



## Review article

# Barriers to the adoption of evidence-based practice among nurses

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## Abstract

**Aim:** The purpose of this review was to investigate the barriers preventing nurses from evaluating and applying evidence from research findings in their nursing practice.

**Background:** Evidence-based practice, a recent addition to the nursing literature, has been reported to promote beneficial outcomes. The investigation of factors influencing its adoption and, in particular, the integration of empirical evidence with nursing practice is warranted.

**Methods:** A systematic review was performed using databases, such as PubMed, CINAHL, Health Source: Nursing/Academic Edition, and MEDLINE, to access articles published between 2008 and 2017. A total of 14 studies met the selection criteria and were included in the study. This review was undertaken in accordance with the PRISMA guidelines.

**Results:** The main barrier hindering the integration of research evidence into practice, and consequently, the application of evidence-based practice to nursing was nurses' lack of time to conduct searches and read research articles. At the same time, many other factors, which are common among studies, appeared to influence differences in the nurses' incorporation of research evidence into their practice.

**Conclusions:** There is a significant gap between research and nursing practice. Identifying the factors contributing to this gap might provide a foundation for developing strategies to reconcile it.

**Keywords:** Barriers; Evidence-based practice; Healthcare; Hospital; Nursing; Research utilization

## Introduction

Evidence-based practice (EBP) has been a priority in nursing practice over the last few years at the international level. A considerable number of studies conducted worldwide have highlighted EBP's importance (Saunders et al., 2019; Shayan et al., 2019; Thorsteinsson and Sveinsdottir, 2014). It has been defined as 'a continuous interactive process involving the conscientious and wise examination of available research evidence for better care' (Canadian Nurses Association, 2010). The daily accumulation of new knowledge and technologies, consumers' changing needs, and finding, retrieving, and using existing knowledge based on research evidence in practice are basic concerns of nurses (Farokhzadian et al., 2015). Nursing services play a key role in the effectiveness of health systems (WHO, 2010), and nurses' clinical decisions are essential for patients' well-being and treatment outcomes (Thorsteinsson, 2013).

The application of evidenced-based practice benefits both patients and nurses. Healthcare systems, which in recent years have been under pressure to save resources and improve service performance, report positive outcomes (Leach et al.,

2016; Melnyk et al., 2010; Orta et al., 2016). Attempts to improve the quality of healthcare services and to use available resources rationally have led to repeated attempts to adopt EBP (Lau et al., 2016; Orta et al., 2016).

Although the application of EBP in nursing has been universally acknowledged as a way to improve healthcare services, its complexity due to multiple factors has prevented its application (Saunders et al., 2016). Barriers to research utilization in nursing have been extensively reported in the literature (Duncombe, 2018; Kiessling et al., 2011; Veeramah, 2016). The results of studies on barriers to the use of EBP differ and there is great ambiguity and confusion in defining the greatest barriers. Studies show that nurses rarely incorporate research findings into their practice, as they tend to use practices derived from pre-existing knowledge, experiences, and social interactions (Friesen-Storms et al., 2015; Gifford et al., 2018; Stokke et al., 2014).

## Aim

The purpose of this research was to investigate the factors that impede the use of research evidence in the application of EBP to the clinical practice of nurses.

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## Materials and methods

A systematic review of the international literature was conducted. In the creation of this paper, the content analysis method was used. The relevant sources were searched using the scientific databases PubMed, CINAHL, Health Source: Nursing/Academic Edition, and MEDLINE. The survey was conducted in August 2017. Gathering of data and results analysis were carried out from January 2008 to June 2017. The search terms used were 'evidence-based practice', 'research utilization', 'nursing', and 'hospital' in the titles of articles, and the used Boolean operators were "AND" and "OR". The results are presented in a PRISMA – [Suppl. file 1: PRISMA 2009 Flow Diagram: selection strategy of studies for systematic review](#) (Moher et al., 2015).

During the first phase of the search, 1,268 papers were found. In the next phase of the analysis, all duplicates and studies that did not deal with the topic in the required context were removed. Also removed were studies older than 10 years and studies for which I was unable to obtain their full text. The resulting number of studies used for this review was 14 papers. These 14 papers were conducted in the US, Singapore, England, Iran, Kenya, Norway, Turkey, Oman and China, with samples ranging from 182 to 1,486 participants.

The key features of all the included studies (i.e. authors, year of publication, country where the study was conducted, number of participants, research objective, data collection tools, and key research results) are summarized in Table 1.

An attempt was made to include only randomized studies, but this was impossible because of the limited number of this type of study. A quantitative synthesis of the results was not performed; only a systematic review of the studies was conducted. Specific tools were not used to assess the quality of the studies because the purpose of this review was descriptive.

### Inclusion and exclusion criteria

This systematic review focused on identifying studies published in English or Greek. Studies (qualitative, quantitative, or mixed-methods) consisting of nurses working in hospitals or medical centres, aged 21–65 years, were selected for the review. Surveys of primary care nurses, nursing students, or other healthcare professionals were excluded. No secondary analyses were included that did not fully investigate the subject under study.

## Results

Fourteen international studies from the US (2), Singapore (2), England (1), Iran (1), Kenya (1), Norway (1), Turkey (3), and Oman (2) were reviewed. Although a considerable number of international studies have been conducted on research utilization in the healthcare field, few have examined barriers affecting the application of research findings to nursing practice; yet, nurses are one of the largest groups of health professionals and have key roles in the care of patients. The number of studies on this topic using randomization was even fewer. A large number of studies were excluded from this review because most of them included other health professionals (e.g. midwives and doctors) or primary care nurses and nursing students. The analysis of the 14 studies eligible for this systematic review revealed interesting results. Some of the studies had

common features, such as use of the same instrument, i.e. the Barriers Scale ( $n = 8$ ), although this feature was not a criterion for the selection of studies.

This review found that the main barriers influencing the application of EBP were mostly organizational shortcomings and malfunctions. The results of the 14 studies showed the majority of nurses considered lack of time as one of the major barriers to research utilization in their clinical practice, with an agreement of 85.7% ( $n = 12$ ) between the studies (Ammouri et al., 2014; Brown et al., 2009; 2010; Dalheim et al., 2012; Foo et al., 2011; Gerrish et al., 2008; Majid et al., 2011; Sari et al., 2012; Tan et al., 2012; Wang et al., 2013; Yava et al., 2009; Zhou et al., 2015). Lack of time was found to be the greatest obstacle in six of the studies (Brown et al., 2009; 2010; Dalheim et al., 2012; Foo et al., 2011; Gerrish et al., 2008; Majid et al., 2011) and one of the top five barriers in the remaining studies ( $n = 6$ ) (Ammouri et al., 2014; Sari et al., 2012; Tan et al., 2012; Wang et al., 2013; Yava et al., 2009; Zhou et al., 2015). In the survey by Brown et al. (2009), respondents said they had limited time to search for studies during scheduled work hours and after work: 'very little time to find and read research' and 'too many family responsibilities to read research at home'.

Lack of time was considered by many investigations (Brown et al., 2009; 2010; Dalheim et al., 2012; Foo et al., 2011; Gerrish et al., 2008; Majid et al., 2011) as the main factor interfering with the adoption of EBP; in other studies, nurses had different perceptions (Ammouri et al., 2014; Sari et al., 2012; Tan et al., 2012; Wang et al., 2013; Yava et al., 2009; Zhou et al., 2015). Barriers were considered to reflect a *lack of power to make changes in practice* (Brown et al., 2009; 2010; Tan et al., 2012; Wang et al., 2013; Yava et al., 2009), *lack of time to make changes in practice* (Brown et al., 2010; Foo, et al. 2011; Tan et al., 2012; Zhou et al., 2015), and *inadequate workplace facilities for the use of research findings* (Mutisya et al., 2015; Sari et al., 2012; Yava et al., 2009). These factors were among the most frequently encountered barriers.

Almost all the studies showed similar findings with respect to EBP barriers, with differences in their rank order by importance of the barriers. Lack of skills for finding and managing research evidence, the inability to understand statistical terms used in research articles, lack of relevant references or references obtained from only one source, and poor knowledge of research were reported as barriers, although to different degrees (Ammouri et al., 2014; Brown et al., 2009; 2010; Dalheim et al., 2012; Farokhzadian et al., 2015; Foo et al., 2011; Gerrish et al., 2008; Majid et al., 2011; Tan et al., 2012; Sari et al., 2012; Wang et al., 2013; Zhou et al., 2015).

Several studies reported different outcomes, such as those by Mutisya et al. (2015) and Ammouri, et al., (2014) conducted in Kenya and Oman, respectively, which identified difficulty finding research reports or the unavailability of research studies as a major barrier to the implementation of EBP. This barrier was not identified in any of the other studies as the most important barrier influencing the adoption of EBP. Different results were also reported by Farokhzadian et al. (2015). In that study, the greatest barrier for the implementation of EBP was difficulty assessing the quality of research articles, a barrier that nurses from the other studies classified as important but not as the greatest barrier. Two other studies (Dalheim et al., 2012; Wang et al., 2013) conducted in countries that do not have English as their first language reported that the publication of research articles in English was a major barrier to research utilization in practice.

**Table 1. Studies included**

Research	Aim	Country	Research population	Measurement tool	Environment	Results/Outcome
Gerrish et al., 2008	Comparison of factors influencing the development of evidence-based practice	England	598 nurses	Developing Evidence-Based Practice Questionnaire	2 hospitals	1. Nurses reported lack of time and lack of resources as major barriers 2. Major barriers are also considered to be the difficulty in understanding and evaluating the quality of research
Brown et al., 2009 Quantitative research (Descriptive, Synchronous Study)	A description of the practice, knowledge, and attitudes of nurses associated with EBP and the relationship between perceived barriers and factors facilitating EBP	USA	458 nurses	Evidence-Based Practice Questionnaire (Upton and Upton, 2006) Barriers to Research Utilization (Funk et al., 1991)	Academic Medical Center in California	The organizational barriers (lack of time for reading surveys, insufficient time in practice, lack of power for change, and lack of knowledge concerning research) were the top barriers
Yava et al., 2009 (Quantitative research)	Identifying nurses' perceptions of barriers and facilitating the use of research	Turkey	631 nurses	Barriers Scale	9 Hospitals in Ankara	The most important barriers were inadequate power (63.6%), lack of time (54.0%), inadequate facilities (52.8%), the perception of nurses that the results are not universally applicable (48.7%), and the lack of support for implementation by the rest of staff (46.0%)
Brown et al., 2010	Investigation of the relationship between barriers using research and application of EBP by nurses, and the identification of barriers as predictive factors in the implementation of EBP	USA	1,301 nurses	Evidence-Based Practice Questionnaire (by Upton and Upton, 2006), Barriers Scale (Funk et al., 1991)	4 hospitals in California	The top barriers mentioned are lack of time, insufficient time to change practice, lack of power for change, and lack of knowledge for the research
Majid et al., 2011 Quantitative Research (Descriptive Research)	Investigation of nurses' knowledge and attitude towards EBP as well as factors that may discourage or encourage the adoption of EBP	Singapore	1,486 registered nurses	Questionnaire Development	2 public hospitals	1. The main barrier to the adoption of EBP was the lack of time to search for and read research articles in the workplace 2. The three following barriers, identified by 47% of the nurses, were inability to understand the statistical terms, inadequate understanding of the technical terminology used in the research articles, and difficulty in assessing the quality of research articles and reports 3. 46% of participants said they did not have enough time to change current patient care practices
Foo et al., 2011 Quantitative Research	Investigation of attitudes, knowledge, barriers, and factors facilitating the implementation of EBP as well as the education and training of nurses	Singapore	1,141 nurses	Questionnaire Development	National University Hospital	1. The biggest barrier mentioned was the difficulty of finding time at work for searching and reading articles and reports (53.84%) 2. The second biggest barrier was insufficient working time for changes in current practice (46.73%) 3. Difficulty in judging the quality of research and the inability to understand the statistical terms used in research articles 4. The least effecting factor in the application of EBP was inability to apply the recommendations of research studies to the clinical practice
Dalheim et al., 2012 (Synchronous/Sectional Research)	Determining the factors affecting nurses in the application of Evidence-Based practice	Norway	407 nurses	Developing Evidence-based Practice questionnaire (DEBP)	Norwegian University Hospital	The five major barriers to evidence-based practice were 1. Insufficient time to find research reports 2. Insufficient time to find organizational information (such as guidelines and protocols) 3. Difficulty in assessing the quality of research 4. Difficulty understanding the English language versions 5. Insufficient working time to implement changes in practice

Table 1. (Continued)

Research	Aim	Country	Research population	Measurement tool	Environment	Results/Outcome
Sari et al., 2012 Descriptive and Synchronous Study	Evaluation of barriers in the use of research in nursing practice	Turkey	718 nurses	Barriers to Research Utilization Scale	3 hospitals	1. The participants stated that the top five barriers were inadequate facilities, lack of relevant bibliography concentrated in one place, insufficient knowledge of research, lack of collaboration by doctors in the implementation of research findings, and lack of time for reading the surveys
Tan et al., 2012 Synchronous Research	Identifying barriers in the implementation of research findings in clinical practice	Turkey	1,094 nurses	Barriers Scale	13 hospitals	1. The reported top five barriers in the use of the research are: a) Nurses' inability to apply new ideas (45.4%) b) Nurses' lack of power to change practice (32.4%) c) Nurses' lack of time to retrieve and read surveys (30.3%) d) Lack of cooperation on behalf of the doctors (29.4%) e) Lack of support for the implementation by the rest of staff (28.7%)
Wang et al., 2013 Synchronous Research	Investigating the factors that affect nurses in exploiting research in practice	China	590 nurses	The Barriers Scale, Facilitators Scale	3 tertiary care hospitals	1. The three more significant barriers were identified as lack of power (15.7%), lack of time (13.4%), and inability to understand English-language research (15.0%) 2. The participants identified additional barriers, such as patient reluctance to exploit research (3.64%), lack of funding (2.88%), and lack of legal protection from clinical risk of using research in practice (1.0 %)
Ammouri et al., 2014 Quantitative Research (Descriptive, Synchronous, Correlation Research)	Description of attitude, knowledge, nursing practice, and perceived barriers to EBP	Oman	414 nurses	Evidence-Based Practice Questionnaire and Developing Evidence-based Practice Questionnaire (DEBPQ).	4 governmental hospitals in Muscat region	1. The major obstacles the participants have reported in the implementation of the TEN were difficulty of finding research reports, inadequate time to find research reports, difficulty in assessing the quality of research articles and reports, difficulty in determining the impact of research on practice, and difficulty in understanding research
Farokhzadian et al., 2015 Quantitative Research (Prevalence Study)	Investigation of nurses' attitudes towards EBP and factors influencing the application of EBP	Iran	182 nurses	Questionnaire (Majid et al., 2011)	Four Medical Hospital Universities in Kerman	The major barriers to the application of EBP were difficulty in assessing the quality of research work and reports, difficulty in identifying the applicability of research evidence, inability to implement research recommendations in clinical practice, and inability to correctly interpret the results of research studies
Mutisiya et al., 2015	Assessment of the use of research by nurses and factors affecting it	Kenya	534 nurses	Barriers to Research Utilization Scale	National Hospital of Kenya	1. Nurses stated that the biggest barriers to the use of research were that surveys were not readily available (68.7%), that there are unclear effects on practice (66.5%), inadequate facilities for implementation (66.4%), inadequate power (65%), and delayed publication of surveys (63.7%)
Zhou et al., 2015 Quantitative Research	Investigating the use of research among nurses	China	648 registered nurses	Barriers Scale	4 educational hospitals	1. The most significant reported barriers were nurses' lack of time to apply new ideas and to change their practice, and nurses' isolation from colleagues who know about the research 2. From there on, the following were also declared as barriers: the great amount of information that is available, lack of time to find and read research at work, and the conviction of the non-relevance of research in the nursing practice



## Discussion

This review's results showed that the implementation of EBP is not easy, and that a multitude of factors, such as organizational barriers affect the application of research findings. This review revealed lack of time as one of the greatest barriers to the application of research findings in clinical practice. Studies that were excluded from this review because their samples consisted of populations other than those required for this study (e.g. primary care nurses, nursing students, or other health professionals) also found the same results. Studies have reported that these professionals do not have enough time to search for and read research papers and reports (Atkinson et al., 2008; Breimaier et al., 2011; Chau et al., 2008; Koehn and Lehman, 2008; Mehrdad et al., 2008; O'Connor and Pettigrew, 2009). The review by Sadoughi et al. (2017) of studies of nurses also found that lack of sufficient time was the most frequently mentioned barrier in 86% of the studies. Although a barrier, lack of time might also reflect lack of interest, lack of need for new knowledge, or lack of knowledge. Nurses might wish to avoid additional responsibilities or tasks, such as the process of exploiting research findings (Ozdemir and Akdemir, 2009).

Lack of power to change nursing practice, which emerged as a barrier in this review, has been identified as a major barrier in other reviews (Al Ghabeesh, 2015; Heydari and Zeydi, 2014). Lack of power might be related to the prevailing hierarchical structure of modern hospitals, as directors and physicians have power roles, whereas nurses appear to be executive bodies, thus, undermining their role (Yava et al., 2009). Similarly, inadequate facilities for the application of EBP has also been reported as a barrier, not only by nurses but also by other health professionals in studies conducted in many countries (China, Nepal, Ireland, Bahrain, Turkey and Spain) (Buhaid et al., 2014; Chien et al., 2013; Mehrdad et al., 2008; Moreno-Casbas et al., 2011; Srijana et al., 2016; Uysal et al., 2010). A lack of essential equipment and facilities leads to limited use of research findings. Moreover, the economy of a country plays a major role in this barrier, as nurses from more developed countries, such as Norway and the US did not share the same opinions (Brown et al., 2009; 2010; Dalheim et al., 2012). Many nurses also reported an inability to assess the quality of research reports, which is probably due to their low levels of research knowledge (Linton and Prasun, 2013).

Agreement with regard to nurses' lack of time to implement new ideas and changes in practice was found in this review. In another review study (Athanasakis, 2013), 23 of the 37 investigations classified insufficient time to implement new ideas as one of the top five barriers. Finally, a significant obsta-

cle was that published research was available only in English. Difficulty reading English journals can cause many misunderstandings in the application of EBP in nursing (Wang et al., 2013).

## Conclusions

In summary, the findings of this review showed that the same top barriers were classified similarly by nurses in different countries despite their cultural differences. Furthermore, the findings suggest that lack of time to access and read research is the most important factor in the inability to use research findings in practice, and consequently, in the adoption of EBP by nurses. The reasons for the lack of time to engage in these activities are not clear and warrant further investigation. The reasons may concern issues, such as time management, role overload, or priorities.

According to the international literature and contrary to expectations, research utilization in nursing practice remains limited, despite the positive attitudes which nurses present. Recent literature has reported significant gaps between research and nursing practice. The adoption of EBP is a relatively new approach, which has beneficial effects on health and on the healthcare system (Leach et al., 2016; Orta et al., 2016; Saunders and Vehviläinen-Julkunen, 2015; Saunders et al., 2016), but it requires proper guidance and education. The knowledge of the barriers will help the health system and policy makers to address these and to provide a positive culture to the EBP. In any case, organizational strategies must be in place to encourage and support nurses at all stages of the nursing process to base their practice on research evidence.

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## Ethical approval

This study does not require approval from the National Bioethics Committee of Cyprus.

## Conflict of interests

The authors have no conflict of interests to report.

## Bariéry implementace ošetrovatelství založeného na důkazech zdravotními sestrami do praxe

### Souhrn

**Cíl:** Cílem této přehledové studie bylo prozkoumat bariéry, které brání zdravotním sestrám ve vyhodnocení a aplikování poznatků získaných vědeckým výzkumem do jejich ošetrovatelské praxe.

**Úvod:** Ošetrovatelství založené na důkazech je v odborné literatuře relativně novým jevem a přináší zajímavé výsledky. Je žádoucí provést výzkum faktorů, které ovlivňují přijetí těchto postupů do praxe, a zejména zjistit, jak jsou empirické poznatky do ošetrovatelské praxe implementovány.

**Metodika:** Systematická přehledová studie, při které byly s pomocí databází jako PubMed, CINAHL, Health Source: Nursing/Academic Edition a MEDLINE prohledány vědecké články publikované v letech 2008 až 2017. Celkem vyhovělo daným kritériím 14 publikací, které byly následně zařazeny do této studie, jež byla provedena v souladu s pokyny PRISMA.

**Výsledky:** Hlavní překážkou v implementaci ošetrovatelství založeného na důkazech do praxe byl nedostatek času, který zdravotní sestry mají na vyhledávání a čtení odborných článků. Kromě nedostatku času se v publikacích opakovaly i mnohé další faktory, jež ovlivňovaly rozdíly mezi zdravotními sestrami v přejímání vědeckých poznatků do jejich ošetrovatelské praxe.

**Závěr:** Existuje významný rozdíl mezi vědeckými poznatky a ošetrovatelskou praxí. Identifikace faktorů by mohla být základem ke stanovení strategií při využívání principů ošetrovatelství založeného na důkazech.

**Klíčová slova:** aplikace výzkumu; bariéry; nemocnice; ošetrovatelství založené na důkazech; zdravotnictví

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