette et al., 2003; McColl et al., 1998). The adoption and use of evidence-based practice varies among work settings and countries. This could be a result of the differing state of health care in various countries, the presence and strength of the barriers to evidence-based practice, and the education and preparedness of professionals in evidence-based practice. In cases where evidence-based practice is not pervasive, there is a general recognition of the need to increase the use of evidence in daily practice (McColl et al., 1998).

In terms of nurses’ skills and competencies in evidence-based practice, most health care professionals reported general awareness but limited use of key databases and sources (Rolfe, Segrott, & Jordan, 2008). Reported competency in the ability to search for and find relevant and useful information was mixed across studies, with health care professionals in developed countries having an advantage because of their better information technology infrastructure and greater access to the Internet. In contrast to using literature for evidence-based practice, consulting peers and colleagues seems to be a common and ongoing practice (Gerrish et al., 2008; McColl et al., 1998). The use of “intuition” and “reflection of life experience” are other cited sources of evidence employed in practice (Rolfe et al., 2008).

Seniority and experience in terms of age, years since licensure and professional entry, advanced academic degrees, and accumulated training was associated with greater reported confidence in the knowledge and use of evidence-based practice (Gerrish et al., 2008; Jette et al., 2003). In contrast, searching skills and familiarity with the online environment seemed to favor the younger generation of health care professionals, who are better equipped in their educational preparation for this phase of evidence-based practice (Jette et al., 2003).

Lack of time was the most frequently cited barrier to evidence-based practice in almost all studies. This has been attributed typically to heavy workloads and other personal commitments. Organizational barriers included the presence of other goals with a higher priority, difficulty in recruiting and retaining staff, lack of autonomy, and budgetary constraints (Brown et al., 2009; Pravikoff et al., 2005). Personal barriers included lack of perceived value of research in practice, lack of skills and competencies to carry out different stages of evidence-based practice effectively (Pravikoff, Tanner, & Pierce, 2005; Penz & Bassendowski, 2006), and problems associated with individual learning styles (Reavy & Tavernier, 2008). Challenges remain in finding and understanding research reports that are prone to methodological inadequacies and conflicting findings (Koehn & Lehman, 2008; O’Conner & Pettigrew, 2009).

Health care professionals generally seek education and training because they view it as part of a lifelong learning journey to provide evidence-based practice (Jette et al., 2003). Needs in terms of knowledge of sources, searching skills, and critical appraisal of the literature have been cited in different studies. Being able to critically appraise evidence from different sources and select and apply the most appropriate evidence in practice appears to be the most challenging aspect of evidence-based practice (Waters et al., 2009). Miller et al. (2010) pointed out that front-line nurses usually did not have the ability to find relevant information, evaluate its credibility, and apply it to practice. A more realistic suggested approach is to develop the skills to appraise information, such as clinical protocols, in the context of the local setting in which it is to be applied (Gerrish et al., 2008).

This was the first study on this topic conducted in Singapore, and the goal was to contribute to the growing literature on evidence-based practice from the perspective of nurses to examine whether the findings are similar to those of other studies. The study was conducted at the National University Hospital, a 935-bed acute care specialty hospital that provides advanced medical care and services and serves as a major referral center that handles a wide range of medical and dental specialties.

METHODS

The survey instrument consisted of six demographic and seven evidence-based practice-related questions extracted and adopted from existing survey questionnaires. A consistent five-point scale, ranging from 1 to 5 points to indicate “strongly disagree” to “strongly agree,” “least important” to “most important,” and “poor” to “excellent,” was used to elicit nurses’ responses. Approval for the study was obtained from the domain specific review
board. Content validity was established by experts, including information studies lecturers, nursing managers, nurse researchers, and registered nurses. Internal consistency reliability was evaluated with Cronbach’s alpha coefficient, which yielded a range of values between 0.691 and 0.954. The questionnaire was pilot tested on 20 nurses, refined, and distributed to all 1,518 part-time and full-time registered nurses at the National University Hospital. A total of 1,144 usable returns, representing a 75.4% return rate, were used for analysis, which was conducted with SPSS software, version 14.

RESULTS

The demographic profile of nurses showed that the respondents included 1,054 (92.2%) registered nurses, 39 (3.4%) nurse managers or senior nurse managers, and 47 (4.1%) nurse clinicians, nurse educators, or senior nurse clinicians or nurse educators. Of the respondents, 505 (44.1%) had a bachelor’s or master’s degree in nursing, whereas 158 (13.9%) had a post basic or advanced diploma in nursing and 468 (40.9%) had a certificate or diploma in nursing. A total of 553 (48.3%) of the nurses had less than 5 years of nursing experience, 234 (20.5%) had 6 to 10 years, and 307 (26.8%) had more than 10 years. A large majority (922; 83%) of the nurses indicated that they had not attended any training courses on evidence-based practice.

Nurses were asked what evidence-based practice meant to them and how they understood and adopted evidence-based practice in providing nursing care and making clinical decisions based on a different set of choices. Forty-nine (4.3%) of the nurses believed that they were practicing and adopting evidence-based practice as long as they made clinical decisions based on a patient’s subjective and objective data; 108 (9.4%) perceived evidence-based practice to be using information obtained from textbooks; and 121 (10.6%) perceived evidence-based practice to be using a combination of previous experiences and research findings. Nonetheless, a majority (412; 36.8%) of the nurses indicated that evidence-based practice includes all of the above, whereas 417 (36.5%) indicated that evidence-based practice includes all of the above except using information obtained from textbooks, but recognized the importance of considering the patient’s values and preferences as part of the process of adopting evidence-based practice. The responses indicated that most nurses were not fully aware of what evidence-based practice means, and this could be explained by the finding that most of the respondents (922; 83%) lacked formal training in evidence-based practice.

Nurses stated their opinions and beliefs using a scale ranging from 1 (strongly disagree) to 5 (strongly agree) to respond to a series of statements about evidence-based practice, as shown in Table 1. The table shows the total number of responses and the mean and standard deviation.

Nurses generally expressed very positive opinions of evidence-based practice despite their somewhat shallow knowledge and understanding of it. Most reported that their workload was too great for them to keep up to date with all new evidence \((M = 3.2138, SD = 0.9654)\). Nonetheless, they disagreed with most of the other statements, thereby showing a positive opinion of evidence-based practice. They disagreed with the statement that they did not like people questioning their clinical practice that was based on established methods \((M = 2.5496, SD = 0.7828)\). They disagreed that evidence-based practice has limited utility \((M = 2.7731, SD = 0.8093)\), and that they preferred using more traditional methods instead of changing to new approaches \((M = 2.3175, SD = 0.7403)\). Further, they disagreed that most research articles were not relevant to their daily practice \((M = 2.5527, SD = 0.8213)\).

Table 2 shows the nurses’ responses to nine statements about their self-efficacy in performing activities related to evidence-based practice. Most results hover around the midpoint score of 3, implying that the nurses rated themselves as average on various evidence-based practice activities. The overall mean for all nine state-
ments was 3.0996 (SD = 0.5000). The ability to identify clinical issues and problems yielded the highest score (M = 3.2547, SD = 0.6107), with 61.85% of nurses rating themselves as average and 31.5% rating themselves as above average to excellent. In contrast, nurses rated themselves as least adequate in the area of using checklists to assess research articles. This response yielded the lowest score (M = 2.9654, SD = 0.7343), with 55.59% of nurses rating themselves as average and 23.22% rating themselves as below average to poor. This may point to a lack of competency in research (information evaluation) skills, a lack of or limited actual practice in using research articles, or both.

Table 3 shows the nurses’ ratings of the perceived barriers sorted in descending order. No single barrier was rated by a mean value below the midpoint, which suggests that the nurses perceived barriers that prevented them from adopting evidence-based practice at work. The overall mean for all nine barriers was 3.3473 (SD = 0.5555). The top barrier identified was time. The highest scored barrier was the difficulty in finding time at work to search for and read articles and reports (M = 3.5172, SD = 0.8700), with more than half of respondents, or a total of 610 nurses (53.84%), agreeing or strongly agreeing that this is most challenging. The second highest scored barrier was insufficient time at work to implement changes in current practice (M = 3.3975, SD = 0.8138), with 529 nurses (46.73%) agreeing or strongly agreeing. This was followed by difficulty judging the quality of research papers and reports (M = 3.3928, SD = 0.7548). The lowest scored perceived barrier was inability to implement the recommendations of research studies in clinical practice

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Note. Cronbach’s alpha = 0.897 for all nine items.

| TABLE 3
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Note. Mean arranged in descending order. Cronbach’s alpha = 0.873 for all nine items.
practice, a factor that may be a direct consequence of the time constraint associated with adopting evidence-based practice that was cited previously.

Table 4 shows the ratings of the six factors that are considered important for adopting evidence-based practice in the workplace. Most of the nurses stated that proper and adequate training ($M = 3.9165, SD = 0.7986$), protected time to conduct evidence-based practice ($M = 3.8881, SD = 0.8006$), and mentoring by nurses who have adequate experience in evidence-based practice ($M = 3.8765, SD = 0.7909$) were the three most important factors to be considered for the adoption of evidence-based practice. More than two thirds of respondents (798; 70.12%) considered the top factor, the need for adequate training in evidence-based practice, very important (45.52%) or extremely important (24.60%) to promote the adoption of evidence-based practice in the hospital. In view of this, the next set of findings on training needs is particularly appropriate and relevant.

Table 5 shows the ratings of the seven areas of training. The findings showed that the top three training needs are as follows: (1) identifying clinical issues for implementing evidence-based practice ($M = 3.9200, SD = 0.7698$); (2) understanding what constitutes evidence-based practice ($M = 3.9158, SD = 0.8328$); and (3) implementing recommendations in practice ($M = 3.8733, SD = 0.7528$).

Additional statistical tests that were performed on the demographic variables against the evidence-based practice variables showed that senior highly qualified nurses with training in evidence-based practice are most confident and knowledgeable in their ability to perform evidence-based practice activities. Nurses with higher levels of nursing education tend to have better reported information-related skills (e.g., sourcing, searching, evaluating, and using evidence-based practice information) and less difficulty in applying evidence-based practice, but at the same time, these nurses reported the highest perceived barriers and indicated the greatest need for training in evidence-based practice.

**DISCUSSION**

The findings showed that the majority of nurses surveyed did not have any formal training or courses in evidence-based practice. This finding is somewhat surprising because 44.1% of these nurses had a degree or
postgraduate degree that normally has a component of formal training in evidence-based practice. It may be the case that these respondents did not receive training in evidence-based practice as part of their nursing education curriculum because this material was not routinely covered at that time. These nurses had a mean of approximately 8 years of nursing experience. Nurses who had diplomas (55% of those surveyed) did not seem to have any evidence-based practice courses in their curriculum, which may further explain the lack of formal training in this area.

The issues and perceptions reported by nurses in Singapore are similar to those of their counterparts worldwide. The respondents were open to evidence-based practice but felt that they lacked competence and knowledge in conducting evidence-based practice activities. These findings mirror those of studies conducted in nurses in New South Wales, Australia (Waters et al., 2009); primary care physicians in Kuwait (Ahmad et al., 2009); and nurses at a large Midwestern urban medical center in the United States (Koehn & Lehman, 2008). In Singapore, the lack of competence and knowledge can be attributed to the lack of formal training and coursework in evidence-based practice for most nurses.

The main barriers to adopting evidence-based practice are related to time: the need to find time at work to search for and read articles and reports and insufficient time at work to implement changes to current practice. The respondents also reported inability to judge the quality of research papers and reports, understand the contents, and interpret the results to apply to practice. These trends were widely reported in other studies (Brown et al., 2009; Jette et al., 2003; Koehn & Lehman, 2008; O’Conner & Pettigrew, 2009).

The respondents suggested that adequate training, the availability of protected time to conduct evidence-based practice, and mentoring by nurses with experience in evidence-based practice were the most important factors to enable better and more widespread adoption of evidence-based practice. This finding is logical and aligns with respondents’ perceived inadequacy and competence in knowledge and skills related to evidence-based practice as well as the time barriers that nurses currently face. Almost all areas of training listed in the questionnaire were deemed important by the nurses because most of them have yet to receive formal training in evidence-based practice. The findings also concur with other studies indicating that nurses’ qualifications and experiences are directly related to their attitudes, skills, competencies, confidence, and training regarding evidence-based practice (Gerrish et al., 2008; Jette et al., 2003; Johansson, Fogelberg-Dahm, & Wadensten, 2010).

**key points**

**Evidence-Based Practice**


1. Registered nurses in Singapore, like most of their counterparts around the world, reported a positive and supportive attitude toward evidence-based practice but lacked the competence and knowledge to conduct evidence-based practice.

2. To enable evidence-based practice to succeed, there is a need for proper education and training, mentoring by senior nurses, and adequate time to conduct proper evidence-based practice.

3. Nurses with a higher level of nursing education indicated the highest perceived barriers, had less difficulty applying evidence-based practice, and described the need for more training in information skills.

4. Evidence-based practice is still in its infancy in Singapore, with a long way to go to reach the level of maturity that has been attained by some hospitals in other developed countries.

**CONCLUSION**

Because of its high participation rate, this study yielded a set of reliable data on the current state of evidence-based practice in one of the largest hospitals in Singapore. The findings suggest that evidence-based practice is in its infancy in Singapore, with a long way to go to reach the level of maturity attained by some hospitals in other developed countries. There remains much to learn and emulate. Against this scenario, nurses’ perceptions of the entire evidence-based practice process is an important factor if evidence-based practice is deemed an area of concern and development in the future.

Existing evidence-based practice questionnaires help to identify previous conditions that affect nurses’ decision to adopt evidence-based practice and aid hospitals and decision makers to identify areas for further review and assessment. This study showed that even at a medically advanced hospital in Singapore, nurses face similar and challenging evidence-based practice scenarios. The study results can be used as a basis for further investigation and to develop training and intervention programs to better prepare nurses to implement evidence-based practice in the hospital to offer even better patient care.
REFERENCES