



Research article

Military nurses' perspectives towards research utilization barriers

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ABSTRACT

Objectives: Research utilization in nursing practice includes integrating research findings into clinical practice to guide nursing practice towards safe and effective clinical decision-making. However, nursing leaders are faced with barriers which hinder research utilization and hence create a gap between research and clinical practice. This study aimed to identify the barriers to research utilization as perceived by Jordanian Royal Medical Services nurses.

Methods: A descriptive cross-sectional design was employed. A convenience sample of 365 nurses working with the Jordanian Royal Medical Services was recruited from three hospitals. The BARRIERS scale and a self-designed questionnaire were used for data collection, and descriptive statistics, t-tests, one way ANOVA, and Pearson's correlation were used to analyze the data.

Results: The mean age of the participants was 30 years. The majority of the participating nurses were female (62.5%), and 91.8% held a bachelor's degree. Overall, the greatest barrier to research utilization was related to the setting factor (mean = 3.01), followed by the presentation of research factor (mean = 2.86). Further, lack of time to read research identified as a top-ranked barrier among the individual items ($m = 3.3$). In addition, there were significant differences in the participants' mean BARRIERS scale scores based on age and hospital (p value = .002 and $<.0001$, respectively).

Conclusion: The study findings highlighted the need for organizational support, recognition, and encouragement of research utilization. Continuous education for nurses that focuses on research skills, knowledge, and awareness is also crucial.

1. Introduction

Every year, numerous studies in the field of nursing are conducted around the world and published through journals, conferences, and the media. Though the findings of these studies enhance the body of nursing knowledge, they are not always used effectively to guide clinical practice. Since the concept of research utilization was introduced in 1969 [1], nursing researchers have been expressing their concerns about whether their research evidence is used by nurses to guide their clinical practice [2].

Like other healthcare professions, the nursing profession requires research for its progression and the expansion of its body of knowledge [3, 4]. In the field of nursing research, there is always new information that contributes to notable advances in nursing sciences. Whilst the term research utilization is used interchangeably or synonymously with evidence-based practice (EBP), the latter term refers to a broader concept [5]. Research utilization is defined as the transferring of research

knowledge and findings into practice, thus leading to changes in practice or verifying current practices [6]. Research utilization is of three types, namely instrumental, conceptual, and symbolic utilization. Instrumental utilization refer to the direct application of findings obtained from research to change clinical practice, while conceptual utilization refers to the use of research findings to enhance nurses' understanding of nursing issues [7]. Finally, symbolic utilization refers to the use of research evidence to change decision-makers' opinions [8].

Evidence-based practice is the conscious and conscientious use of best research evidence in decision-making about patient care through the integration of evidence with clinical expertise and patient preferences and values [9]. Implementing EBP is associated with the organizational management concepts of continuous quality improvement (CQI), knowledge management, and organizational learning. Therefore, nurses need to be aware of EBP in order to enhance their performance, provide high quality of care, and ensure safe and effective care [10, 11]. Recently, there has been a gradual adoption of EBP in nursing practice, as it is

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well-known that optimal patient outcomes are obtained through scientific evidence and clinical expertise [12].

However, despite the great attention that has been paid to research utilization in the recent literature, there remains a gap between the available research evidence and its use in clinical practice. Balas and Boren [13] indicated that on average, it takes 17 years before new evidence-based findings are adopted in clinical practice. Kousar et al. [14] assessed research utilization among a randomly selected sample of 245 registered nurses and found that nurses did not utilize research in their practice.

Nursing practice that depends on rituals and routine remains widely adopted, despite the availability of evidence-based research findings that ensure better patient health outcomes [15]. McGlynn et al. [16] assessed the quality of care provided in the United States (US) and found that over 20% of patients received unnecessary or even potentially harmful care. The poor use of research findings contributes to many negative consequences that impact general health indicators, assessment ability, the determination of the psychosocial factors influencing pain, the establishment of prognosis, and the exercising of instructions [17]. Therefore, there remains a gap between nursing research and clinical practice, and certain barriers have been reported to hinder the bridging of this gap. Among these barriers are nurses' characteristics, organizational characteristics, the nature of research information, and the healthcare environment.

1.1. Nurse-related barriers

Lack of awareness about research utilization and EBP among nurses is considered a barrier to nurses' research utilization. A study in the US evaluated 760 registered nurses' readiness for EBP and found that 54% of nurses were not familiar with the term, and 59% had not determined any researchable problem in their practice within the past year. Furthermore, the nurses did not recognize or value research and had not received training on the use of tools that could help them find research evidence to guide their practice [18]. Nurses may feel overwhelmed by the volume of evidence and may lack authority or confidence in their ability to change care practice [19]. Moreover, nurses may lack the skills and ability to conduct literature searches using the computer [20], or they may lack the research critique skills and knowledge needed to interpret statistical research analysis [21].

1.2. Organizational barriers

Organizational factors may hinder research utilization, possibly through the domination of routine in the provision of care, the lack of administrative motivation to conduct research, and shortages in nursing staff [7]. Lack of time, due to heavy workloads and nursing staff shortages, is also ranked as a top barrier to research utilization, both in terms of the time needed to read research or to implement research findings into practice [22, 23]. Moreover, differences in clinical practice goals among administrators and nurses impact the readiness of nurses to use research findings [24]. Finally, the absence of continuing education and staff development programs related to research utilization impede organizations from implementing research findings into clinical practice [25].

1.3. The nature of research information

The nature of research itself predominates as a barrier to research utilization. Research which is too complicated, too scholarly, very statistical, ambiguous, or having limited or no relevance to practice requires well-qualified nurses in the field of research for the application of its findings into clinical practice [24]. In addition, some research may lack clear practice implications or generalizability [26].

Given the important role of research utilization in supporting nurses in the provision of high quality care, it is essential to investigate the

factors that may impede research utilization [27]. Although the majority of nurses have positive attitudes towards research utilization and believe in its significance, they also believe that they lack the ability to effectively implement research findings into practice [28]. Thus, the present study aimed to explore the factors that influence research utilization among nurses and how these factors can be addressed to promote research utilization.

2. Method

2.1. Design

The current study used a descriptive cross-sectional design.

2.2. Sample and population

A convenience sample of 365 registered nurses working with the Jordanian Royal Medical Services (JRMS) was recruited. Registered nurses are nurses who are formally certified for nursing practice and are engaged in clinical nursing practice, regardless of their educational degree. The target population comprised all registered nurses working with the JRMS. Data were collected from nurses working at three JRMS hospitals, namely Princess Aisha Center, King Hussein Medical City, and Prince Hashem Hospital. The sample size was calculated using the computer program "Creative Research Systems Survey Software Calculator", which yielded a required sample size of 357 registered nurses. The statistical level of significance was set at 0.05. Registered nurses were included if they had more than one year of experience, whilst practical nurses or practical work trainees with no nursing degree were excluded.

2.3. Ethical approval

Ethical approval to conduct the study was obtained from the Ethical Review Board at the JRMS. Permission to use the BARRIERS scale was obtained from its original author. Furthermore, each distributed questionnaire included a cover letter which provided the participants with complete information about the study.

2.4. Instruments

In order to collect data on the participants' demographic characteristics, a questionnaire was developed by the authors and included items related to age, gender, marital status, educational level, years of clinical experience, previous training on research topics, and work department. The BARRIERS scale, developed in 1987 by Funk et al. [29], is a tool used to assess clinicians, nurses, administrators, and academicians' perceptions of the barriers to the utilization of research findings in practice [29]. The BARRIERS scale comprises 29 items scored on a five-point Likert-type scale ranging from 1 ("to no extent") to 5 ("to a great extent"). The 29 items are classified into four factors: (a) characteristics of the adopter: the nurses' research values, skills, and awareness (8 items); (b) characteristics of the organization: setting, barriers, and limitations (8 items); (c) characteristics of the innovation: qualities of the research (7 items); and (d) characteristics of the communication: presentation and accessibility of the research (6 items).

The reported internal consistency reliability of the BARRIERS scale is moderate [29]. Cronbach's alpha values of 0.80, 0.80, 0.72, and 0.81 have been reported for each of the characteristics of the adopter (nurses), characteristics of the organization, characteristics of the innovation (research), and characteristics of the communication (presentation) subscales, respectively [29]. Cronbach's alpha coefficient was calculated to determine the internal consistency of the instrument for use among the current study sample, and the yielded values ranged from 0.67 to 0.79. Face and content validity of the BARRIERS scale was established after reviewing the scale items by an expert panel of three nursing professors

to ensure that the scale that was developed overseas is interpreted in the same way by Jordanian nurses.

2.5. Procedure

Data were collected over a period of three months, from January to April 2018. The questionnaires were distributed to the registered nurses at their workplaces with an attached reply envelope. Each hospital had assigned staff nurses who took responsibility for data collection and who were informed about the aims of the study and the voluntary nature of participation. The assigned staff nurses then disseminated this information to the nurses working in their units. Each questionnaire required around 20 min to complete, and completed questionnaires were collected by the assigned staff nurses.

2.6. Data analysis

Data were collected, organized, coded, and statistically analyzed. Statistical analyses were performed using the SPSS statistical software computer package version 20. Descriptive analysis was performed, with means and standard deviations used to describe the quantitative variables and percentages to describe the qualitative variables. The demographic variables were defined as follows:

- Age: quantitative variable measured in years
- Marital status: dichotomous qualitative variable (1 = single; 2 = married)
- Gender: dichotomous qualitative variable (1 = male; 2 = female)
- Years of clinical experience: quantitative variable measured in years
- Educational level: dichotomous qualitative variable (1 = Bsc; 2 = higher degree)
- Work department: nominal qualitative variable
- Previous training on research topics: dichotomous qualitative variable (1 = Yes; 2 = No)

Pearson's correlation coefficient was used to test the correlations of age and years of clinical experience with mean BARRIERS scale score. Independent samples t-tests were used to test the differences in mean BARRIERS scale scores based on gender and previous training courses on research topics. One-way ANOVAs were used to test the differences in mean BARRIERS scale scores based on age, hospital, and educational level. Statistical significance was set at a p-value of <0.05.

3. Results

Out of the 420 questionnaires distributed to the nurses at the three hospitals, a total of 365 questionnaires were completed and returned (response rate = 86.9%). The mean age of the participants was 30 years (SD = 3.55), with ages ranging between 24 and 42 years. Two hundred and twenty-eight (62.5%) of the nurses were female, whilst 137 were male (37.5%). The majority of the nurses (91.8%) held a bachelor's degree, while the rest (8.2%) held a master's degree. The detailed demographic characteristics of the nurses are summarized in Table 1.

Table 2 shows the nurses' perceived barriers to research utilization. The results indicated a mean BARRIERS scale score of 2.80 (SD = .457), with scores ranging from 1 to 5. The "Settings" (organization) subscale had the highest mean score (mean = 3.01, SD = .474), followed by the "Presentation" (communication) subscale (mean = 2.86, SD = .493), the "Research" (innovation) subscale (mean = 2.65, SD = .451), and the "Nurses" (adopter) subscale. The scores of BARRIERS scale and its subscale were all above average indicating less research utilization.

Table 3 shows the rank order of the barriers based on the BARRIERS subscale scores. The first seven barriers were considered the greatest barriers to research utilization, as perceived by the participating nurses, and these seven barriers are related to the setting (organization) and presentation (communication) subscales. These seven barriers are

Table 1. Demographical characteristics of the participant.

Variable	Mean and Frequency	Std. Deviation
Age	30.0	3.55
24–29	184 (50.4%)	
30–35	147 (40.3%)	
36–41	33 (9%)	
42 and older	1 (.3%)	
Gender		
Male	137 (37.5%)	
Female	228 (62.5%)	
Marital status		
Single	213 (58.4%)	
Married	152 (41.6%)	
Educational level		
Baccalaureate degree	335 (91.8%)	
Master's degree	30 (8.2%)	
Doctoral degree	0 (0%)	
Duration of clinical experience	6.93	4.00
	Range (2–20)	
Hospital		
PAC	70 (19.2%)	
KHMC	176 (48.2%)	
PHH	119 (32.6%)	
Previous training on research topics		
Yes	85 (23.3%)	
No	280 (76.7%)	
Working department		
ER	88 (24.1%)	
ICU	57 (15.6%)	
Infection control	1 (.3%)	
Medical ward	40 (11%)	
Oncology ward	20 (5.5%)	
Orthopedic ward	11 (3%)	
Pediatric ward	47 (12.9%)	
Psychiatric ward	36 (9.9%)	
Respiratory ward	30 (8.2%)	
surgical ward	35 (9.6%)	

PAC: Princess Aisha Center; KHMA: King Hussein Medical City; PHH: Prince Hashem Hospital.

ordered as follow: the nurses do not have time to read research; statistical analyses are not understandable; the nurses feel that research findings are not generalizable to their own settings; the nurses do not feel that they have enough authority; the implications for practice are not made clear; the facilities are inadequate for the implementation of research findings; and the nurses do not have the time to implement new ideas. On the other hand, the nurses' unwillingness to change/try new ideas and their inability to see the value of research for practice were considered the lowest barriers to research utilization, as perceived by the nurses (mean = 2.47 and 2.50, respectively).

Table 4 shows the correlations of age and years of clinical experience with mean total BARRIERS scale score. Both age and years of clinical experience were found to have a significant positive correlation with total BARRIERS scale score (p value = .003 and .002, respectively). Therefore, the older and more experienced that nurses are, the less likely they are to utilize research.

Table 2. Means and Standard Deviations of the BARRIERS Scale and its subscales (N = 365).

Subscale	Mean	Std. Deviation
Nurses	2.66	.457
Research	2.65	.451
presentation	2.86	.493
setting	3.01	.474
Total barrier scale	2.80	.344

Table 3. BARRIERS scale items in rank order (N = 365).

Items rank	Mean	Std. Deviation
1. The nurse does not have time to read research.	3.30	.926
2. Statistical analyses are not understandable	3.28	.977
3. The nurse feels results are not generalizable to own setting.	3.15	1.00
4. The nurse does not feel she/he has enough authority.	3.09	.984
5. Implications for practice are not made clear.	3.05	.979
6. The facilities are inadequate for implementation.	3.03	1.02
7. There is insufficient time on the job to implement new ideas.	3.02	.924
8. Administration will not allow implementation.	2.93	.897
9. Physicians will not cooperate with implementation.	2.92	1.05
10. The nurse does not feel capable of evaluating the quality of the research.	2.89	.957
11. The amount of research information is overwhelming.	2.88	1.01
12. The research is not reported clearly and readably.	2.87	.913
13. The nurse feels the benefits of changing practice will be minimal.	2.79	.912
14. The nurse sees little benefit for self.	2.78	.943
15. The nurse is unaware of the research.	2.76	.836
16. The nurse is uncertain whether to believe the results of the research.	2.73	.908
17. The research is not relevant to the nurse's practice.	2.69	.916
18. Research reports/articles are not readily available.	2.68	.926
19. Other staff are not supportive of implementation	2.68	1.08
20. Research reports/articles are not published fast enough.	2.63	.902
21. The relevant literature is not compiled in one place	2.63	.853
22. The conclusions drawn from the research are not justified.	2.61	.976
23. The research has not been replicated.	2.60	.807
24. There is not a documented need to change practice	2.59	.940
25. The literature reports conflicting results.	2.58	.938
26. The research has methodological inadequacies.	2.57	.779
27. The nurse is isolated from knowledgeable colleagues with whom to discuss the research.	2.51	.965
28. The nurse does not see the value of research for practice.	2.50	.942
29. The nurse is unwilling to change/try new ideas.	2.47	1.03

Table 4. Correlation between demographical characteristics and mean total of BARRIER scale.

Variable	mean total of BARRIER scale	
	r	P value
Age	.156	.003
Duration of clinical experience	.163	.002

Table 5 shows the differences in mean BARRIERS scale scores based on the participants' demographic characteristics. The ANOVA test showed significant differences in mean BARRIERS scale scores based on age ($F = 5.039$, p value = .002), indicating that older nurses were less likely than younger nurses to utilize research. In addition, there were significant differences in mean BARRIERS scale scores based on hospital ($F = 15.961$, p value < .0001), whereby nurses working at Princess Aisha Center were less likely than nurses working at the other two hospitals to utilize research. However, no significant differences in mean BARRIERS scale scores were identified based on gender, educational level, or previous training on research topics, with p -values of .058, .698, and .797, respectively.

4. Discussion

In the present study, the first seven major barriers perceived by military nurses as obstacles to the use of research in clinical practice were

Table 5. Difference in mean score of BARRIER scale with regard to demographics characteristics.

Variable	Group	n	Mean score of BARRIER scale	Difference of mean	Sig
Age	24–29	184	2.74	5.039	.002
	30–35	147	2.88		
	36–41	33	2.81		
	42 and older	1	3.08		
Gender	Male	127	2.85	.0705	.058
	Female	238	2.78		
Level of education	Bsc	335	2.80	.150	.698
	Msc	30	2.77		
Hospital	PAC	70	2.97	15.961	<.001
	KHMC	176	2.71		
	PHH	119	2.84		
Previous training on research topics	Yes	85	2.81	.0043	.797
	No	280	2.80		

PAC: Princess Aisha Center; KHMA: King Hussein Medical City; PHH: Prince Hashem Hospital; Bsc: Bachelor's degree; Msc: Master's degree. Bold values indicates significance level at $p < 0.05$.

related to the setting (organization) and presentation (communication) subscales. Lack of time to read research was ranked as the top barrier, which is consistent with the findings of previous research studies [22, 23]. Furthermore, insufficient time on the job to implement new ideas was also identified as a top ranked barrier in a previous study [30].

Time issues may be attributed to many factors, including workload, nurse shortages, and poor time management [30]. Therefore, time management among military nurses needs to be developed. Nurse administrators play a vital role in managing time issues and providing an organizational environment that supports research utilization in clinical practice [22, 23]. There are many ways through which nurses may be encouraged to devote time for reading and implementing research, including journal clubs, participation in nursing conferences, and writing grants, and participation in multidisciplinary meetings [22, 23, 25].

Statistical analysis was identified as being the second top-ranked barrier, which is related to the presentation and communication of research. The participating military nurses perceived statistical analyses of research studies as being difficult to understand, which is consistent with the findings of previous studies [24, 31]. Statistical analyses should be written by researchers in ways which are simple and easy for nurses to understand [24, 31]. Furthermore, military nurses should make themselves aware of the basic concepts of research and statistical analysis by participating in research courses [24, 31]. The nursing administration department at the JRMS holds a research course for military nurses every year to enhance their knowledge about research. Nurses who attend these courses should provide support to other nurses, promote their engagement in research utilization, and provide them with education and guidance about the technical skills related to research utilization [31].

Moreover, researchers should ensure that their studies' implications for practice are made clear and understandable for nurses. This was highlighted by the fact that the nurses believed that research findings were not always generalizable to their own work settings at the JRMS, which was the third identified barrier. This finding comes consistent with another study conducted in Jordan in 2016, whereby the participating nurses reported "the results of research studies are not generalizable to their own setting" as being the greatest barrier to research utilization [32].

Authority was the fourth top ranked barrier related to the setting (organizational) factors, as indicated by the item "The nurse does not feel she/he has enough authority". Military nurses do not perceive themselves as independent members within the healthcare team to implement research findings in their settings, which comes consistent with previous

study findings [33]. Therefore, professional autonomy and authority among nurses should be encouraged by nursing leaders in the healthcare system by including nurses in decision-making and collaborative practice [33].

It is also interesting to note that the participating military nurses did not perceive the item "The nurse is unwilling to change/try new ideas" as being a significant barrier to research utilization. This may indicate military nurses' ability and readiness to change and use research findings in their clinical practice. This finding could be explained in the context of a self-reported questionnaire and the social desirability of this response. Few nurses would openly acknowledge they do not want to implement research findings. This finding was supported by the findings of previous research which highlighted the impact of social desirability bias on self-reported measures [34, 35, 36]. This bias distorts one's response on the items of self-reported measures by revealing false response or obscuring true response to present a favorable image of themselves. Future research should consider a variety of approaches in data collection on nurses' research utilization, such as, varying response choices and their wording and randomized response techniques.

Furthermore, age and years of clinical experience were found to be associated factors with nurses' perception of barriers, and they were positively correlated with mean total BARRIERS scale score. A possible reason for this result might be that recent policy for professional development and ranking promotion at the JRMS requires success in specialized courses in the field of scientific research and participation in local and international conferences by submitting and presenting research papers. Therefore, younger nurses with less experience may be more knowledgeable than older, more experienced nurses about scientific research. Moreover, older and more experienced nurses studied older nursing programs, which lack courses specialized in qualitative and quantitative methods of research [37]. Therefore, these nurses may lack the required level of knowledge that facilitates research utilization.

Significant differences in mean BARRIERS scale scores were identified based on the hospitals that the nurses worked at. The mean BARRIERS scale score of the nurses working at King Hussein Medical City was lower than the score of nurses working at Prince Hashem Hospital and Princess Aisha Center. This is possibly due to the nature of the work setting, availability of resources for research, better nurse to patient ratios, and more time available for research implementation and utilization for nurses at King Hussein Medical City. This finding is supported by the findings of previous research studies which identified lack of time, lack of research resources, and nursing staff shortages as being significant predictors of low research utilization among nurses [37, 38]. With heavy workloads and nursing staff shortages, nurses are forced to undertake non-nursing tasks, hindering their ability to utilize evidence-based research in clinical practice [38]. Adopting up-to-date, reasonable, and national nurse-patient ratio standards for assessing the adequacy of staffing levels in hospitals is recommended [37].

The findings of this study suggest that managerial support, recognition, and encouragement are factors which impact research utilization among military nurses. Continuing education that focuses on research skills, knowledge, and awareness among nurses is also recommended.

5. Implications for practice

The findings of this study may guide the development of workshops and seminars which train nurses on how to conduct clinical research and which aim to increase nurses' knowledge pertaining to research and practice. Also, hospital administrators should address the issue of high nurse-patient ratios by hiring more trained nurses.

6. Limitations

This study used a cross-sectional design which described nurses' opinions over a limited time period, and which does not allow for the establishment of causal inference. Future research should consider using

experimental and longitudinal designs to investigate nurses' perceived barriers to research utilization. Further, the use of convenience sampling focusing on JRMS nurses limits the generalizability of the study findings to all Jordanian nurses. Future research using random samples which are more representative is recommended. Furthermore, there may have been cases of participants being unable to answer some of the questionnaire questions and hence selecting "no opinion", which may have impacted the internal consistency of the BARRIERS Scale. Future research on adapting or rewording some items is recommended.

7. Conclusion

Research utilization in nursing practice is essential for advancing the nursing profession, standardizing nursing care, and enhancing nurses' clinical decision-making. The findings of this study showed the setting (organizational) factor to be the greatest barrier to research utilization, as perceived by military nurses, followed by the presentation (communication of research) factor. The individual item that was reported by the military nurses as being the most significant factor was lack of time to read research. On the other hand, the participating military nurses were found to be interested in research utilization in clinical practice, and they perceived nurses' unwillingness to change or try new ideas as being the least significant barrier. Hospital administrators should develop training sessions, workshops, and seminars aimed at increasing nurses' research skills and utilization. Therefore, future research which investigates the effectiveness of educational sessions or professional training on research utilization for nurses is highly recommended.

Declarations

Author contribution statement

Ayat Da'seh: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Mohammad Rababa: Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of interests statement

The authors declare no conflict of interest.

Additional information

No additional information is available for this paper.

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