

Evidence-based practice

Knowledge, attitudes, implementation, facilitators, and barriers among community nurses—systematic review

Shu Li, MB, Meijuan Cao, PhD, Xuejiao Zhu, PhD*

Abstract

Background: This study is to summarize the status of knowledge, attitudes, implementation, facilitators, and barriers of evidence-based practice (EBP) in community nurses (CNs). EBP has been widely adopted but the knowledge, attitudes, and implementation of EBP among CNs, and the facilitators and barriers they perceived have not been clearly confirmed.

Methods: A literature search was conducted using combined keywords in 3 English databases and 3 Chinese databases of peer-reviewed publications covering the dates of publication from 1996 to July, 2018. Twenty articles were included. The information of the knowledge, attitudes, implementation, and the perceived facilitators and barriers of EBP in CNs was extracted and summarized.

Results: CNs had positive attitudes toward EBP, but insufficient knowledge and unprepared implementation. The most cited facilitators were academic training, management functions, and younger age. Inadequate time and resources were recognized as main barriers hindering the transforming from knowledge and attitudes to implementation. Developed interventions mainly focused on knowledge facilitation rather than the elimination of objective barriers.

Conclusions: Findings demonstrate a compelling need for improvement in knowledge and implementation of EBP in CNs, compared with the better attitudes. Except education, knowledge translating into implementation needs more coordination with authorities to magnify the facilitators and overcome the barriers. Further studies need to concentrate on deficient knowledge and implementation of EBP among CNs. Policy makers can use the facilitators and barriers found by this review to modify nursing education, current scientific resources supplement, practice supports for care improving.

Abbreviations: CNs = community nurses, EBP = evidence-based practice.

Keywords: community nurse, evidence-based practice, literature review, nurses, systematic review

1. Introduction

Nurses can provide personal care and treatment, work with families and communities, and play a central part in public health and controlling disease and infection. These roles of nurses have been recognized by the World Health Organization.^[1] Community nurses (CNs) combine the skills of nursing, public health, and

some phases of social assistance, and they function as a part of the entire public health programs.^[2] CNs can provide health care services, contributing to disease and injury prevention, disability alleviation, and health promotion.^[1,2] CNs generally face more independent work in the varied and dynamic community when there is no medical diagnosis or treatment provided by physicians for either patients or family. Therefore, they have to think critically, analyze complex situations, perform health assessment, and make decisions.^[3] However, CNs do not always make decisions based on the up-to-date high quality evidence, but on experiences.^[4,5]

WHO has suggested that health improving in communities is dependent upon nursing services underpinned by evidence-based practice (EBP).^[2] EBP refers to using the best available evidence for decision-making and providing efficient and effective care for patients on a scientific basis.^[6] Systematic implementation of EBP can enhance healthcare safety and improve patient outcomes.^[7,8] Although EBP is equally important to CNs as it is to clinical nurses, EBP in community nursing is still in the initial stage.^[5]

Researchers have reviewed the importance of nursing leadership in EBP,^[9] the state of readiness for EBP,^[10] barriers and facilitators in guidelines,^[11] and strategies of EBP implementation,^[12] but all these researches were designed for hospital nurses, but not CNs. One study^[7] concluded the practical contents of EBP in community nursing without analyzing the level of CNs' EBP. Another study^[13] reviewed the attitudes, knowledge, and perceptions of CNs regarding EBP, but the study was limited in European community settings.

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Nursing Faculty, Medical College, Hangzhou Normal University, Hangzhou, China.

* Correspondence: Xuejiao Zhu, Nursing Faculty, Medical College, Hangzhou Normal University, No. 16 Xuelin Road, JIANGGAN District, Hangzhou, Zhejiang 310016, China (e-mail: jj_ice@163.com).

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In this review, the knowledge, attitudes, and implementation of EBP of CNs were analyzed globally, as well as the facilitators and barriers of EBP implementation of CNs.

1.1. Aim of study

The aims of the review are to answer the questions: what is the status of knowledge, attitude, and implementation of EBP among CNs worldwide? What facilitators and barriers influence EBP implementation of CNs?

2. Materials and methods

2.1. Literature search

Literatures were retrieved within the authority of the university which authors belonged. A literature search was conducted using combined keywords in 3 English databases (PubMed/MEDLINE, Mag Online Library, Science Direct) and 3 Chinese databases (Chinese Journal Full-Text Database, Wan fang Database, VIP Database for Chinese Technical Periodicals) of peer-reviewed publications covering the dates of publication from January 1996 (the earliest year when EBP in primary care was introduced in detail^[14]) to July 2018. The following keywords were used: [(primary care nursing) OR (community health nursing) OR (public health nursing)) OR ((primary care) AND (nurse)) OR ((community health) AND (nurse)) OR ((public health) AND (nurse))] AND [(evidence based) OR (evidence-based practice) OR (evidence-based nursing)] AND [(knowledge) OR (skill) OR (attitude) OR (belief) OR (facilitators) OR (barriers)]. The field was limited to “title/abstract” and the publication type was limited to “journal article.” Reference tracking was carried out to identify additional potentially relevant references. Bibliographic citation management NoteExpress software (Version V3.2.0, Aegean Corporation, Beijing, China) was used to manage the retrieved studies. No published or in-progress systematic review on this topic is found in Cochrane Library and Jonna Briggs Institute Library before this review.

2.2. Inclusion and exclusion criteria

Two researchers independently screened the titles and abstracts to identify CNs based on the authors' description and the definition of WHO.^[2] Inclusion criteria: reports involving CNs' EBP knowledge/skill, attitude/belief, implementations; reports involving CNs perceived barriers or facilitators of EBP; original scientific studies; written in English or Chinese. Exclusion criteria: reports on EBP theory/framework, and narrative description of writer's personal opinion; studies without a clearly defined population and sub-analysis of CNs, or with mixed population (hospital and care organization nurses, other health professionals); reports on private nursing homes and rural hospitals; systematic reviews; non-research literature, that is, conference notice.

2.3. Data extraction and analysis

Two researchers extracted the data, including author, year, study design, sampling, outcome methods, and main results. The following aspects of CNs' EBP were extracted knowledge, attitude, implementation, facilitator, and barrier. Each study covered at least one theme in this review (Table 1).

2.4. Ethical approval

Ethical approval is not necessary because no human subjects and patient information were collected and studied.

3. Results

3.1. Literature screening

A systematic integrated literature review was conducted with the guidance of preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) protocol.^[46] A total of 2873 articles were obtained by database-searching and 4 additional articles were identified by reference-tracking (Fig. 1). After screening the titles, abstracts, and full-text, 19 English articles and 1 Chinese article were included in this study.

3.2. Study characteristics

As shown in Table 1, the articles involved in this study were published between 2004 and 2018, conducted in 8 developed countries and 1 developing country. The study designs were mainly cross-sectional survey (n=11), and the sample sizes ranged from 19 to 719. Four studies (20%) used probability sampling method. Thirteen previously reported questionnaires^[16,18–20,25,26,31,34,35,38,40,44] and 6 self-developed questionnaires were used to explore the status of CNs' EBP. For those studies that used questionnaires (n=16), 12 studies reported the reliability or validity of questionnaires. Only 2 studies had a response rate under 50%, so the results might be reflective for the actual situation. Face-to-face interview was used in 5 studies, so the feelings of the participants could be directly presented. All studies focused on at least 1 of the 5 themes: knowledge (n=8, 40%), attitude (n=12, 60%), implementation (n=14, 70%), facilitator (n=8, 40%), and barrier (n=7, 35%).

3.3. Study quality

No study was excluded in the quality assessment stage because potential valuable insights may be presented even in lower quality researches.^[47] The bias caused by researchers should be noted because no cross-sectional study explained unified training and education for the data collectors in the use of measuring tools, and the dealing of confounding factors within the study design or in data analysis was not shown. No author stated the influences of researcher on the study of qualitative designs, nor specified clear philosophical perspective. With regards to quasi-experimental studies, there was a lack of report about confounding variables on whether participants were involved in other similar studies contemporarily. The designs of randomized controlled trial's (RCT) randomization and concealment were insufficient and needed to be improved in blind design.^[48] Comprehensive application of mixed methods studies was satisfied, but the interview context description and controlling of confounding variables were deficient.^[49]

3.4. Outcome measurements

3.4.1. CN's knowledge of EBP. EBP knowledge of CNs was not satisfied generally. A total of 93% (n=139) CNs did not or knew little about EBP. They made decisions depending on individual experiences and consultation.^[4,47] Pericas-Beltran et al^[23] pointed out the possible reason may be that most CNs are lack of EBP training or education though some CNs search for more

Table 1

Summary of the included studies.

Author/year/country	Study design	Sampling method/sample size/response rate	Outcome measured	Main results
Rutledge and Skeltov/ (2011)/USA ^[15]	Quantitative, quasi-experimental survey (pre-post)	Non-probability/N = 19 (11 nurses participated the entire study, 8 nurses participated 1 year later)	Development of evidence based practice questionnaire (DEBPQ), ^[16] Cronbach α : 0.90; self-developed questionnaire, Cronbach α : 0.84	Knowledge: participants reported increased perceptions and skills of EBP after class, but not maintained, which decreased 1 year later. Attitude: almost all participants mentioned felt more and more comfort in using EBP. Implementation: most participants did not use EBP in their work. Barrier: barriers existed in the implementation of EBP. Attitude and implementation: in both survey, leaders scores were significantly higher for EBP beliefs, readiness, and implementation than registered nurses (RNs) scores. RNs' attitudes toward EBP, perceptions of organizational readiness, and implementation of EBP were more positive between the 2 study years, but those of nurse leaders had no significant changes. Facilitator: leadership role
Warren et al/(2016)/ Canada ^[17]	Quantitative, quasi-experimental survey (pre-post)	Non-probability/N = 719 (377 nurses participated in 2008, and 342 nurses participated in 2012)	Evidence based practice beliefs scale (EBPB) ^[18] , Cronbach α : 0.90; evidence based practice implementation scale (EBPI) ^[19] , Cronbach α : 0.95; organizational culture and readiness for system-wide implementation of EBP scale (OCHSIEP) ^[20] , Cronbach α : 0.95 Face to face interview	Implementation: CNs' practice was evidence based with the structure provided by guidelines and policies. Barrier: inadequate time. Facilitator: receiving academic training and bibliographic retrieval training, English proficiency, knowing resources access; higher workplace satisfaction, reading scientific articles.
Brooke and Mallion/ (2016)/ UK ^[21]	Qualitative, exploratory study	Non-probability/N = 33	Face to face interview	Implementation: CNs' practice was evidence based with the structure provided by guidelines and policies. Barrier: inadequate time. Facilitator: receiving academic training and bibliographic retrieval training, English proficiency, knowing resources access; higher workplace satisfaction, reading scientific articles.
Zabalea-del-Olmo et al/ (2016)/Spain ^[22]	Quantitative, RCT	Probability/ N = 93	DEBPQ ^[16] , Cronbach α : 0.88, KMO = 0.85, ICC = 0.91 Face to face interview	Knowledge: most participants' knowledge were from colleagues' knowledge, nursing education, literature, and guidance from expert personnel. Implementation: participants rarely used research-based knowledge in practice, some read research articles without applying. Knowledge, attitude, implementation: CNs had a positive attitude, but they seldom used EBP because of low competence and organizational support. Facilitator: positive attitudes. Barrier: lack of competencies, motivation, supports, and commitment to change.
Berland et al/(2012)/ Norway ^[4]	Qualitative, exploratory study	Non-probability/N = 20	Face to face interview	Knowledge, attitude, implementation: CNs had a positive attitude, but they seldom used EBP because of low competence and organizational support. Facilitator: positive attitudes. Barrier: lack of competencies, motivation, supports, and commitment to change.
Pericas-Beltran et al/ (2014)/Spain ^[23]	Qualitative, exploratory study	Non-probability/N = 46	Face to face interview	Knowledge, attitude, implementation: CNs had a positive attitude, but they seldom used EBP because of low competence and organizational support. Facilitator: positive attitudes. Barrier: lack of competencies, motivation, supports, and commitment to change.
González-Torrente et al/ (2012)/Spain ^[24]	Quantitative, cross-sectional survey	Non-probability/ N = 377, 61%	Evidence based practice questionnaire (EBPQ) ^[25] , Nursing work index (NWI) ^[26] , Cronbach α : not reported EBNAQ, ^[27] Cronbach α : 0.90, Correlation coefficients: 0.255	Knowledge, attitudes, implementation: these were significantly related to nursing work index and work experience. Facilitator: better nursing work index.
Ruzafa-Martínez et al/ (2011)/Spain ^[27]	Quantitative, cross-sectional survey	Non-probability/N = 395, not reported	Cronbach α : 0.90, Correlation coefficients: 0.255	Attitudes: community nurses with knowledge of EBP and shorter working experience had better attitudes. Facilitator: EBP knowledge and experience.

(continued)

Table 1
(Continued).

Author/year/country	Study design	Sampling method/Sample size/response rate	Outcome measured	Main results
Dadich et al/(2015)/Australia ^[28]	Mixed method, exploratory study	Non-probability/N = 217 (217 nurses received questionnaire survey, 10 nurses received interview survey)	Face to face interview; Self-developed questionnaire, Cronbach α : 0.53 of online training, 0.89 of offline training	Attitude: 85.8% of participants considered the EBP postcard to be useful and 100% found the online EBP training to be useful. 67.4% of participants indicated that their knowledge was improved, 82.4% cited improvement in their practice after the online EBP training. Implementation: 36.1% of the participants unsure or never uses the nurse EBP postcard in their work, 23.5% never use the online EBP training. Barrier: limited deliver opportunities of EBP, less organizational support, usefulness of research output.
Gerrish and Cooke/(2013)/UK ^[29]	Quantitative, cross-sectional survey	Probability/N = 337, 44%	DEBRQ ^[16] , Cronbach α : not reported	Knowledge: the top 3 knowledge sources were patient/client's information, policy and protocols national policy initiatives/guidelines' lowest 3 skills of EBP: finding research "evidence," using research evidence to change practice, reviewing research evidence. Facilitator: colleague, doctor and manager's support. Barrier: the top 3 barriers in finding evidence: insufficient time, no confidence in evidence judging, finding it hard to research. The top 3 barriers in practice changing: insufficient time, insufficient resources, insufficient authority to change practice.
Mckenna et al/(2004)/UK ^[30]	Quantitative, cross-sectional survey	Probability/N = 103, 56%	Self-developed questionnaire (built on BARRIERS scale ^[31]), Cronbach α : 0.74	Knowledge: 23.2% of the participants could access online journals, 13.2% could access publication databases, 10.6% could access evidence-based website, 6.5% could access government sites. The top 3 barriers: conflicting results in literature, lacking of relevant experiences, high costs of EBP.
Thompson et al/(2005)/UK ^[32]	Mixed method, exploratory study	Non-probability/ N = 82	Face to face interview, observation survey	The top three barriers: lack of knowledge and skills, limited information for research consumption, limited time support.
Melnyk et al/(2010)/USA ^[33]	Quantitative, cross-sectional survey	Non-probability N = 58, not reported	OCRSIEP ^[20] , Cronbach α : 0.92; EBPB ^[18] , Cronbach α : 0.88; EBP ^[19] , Cronbach α : 0.92; Group Cohesion scale, ^[34] Cronbach α : 0.90; Price and Mueller Job Satisfaction questionnaire, ^[35] Cronbach α : 0.84	Attitude: participants' EBP attitudes were correlated with EBP implementation, organization culture, group cohesion, and job satisfaction. Implementation: participants' EBP implementation was correlated with EBP attitudes, organization culture and group cohesion. Facilitator: organization culture, group cohesion and job satisfaction.
Bostrom et al/(2009)/Canada ^[36]	Quantitative, cross-sectional survey	Non-probability/N = 39, 76%	Self-developed questionnaire, Cronbach's α : not reported; Content validity: 5 items scored 1.0 and 1 item 0.8	Implementation: 7% of the participants formulated questions for seeking evidence, 20% searched databases, 68% used other sources of information, 37% critically appraised and compiled best knowledge, 22% participated in knowledge research implementation, and 22% participated in EBP evaluation.

(continued)

Table 1
(continued).

Author/year/country	Study design	Sampling method/Sample size/response rate	Outcome measured	Main results
Alanen et al/(2009)/Finland ^[37]	Quantitative, cross-sectional survey	Non-probability/N = 327, 80%	Attitudes toward Guideline scale ^[38] , Cronbach α : 0.68–0.74	Attitude: 75% of the participants reported their familiarity with the guideline to be very good or good. Elder nurses and those with longer working experience considered guidelines less reliable. Facilitator: EBP intervention experiences, reading articles. Attitude: 100% of the participants agreed or strongly agreed that EBP were welcomed in primary care; 98.3% agreed or strongly agreed that it was the duty to practice with current best evidence; 96.6% agreed or strongly agreed that EBP improved patient care.
O'Donnell/(2004)/UK ^[39]	Quantitative, cross-sectional survey	Non-probability/N = 59, 80%	Evidence-based medicine in primary care questionnaire ^[40] , Cronbach α : not reported	Implementation: 5.2% of the participants appraised the primary literature by themselves; 1.7% sought and applied evidence-based summaries; 32.8% used evidence-based guidelines or protocols developed by others. Knowledge: nurses with master's degree were more skillful of EBP than others. Implementation: organizational culture will affect the EBP implementation.
Baird and Miller/(2015)/Canada ^[41]	Quantitative, cross-sectional survey	Non-probability/N = 68, 54%	Self-developed questionnaire, Cronbach α : 0.87	Knowledge: nurses with master's degree were more skillful of EBP than others. Implementation: organizational culture will affect the EBP implementation.
Fuying et al/(2015)/China ^[42]	Quantitative, cross-sectional survey	Non-probability/ N = 150, not reported	Self-developed questionnaire, Cronbach α : not reported	Knowledge: 57% of the participants did not understand and 36% knew little about EBP, no one mastered EBP. Attitudes: 74.7% of the participants were interested in EBP. Implementation: 59% of the participants made decisions based on individual and expert's experiences, 21% would read scientific articles voluntarily.
Levin et al/(2011)/USA ^[43]	Quantitative, RCT	Probability/N = 46	EBPB ^[18] , Cronbach α : >0.85; EBPI ^[19] , Cronbach α : >0.85; Group Cohesion scale ^[34] , Cronbach α : 0.73–0.83; Index of work satisfaction (WS) ^[44] , Cronbach α : 0.80–0.90	Attitude, implementation: after the intervention, the experimental group versus an attention control group had stronger EBP beliefs, higher EBP implementation behaviors, more group cohesion, and less attrition/turnover.
Pereira et al/(2018)/Switzerland ^[45]	Quantitative, cross-sectional survey	Non-probability/ N = 86, 32%	EBPB ^[18] , Cronbach α : 0.84; EBPI ^[19] , Cronbach α : 0.92	Attitude: the top 3 items: believing in evidence-based guidelines will improve clinical care, critically appraising evidence of EBP is an important step and EBP implementation will improve the care. The lowest 3 items: knowing how to implement EBP sufficiently, knowing the steps of EBP, believing EBP is difficult (reverse scored). Implementation: the top 3 items: data collecting on patient problems, evaluating the outcomes of practice change and changing practice based on patient outcome data. The lowest 3 items: accessing the database of systematic reviews, promoting EBP application with colleagues, generating a PICO question about practice.

EBP = Evidence-based practice, PICO = participants, interventions, comparisons, outcomes, RCT = randomized controlled trial.

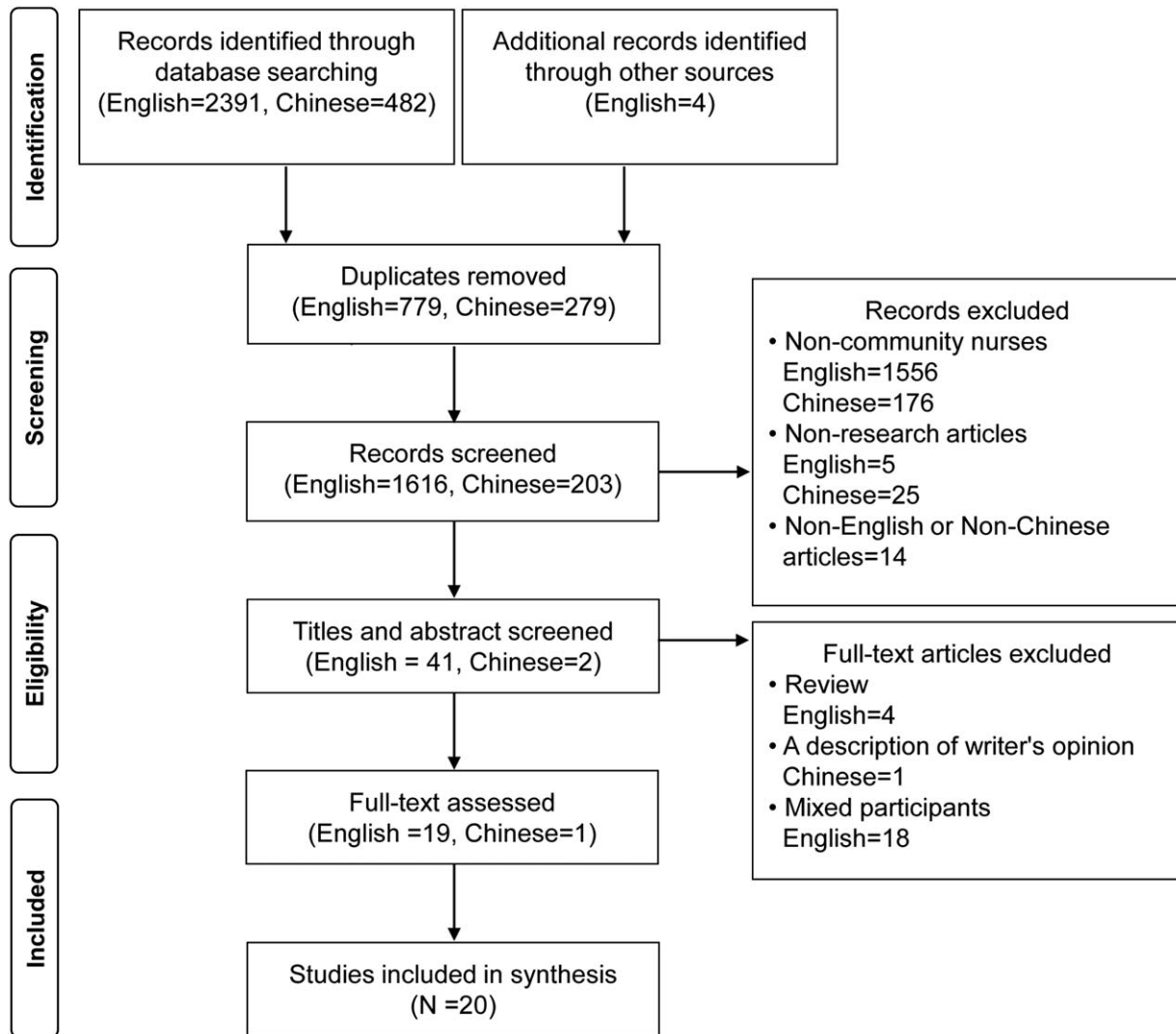


Figure 1. Flowchart of the systematic search and review process.

information by Google, e-journals, clinical enquiry websites, institutional websites, and databases. CNs faced difficulties in critical thinking, identifying research articles and journals, evaluating research quality.^[41,29,15] Gerrish and Cooke^[29] found that only 26% of the participants were competent in finding research evidence and 29% in using research evidence. Though a study in UK^[39] reported 64% CNs had the ability to find research evidence and review critically, all participants were nursing leaders. In addition, participants with higher title have been confirmed to have greater EBP competency.^[50]

3.4.2. CNs' attitudes toward EBP. Contrary to the lacking of knowledge, CNs consistently expressed satisfactory attitudes and beliefs about EBP. They agreed that primary care needed to keep up with current scientific base and best evidence.^[23,27,28] This positive attitude toward EBP may be associated with evidence-based intervention experience, working years in nursing,^[37] the role of leader (having more authority and influences),^[15] EBP experiences,^[24] job satisfaction and group cohesion, organizational culture, and, readiness for system-wide integration of

EBP.^[33] However, positive attitudes toward EBP did not mean the implementation of EBP.^[51] Rutledge and Skelton^[15] found that after 1-year training program focusing on EBP facilitation skills, almost all participants have more confidence in EBP, whereas they had not implement EBP into daily job. Other researchers^[51] also supported that despite familiarity with EBP, nurses seldom participated in EBP.

3.4.3. CNs' implementation of EBP. CNs' positive attitudes toward EBP do not guarantee the implementation of EBP.^[10] One study^[39] found that 97% respondents agreed or strongly agreed on the promotive role of EBP in patient care, while only 5% by learning the skills of EBP and 2% by seeking and applying evidence-based summaries established evidence-based implementation. Pereira et al^[45] discovered CNs got higher scores of believing in EBP will improve care (4.02), but the implementation of EBP sufficiently got relatively lower scores (2.71). Similar findings^[35] of poor implementation were also reported in Canada, as 7% respondents formulated questions and performed knowledge search, 20% used database, and 22% used research in

Table 2
Facilitators and barriers of CNs' EBP.

Theme	Facilitators	Barriers
Evidence		Insufficient evidence ^[15] Complexity ^[23] Lack of consistence in all clinical areas ^[23] Useless for implementation ^[28] Conflicting research findings ^[30] Massive amounts of literature ^[32]
Environment	More professional conferences or scientific events ^[22] Physician/Nurse relationship ^[24] Higher group cohesion ^[33] Higher workplace satisfaction ^[33,22] Organizational culture of value EBP ^[41,33,22] Organization support ^[24]	Inadequate time and heavy workload ^[29,15,30,21,32] Insufficient facilitators and resources ^[23,29,15,30,32] Lack of support to change ^[23,15,28] Lack of staff collaboration and communication ^[15] No pilot work ^[15] Lack of commitment to change ^[23] Lack of authority to change practice ^[29] Limited funding ^[30] Lack of research facilitator and training courses ^[30] Lack of opportunities to make changes ^[28]
Nurses	Receiving academic training and education ^[22,41,43] Receiving bibliographic search training ^[22] Better English ^[22] Reading journal articles and searching literature ^[22] Owning management functions ^[37,24,17] Owning EBP knowledge and experiences ^[27,37] Higher job satisfaction ^[33] Younger age and shorter working experience ^[41,37,24]	Lack of knowledge and skills ^[31,34,37,59] Lack of motivation, interests, and reconnection ^[31,37,55] Unwilling to change usual practice ^[31,55] Wonder how to translate knowledge into practice ^[33] Lack of confidence and related experiences of EBP ^[32,33,55]

CNs = community nurses, EBP = evidence-based practice.

practice. Some CNs did read the nursing journals, which gave them access to relevant information within the fields, nonetheless, this did not yet lead to EBP implementation.^[4]

In a pilot study in the United States,^[43] an intervention program was offered to 24 CNs by EBP mentors, including teaching content on EBP; EBP toolkit; environmental prompts; and EBP mentors who encouraged participants to use EBP to provide supports; EBP training (e.g., how to build searchable questions, find evidence, systematic review and meta-analysis, appraise, EBP in clinical decision making). The intervention contended 2 periods to integrate learning and practice: a 16-week educational intervention phase and a following 12-week project intervention period. Data were collected at baseline (Time 1), after the 16-week educational intervention (Time 2), mentored intervention period (Time 3), and after completion of the intervention (Time 4, i.e., 9 months after Time 3). Results demonstrated that the training might be a promising strategy for a short-term enhancement of EBP implementation, but the long-term effect was undetermined. Another study^[28] explored the project including EBP training handbooks and online courses for CNs to enhance evidence-based sexual healthcare and found that 86% participants dedicated useful EBP training handbooks and all participants agreed that online courses were helpful to the implementation of EBP. However, near to one-third participants reported no implementation of the learned EBP skills.

3.4.4. Facilitators and barriers of EBP. Fourteen facilitators and 21 barriers of CNs' EBP application were identified and were divided into 3 themes: characters of the evidence (e.g., the presentation, quantity, and quality of the studies); characters of the environment, that is, facilitators and barriers perceived in the

work settings; characters of the nurses, that is, the nurses' values, skills, and awareness about EBP (Table 2).

4. Discussion

This review found that CNs showed interests in EBP and believed that exerting EBP was useful for the quality of care.^[23] However, the lack of knowledge or skills and barriers of CNs limited the implementation of EBP application.^[52] Numerous teaching approaches, such as small group exercises, article review and critique, case studies, literature search, and scenario simulation training, have been found to be promising ways in improving EBP knowledge and beliefs.^[53] EBP as a scientific approach is easy to be accepted, but difficult to be acquired and applied.^[54] This review found that researchers tended to focus on the cultivation of EBP knowledge and interests, but not the implementation of EBP. However, ensuring EBP implementation is the ultimate aim.

Understanding and identifying the facilitators and barriers of EBP may be the cornerstone to achieve successful knowledge transferring.^[55] This review identified that most facilitators were related to individual knowledge and beliefs. Administrators tend to carry out more EBP because they can get more authority and coordination than general nurses.^[56] Younger age and shorter working experiences were also recognized as promoting factors of EBP, which may be due to the academic training.^[22] These CNs received modern nursing curriculums, including EBP, and they were liable to apply EBP with the cultivated consciousness and ability.^[17] Effective implementation is also associated with organizational culture of valuing EBP, which means "evidence-based culture" perceived and created by community healthcare providers and managements.^[41,33,22] CNs working in an

evidence-based group with a better EBP belief and culture will support the fresh findings and scientific behaviors.^[57]

Barriers of EBP among CNs were mostly gathered in an environment scale. Time and resources were referred mostly.^[58] When workload is too heavy, nurses are less likely to search and apply evidence.^[55,58] Nurses who have access to more available resources, such as electronic databases, libraries, and professional guidelines, tend to rely more on scientific evidence.^[59,30] Four articles referred inadequate knowledge as a barrier, and indicated that the current academic education programs did not adequately prepared for EBP implementation.^[23,15,28,59,60] Barriers distributed evidence was relatively less, and these can be overcome by providing more evidence resources, peer supports, and literature screening skills. All cited barriers can be ascribed to 3 possible factors ultimately: inadequate supports of time and resources, inadequate knowledge and training, inadequate encouragement, and assistance from organizations. Barriers were recognized by researchers; however, workable and comprehensive approaches to overcome these barriers are lacking. Measures reported in studies were educational programs generally, which are effective in knowledge improving. More concerns should be focused on EBP implementation. Barriers must be settled, not just in education and training, but also in objective barriers and comprehensive elimination. Policy support and institutional protection is not a choice, but a necessity. More investment in resource supplement, nursing workforce, nursing guidance, and EBP approaches is needed for well EBP implementation, and therefore CNs can get abundant research time and resources, better EBP operating environment, and additional supports from working staff and managements.

4.1. Limitation

One of the limitations is that though systematically electronic databases searching has been down, some relevant literatures may be missed as in any reviews.^[61] To avoid this, the articles were independently searched by 2 researchers and all eligible articles were saved with maximum degree. Language and publication bias were possible despite that our review scope was increased to worldwide.

4.1.1. Implication to nursing policy. The implication of this review involves the need of relevant training for EBP knowledge. Nursing policy reform must provide a systematic curriculum of EBP for nursing students and manageable continuing education for nurses. Then barriers removing must be a priority for authorities to clear the gap between CNs' EBP knowledge and implementation. It is expected that more policies will be introduced in EBP supporting among CNs, such as research time protection, resources providing for community health institutions, and responsible EBP coordination.

5. Conclusions

The findings suggest that most CNs' EBP are not satisfied. Although they make positive gestures and believe in the value of EBP in improving nursing practice and patient outcomes, they did not have matching sufficient knowledge and skills, such as finding proper evidence. In addition, the application of EBP is worse, and several interventions do improve their knowledge, but how to ensure that the abilities CNs acquired can be used in vocational action remains to be explored.

The facilitators of CNs' EBP mostly belong to the "nurses" part, and relate to the improvement of the ability and values of EBP both in individual and organization. Barriers mostly belong to the environment part, and all barriers can be attributed to the following factors: lacking time and resources, lacking knowledge and training, inadequate encouragement and assistance. Organizations must ensure that the required resources and supports are available for CNs. Strong experimental designs are required to accurately assess the long-term capacity for EBP training strategies and more researches should be devoted to removing objective barriers in EBP implementations.

Author contributions

Conceptualization: Shu Li, Meijuan Cao, Xuejiao Zhu.

Data curation: Shu Li, Meijuan Cao.

Formal analysis: Shu Li, Meijuan Cao.

Project administration: Xuejiao Zhu.

Writing – original draft: Shu Li, Meijuan Cao, Xuejiao Zhu.

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