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Barriers to Research Utilization among Registered Nurses at Hamad Medical Corporation

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Abstract: This study aimed to determine the barriers to research utilization from HMC registered nurses' perspectives. This quantitative descriptive study used a newly developed 25-item questionnaire. The questions were categorized into three domains: Nurse-related, System-related and Research-related Barriers. The questionnaire was distributed electronically via e-mail service to all registered nurses in Hamad Medical Corporation (HMC) (N = 5000). About 901 responses were collected (response rate = 18%). Of the total responses, 430 met the inclusion criteria. Results showed that System-related barriers domain scored the least average among the three domains. Followed by research and nurse-related barriers domains respectively. Lack of access to research experts (51%), lack of physicians' support to change practice (52%), lack of protected time for research (55%) and lack of other disciplines' support to change practice (57%) were reported as top system-related barriers. The difficulty of utilizing research findings in clinical practice was reported as a research-related barrier (57%). Moreover, results showed a significant relationship (P-value 0.005) between access to research experts and the support from other disciplines with the hospital where the nurses work within HMC. Otherwise, no significant relationship between the identified barriers and demographic characteristics was determined. The findings provided baseline information for an organizational research utilization program, necessary measures such as; protected time, accessibility to research mentors or experts and evidence-based practice units are highly recommended by the frontline nurses through a review of the successful research governance models within HMC.

Keywords: Research Utilization, Barriers, Registered Nurse, Qatar, Nursing

Introduction

Getting research findings into routine clinical practice is a major challenge. Typically, research is detached from implementation especially in healthcare industries, therefore, since the early 1990s, the emphasis on research utilization in clinical practice has grown significantly in all health care disciplines and particularly in medicine and nursing. Poor utilization of the available research findings in nursing practice has been highlighted in many studies starting from the early 1980s. Accordingly, researchers have identified many factors that hinder the efficient use of research findings in nursing clinical practice. In North America and Europe, this subject has been investigated thoroughly and researchers have developed many tools to help organizations identify barriers to research utilization about their unique workplace circumstances. Nevertheless, in the Middle East, very few studies were conducted in this regard.

In Qatar, one of the fastest growing economies in the world, Hamad Medical Corporation (HMC) puts significant emphasis on research. It has allocated a significant budget to support research activities. These actions are derived from the top management's faith that research is the cornerstone of HMC's success to become a world-leading healthcare organization. Since the nursing department is the biggest department concerning manpower, nurses at all levels are expected to contribute significantly to the organization's success. However, it has been observed that few frontline nurses in HMC are practicing based on the best research evidence despite the nursing

department's efforts to encourage them to use research as a basis for delivering the optimal quality of care. Based on the investigators' anecdotal evidence and available relevant literature review; many factors were highlighted and categorized into three main domains: (a) factors related to nurses themselves, (b) factors related to organization's system and (c) research-related factors. Accordingly, an opportunity was seized to uncover the factors that impede the effective use of research in improving nursing practice. This study gives nursing administrators a clear picture about the barriers that prevent nurses from using research findings in their practice. It also helps the nursing administration come up with research-based strategies to overcome the identified barriers and more importantly, it helps the nursing department push the march towards achieving HMC's strategic goals, particularly in research as one of HMC's strategic pillars.

Literature Review

The ultimate goal of the nursing research is to improve nursing care and practice. Therefore, if clinical nurses do not use research findings, the research will have no value and there is a risk that its conclusions will become obsolete before they reach the nurses. Over the last 40 years, researchers have been concerned with identifying factors that hinder the effective use of research findings and evidence in clinical practice to come up with actual solutions to enhance the effective utilization of research in nursing settings. Scott-Findlay and Golden-Biddle (2005) have defined research utilization as the use of research findings to support clinical decision-making. According to Estabrooks *et al*. (2003), research utilization in nursing has been defined as the use of research results in any and all aspects of one's work as a Registered Nurse. However, the concept of research utilization is not a new invention; early in the 1970s, Horsley *et al*. (1978) discussed the barriers to research utilization and argued that research utilization is an organizational process where it is everyone's responsibility to facilitate research and utilize research findings in practice. Since then, many researchers have studied barriers to utilizing research and research findings in nursing clinical practice.

Researchers have identified many barriers to using results of research in clinical practice. However, examining the research over the past three decades found no significant difference between the findings over the years except, perhaps, in the barriers that were due to the accessibility, availability of research results and technological advancement that have boomed in the last few years. Studies in the late 1970s, 1980s and early 1990s concluded that the availability of research findings is of utmost importance and the number one reason for the poor utilization of research findings. For example, Miller and Messenger (1978) disputed the notion that the frequently encountered barrier is the inability to obtain research findings. Horsley *et al*. (1978) concluded that nursing research reports are not readily available. Additionally, Nieswiadomy (2011) claimed that most nursing research is not presented or published. Similarly, Barnsteiner (1994) found that most published nursing research is in journals that are not widely read by clinical nurses.

On the other hand, many studies have reported that nurses' attitudes and knowledge of research represent real barriers to research utilization. Oranta *et al*. (2002), who used Funk *et al*. (1991) BARRIER scale to survey 316 Finnish nurses, concluded that the main obstacle is nurses' negative attitudes toward research. Further, Sitzia (2002) argued that the lack of teamwork is perceived to be one of the impediments to conducting or using research in nursing clinical settings. Conversely, a positive attitude toward research has been identified as the most important facilitator in research utilization (Squires *et al*., 2011a). In a different context, nurses' inadequate knowledge about research has been reported to be a barrier to research utilization. Mottola (1996) noted that the exposure to research in the basic educational programs is limited or could be absent. Kajermo *et al*. (1998), who surveyed 275 Sweden nurses, noted that nurses who received education about research reported fewer barriers compared to nurses who did not receive research education. Moreover, (Oranta *et al*., 2002; Estabrooks *et al*., 2003) found that nursing knowledge and training about research could facilitate research utilization. Therefore, the poor knowledge of research methods and statistics are considered key inhibitors of research utilization among nurses. Similarly, Sitzia (2002) asserted that lack of relevant research skills was perceived as a barrier to research utilization. However, it is important to note that Connor *et al*. (2006), who studied the relationship between organizational culture and research utilization in home care nursing in Canada. The authors have concluded that the staff education about research evidence in the nursing home settings or any other setting by itself is not sufficient to initiate and sustain a meaningful change in practice.

Recently, Carlone and Igbirieh (2014) conducted a quantitative cross-sectional survey to evaluate Evidence-Based Practice (EBP)-related attitudes and knowledge amongst a sample of 400 registered nurses at Hamad General Hospital (HGH) in Qatar. They concluded that both academic background and current professional practice exerted an influence on perceptions and familiarity with EBP. Granting protected time has been discussed thoroughly in the literature on research utilization. Many researchers from different contexts

have argued that the lack of time was perceived as a barrier to conducting or using research. Retsas and Nolan (1999) found that the most frequently cited barriers to using research were insufficient time on the job to implement research findings and inadequate time to read the research. Likewise, Sitzia (2002) concluded that lack of time is one of the primary barriers to research utilization. According to Scott-Findlay (2006), who studied the role of organizational culture on research utilization in Canada, nurses need to conduct research on their own time. However, organizations expect that nurses' time should be allotted to doing what needs to be done which is providing patient care. Additionally, Hutchinson and Johnston (2004), who surveyed 761 Australian nurses, concluded that the greatest barriers to research utilization included time constraints. Furthermore, Mehrdad *et al*. (2008), who surveyed 410 Iranian nurses, found that a major barrier to research utilization was that nurses do not have time to read the research. Similarly in Korea, Oh (2008), who surveyed 63 Korean critical care nurses, found that the insufficient amount of time allotted to implement new ideas in the clinical area was identified as one of the highest-ranking barriers. Regionally, in Oman, Ammouri *et al*. (2014), who surveyed 414 nurses, concluded that insufficient time for research is the greatest barrier to developing (EBP).

In a similar vein, organizational culture attributes were the most cited barriers to research utilization in nursing clinical settings. Researchers have reported that administrative support to nursing research is of utmost importance and that the lack of support is a major barrier to using research evidence in the clinical practice. Further, lack of authority is another attribute that was mentioned in the literature. (Lewis *et al*., 1998; Retsas and Nolan, 1999; Oranta *et al*., 2002; Hutchinson and Johnston, 2004; Scott-Findlay, 2006; Gifford *et al*., 2007; Oh, 2008; Kajermo *et al*., 2008; Azuka, 2010). Researchers have noted that lack of authority and incentives is among the primary inhibitors of research use in nursing clinical practice (Rutledge *et al*., 1998; Kajermo *et al*., 1998; Sitzia, 2002; Hutchinson and Johnston, 2004; Schoonover, 2009; Mehrdad *et al*., 2008; Azuka, 2010; Squires *et al*., 2011b).

Researchers over many years have depended on Funk *et al*. (1991) BARRIERS scale to identify nurses' untoward perceptions or barriers to research utilization (Carlson and Plonczynski, 2008). The scale categorizes the barriers into four main areas including; Nurse (adopter), Setting (organization), Research (innovation) and Presentation (Communication).

Aim

This study aimed to determine the barriers that lead to the poor utilization of research findings by Registered Nurses in HMC to make research-based recommendations to the administration to overcome these barriers.

Secondary Objectives

To identify the relationship between the demographic characteristics of HMC's registered nurses and the barriers to research utilization.

Methodology

This descriptive, correlational, cross-sectional study was conducted between March to October 2014. A self-reported questionnaire was designed to fulfill the research objectives. The study used a 25-item BRUQ questionnaire that was developed by the authors to measure participants' agreement on statements that reflect barriers to research utilization in their workplace. The barriers were categorized into three categories based on a thorough literature review: Nurse-related barriers, system-related barriers and research-related barriers. Every item rated from 1 (strongly disagree) to 10 (strongly agree), a 10 point scale was used to allow for a more accurate range of responses and to help in ranking the top barriers, given that studies show respondents favored finer scales for expressing their feelings accurately (Roberts *et al*., 1999). Furthermore, studies indicate that reliability tends to improve for scales with greater response categories (Roberts *et al*., 1999; Preston and Colman, 2000). Preston and Colman (2000) also found that the scales rated the easiest to use by respondents were those with 5, 7 and 10 response categories. The most reliable scores were derived from scales with 7, 8, 9 or 10 response categories. Accordingly, A "no opinion/do not know" answer was added to avoid forced responses. All items were ranked ascendingly according to the mean score; items with the lower average score are more likely considered as barriers. The survey was designed on SurveyMonkey ® and a link was distributed by using HMC's corporate webmaster to reach all the potential nurse candidates. The survey was available for the participants and a periodic weekly reminder was sent via email (5 times). All the responses were saved automatically in the SurveyMonkey ® and access to the data was given only to the researchers to ensure confidentiality. Demographic data were collected to determine the relationship between demographic characteristics and the barriers to research utilization. Each participant was allowed to have one response per computer; further steps have been taken to eliminate duplicate responses by comparing the demographics. Responders were not asked to provide their name or corporation number. Data were handled only by researchers. Data were stored on the investigators' personal memory disks and were not shared with any

party that was not a part of the study. The study was approved by the Institutional Research Board (IRB) at HMC before conducting the study, which ensured the compliance with ethical research standards. The researchers declared no conflict of interest.

Pilot Testing

The tool has been developed by the authors based on an extensive literature searched and was presented to a group of research experts to ensure the face and construct validity besides the appropriateness of the language used in formulating the questions.

A pilot study has been conducted on 25 registered nurses (who are not included in this study) to evaluate the clarity and applicability of the tool and necessary modifications were done based on their responses. The reliability was tested for the 25-item survey using Cronbach's alpha; the overall alpha of 0.93 with subscale alphas ranging from 0.89 to 0.97 indicating excellent internal consistency.

Inclusion Criteria

The study was directed to any HMC registered nurses who met the following criteria: (a) provides direct clinical duties (direct interaction with patients) and (b) has been employed by any of HMC's facilities for more than 12 months at the time of distributing the survey. These criteria limited the potential participants in the following nursing positions: Staff and charge nurses, clinical nurse specialists, case managers, infection control practitioners, patient educators and clinical pathway coordinators.

Exclusion Criteria

Any nurse at HMC, who met the following criteria: (a) nursing administrators (Executive team members, directors, head nurses and nursing supervisors) and (b) staff with no direct clinical duties (quality officers, bed managers and nurse educators).

Design

Sampling and Sample Size

HMC recruits more than 9000 registered nurses in 8 hospitals and many other support services. That might lead to a wide variety of experiences, leadership styles and very importantly to a different set of barriers to research utilization. Therefore, the authors believed that demographic characteristics might contribute to various perceptions of the research barriers on every facility in HMC. Accordingly, the survey was disseminated to all HMC nursing staff who met the inclusion criteria by using HMC's webmaster mail for around six months. The potential sample size was 5000 registered nurses. However, due to the possibility that the staff database might not be updated, the first two questions in the survey confirmed whether the participants met the inclusion criteria and if not, the website would automatically display a note that the participant was not eligible to complete the survey. Importantly, due to a large number of nurses in HMC and the inability to recruit research coordinators, the authors decided to adopt a non-probability convenience sampling technique in which the survey would be published online and whoever met the criteria was welcome. To ensure the normality of data as well as to maximize the generalizability of findings, no less than 200 eligible responses were accepted.

Types of Outcome Measurements

Primary outcomes:

1- Nurse-related barriers to research utilization in HMC
2- System-related barriers to research utilization in HMC
3- Research-related barriers to research utilization in HMC

Secondary Outcomes

The relationship between nurses' demographics and barriers to research utilization in HMC.

Data Analysis and Management Plan

Mean, median and proportions were used to describe the findings of every research item. The mean was multiplied by 10 and converted into a percentage to facilitate data presentation and to ease understanding. Every mean less than 60% was considered as a barrier. On the other hand, to understand if there was a relationship between the demographics and participants' perceptions of the identified barriers to research utilization, analysis of variance and independent t-tests were used. All the statistics were performed by using Statistical Package for the Social Sciences (SPSS v.21) and Microsoft Excel 2010.

Results

The survey was distributed to around 5000 nurses. A total of 901 responses were collected (response rate = 18%). Of them, 430 responses were eligible. A total of 45% of the participants were between 31 and 40 years old while 28% were between 20 and 30 and 27% were above 40 years old. A total of 40% of the participants had five years or less of experience at HMC, 34% had between six and ten years of experience, 17% had between 11and 15 years and 9% had more than 15 years. A total of 60% of the participants had bachelor's degrees, 29% had diplomas and 11% had one or more

post-graduate degrees. A total of 84% of the participants were female and 16% were male. Table 1 provides more details about demographical characteristics of the participants.

Statistical analysis was conducted in two phases. First, the calculation of means, medians and proportions. At this stage, system-related barriers domain scored the least, with an average of 62% compared to 77% and 68% for nurse-related barriers and research-related barriers domains respectively. Of the identified system-related barriers, access to research experts in the organization was ranked as the number one barrier (N = 311, mean = 51%). Nurses stated that physicians' support for nurses to use research in their clinical practice was an issue (N = 305, mean = 52%). Consistent with the literature, providing a protected time to utilize research was perceived as a system-related barrier (N = 323, mean = 55%). In the same vein, lack of support to research utilization by other healthcare disciplines was considered as a system-related barrier (N = 302, mean = 57%). Nurses stated that using research findings in clinical practice is a barrier to research utilization (N = 335, mean = 57%). The remaining 20 items were not considered as barriers as per the study definition of barriers. However, the variation in the means may help the administration better understand the research environment and nurses' perceptions towards research, which may eventually assist the nursing administration to develop a strategy to overcome all obstacles to research utilization among nurses in the organization (Table 2).

In the second stage, the authors search for a significant relationship between the identified barriers and the demographic characteristics. Findings showed a significant association (P-value 0.005) between access to research experts and the hospital where the nurses work within HMC. That might give an indicator about the resource allocation in the organization. In some HMC facilities, the nurse may have access to a research expert either because he/she is available or because the nurse-to-research expert ratio is different between hospitals. Therefore, this result suggests that nursing administration needs to look carefully at resource allocation to provide the necessary support to nurses to utilize research in their clinical practice. Moreover, results showed a significant relationship between nurses' perceptions of support from other disciplines and hospitals where the nurses work within HMC.

Discussion

The primary objective of this study was to determine the barriers to research utilization from HMC registered nurses' perspectives. The results are consistent with previously published studies in the field of research utilization. Nurses in this study reported that the system-related domain ranks number one among the three domains that influence research utilization among nurses, followed by research-related domain and nurse-related domain respectively.

Of the identified system-related barriers, access to research experts in the organization was ranked as the number one barrier and reported in a few studies as a system-related barrier as well (Patiraki *et al*., 2004; Khader *et al*., 2015; Mehrdad *et al*., 2008).

Lack of protected time considered as an important system-related barrier, which is consistent with several research findings (Retsas and Nolan, 1999; Sitzia, 2002; Hutchinson and Johnston, 2004; Scott-Findlay, 2006; Mehrdad *et al*., 2008; Oh, 2008; Ammouri *et al*., 2014).

Lack of physicians' and other disciplines' support to change the practice was also identified as a system related barrier. This result is consistent with Oranta *et al*. (2002) who reported the discouragement of colleagues and nurses' belief that their research will not add value or change the practice and especially that physicians will not cooperate with implementation, as a system related barrier. Lack of other disciplines' support and lack of teamwork were also stated as barriers in the study of Sitzia (2002).

Consistent with many research findings, the difficulty of research was number one reported research-related barrier. Many studies concluded that nurses find difficulty in understanding research as a topic or statistical research analyzes (Clarkson, 2004; Chang *et al*., 2010; Jansen *et al*., 2010). Other nurse-related factors such as interest in nursing research, ability to evaluate the quality of a research article and to differentiate between relevant and irrelevant research findings and knowledge of where and how to find a research article and knowledge of research design were not considered as barriers as per the study's definition of a barrier.

Table 1. Characteristics of participants' demographics

Demographics	N (430)	%
Age distribution		
20 – 30	120	28
31 – 40	194	45
> 40	116	27
Experience in HMC (Year)		
≤ 5	172	40
6 – 10	146	34
11 – 15	73	17
> 15	39	9
Education level		
Diploma	125	29
Bachelor	258	60
> Bachelor	47	11
Gender		
Male	69	16
Female	361	84

Table 2. Barriers questionnaire ranked ascendingly according to the mean (*)

Item	Domain	N	Mean	SD
I have access to expert research staff in the organization	SRB	311	5.12	2.846
Physicians in my hospital support the use of nursing research findings in the clinical practice	SRB	305	5.24	2.703
My organization (HMC) gives me a protected time to use research findings in my clinical practice	SRB	323	5.54	2.738
Other health disciplines support me to use research findings in my facility	SRB	302	5.65	2.613
The use of research findings in nursing practice is an easy subject	RRB	335	5.65	2.561
My nursing colleagues support the use of research findings in the nursing practice	SRB	329	6.27	2.486
My organization provides training to use research findings in my clinical practice	SRB	331	6.45	2.654
Research articles have conflicting results	RRB	300	6.51	2.266
Nursing administration at HMC supports the use of research findings in the nursing practice	SRB	328	6.75	2.578
My organization (HMC) motivates nurses to use research findings in the nursing practice	SRB	335	6.8	2.659
The conclusions drawn from research are applicable to my practice in HMC	RRB	303	6.8	2.24
HMC policies support nurses to utilize the research findings in clinical practice	SRB	327	6.86	2.496
Research results in other countries/facilities are relevant to my practice	RRB	302	7.01	2.252
I can differentiate between relevant and irrelevant research findings	NRB	394	7.19	2.226
I am aware of what research design means	NRB	403	7.19	2.334
I dedicate enough time to apply research findings in my clinical area	NRB	415	7.23	2.389
I know how to find a research article	NRB	407	7.31	2.216
I can evaluate the quality of a research article	NRB	407	7.32	2.125
I know where to find a research article	NRB	402	7.35	2.217
My organization provides me with access to up-to-date research resources (e.g., Electronic library, nursing journals, international databases, etc.)	SRB	352	7.38	2.438
I have the confidence to use research findings in my clinical practice	NRB	418	8.19	1.967
The English language used in research is easy to understand	RRB	334	8.21	2.111
I'm interested in nursing research	NRB	422	8.36	1.978
I'm willing to try new ideas based on research findings	NRB	422	8.45	1.87
I believe that using research findings in clinical practice is important	NRB	428	8.75	1.78

NRB = Nurse-Related Barrier SRB = System-Related Barrier RRB = Research-Related Barrier
(*) items with lower mean score are more likely considered as barriers

Regarding the study's secondary objective, there was a significant relationship between access to research experts and the hospital where nurses worked within HMC and between nurses' perceptions of support from other disciplines and the hospital where the nurses worked within HMC. This might be explained by the diverse leadership styles in each facility, as well as the administrative support and nursing empowerment, which was proven in the literature as a facilitator for using research in nursing clinical practice (Lewis *et al*., 1998; Retsas and Nolan, 1999; Oranta *et al*., 2002; Hutchinson and Johnston, 2004; Scott-Findlay, 2006; Gifford *et al*., 2007; Mehrdad *et al*., 2008; Oh, 2008; Kajermo *et al*., 2008; Azuka, 2010; Squires *et al*., 2011a).

Limitations

Although the study has achieved its overall purpose, there were three inevitable limitations. First, the instrument that was used in this study was developed by the research team and needs a further use by other researchers to test the psychometric measures. Use of interview-based approach would be more favorable to overcome the self-reporting disadvantage.

Second, the authors opted to go with non-probability sampling to facilitate accessibility to the largest number of participants. The authors were aware that this sampling method and size had influenced the representability of the sample as well as the generalizability of the results on the population (e.g., the response rate was 18%).

Third, due to the budget constraint, research coordinators were not recruited to help conduct the study.

Implication of Study Results

This study was intended to determine the barriers to research utilization among registered nurses in HMC. That would help all the stakeholders in the nursing department develop strategies to overcome identified barriers. More broadly, this would help HMC achieve its overarching goals of delivering a world-class and evidence-based care to patients and their families and enhancing the research, which is the cornerstone of organizational success.

Conclusion

The findings provided baseline information for an organizational research utilization program, necessary measures such as; protected time, accessibility to research mentors or experts and evidence-based practice units are highly recommended by the frontline nurses through a review of the successful research governance models within HMC.

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Author's Contributions

All authors contributed equally to the preparation, development and publication of this manuscript.

Abdulqadir Nashwan: Initiated the study and took primary responsibility for writing the research proposal, seeking funding, implementing the study, corresponding with the funding agency and writing the manuscript.

Ahmad Abujaber and Dana Mansour: Made substantial contributions towards writing the research proposal and manuscript, as well as implementing the study.

Ethics

The study was explained to participants and the wording of the questionnaire was carefully designed to be sensitive to the topic. Personal identifiers were concealed and published data were confidential. Participants also had the right to refuse participation without any consequences.

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