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A scoping systematic review of factors influencing evidence-based practice implementation in nursing

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Abstract

Internationally, nurses are required to deliver care that is underpinned by sound evidence. However, available evidence suggests that the delivery of evidence-based practice is difficult due to multifaceted problems inherent in healthcare settings. This scoping review aimed to examine factors influencing evidence-based practice in nursing, to identify existing gaps requiring further inquiry. It is a scoping systematic literature search of major electronic databases, including CINAHL, MEDLINE, EbscoH, Embase, ASSIA, Science Direct, Nursing index, PsycINFO and Google Scholar. Fifty-two studies met the inclusion criteria and were eligible for review. The PRISMA approach was utilised in retrieving articles which were critically appraised. Findings were qualitatively synthesised using constant comparative approach. Findings were collated and summarised thematically. Outcomes were categorised into four broad themes as well as four subthemes. The scoping review identified dearth of studies utilising qualitative approaches, particularly in the low and middle income countries. Consistent with previous findings, this review exposes the difficulties associated with implementing evidence-based practice. There is need to examine the influence of power dynamics on evidence-based practice implementation in nursing.

1. Introduction

Evidence-based practice (EBP) has gained the attention of researchers and health care professionals in the past few decades. It is widely acknowledged in modern healthcare and has instigated quality assurance initiatives in healthcare practice. The National Academy of Medicine's roundtable on Evidence based Medicine (EBM) set forth a goal requiring 90% of clinical decisions to be based on evidence by 2020 [1, 2]. Indeed, several online databases, for example, the Cochrane Library and National Institute of Clinical Excellence (NICE) website, have been established to serve as sources of evidence for clinical practitioners [1, 3, 4]. In nursing practice, the delivery of evidence-based (EB) care to service users by adhering to standards is widely recommended [5, 6] as nurses are required to justify the decisions they make for, and with patients in practice. However, having the knowledge and skills required to utilise evidence does not necessarily facilitate implementation process since wider organisational change is required to translate research into practice [7, 8]. There are concerns that what is known to be best practice is not currently reflected in practice, which exposes service users and patients to potential harm.

Available evidence suggests that this is due to complex and multifaceted barriers within practice settings limiting nurses' efforts to implement EBP [7 9, 10]. Implementation of EBP can be largely impeded by a range of multilevel factors as several authors attribute this situation to circumstances related to the organisation, practice context, individual professionals as well as nature of evidence itself [6, 11, 12, 14]. Others factors include lack of access to best evidence, lack of frontline nurse leaders leading implementation activities, inapplicability of clinical guidelines, lack of

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organisational readiness, obstructive organisational and professional cultures [9, 11], lack of supportive workplace environment and inadequate resources for EBP [14].

1.1. Purpose

This review aimed to identify gaps in the literature regarding EBP in nursing by examining published literature in the field. It is intended to examine prevailing circumstances that influence implementation efforts in nursing practice, and to further critique methodologies utilised in investigating the field. Thus, the research question is; *what is known from the qualitative, quantitative and mixed method studies about circumstances influencing implementation of EBP in nursing*?

2. Material and methods

2.1. Design

This is a scoping review with a narrative synthesis. Scoping review is defined differently in the literature; however, researchers have made several efforts in seeking clarifications. The initial interpretation of a scoping study was laid in the Arksey and O'Malley's framework which refers to scoping study as the mapping of key sources and type of evidence available as well as main concepts underpinning a research area. Scoping review is a flexible and comprehensive approach to examining topics of interest [15]. It sets the scene for future research by discussing and reporting what is already known by critically analysing existing gaps in knowledge [16, 17]. It is similar but also different from systematic reviews in that it can be used to answer broad research topics and studies of varying methodological designs as against systematic reviews that typically focus on addressing well defined questions with and attention to specific study designs that might have been defined in advance [16]. The review utilises the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) guidelines [18].

2.2. Searching the literature

The literature research involves searching major electronic databases: CINAHL, Web of Science and MEDLINE, EbscoH, Embase, ASSIA, Science Direct, Nursing index, PsycINFO and Google Scholar using relevant key words/phrases. Initially, these databases were searched separately to retrieve literature related to implementation of EBP using key words: 'evidence-base practice' AND 'implementation' AND 'nursing*', employing use of '*' truncation to capture other relevant concepts, for example, research utilisation, knowledge implementation, barriers, facilitators, nursing, nurse managers using the Boolean operator word 'AND' to combine them. This initial search was basically undertaken to estimate the scope of literature in this topic and resulted in generation of large hits of **>1500.** Then, inclusion criteria were created and utilised to capture relevant studies via a more advanced search process.

2.3. Search results

Advanced searches yielded 351 citations and abstracts which were screened to identify appropriate studies. Out of these studies, 278 were excluded for failing to meet the inclusion criteria. Again, these 278 studies were screened by reading their abstracts and 21 was excluded in the end. Overall, 52 studies met the inclusion criteria and were eligible for the review. There would have been more studies meeting the inclusion criteria, but due to the volume of studies retrieved from the electronic search only studies considered relevant was included. The PRISMA flow chart in **figure 1** below shows the search and article selection process.
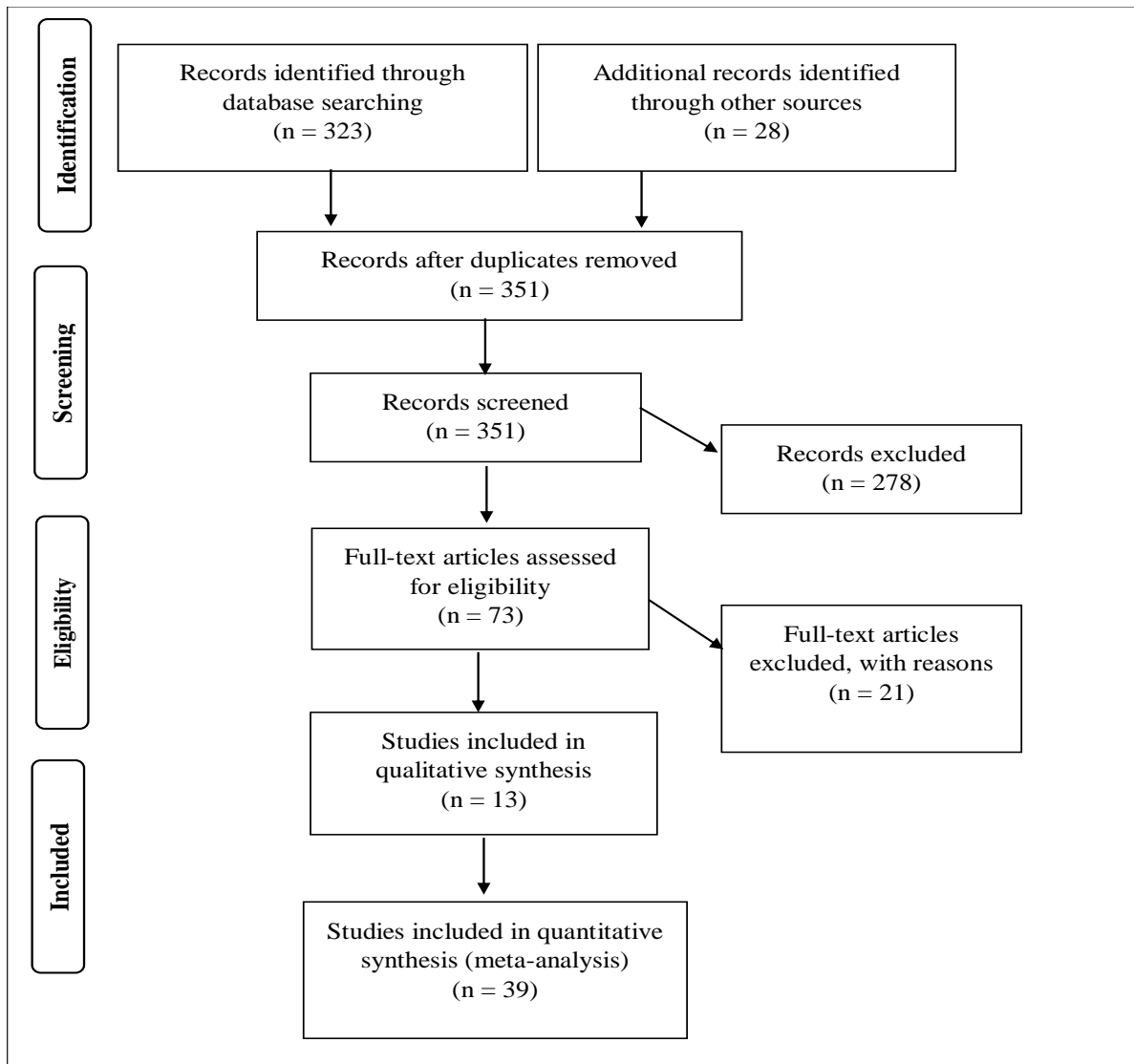
Figure 1 Articles search, screening and selection process

2.4. Inclusion criteria

Essentially, years of publication, language, and type of study and review status were used to limit these advanced searches. Studies included in this review are scoping/systematic/integrative reviews, peer reviewed and primary studies utilising any form of methodology (e.g. quantitative, qualitative and mixed), focusing on nursing and healthcare practice. Additionally, articles from all over the world that were published in English language from 2005 to 2017 were included.

2.5. Assessment of quality

This scoping review have not utilised a specific critical appraisal tool in determining included and excluded studies as scoping studies do not typically have to include a screening or assessment of methodological quality. Besides, a scoping study aims to identify the breadth of the literature and so does not include formal quality assessment. However, an overall critical evaluation of the methodological qualities of the studies reviewed in the discussion to identify existing gaps.

2.6. Studies reviewed and their characteristics

As shown in appendix 1, these studies were selected from across continents, including America (15), Europe (12), Asia (12), and Africa (6) Australia/New Zealand (3) with the rest being reviews.

Table 1 Data extracted from the reviewed articles.

Study/Country	Details
[19] Jordan	Aim: To describe Jordanian nurses' knowledge, attitudes and practice regarding EBP
	Design: Descriptive cross-sectional survey
	Sample 500 registered nurses
	Key findings: Higher educational qualification was associated with positive attitude towards research and subsequent utilisation of research in practice Nurses who have less research knowledge made less use of research and had less positive attitudes towards EBP while nurses who had better knowledge of research had positive attitudes and made better use of research in practice.
[20] Nigeria	Aim: To explore nurses' opinions of gap between research and clinical practice, including factors influencing research utilization in nursing in Nigeria
	Design: Qualitative descriptive interview/focus group
	Sample: 60 registered nurses
	Key findings: Organizational policies were not favourable to research utilization as participants reported that lack of adequate ICT facilities impeded research utilization/EBP. Regarding research translation, nurses apply lots of improvisation due to lack of material resources in the ward which did not permit research utilization while procedures adopted within the ward were faulty. This may due to nurse managers' lack of proper knowledge to guide practice regarding research conduct and utilization or EBP.
[21]	Aim: To review nurses' research behaviour and barrier that nurses meet to utilise research evidence into clinical nursing practice
	Design: Systematic review of focusing on nurses and nursing practice
	Sample: 37 published papers
	Key findings: Barriers to research utilisation mainly relate to characteristics of the practice settings such as lack of resources and issues related to nurses e.g. nursing education, nurses' knowledge and skills
[22] USA	Aim: To explore perceived barriers to research utilisation by nurses working in a community hospital in the US
	Design: Cross sectional descriptive survey
	Sample: 376 RNs
	Key findings: Barriers reported include lack of authority to change patient care procedures, lack of time to read research, and lack of awareness of research. Organizational strategies that can be used by staff development professionals to influence research awareness and utilization are discussed.

[23]	Aim: Evaluated variation in implementation fidelity caused by contextual factors using the Framework for Evaluating Organisational Level Evidence-Informed Intervention
Sweden	Design: Qualitative case study
	Sample: not stated (Nurses and physicians)
	Key findings: Implementation fidelity varied across units even though they were supported in the same ways. The variations across contextual elements was explained by the Framework Evaluating Organisational Level Evidence-Informed Intervention
[24]	Aim: To understand stroke care professionals' views on the barriers which hinder the provision of optimal acute stroke care in a Ghanaian hospital
Ghana	Design: Qualitative structured interviews
	Sample: 40 nurses, ward managers and physicians
	Key findings: Barriers related to patients include financial constraints, delays, socio-cultural or religious practices. Barriers related to health system include inadequate medical facilities, lack of stroke care protocol, limited staff number, and inadequate staff development opportunities. Barriers related to professionals – limited knowledge of EBP, poor collaboration
[25]	Aim: Analysis of factors influencing development of evidence-based nursing practice in Canada
Canada	Design: Descriptive survey utilising electronic questionnaire
	Sample: 68 RNs
	Key findings: Nurses who have higher educational qualification reported better skills in EBNP and more skills in synthesising and applying information from research findings into their nursing practice. Clinical practice setting has an impact on the extent to which nurses engaged with EBNP as nurses who were less educated are likely to draw on their experience and intuition whereas expert nurses and those who had MSc degree reported being more skilful in synthesising evidence from various sources. Evaluation of the organisational context and culture of practice setting would be useful to assess the extent to opportunities are presented to novice nurses to practice EBNP
[26]	Aim: To test whether strict implementation of standardised protocol for malaria and provision of financial incentives for healthcare worker improved implementation
Guinea Bissau	Design: Randomised control trial
	Sample: 951 children, nurses and doctors
	Key findings: Financial incentives facilitated compliance of staff members to a standardised treatment protocol which was associated with greatly reduced in-hospital mortality
[27]	Aim: To examine the perceived relevance of the sub-elements of the organisational context cornerstone of the PARIHS framework and whether other factors in the organisational context were perceived to influence KT in a specific low-income setting

Uganda	Design: Qualitative interviews
	Sample: 23 nurse midwives and ward managers
	Key findings: The sub-elements (receptive context, culture, leadership, and evaluation) of organisational context in the PARIHS framework were also relevant for evidence implementation in the Ugandan context. However, additional factors to consider include access to resources, commitment and informal payment and community involvement. Thus, these additional factors should be considered when applying the PARIHS framework in the developing countries like Uganda
[28] Australia	Aim: To determine the knowledge, attitudes and use of research by nurses working in a regional area in Australia
	Qualitative (focus groups and interviews) and cross-sectional survey
	Sample: 347 RNs
	Key findings: Senior Nurse Managers were more likely to have a positive attitude towards research, and completion of university subjects on nursing research was significant in determining attitude and knowledge of research. All nurses, regardless of position identified barriers to performing research. Conclusion Nurses require specific research education, clinical nursing leadership and work environments conducive to ensure practice is evidenced-based
[29] USA	Aim: This paper is a report of a study to describe nurses' practices, knowledge, and attitudes related to evidence-based nursing, and the relation of perceived barriers to and facilitators of evidence-based practice in the USA
	Design: Descriptive cross-sectional survey
	Sample: 458 RNs
	Key findings: Organizational barriers (lack of time and lack of nursing autonomy) were the top perceived barriers. Facilitators were learning opportunities, culture building, and availability and simplicity of resources. Statistically significant correlations were found between barriers and practice, knowledge and attitudes related to evidence-based practice
[30] Qatar	Aim: To explore the prevailing attitudes and knowledge of EBP and compare the relationship between EBP attitudes and knowledge amongst nurses in Qatar
	Design: Cross sectional survey
	Sample: 400 RNs
	Key findings: Attitudes were closely associated with knowledge. Higher educational qualification was associated with positive attitudes `towards EBP
[31] China	Aim: To explore influencing factors from staff nurses, nurse managers, nurse director and a physician involved in nursing EBP implementation in Mainland China
	Design: Qualitative interviews

	Sample:56 nurses, nurse directors and physicians
	Key findings: Key factors include project leader, nature of evidence, nurses, patients and the system in which the projects were implemented. Managerial requirements, administrative power and influence from physicians were viewed as both barriers and facilitators. Clinical system might consider the administrative power as a facilitator of implementation of evidence when it is driven from the top level. However, it could be a barrier in a democratic organisation. Obedience to higher authority was also a barrier that prevented nurses who genuinely had the intention to implement EBP as they imbibed the culture of seeking harmony with the authority
[32] UK	Aim: To determine the extent to which clinical nursing practice has adopted research evidence. To identify barriers to the application of research findings in practice and to propose ways of overcoming these barrier
	Design: An integrative review of 25 studies conducted in Europe and America focusing on nurses and nursing practice
	Sample: 25 published studies
	Key findings: Lack of time, ability and motivation to appraise research reports and adopt findings in practice. The clinical environment was not seen as research friendly as there were a general lack of research activities and facilities locally. Practical recommendation focused on how consultant nurses can make their practice more research transparent by providing the required leadership, creating a research-friendly organization, developing a clear research agenda and facilitating staff develop a local research framework for reading research and implementing research evidence in their practice
[33] UK	Aim: Evaluated the implementation of an evidence-informed embedding training programme for Caregivers using the Normalisation Theory in a Stroke Unit
	Design: Cluster randomised control trial
	Sample: Sample not stated (Healthcare team members – nurses, physicians, physiotherapists)
	Key findings: Contextual factors including organisational history, team relationship, leadership, and national policy impeded implementation of Caregiver training programme
[34] Norway	Aim: To examine factors influencing the implementation of EBP among nurses in a large Norwegian university hospital
	Design: Cross-sectional survey utilising the Norwegian version of Developing EBP questionnaire.
	Sample: 407 RNs
	Key findings: Major barriers were lack of time and skills to find and manage research evidence. Nurses' age, years of experience, research skills, ability to critique and evaluate research findings were also reported as barriers to EBP. Reduction in barriers to EBP is most likely to achieved when nurses are supported to acquire skills and knowledge relevant to research use in practice
[35] Canada	Aim: Investigated the role of organisational context and nurse characteristics in explaining nurses use of personal digital assistant and mobile tablets in assessing evidence-based information
	Design: Descriptive survey utilising questionnaires

	Sample: 710 RNs
	Key findings: Nurses' use of personal digital assistant and mobile tablets was explained using the Chi-Square. Results indicated that several organisational contextual affected nurses' access and use of personal digital assistant and mobile tablets in retrieving evidence-based information
[36] Bahamas	Aim: To examine perceived barriers and facilitators to implementing EBP among nurses working in psychiatric, geriatric, hospital and community setting in The Bahamas
	Design: Descriptive comparative study utilising self-administered questionnaires
	Sample: 100 RNs
	Key findings: Greatest barriers were inadequate resources for EBP implementation, inadequate training in research methods. Top facilitators were training in research methods and organisational policies and protocols that are evidence-based. Nurses had the desires to implement EBP but required relevant training and organisational support. Thus, EBP needs to be a top priority of health care organisations and government to be successfully implemented.
[37] Nigeria	Aim: To examine nurses' knowledge-base for research conduct, perceptions of research and perceived barriers to research utilization
	Design: A cross-sectional descriptive survey utilising questionnaire
	Sample: 84 RNs
	Key findings: This scale assesses barriers to research utilization using four different factors; barriers related to 1) individual characteristics, 2) organization, 3) research quality 4) research communication and accessibility. Top barriers were unavailability of research articles, lack of access to research reports/results and lack of clarity of practice implications of non-utilization of research findings in patient care. Managers and other senior nurses have better knowledge and perceptions of research conduct and research utilization than the non-mangers and other low-ranking nurses.
[38] Israel	Aim: To explore the relationship between nurses' personal and professional factors and evidence-based nursing practice in Northern Israel
	Design: Cross-sectional survey utilising self-reported questionnaire
	Sample: 243 RNs
	Key findings: Nurses who had bachelor's degree were better off in EBP than those who had diplomas. Availability of library and internet facilities in a workplace is associated with higher evidence-based nursing. Predictors of EBN include education, skills in locating and appraising research reports, knowledge sources based on colleagues and system procedures – inhibitors and knowledge sources based on reading professional literature, knowledge sources based on experience or intuition. There is need for research-based information, exposure to journals and organisational support for evidence-based nursing practice.
[39]	Aim: To evaluate implementation of comprehensive pain programme to improve paediatric pain management practices

UK	Design: Descriptive evaluation study
	Sample: 366 RNs and 8 physicians
	Key findings: Less effectiveness was recorded in the implementation of this programme as management of procedural pain and documentation was not improved. However, positive changes occurred in the use of pain scales
[40] Canada	Aim: To evaluate an evidence-informed strategy for reducing the use of physical restraint in older mentally ill patients
	Design: Stepped-wedge trial
	Samples: Sample not stated (Nurses, doctors and older patients)
	Key findings: A reduction in the level of restraints was achieved as 27% initial level of restraint reduced to 7% after implementation of the strategy. This evidence-informed multicomponent strategy has the potential to reduce restraints in older mentally ill older adult patients
[41] Canada	Aim: To examine the determinants of research use among nurses working in acute care hospitals two Canadian hospitals
	Design: Comparative ethnographic case study utilising quantitative and qualitative methods
	Sample: 235 RNs
	Key findings: High and moderate levels of research use was associated with high level of support from co-workers and organisation respectively while low level of research use was associated with lack of authority and support to use research in patient care. Research utilisation by nurses is significantly influenced by modifiable features of the organisational context at the patient care unit level. Thus, there is implication for patient care unit structures and so should be considered by future interventions aimed at enhancing research utilisation by nurses
[42] USA	Aim: To investigate the relationship between characteristics of the learning organisation to the registered nurses' beliefs regarding EBP
	Design: Descriptive survey utilising questionnaires
	Sample:1750 RNs
	Key findings: Relationship exists between characteristics of the learning organisation and registered nurses' beliefs about EBP. Nurses rated 'the organisation' lowest in promoting learning about EBP as organisation were perceived as not empowering nurses. However, only 27% of nurses working within the organisation were studied which means that the remaining 77% may share different views.
[43] Iran	Aim: To examine nurses' attitudes towards EBP, their self-efficacy and training needs, as well as supporting factors and barriers for implementing EBP in Iran
	Design: Cross-sectional survey utilising questionnaire
	Sample: 182 RNs

	Key findings: Nurses lacked previous training on EBP and were not familiar with the concept. Nurses' attitude towards EBP was poor and so is their self-efficacy of EBP. Facilitating factor for EBP was mentoring by nurses who were experienced while the strongest barrier was inability of the nurses to appraise research paper/reports. For nurses to improve nursing care quality and implement EBP, nurses will require relevant skills and knowledge for EBP. NMs should map out strategies that are appropriate for addressing these barriers and enable incorporation of EBP into clinical nursing practice.
[44] Canada	Aim: Evaluated changes in nurses' attitudes towards use of research and organisational environment pre- and post-implementation of multifaceted intervention to promote research utilisation in nursing
	Design: Descriptive cross-sectional survey
	Sample: 239 RNs and 92 nurse managers
	Key findings: Nurses prefer experiential knowledge and the knowledge they received from colleagues and patients to that which they retrieved from textbook and journals. Improvement in research utilisation in nursing was associated with membership of journal clubs.
[45] USA	Aim: Explores factors that affect the adoption or rejection of evidence-based practice (EBP) changes and differences in nurse manager and staff nurse perceptions about those factors
	Design: Descriptive cross-sectional survey
	Sample:92 RNs
	Key findings: Top barriers to EBP were insufficient time, lack of staff, and not having the right equipment and supplies. Top reasons to adopt EBP were having personal interest in the practice change, avoiding risk of negative consequences to the patient, and personally valuing the evidence. Several statistically significant differences emerged for demographic variables.
[46] UK	Aim: Report of a study to compare factors influencing the development of evidence-based practice identified by junior and senior nurses
	Design: Cross sectional survey
	Sample: 1411 RNs
	Key findings: Nurses relied heavily on personal experience and communication with colleagues rather than formal sources of knowledge. All respondents demonstrated confidence in accessing and using evidence for practice. Senior nurses were more confident in accessing all sources of evidence including published sources and the Internet and felt able to initiate change. Junior nurses perceived more barriers in implementing change and were less confident in accessing organizational evidence. Junior nurses perceived lack of time and resources as major barriers, whereas senior nurses felt empowered to overcome these constraints. However, the nursing culture seems to disempower junior nurses so that they are unable to develop autonomy in implementing evidence-based practice.
[47] Sweden	Aim: To describe nurses' perceptions of enabling and inhibitory factors that influenced implementation of EBP for urinary incontinence in nursing home
	Design: Focus group interviews

	Samples: 14 RNS and auxiliary nurses
	Key findings: Most enabling factors include having a leader and manager who is involved, and who has positive attitudes towards EBP. Inhibitory factors include lack of time to incorporate evidence into practice. However, participants admitted that EBP was necessary in caring for old people and should be promoted to spread, adopted and widely implemented in care homes
[48] Belgium	Aim: To explore the barriers to evidence-based nursing among Flemish (Belgian) nurses
	Design: Focus group utilising a Grounded Theory approach
	Sample: 53 RNs
	Key findings: Major barriers were the doctors, patients and family, management/supervisors, nurses/nursing and evidence. In addition to findings which were already reflected in the literature, Flemish nurses reported a potential lack of responsibility in the uptake of evidence-based nursing, their 'guest position' in a patient's environment leading to the different education levels of nurses.
[49] Iran	Aim: To present a comprehensive literature review describing barriers and facilitators of RU among Iranian nurses
	Design: An integrative review of studies focusing nurses and nursing practice
	Key findings: Major factors were: Organisational – inadequate facilities, insufficient time on the job, lack of authority to change practice, lack of administrative support and physicians' cooperation. Major facilitators were relevant educational skills, support from knowledgeable nursing colleagues, faculty and setting, access to an expert clinical and quality appraisal committee within the setting, improved research skills, sufficient funds to undertake research and access to internet facility. Barriers related to the setting were the most frequently cited obstacles to RU. Health care managers should plan strategically to promote research use by nurses
[50] Netherland	Aim: To identify factors that influence the implementation of the Triage in emergency department guideline in the Netherlands and develop strategies for implementation of this guidelines
	Design: Focus group and in-depth interviews
	Sample: 108 RNs, ward managers and physicians
	Key findings: Key factors were at individual, social context and organisational level. Factors were level of knowledge, insights and skills, workplace preferences, motivation and or commitment, support, workload and resources. Strategies tailored to improve implementation include education, maintenance of change. Motivation and consensus-building, information, organisation and facilitation
[51] Iran	Aim: To determine the barriers to implementation of EBP among nurses working in Zahedan Teaching Hospital
	Design: Cross sectional survey utilising EBP implementation barriers questionnaire
	Sample: 280 RNs

	Key findings: Barriers to implementation of EBP were largely categorised into two issues; individual and organisational. Barriers related to the organisation include lack of human resources, lack of internet facilities at work, heavy workload. Barriers related to the individuals include education, lack of time allocated time to read the literature, lack of ability to work with the computer, insufficient proficiency in English language, age, educational level, experience and employment status. Barrier to implementation of EBP occur at both individual and organisational levels. Health care systems and organisations should pay attention on how to provide relevant training for the nurses as relevant structural and support facilities that can enable nurses implement EBP
[52] Singapore	Aim: To implement and test a multifaceted implementation strategy for preventing falls and to achieve a change in fall prevention practices in acute care setting
	Design: A comparative case study of two hospital
	Sample: 41 nursing staff
	Key findings: There was an increase compliance with the use of the strategy for risk assessment. The implementation programme did not yield significant reduction in the incidence of falls (result:1.44 to 1.09/1000 patient days in the unit). This is in both intervention and control hospitals. However, the implementation strategy for preventing falls enhanced nurses' understanding of use of the fall risk assessment.
[53] Canada	Aim: To identify contextual factors described by NMs to drive change and facilitate EBP at the unit level, comparing these perspectives across nursing units in selected
	Design: Qualitative semi-structured interviews
	Sample: 9 nurse managers
	Key findings: Workplace culture, structure, resources were either facilitators or barriers to empowering nurses under their supervision to use EBP and drive change. Workplace culture that clearly communicates EBP goals, regulatory changes and provides good contact between the CEOs and NMs were perceived as promoters of EBP. In the units that performed well in EBP, there were structures such as nursing-specific committees and nurses were allowed and supported to drive change in practice within the units. NMs within the high performing nursing units were perceived to have been to articulate internal resources such as quality-monitoring departments which were all seen as critical to EBP implementation in their units. Thus, these findings contribute to in depth understanding of organisational contextual factors that can support NMs in their efforts towards driving EBP changes at the unit levels.
[54]	Aim: A systematic review of relationship between contextual factors and research utilisation in nursing, examining strength of these relationships, and mapping the contextual factors to the PARIHS
	Design: A systematic review of studies focusing on nurses and nursing practice
	Sample: 10 studies
	Key findings: Six contextual factors were significant to research utilisation and they include the role of the nurse, multifaceted access to resources, organisational climate, multifaceted support, time for research activities and provision of education.

[55] Pakistan	Aim: To assess nurses' attitudes and belief towards evidence-based nursing practice in tertiary care hospitals of Pakistan
	Design: Descriptive cross-sectional survey
	Sample: 102 RNs
	Key findings: Majority of the nurses agreed that EBN have been used in clinical decision-making about patient care and was reported to have improved the quality of nursing care. However, they reported that their workload is too high to keep up with up to date evidence. Some nurses disagreed that EBN was helpful; EBN was a waste of time. Thus, majority of the nurses had positive attitudes towards EBN and had the belief that EBN improves patient's outcome
Ofi *et al.,* (2008) Nigeria	Aim: To explore nurses' knowledge base for research conduct and perceived barriers to research utilisation
	Design: Descriptive survey utilising questionnaire
	Sample: 500 RNs
	Key findings: There is a strong relationship between educational level on the knowledge base and nurses expressed positive attitude towards research utilisation in nursing practice. Barriers were nurses' inability to understand research reports and statistics. Thus, nurse managers and nurse educators should endeavour to promote better research education that focuses on practitioners' knowledge and experience and attitudes towards research
[56] Korea	Aim: To describe Korean nurses' perceptions, attitudes, and utilisation intention for evidence-based nursing and explore what factors influence utilisation intention
	Design: Cross-sectional survey utilising self-reported questionnaire
	Sample: 420 RNs
	Key findings: Individual factors – intention to use research evidence include attitudes and views as well as previous education. Nurse managers and nurse educators should provide relevant encouragement for nurses to enable them to develop positive attitudes towards EBP implementation in their daily nursing practice
[57] New Zealand	Aim: To describe nurses' perceptions of their EBP, attitudes towards EBP and perceptions of their knowledge/skills associated with EBP in West Auckland
	Design: Descriptive survey utilising questionnaire
	Sample: 55 RNs
	Key findings: Nurses' attitude to towards EBP, education, knowledge and skill towards EBP are relevant to implementation of research evidence in practice. Through educational interventions, nurses' knowledge and skills for EBP can be enhanced. Further research is required to explore the contextual factors which can inhibit or promote achievement of EBP by nurses
[6]	Aim: Utilised the PARIHS to explain implementation process for the national implementation research randomised control trial with embedded process evaluation in acute care

UK	Design: Descriptive semi-structured interview focus groups
	Sample: 151 healthcare professionals and patients in 19 hospitals
	Key findings: Results indicated many context related issues such as relationships, communication, emotional response to change, lack of clarity regarding roles, commitment to change, organisational preparedness. Findings suggest that the context requires increased attention
[58]	Aim: To systematically review and carry out analysis on the barriers to EBM
	Design: A systematic review of 106 published papers focusing on nurses
	Key findings: Most common barriers include lack of resources, lack of time, inadequate skills, and inadequate access, lack of knowledge and lack of cooperation from senior colleagues and physicians as well as lack of authority to change practice. Identifying barriers is only but the first step towards removing barriers to the use of EBM and additional resources are required to remove these barriers.
[59] Iran	Aim: To measure practice, attitudes, knowledge and skills of EBP of nurses
	Design: Descriptive cross-sectional survey
	Sample: 195 RNs
	Key findings: There was a strong relationship between knowledge and EBP. Further training is required for EBN to achieve a successful implementation in nursing practice.
[60] Australia	Aim: To evaluate the effect of EBP educational programme on attitudes and perceptions of knowledge and skills of registered nurses towards EBP in Queensland
	Design: Descriptive survey utilising questionnaire
	Sample: 59 RNs
	An educational intervention improved nurses' attitudes towards organisational support for EBP and their perceptions of their knowledge and skills in locating and evaluating research reports. Thus, providing educational courses in a clinical setting is useful in improving clinicians' attitudes to and perceptions of knowledge and skills to EBP.
[61] Sweden	Aim: Assessed the progress of work with lifestyle intervention in a primary healthcare and the uptake and use of the new guidelines on lifestyle intervention in clinical practice
	Design: Longitudinal survey utilising questionnaires with a two-year follow up
	Sample: Physicians and nurses (sample not stated)
	Key findings: Only 18% of the physicians and 58% of nurses reported use of clinical guidelines. Findings indicate that nurses were more likely to use the practice guidelines than physicians.

[62] Iran	Aim: Explored nurses' experiences of perceived support and their contributing factors in a University Teaching Hospital
	Design: Qualitative semi-structured interviews
	Sample: 12 RNs
	Key findings: Four key findings – poor organisational climate, low social status, poor working conditions and managers' ignorance to individual and professional values were considered as inhibitory factors to support. Thus, NMs can promote nurses' support perceptions through recognising inhibitory factors and applying fair solutions and take benefits of their positive consequences including high efficacy, self-esteem and organisational commitment to promote quality of care
[63] Canada	Aim: Determined the effectiveness of an evidence-based knowledge translation strategies implemented to describe influences on pain assessment and management; to determine barriers and facilitators to their implementation
	Design: Evidence-Based Practices for Improving Quality intervention questionnaires were utilised to gather data from medical/surgical 16 units of two different hospitals
	Sample: not stated
	Key findings: 78% out of 80% pain practice management that was targeted was achieved. A significant improvement was found in high proportion of children receiving pain assessment and management. Adapting knowledge translation to specific unit context, unit leadership support, staff engagement and dedicated resources were facilitating strategies for implementation
[64] Norway	Aim: To map self-reported beliefs towards EBP and EBP implementation among nurses and to investigate whether there was a positive correlation between EBP beliefs and EBP implementation
	Design: Descriptive cross-sectional survey
	Sample: 185 RNs
	Key findings: Previous training and learning about EBP had higher positive attitudes towards EBP belief than those who were not familiar with EBP. There was an association between use of evidence in practice and belief about its efficacy in nursing patient. Having the knowledge facilitates the belief in EBP and subsequently its use in practice
[65] Canada	Aim: To identify dimensions of organisational context and individual nurse characteristics that influence paediatric nurses self-reported use of research in a Canadian Paediatric hospital
	Design: Self-reported online survey
	Sample: 735 RNs
	Key findings: Key predictors of research use were associated with previous use of research by the individual nurse, the unit level; culture, number of nurses with baccalaureate degree, leadership, evaluation, formal relationship/interactions, organisational slack-space and unit specialty. Research use by nurses may be enhanced by paying more attention to the modifiable elements within the unit context. Thus,

	adoption of EBPs and other quality improvement initiatives may be promoted within the organisation by paying adequate attention to nurses needs
[66] USA	Aim: Tested an interdisciplinary, multifaceted translating research into practice (TRIP) intervention to promote adoption by nurses and physicians and to decrease barriers to its use in acute pain management of older hospitalised adults
	Design: Experimental design
	Sample: Nurses and physicians participated but sample was not stated
	The quality of acute pain care was significantly higher for experimental (10.1) than control (8.4). However, the TRIP enhanced quality of acute care pain management in older adults.
[67] USA	Aim: Evaluated impact of Implementing evidence-based fall intervention prevention for specific risks
	Design: Prospective pre-and post-implementation cohort design
	Sample: RNs: pre-157, post-140, 390 adult patients pre- and post
	Key findings: The intervention proved positive as fall rates decreased to 22%. Fall injuries largely changed from minor to moderate, but did not decline
[68] Netherland	Aim: Tested the effect of interactive and tailored education on nurses' knowledge level
	Design: Cluster randomised control trail
	Sample: Not stated
	Key findings: A statistically significant effect on nurses' knowledge was recorded in relation to pressure ulcer and not the other two. Overall, nurses' knowledge levels regarding the subject did not improve. Additional research on the effectiveness of tailored educational intervention is required.

2.7. Data extraction

A pre-defined charting order was designed and utilised to gather information for each of the study included in this review. As shown in table 1 above, these orders include author, year and country of study, research focus, population, study design, and key findings. Data was qualitatively synthesised and analysed using the constant comparative methods to compare findings across studies [69]. Findings were collated summarised and reported in themes as well as subthemes.

3. Results

Findings of this review are presented in themes with a discussion about the study designs and identifiable gaps provided. Studies about EBP largely concentrate on investigating barriers and facilitators constituting major findings. These findings were organised as individual and organisational determinants, with organisational determinants being further reported in five subthemes. The five subthemes reported in organisational determinants include strategic, cultural, technical, structural and contextual factors. The facilitating strategies of knowledge implementation is discussed as a standalone theme.

3.1. Individual determinants

Seven of the studies report that higher educational qualifications were associated with positive attitudes towards EBP, and positive belief in ones' ability to synthesise and utilise evidence in patient care. Nurses who had lower academic qualifications were more likely to draw on their experiences and intuition whereas expert nurses and those who have higher educational qualification, for example, MSc and PhD were more skilful in synthesising evidence from various sources. Nurses who had requisite skills and knowledge were positive about the efficacy of implementing evidence in nursing practice while nurses who lacked relevant knowledge and were not familiar with EBP did not believe in its efficacy, and did not subsequently apply evidence in patient care. Overall, nurses generally held positive attitudes towards EBP, and were highly interested in improving their EBP knowledge and skills [19, 21, 28, 34, 38]. Additionally, a few nurses who utilised evidence in practice were considered as having increased knowledge which is associated with positive attitudes towards EBP [50, 60].

3.2. Organisational determinants

These are factors relating to the healthcare setting or practice context. They are classified based on four aspects of the organisation as enshrined in the quality improvement framework developed by [71]. They are the strategic, cultural, structural and technical factors.

3.2.1. Strategic factors

Strategic dimension of the organisation relates to, for example, the vision, mission and priorities. This involves actions and processes that are very crucial to the organisation, and can provide greatest chances for quality improvement within the healthcare setting [71]. Barriers to knowledge utilisation can result when intervention or innovations are not aligned with goals and priorities of the organisation. Barriers to knowledge utilisation in nursing practice include lack of resources, heavy workload, time constraints, lack of prioritisation of EBP initiatives by the management. Lack of autonomy and administrative support for changing practice are barriers to EBP implementation in nursing practice [22, 27, 29, 31, 49, 58]. Key facilitating conditions captured in the strategic dimension as reported in four of the studies are inclusion of nurses in organisational governance as well as hospital-wide committees [29, 53]. Fink *et al.,*'s [44] pre-implementation and post-implementation intervention found that implementation can be promoted by incorporating EBP into the vision, philosophy, skills and nurses' job description, and included as a mandatory requirement for promotion in clinical ladders. Providing nurses opportunities to train and develop practice change activities aimed at facilitating EBP implementation [29, 53]. Kueny *et al.,* [53] described nursing units where nurse managers are committed to EBP, provided support and opportunities for communicating EBP activities. These nurse Managers provided opportunities for nurses to drive change in practice within their various units, and made available adequate resources, leadership and mentorship to facilitate EBP implementation [53]. Therefore, administrative support and commitment allows nurses some degree of authority and autonomy to initiate and implement EBP initiatives [22, 29, 53].

3.2.2. Cultural factors

Evidence-based practice may be embedded in health care organisations that do not value or reward behaviours that promote quality improvement within the setting. As seen in **table 1**, numerous studies report findings on impact of organisational cultural factors on EBP. The most cited cultural barrier is lack of nursing autonomy and authority to

change practice due to resistance from physicians and top management. Hannes *et al.,* [48] and Heydari and Zeydi [49] described a medically dominated culture and lack of physicians' cooperation as barriers to implementation of EBP in nursing practice. They found that lack of physicians' cooperation was a barrier to evidence implementation by nurses. A unique barrier, hierarchy and power were reported by Cheng *et al.,* [31]. Cheng *et al.,* [31] found that administrative power and hierarchical clinical system that is top down drive can constitute barriers to EBP implementation in a healthcare setting. Compliance with administrative rules in a non-democratic practice setting prevented nurses from implementing EBP as they imbibed the culture of seeking harmony with the authority [31]. Gerrish *et al.,* [46] described a culture that devalues nursing and does not provide managerial support for EBP as disempowering as nurses are unable to develop autonomy in implementing EBP. Adoption of EBP is impeded within a culture that does not pay adequate attention to quality improvement [46].

Interventions targeted at addressing cultural barriers to EBP implementation are reported in four studies [29, 44, 53]. Implementation of EBP is facilitated in workplace cultures that clearly communicates EBP goals between top management and nurse managers [53]. Within a nursing unit that performed well in EBP, there were structures such as nursing-specific committees that allowed nurses to drive change in practice and articulate internal resources such as quality-monitoring committees which are critical to EBP implementation [53]. Funk *et al.,* [44] described an organisational cultural intervention in which EBP champions were appointed to drive initiatives and organise research activities as well as symposium on regular basis. A culture where nurses are supported, encouraged, rewarded for developing EBP initiatives and engaging in critical thinking was reported in Brown *et al.,* [44]. Gifford *et al.,* [73] described a culture where nurse leaders adopted role modelling and mentoring in promoting of EBP. While Fink *et al.,* [44] reported measurable strategies and their outcomes, the rest of other studies [29, 53, 73] focusing on how to address cultural barriers only reported strategies but not outcomes.

3.2.3. Technical factors

Technical factor relates to skills required for implementing EBP. Inaccessibility of EB information due to lack of relevant skills required to retrieve or search for resources, example, research article, inability to appraise research constitute barriers to knowledge use in nursing practice. They added that lack of appropriate mechanisms for communicating EBP information, lack of ICT facilities within the practice and inability to retrieve research reports from appropriate databases such as MEDLINE, CINAHL, PsychINFO rather than Google or yahoo were reported as barriers.

Inability to seek research evidence due to lack of skills to critically appraise or critique relevant research reports are known factors leading to nurses relying heavily on their personal experiences rather than formal sources of knowledge [73]. Facilitators of EBP implementation were workshop training programme on how to conduct literature search and provision of enabling environment for research activities [29, 44]. Sherriff *et al.,* [60] organised an eight-hour workshop for nurses focusing on the principles of EBP and systematic reviewing. They provided nurses with workbooks that supplied them with relevant information prior to the workshop. In the end, nurses managed to develop search strategies utilising the PICO, thereby improving nurses' literature searching skills which in turn facilitated research utilisation [60].

3.2.4. Structural factors

This relates to structures available for EBP within the health care setting, for example, research or EBP committees can influence implementation process. Structural barriers of EBP implementation are non-availability of well-equipped library and lack of clarity in the presentation of evidence (e.g. clinical practice guidelines). Intervention known to resolve structural barriers to utilisation of knowledge in nursing practice are availability of quality-monitoring department, nursing-specific committees and change champions. Availability of Nursing Research Committee provided experienced nurse researchers who acted as champions and authority in leading change implementation [53]. Nursing Journal Club [44], and formatting of clinical practice guidelines to enable clarity, facilitated the diffusion of practice change activities [29].

3.3. Contextual factors

Contextual influences seem to overlap with some of the findings already reported in organisational determinant above. However, several studies that specifically examine context factors categorise contextual influences into two broad dimensions: the social dynamic and structural context factors [23, 27]. Social dynamic context factors include leadership, culture, communication, commitment whereas structural context factors include, for example, hierarchy and power [73]. Several studies reported that contextual factors influence user's ability to make EB decisions and conclude that identifying or addressing contextual factors increases the likelihood of achieving successful knowledge implementation (23, 27, 29). While these studies identify influence of context on knowledge implementation, they did

not state how they might be managed. However, Rycroft-Malone *et al.,* [85] recommends that use of existing structures within settings, aligning with organisational initiatives and those with pivotal roles can potentially promote successful implementation. They emphasise that implementation contexts, inter-professional functioning and organisational processes were challenging to utilisation of knowledge in practice. They recommend further attention to implementation context as its impact on EBP remains largely unclear.

3.4. Strategies for facilitating implementation of interventions

Findings focusing on strategies used in promoting implementation of intervention in different aspects of nursing practice were retrieved and reported in this subtheme. Eight studies reports use of educational materials as facilitating strategy for implementation of EB interventions. The commonly reported factor being targeted messaging, for example, email, posters, and newsletters which were used in disseminating EB information as a reminder to clinicians. Use of point of care reminders and decision aids, for example, charting tools, as well as point of care reference guide were found as promoter of EB intervention in nursing practice.

Additionally, use of change champions or opinion leaders yielded progress in the implementation of EB interventions in nursing and healthcare practice [5, 52, 53, 63, 66, 67, 68]. These studies report that identifying specific individuals or group to undertake the role of leading change promotes implementation of EB interventions. Involving nurse leaders and managerial was another way of promoting knowledge implementation in nursing practice [5, 8, 53, 66, 67]. Organisational policies with added auditing mechanisms can drive implementation processes if stakeholders are committed in practice [5, 63, 67, 68].

4. Discussion

Findings showed that circumstances influencing implementation of EBP in nursing practice relate mainly to the organisations, but also the individual practitioners. The individual nurses as well as healthcare organisations may be interested in implementing initiatives that can enhance quality patient care delivery. However, obstacles may arise when the organisation or individual clinicians do not have relevant knowledge of, or value for the innovation to be implemented. Therefore, successful implementation of EBP in nursing will depend on strategies applied in driving implementation agenda.

This review provides insight into different methodological approaches that have commonly been used in investigating barriers and facilitators of EBP, and a possible direction for future research. Much of the studies utilised self-reported questionnaires which were developed and subsequently utilised in investigating perceived barriers to EBP and research utilization in nursing practice, as opposed to qualitative methods that could provide in-depth exploration of how implementation efforts are shaped by the wider organisational contextual processes. The suitability of investigating nurses' attitudes to, and belief about EBP using the self-reported methods appeared to be problematic from the perspective of several authors [54, 56, 73], as nurses are likely to state what they perceive as the correct answers rather than the actual situation.

However, a few studies utilised theories and theoretical frameworks [22, 29, 44, 54]. Meijers *et al.,* [54] examined relationships between contextual factors and research utilisation and mapped the contextual factors on the Promoting Action for Research Implementation and Healthcare Services (PARIHS) framework. The use of PARIHS framework was useful in revealing contextual factors which included context, culture, and leadership, but the study has failed to provide further explanation on how these factors shaped knowledge implementation. As reported in Cheng *et al.,* [31], there is an indication that power and hierarchy has an impact on the delivery of change in practice. However, as Cheng *et al.,* [31] has failed to explore the nature of this impact, this study will pay attention to the influence of power and hierarchy on EBP implementation which was also implicated in [13].

Some studies utilised experimental design focusing on implementation of complex health intervention, for example, prevention of infections, prevention of falls and other clinical adverse effects. Although experimental research can provide casual evidence, it can be biased by the creation of manufactured situation and researcher's inability to control variables [78]. Five implementation models or frameworks were utilised and reported in six studies and they include PARIHS framework [52], Ottawa Model of Research Use [5], Plan-Do-Study-Act framework [63], Knowledge-To-Action framework [40], and Translation Research Model [66, 67]. Findings indicated that much of the studies utilised a multifaceted implementation approaches or strategies. It is difficult to accrue evidence for effectiveness of these strategies or identify similarities and differences between them as result of lack of common taxonomy [79]. Stevens *et al.,* [63] identified different strategies for testing improvements in implementation process and outcome. Biai *et al.,* [26] tested the effect of financial incentive as a strategy on outcome of implementation of clinical practice guidelines for

malaria treatment while some studies did not report effectiveness of implementation strategies on the outcome, thereby making it impossible to determine most effective interventions in the various practice settings that they studied.

These studies largely focused on the adoption and implementation of a specific intervention without investigating the impact of settings in which they were implemented, thereby limiting understanding of what strategies work for whom and in what circumstances. While findings included data describing context factors, that is information related to the settings in which implementation occurred, it has failed to explore the unique impact of context factors to provide insights into the outcomes of implementation. The impact of social dynamic (e.g. nurse manager and leadership behaviours, workplace climate) and structural (e.g. staffing) context factors were not clearly examined. The significance of adopting implementation strategies that can also address factors within the organisational and unit contexts has been highlighted. The dynamic as well as complex nature of implementation context demands that multifaceted implementation strategies be adopted in facilitating adoption and implementation of EBP [65, 80, 81]. Context has been recognised as an essential mediator of change in different domains; diffusion of innovation [82], organisational change [83], EBP [84, 85], quality improvement [86, 87].

5. Conclusion

Findings of this review depict several implications for research and practice. Majority of these studies utilised quantitative methodologies to determine variables affecting knowledge use while those utilising qualitative approaches have merely examined nurses' perceptions. These studies are limited in value due to lack of transferability because of variations in healthcare systems, culture and socio-political context. There is an abundance of research investigating barriers to knowledge use relating to organisation with no clarity on how and why it is so. Findings reveal the impact of power and influence on evidence implementation in nursing practice but failed to state how it happens. Therefore, further inquiry into practice context impact on knowledge implementation is required. Additionally, there is need to examine influence of power dynamics on knowledge implementation in nursing practice. Overall, influences on EBP in nursing practice largely exist in four main levels: professional or individuals, organisation; context; and nature of evidence or intervention. Adverse effects may result from non-delivery of EBP in nursing practice, resulting poor clinical outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

We declare no conflict of interest.

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