



# Exploring sources of knowledge utilized in practice among Jordanian registered nurses

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## Abstract

**Rationale, aims and objectives** Understanding sources of knowledge used in everyday practice is very helpful in improving the quality of health care services. There is a consensus in the literature that nurses mostly relied in their practice on experiential knowledge gained through their interactions with other members of health care professionals and patients. The general aim of this study is to explore the sources of knowledge Jordanian registered nurses use during their practice.

**Method** A descriptive correlational design was used to collect data from 539 Jordanian registered nurses from 10 hospitals using a self-administered questionnaire.

**Results** The mean year of experience of the sample was 7.08 years. Of the 615 questionnaires distributed, 555 were returned. This yields a response rate of 87.6%. Results revealed that the top five ranked sources used by Jordanian registered nurses include: the information that nurses learned during nursing education, personal experience in nursing over time, what was learned through providing care to patients, information gained through discussion between physicians and nurses about patients, and information from policy and procedure manuals.

**Conclusion** Jordanian registered nurses recognize the value of research and that research utilization (RU) is an important issue and must not be ignored. The study has many implications for practice, education and research. Health care managers and decision makers need to play a more visible and instrumental role in encouraging RU to improve patients' quality of life.

## Introduction

Nurses around the world form the largest health care workforce with 2.6 million jobs [1]. Most of their jobs are in hospitals. The major role of registered nurses regardless of their specialty and work setting includes: providing nursing care, providing health education to patients and families related to the activities of daily living, emotionally supporting patients and their families, assisting in performing diagnostic tests, and assisting with patient follow-up and rehabilitation. The most frequently used sources of knowledge by nurses arranged in descending order were: nurses' experience, nursing schools, work place sources, physicians, intuitions, and what has worked for years [2].

Globally, in the last few decades, the body of nursing knowledge has been enormously widened. The number of highly educated nurses has increased and is still growing [3]. It became acknowledged that the incorporation of evidence-based knowledge produced by qualitative and quantitative studies into practice reduces the cost of health care, increases personal productivity, improves

health, and decreases the pain and suffering of patients [4,5]. According to Heater, Becker and Olson, patients who receive their care according to the best evidence experience a 28% better outcome than those who received their care according to traditional methods [6]. Consequently, the concept 'research utilization (RU)' has appeared as an important concept to health care providers.

Many initiatives were undertaken by governmental and non-governmental organizations to encourage the development of evidence-based health care systems. Protocols and evidence-based guidelines were developed to guide interventions [7]. The National Institute for Health and Clinical Excellence was established in 1999 in England to provide national guidance on promoting good health, and preventing and treating ill health. More recently, the National Institute for Clinical Studies was established in Australia in 2006 to improve health care by getting the best available evidence from health and medical research into everyday practice [7].

Jordan, in the last few decades, witnessed a great progress in the field of nursing science. The number of published papers

conducted by Jordanian nurse researchers increased from only 1 in 1958 to approximately 214 by 2010 in which around 72 studies were served to clinical practice [the majority of these studies (97.5%) were conducted by academicians and only 1.60% were conducted by clinicians], most of which were published in international journals (I. Kalaf, pers comm.). In addition, Jordan started conducting national and international scientific days and conferences since the 1990s. However, the theory–practice gap still exists.

Few studies have discussed the kinds of knowledge that nurses used in their practice [2]. Polit and Beck stated that nurses mostly based their practice on tradition, authority, clinical experience, trial and error, intuition, and logical reasoning [8]. According to Estabrooks, the most sources of knowledge used by nurses as ordered from the most to the least frequent are as follows: nurses' experience, nursing school, work place sources, physician sources, intuitions, and what has worked for years [2]. On the other hand, Ozsoy and Ardahan found that the most sources of knowledge that nurses used in their practice were the information shared with their colleagues, what has worked with nurses for years, and the traditional way that has always done it [9].

A secondary qualitative data analysis was conducted by Mantzoukas and Jasper in 2007 on previously collected data in 2002 to identify the types of knowledge used by nurses to guide their practice [10]. Five types of knowledge were identified in this study: personal practice knowledge, theoretical knowledge, procedural knowledge, ward cultural knowledge and reflexive knowledge.

The results of a study conducted by Estabrooks indicated that in the field of research, 52.3% of nurses mentioned that the journals are the most widely used source of research knowledge [2]. More specifically, 38.7% of nurses mentioned that nursing journals are the most widely used sources of knowledge. On the other hand, other researchers found that the ward manuals for procedures are currently the most accessible and convincing information source among nurses [11].

Squires, Moralejo and LeFort stated that most nurses in Canada (81.9%) used policy and procedure manuals because it consumes less time to look up than going to the library and search through the Internet or journals and then read and critically appraise it [12]. The presence of policy and procedures increases the RU but in minimal percentage.

Generally, the basic knowledge and the nursing experience with research are deficit [13]. Thus, the use of research findings as a base for practice is still not popular especially in developing countries [14]. It is also well documented that most nurses have little or no knowledge about the research process and its implementation into clinical areas [14,15]. This is mostly a result of the research courses that are taught to nursing students emphasize on how to conduct research rather than on how to implement research findings [16]. A study by Ofi *et al.* that investigated nurses' knowledge base for research conduct, attitudes towards research and perceived barriers to RU indicated that 23.6% of nurses in their sample did not have basic research knowledge, 46.8% have not attended any workshop related to research activities, and 66% of nurses have not participated with other professionals in any research study [13]. Ofi *et al.* concluded that there is general belief that research is only relevant to educators working in universities [13]. Similarly, Kuuppelomaki and Tuomi stated that 66% of

nurses in their sample ( $n = 400$ ) had never attended any nursing conferences [17]. Only 38% of nurses believed that conducting research is not important for nurses' jobs. On the other hand, Veeramah reported that knowledge about research is an important factor to update practice [15]. This knowledge will increase a person's positive attitude towards research.

In summary, there is a consensus in the literature that nurses mostly relied in their practice on experiential knowledge gained through their interactions with other members of health care professionals and patients. The other utilized sources of knowledge were documents such as textbooks, journals, procedures, unit educational materials, etc., and intrapersonal sources such as knowledge gained from nursing school, common sense and personal beliefs. The implementation of research findings into clinical practice has been considered as the first step towards evidence-based practice. Calls for the use of evidence-based practice in nursing have been clearly made.

## Methodology

### Design

A descriptive correlational design was used to answer the research questions of this study.

### Sample/participants

The population of interest was Jordanian registered nurses working at the different Jordanian health care sectors. The sample size was calculated based on computer program 'Creative Research Systems Survey Software Calculator'. A confidence level equals to 95% and confidence interval equals to 5, the required sample was 373 registered nurses. Because the response rate to self-report questionnaires is known to be low [18], the sample size was duplicated to become 746. Additionally, the sample size was increased to obtain more precise results, compensate the suspected incomplete questionnaires and to strengthen the power of the study [8].

A quota was used to recruit the required number of registered nurses from each sector in proportion to the number of nurses in that sector. The percentage of nurses working in each sector was determined in proportion to its representation in the target population. The identified number of nurses from each sector was selected using the convenient sampling procedure. Because one of the three major public branches did not give permission to collect data from its hospitals, the total number of the sample was reduced to 615 (746–131). The inclusion criteria were: Jordanian registered nurses working in hospitals as clinical nurses and nurses in management positions at the unit/department level. The exclusion criteria were: being a registered nurse working at a primary health care centre because health care centres are providing outpatient services only. The associate and assistant nurses working at hospitals were also excluded. Additionally, the nursing managers (directors of nursing services) were excluded because they did not provide direct nursing care.

A probability value of 0.05 on two-tailed was accepted as the level of statistical significance, the estimated effect size was medium effect size of 0.15 (appropriate for descriptive studies) and a statistical power is 0.80 [19].

## The instrument

Sources of knowledge questionnaire consist of 21 questions related to sources of knowledge that may be utilized in practice. The first 16 items were totally adopted from Estabrooks' sources of knowledge questionnaire for Estabrooks (with permission) and other items were derived from the literature, others were based on researcher's long personal clinical experience [7,9].

Respondents are required to rate each item using a Likert-like scale ranging from 1 'never' to 5 'always'.

## Validity and reliability/rigor data analysis

The questionnaire was translated to the Arabic language and the Arabic version was back-translated into English again by the research and linguistic-oriented person. The back translation was compared with the original text and the modifications were done accordingly.

A pretest of the final Arabic version of the questionnaire was conducted through the pilot study on a total number of 20 registered nurses. Piloting was done to assess the feasibility of the study, provide data about recruiting the subjects, and clarity of the questionnaire, and also to check for understanding, time required for filling the questionnaire, and to test the psychometric properties of the questionnaire.

The results of the pilot study showed that all the 20 registered nurses found the items of the questionnaire were clear and easy to understand except item number 11. Item 11, which is 'what has worked for me for years', was rephrased and clarified. The average time required to answer the questionnaire was 4 minutes.

Psychometric properties of the Arabic version of the questionnaire were tested by using SPSS version 16 (SPSS Inc., Chicago, IL, USA). Cronbach's alpha was 0.88, indicating acceptable internal consistency and reliability [18].

## Data collection

The recruitment process of the sample began in November 2010 and continued through March 2011. After obtaining the ethical approval from the Scientific Research Committee at the Faculty of Nursing, the University of Jordan, the data collection proceeded as follows.

Formal letters were sent to the Ministry of Health (MOH), Director of the Royal Medical Services, the directors of the two teaching hospitals and the directors of the selected private hospitals, seeking approval for conducting the study. Approvals were gained from the MOH, one teaching hospital and four private hospitals.

Contacts were made with the nurse administrators of each selected hospital to clarify issues related to the study. The major purpose of the study, the method of data collection, the required time to fill the questionnaire and the number of registered nurses required from the institution were clarified.

Each unit and department nurse manager in each hospital was met separately. The researcher discussed the purpose of the study and gave a brief description about the study to her/him and asked her/him for participation, and discussed the best way to approach the nurses and at the same time not to disturb the work. The unit managers then helped in preparing the list of nurses'

names. Nurses were screened for eligibility to participate. All unit/department managers were asked to fill a copy of the questionnaire.

Nurses who met the criteria were provided with the package that included the cover letter and a copy of the questionnaire. A total of 615 packages were distributed. Each unit/department manager was contacted several times weekly through the telephone to check the process of the completion of the questionnaires. Data were collected over a 5-month period.

The completed questionnaires were coded for analysis and kept in envelopes.

All the 615 registered nurses who met the inclusion criteria and took the package reflected willingness to participate. However, of the distributed packages, 16 were not completed and 60 were not returned. The response rate was 87.6%.

## Ethical considerations

Ethical approval to conduct the study was obtained from the Institutional Review Board at the University of Jordan, MOH, teaching and private hospitals. Once a participant was identified, the researcher provided adequate information about the significance and purposes of the study. Participants were assured that participation is voluntary. In addition, they were told to feel free to withdraw at any time. Furthermore, the participants were instructed that their completion of the questionnaire will be considered a written consent for their participation, and that the information will be used only for the purposes of this study. Participants also were assured that their responses will be treated confidentially by replacing the participants' names by serial ID numbers. Additionally, information that might reveal their identity will not be recorded and only aggregated data will be communicated.

All completed study questionnaires and the software of the study were saved in locked files, where no unauthorized persons can reach them.

## Results

### Demographic characteristics of the sample

A total of 539 questionnaire responses were analyzed for demographic characteristics and other questionnaire responses. Demographic characteristics of participating nurses revealed that of the 539 nurses, 308 were male (57%) and 231 were female (43%). Study participants had a mean age of 29 years [standard deviation (SD) = 6.85] and ranged from 21 to 59 years old. About 297 (55%) of the sample was married. The highest percentage of participants had baccalaureate degree, 81% ( $n = 437$ ). The average year of experience in nursing was 7.08 years (SD = 7.1). Years of nursing experience ranged from 1 to 39 years.

### Contextual characteristics of the sample

The analysis of contextual characteristics of the sample reflects that 54% ( $n = 292$ ) of the sample is working in private hospitals while 32% ( $n = 177$ ) was working in MOH, and only 70 (13%) were working in the teaching hospital. Of the sample, 48% is working in medical and surgical departments, 42% in critical care units, 3% in managerial positions, 3% in education units, and 4%

in infection control and/or quality unit. Of the sample, 75% was working as bedside nurses. About 55% ( $n = 297$ ) of the sample never participated in any research activities. Of those who participated in research activities, 20% indicated that their participation was limited, being subjects in research studies, and 12% participated in data collection and only 7% ( $n = 30$ ) worked as principal investigator. About 44% of the sample never attended any scientific nursing conferences and 47% of the sample attended between one and five conferences. About 5% of the sample has published articles between one and five, and only those who had published articles presented in scientific conferences.

Only 59 (11%) of the sample received research training other than what they received during university or college education, and the trainings were conducted mostly by universities' faculty members and non-profit institutions such as The Jordanian Nursing Council and Jordan Nurses and Midwives Council (4.7%), and the private hospitals (4%). Of the sample, 61% ( $n = 331$ ) mentioned that they never read research articles. About the presence of a library in the participants' institutions, 85% ( $n = 456$ ) of them answered yes, but 71% ( $n = 381$ ) of the sample reported that they never visited it. Additionally, 76% ( $n = 411$ ) of them mentioned that there is Internet in their institutions and 98% ( $n = 527$ ) reported that they never used it to search about research articles or to read research studies.

To determine the responses to the question: 'What are the most common sources of knowledge used by Jordanian registered nurses to guide their practice?' Frequencies and percentages for each source of knowledge were calculated. The percentages of both 'always' and 'frequently' were combined to represent the most utilized sources of knowledge.

Table 1 provides a complete description of the sources of knowledge utilized by nurses to guide their practice. The top five ranked sources used by Jordanian registered nurses include: the information that nurses learned during nursing education (76%), personal experience in nursing over time (69%), what was learned through providing care to patients (66%), information gained through discussion between physicians and nurses about patients (61%), and information from policy and procedure manuals (61%).

On the other hand, the five least utilized sources of knowledge were: published articles in nursing research journals (31%), published articles in nursing journals (33%), published articles in medical journals (34%), information from local audit reports (36%) and activities of nursing foundations in specific branches (37%).

Results showed that only 19.6% of participants have participated in real implementation of research findings. The mean age of the sample was 29 years, 81% of the participants had baccalaureate degree, 77% of the sample had 10 years and less of experience in nursing, and 48% of the sample is working in medical and surgical departments.

Results revealed that the top five sources of knowledge used by Jordanian registered nurses to guide their practice included: information learned during nursing education, personal experience in nursing over time, what was learned through providing care to patients, discussion between physicians and nurses about patients, and information from policy and procedure manuals.

Person's and point biserial correlation analyses were performed to examine the relationship between nurses' knowledge on RU and

**Table 1** Rank order of the sources of knowledge utilized by nurses to guide their practice  $n = 539$

| Rank | Sources of knowledge  | Frequency | (%) |
|------|---|-----------|-----|
| 1    | Information learned during nursing education  | 410       | 76% |
| 2    | Personal experience in nursing over time  | 373       | 69% |
| 3    | What was learned through providing care to patients/clients                         | 357       | 66% |
| 4    | Information from policy and procedure manuals                                       | 330       | 61% |
| 5    | Discussion between physicians and nurses about patients                             | 329       | 61% |
| 6    | Courses specific only to specific departments                                       | 321       | 60% |
| 7    | Information from attending in-service training programs/conferences                 | 316       | 59% |
| 8    | Information from medication leaflets'   | 311       | 58% |
| 9    | Information in textbooks  | 308       | 57% |
| 10   | The information shared between nurses   | 301       | 56% |
| 11   | New therapies and medications described to patients by physicians                   | 299       | 56% |
| 12   | The ways that nurses always did it  | 296       | 55% |
| 13   | Information that senior clinical nurses share                                       | 289       | 54% |
| 14   | What has worked for nurses for years?   | 269       | 50% |
| 15   | Information from the media (e.g. popular magazines, television, the Internet, etc.) | 249       | 46% |
| 16   | Intuitions regarding what seems to be 'right' for patients                          | 230       | 43% |
| 17   | Activities of nursing foundations in specific branches                              | 201       | 37% |
| 18   | Information from local audit reports  | 192       | 36% |
| 19   | Published articles in medical journals  | 185       | 34% |
| 20   | Published articles in nursing journals  | 180       | 33% |
| 21   | Published articles in nursing research journals                                     | 167       | 31% |

Note: Some respondents selected more than one source.

their demographic characteristics (gender, years of experience in nursing, level of education and marital status) and contextual variables (current area of practice, job title and hospital sector). The results revealed no significant correlation between most of demographic and contextual variables. Working in private hospital and in a position as clinical nurse is associated to yield nurses to having knowledge about RU.

## Discussion

Few studies have discussed the sources of knowledge nurses use in their practice. Regarding sources of knowledge used by Jordanian registered nurses, the results of this study found that among the most frequently used sources of knowledge, only two were based on evidence. Those sources are: 'information learned during nursing education (ranked first)' and 'information from policy and procedure manuals (ranked fourth)'.

The most frequently sources of knowledge utilized by Jordanian registered nurses were similar to those utilized in other developed and developing countries, although the reported rank order of

frequency assigned to each has varied from study to study [2,9,11,12]. Estabrooks found that the most frequently used sources of knowledge by nurses as ordered from the most to the least frequent were as follows: nurses' experience, nursing school, work place sources, physician sources, intuitions, and what has worked with nurses for years [2]. More recently, Ozsoy and Ardahan found that the first three most frequently used sources of knowledge were sources that were not based on research evidence such as intuition and personal work experience [9].

In Oh and Squires *et al.* studies, the ward procedure manual was the most accessible and convincing information source among nurses [11,12], while Spenceley, O'Leary, Chizawsky, Ross and Estabrooks in their review paper of 32 research studies reported that the sources of knowledge that most often ranked within the top five sources of knowledge were information shared between registered nurses, followed by nursing journals, reference material such as procedure manual, personal work experience and information obtained from patients or their families [20].

In this study, the three most frequently used sources of knowledge were information learned during nursing education followed by personal experience in nursing over time, and what was learned through providing care to patients. The rationale for this might be related to that the baccalaureate nursing education forms the foundation for nursing practices. However, the participants in this study had been away of their baccalaureate nursing education program for an average of 7 years and their mean age was 29 years. This indicates that the evidence they use is old in most areas such as adult nursing, paediatric nursing, critical care nursing, nursing administration, etc., considering the rapid advancements in knowledge technology. The other two sources were related to experience, because mostly new nurses depend in their practice on what he/she learns from experienced nurses in the unit/department who teach the unit routine work to newcomers.

Published articles in nursing research journals, in nursing journals and in medical journals were the least three sources of knowledge utilized by Jordanian registered nurses. The justification for this might be related to: the limited attendance to nursing conferences, nurses have no time to read research studies or go to the library, and unavailability of Jordanian nursing journals. Also, this might be related to being late in starting research training in Jordan. Unavailability of printed research studies in clinical areas and at the same time difficulty to access the Internet and lack of time may be other causes for not consulting the literatures.

The results of this study revealed no relationship between demographic and most contextual characteristics of the participants. This result is congruent with the results of Oh who found that there is no relationship between both level of education and attendance at conferences and RU [11]. Furthermore, Smirnoff, Ramirez, Kooplinae, Gibney and McEvoy found no significant correlation between age, job title, and having a research course and RU [21]. Chau, Lopez and Thompson found no significant correlation between age and years of experience with RU [22]. On the other hand, the results of the current study were incongruent with the findings of other studies. Ofi *et al.*, Veeramah, Tsai and Smirnoff *et al.* found significant relationship between the level of education and RU [13,15,19,21]. In Veeramah's study, the majority of the respondents expressed positive attitudes towards research and stated that this is related to research education they received [15]. Kajermo *et al.* stated that high percentage of nurses answered 'no

opinion' to the statement related to the quality of research, and reflected the lack of education in research field [3]. The absence of significant relationship may be related to the lack of educational courses related to the most reliable sources of knowledge and lack of resources in our country.

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