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REVIEW

A Narrative Synthesis of Qualitative Studies Conducted to Assess Patient Safety Culture in Hospital Settings

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نبذة وصفية من الدراسات النوعية التي أجريت لتقييم ثقافة سلامة المرضى في بيئة المستشفيات

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ABSTRACT: This review aimed to identify methodological aspects of qualitative studies conducted to assess patient safety culture (PSC) in hospital settings. Searches of Google Scholar (Google LLC, Menlo Park, California, USA), MEDLINE® (National Library of Medicine, Bethesda, Maryland, USA), EMBASE (Elsevier, Amsterdam, Netherlands), PsycINFO (American Psychological Association, Washington, District of Columbia, USA) and Web of Science (Clarivate Analytics, Philadelphia, Pennsylvania, USA) databases were used to identify qualitative articles published between 2000 and 2017 that focused on PSC. A total of 22 studies were included in this review and analysis of methodological approaches showed that most researchers adopted purposive sampling, individual interviews, inductive content and thematic analysis. PSC was affected by factors related to staffing, communication, non-human resources, organisation and patient-related factors. Most studies lacked theoretical frameworks. However, many commonalities were found across studies. Therefore, it is recommended that future studies adopt a mixed methods approach to gain a better understanding of PSC.

Keywords: Patient Safety; Culture; Needs Assessment; Qualitative Research.

الملخص: تهدف هذه المراجعة إلى تحديد الجوانب المنهجية للدراسات النوعية التي أجريت لتقييم ثقافة سلامة المرضى في بيئة المستشفيات. وقد أجريت عملية المراجعة بإستخدام قاعدة البيانات، مثقف البحث من جوجل (جوجل، مينلو بارك، كاليفورنيا، الولايات المتحدة الأمريكية)، ميدلاين (المكتبة الوطنية للطب، بيثيسدا، ميريلاند، الولايات المتحدة الأمريكية)، أم بيس (إلسفير، أمستردام، هولندا)، سيكو أنفو (جمعية علم النفس الأمريكية، واشنطن، مقاطعة كولومبيا، الولايات المتحدة الأمريكية)، شبكة العلوم (تحليلات كلارفيت، فيلادلفيا، بنسلفانيا، الولايات المتحدة الأمريكية)، لتحديد المقالات النوعية المنشورة بين عامي 2000 و 2017 والتي ركزت على ثقافة سلامة المرضى. تم تضمين ما مجموعه 22 دراسة في هذه المراجعة وتحليل الأساليب المنهجية التي أظهرت أن معظم الباحثين اعتمد أخذ العينات الهادفة، والمقابلات الشخصية، والمحتوى الاستقرائي والتحليل الموضوعي. تأثرت ثقافة سلامة المرضى بالعوامل المتعلقة بالموظفين والتواصل والموارد غير البشرية والتنظيم والعوامل المتعلقة بالمريض. والخلاصة أن معظم الدراسات كانت تفتقر إلى الأطر النظرية. ومع ذلك، تم العثور على العديد من القواسم المشتركة بين الدراسات. لذلك، يوصى بأن تتبنى الدراسات المستقبلية منهج طرق مختلطة للحصول على فهم أفضل لثقافة سلامة المرضى.

الكلمات المفتاحية: سلامة المرضى؛ ثقافة؛ تقييم الاحتياجات؛ بحث نوعي.

In 1999, the Institute of Medicine's *To Err is Human* highlighted that a considerable number of patients die annually in the USA as a result of avoidable medical errors.[1] Since this seminal publication, healthcare professionals and leaders have been more alert to the role of human factors in providing safe healthcare services.[1] Evidence suggests that organisational patient safety culture (PSC) plays a critical role in determining patient safety outcomes such as medication errors, hospital-acquired infections and post-operative complications.[2] Knowledge about the extent to which healthcare providers perceive patient safety is an important initial step for improving PSC in healthcare organisations.[3] PSC is an abstract concept and is difficult to measure; there is a need to develop an understanding of healthcare providers' attitudes and behaviours related to patient safety. Furthermore, healthcare providers should use this understanding to form interventions addressing patient safety issues.[4]

The vast majority of studies examining PSC in healthcare organisations have adopted quantitative survey methods such as the Hospital Survey on Patient Safety Culture (HSOPSC), Safety Attitudes Questionnaire and Culture of Safety Survey.[5] These tools were designed to evaluate healthcare providers' perceptions of the different dimensions of PSC (e.g. leadership support, non-

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punitive response to error, teamwork, job satisfaction, etc.).[5] Surveys are useful as they are economical, time-efficient and allow for direct comparisons across various contexts.[6] However, such questionnaires cannot provide an understanding of why certain responses are provided and fail to gather personal stories and experiences related to organisational safety culture.[7]

Qualitative research approaches are typically used to understand attitudes and behaviours and therefore, have a greater potential to document personal experiences, feelings about and opinions of organisational safety culture than responses to pre-determined survey questions.[5,8–10] This type of research uses either inductive or deductive reasoning.[11] Inductive approaches use patterns derived from data related to a particular phenomenon under study to construct theories, while deductive approaches use pre-existing theories in the literature as an analytical tool to gain insight into certain aspects of the data.[11] In addition to the presence of different approaches in this field, a wide range of methods can be adopted for qualitative data collection (e.g. surveys, individual interviews and focus group discussions) and analysis (e.g. content analysis, thematic analysis and discourse analysis).[12]

This review aimed to evaluate the methodological aspects of existing qualitative studies which focused on PSC in hospital settings. The objective was to provide an overview of study quality and identify gaps in knowledge which could then be addressed in future research.

Methods

In this narrative synthesis of published studies, content analysis was used to describe the most commonly adopted qualitative methods in the included studies, and findings were quantified via frequency counts.[13,14] Thematic syntheses was used to explain the different factors underpinning patient safety in the included studies.[15]

The specific research questions for this review were: "What are the most widespread methods used in previous qualitative studies of PSC in hospital settings?" and "What commonalities are there, if any, across studies, regarding factors affecting patient safety?".

To address these research questions, independent searches of Google Scholar (Google LLC, Menlo Park, California, USA), MEDLINE® (National Library of Medicine, Bethesda, Maryland, USA), EMBASE (Elsevier, Amsterdam, Netherlands), PsycINFO (American Psychological Association, Washington, District of Columbia, USA) and Web of Science (Clarivate Analytics, Philadelphia, Pennsylvania, USA) databases were conducted to identify studies on PSC. To be included in this review, studies had to be: 1) published original articles that focused on healthcare providers' perception of PSC; 2) qualitative or mixed methods studies conducted in hospital settings; 3) published in English; and 4) published from January 2000 to December 2017 to focus on studies conducted between the publication of *To Err is Human* in 1999 and December 2017. Studies were excluded if they only assessed a subset of PSC, they did not have a methods section, they were opinion papers including anecdotal and discussion papers, editorials, letters to the editor, short communications, positions and expert opinion papers or theoretical literature reviews.

The following search terms were collectively used when searching the databases: "patient safety culture" OR "patient safety climate" OR "perception of patient safety" OR "safety culture" OR "safety climate" OR "patient safety AND hospital". Abstracts of the identified articles were used to determine relevance of the study based on this review's inclusion criteria. If a study's relevance could not be determined from the abstract, the article was read in its entirety.

Five questions from the Critical Appraisal Skills Programme (CASP) checklist were used to guide and standardise data extraction from the included articles.[16] These questions were selected as they focus on the methodological aspects of qualitative studies such as appropriateness of research design, recruitment strategy, data collection and analysis and clarity of findings.

Answers to the selected question from the CASP were coded and then thematically sorted into tables. Sorted data relating to the identified methods were quantified using Microsoft Excel, Version 2013 (Microsoft Corporation, Redmond, Washington, USA). Further thematic synthesis was carried out to identify factors affecting patient safety, develop descriptive sub-themes and generate analytical themes.[17]

Results

An initial database search revealed 390 articles relevant to PSC assessment. Duplicates (n = 139) were excluded and abstracts of the remaining 251 titles were used to decide relevance of the study based on the inclusion criteria. A summary of the search process is shown in Figure 1.

A total of 22 studies carried out between 2006–2017 were included in this review. Of these, four studies were conducted in Sweden, three studies each were conducted in the USA, China and Iran and one study each was conducted in the UK, Canada, Finland, Australia, Brazil, Uruguay, Congo, Ethiopia and Bhutan.

Most studies (72.7%) were purely qualitative, while six studies used mixed methods approaches. The majority (81.8%) did not state an epistemological basis or tradition (foundation for the study design). Of the four studies

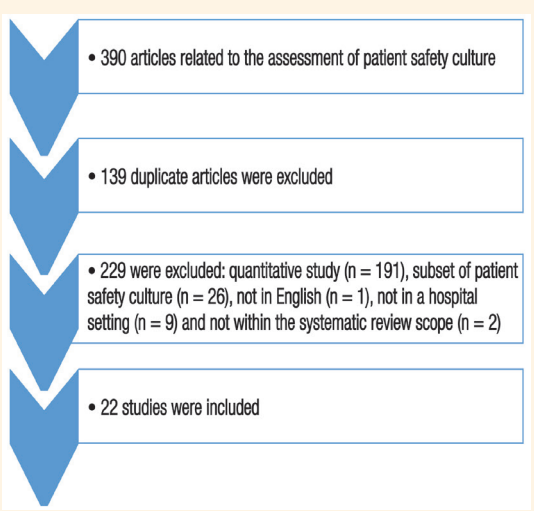

Figure 1: Flow chart of the search process for articles on patient safety culture.

which did report an epistemological basis, two used case studies, one used dialectic hermeneutics and one used social constructivism. The latter represents an overarching epistemological basis, whereas case studies and dialectic hermeneutics may be more accurately categorised as methods.[18]

Most participants (59.1%) were selected using purposive or criterion sampling. Individual face-to-face interviews was the most frequent data collection technique (54.5%) followed by focus groups (18.2%). The majority of studies adopted content (50%) or thematic (22.7%) or both (9.1%) approaches to qualitative data analysis as well as grounded theory, framework analysis and template analysis (4.5% each). Framework analysis and template analysis are, broadly speaking, sub-branches of thematic approach.[19,20]

Inductive, or data-driven, analysis was the preferred approach (72.7%) where as deductive data analysis using pre-established PSC models was used only in six studies [Table 1]. Models differed in terms of numbers of PSC dimensions, ranging from 6–12 dimensions in each model. They also differed by the labels given for each dimension; however, some dimensions shared similar meaning regarding teamwork, communication, leadership and other organisational and environmental characteristics [Table 2].

Despite being conducted in diverse contexts, many common factors were identified that related to facilitating or compromising patient safety. These factors were related to staffing, communication, non-human resources, organisational factors and patient-related factors. The number of available staff was commonly perceived as a determinant of patient safety.[21–31] In general, participants believed that adequate staff numbers would help minimise workload and burnout and would subsequently help them work more accurately and safely. In addition, staff attitudes were perceived as important. Commitment to patient safety and compliance with clinical practice and patient safety standards were thought to play a vital role in determining the level of patient safety in the workplace.[23–26,29,31–35] Job satisfaction and staff turnover rate were also identified as key determinants of patient safety.[25,32]

Communication factors commonly perceived as determinants of patient safety were teamwork, healthcare provider-patient relationships, handovers and transitions.[22–29,32,33,35–37] For example, Zhu *et al*.'s study found that feedback and communication concerning errors were seen as important determinants of patient safety.[22]

There was widespread agreement among the different studies' participants that the availability and appropriateness of non-human resources, including policies, procedures, equipment, supplies, the physical environment, technology and medical records in healthcare organisations were key factors for providing safe services.[21–25,27–35,37–39]

Study participants emphasised the importance of organisational factors, including staff training and continuous education, in improving patient safety.[22,25–27,29,34] They also emphasised the role of leadership in creating a permissive and open working atmosphere which facilitates reporting and learning from mistakes.[22–24,27,34,38] Emphasis was also placed on the role of leadership in mentoring staff toward safe practices.[22,25,30,32,37]

Patient-related factors were less frequently raised in the reviewed studies. However, patient numbers, underlying conditions, awareness of their condition and health literacy were all thought to contribute to patient safety [Table 3].[29,36,37]

Discussion

Theoretically, PSC consists of objective aspects, like healthcare providers' behaviours and practices related to patient safety, and subjective aspects such as their beliefs, values and attitudes about patient safety.[40] These subjective aspects cannot be captured by quantitative survey-based methods, which only determine aspects about PSC in a healthcare organisation at a particular period.[41] Qualitative methods can provide a more detailed understanding of PSC in healthcare settings; however, this review showed that only a few studies adopted qualitative methods to explore this issue.[9]

Most studies lacked clear conceptual or theoretical frameworks and used relatively direct approaches to data collection and analysis. These studies were carried out in diverse contexts and countries and showed variations between the groups under study. Despite these differences, study findings shared commonalities regarding factors facilitating or compromising patient safety—such as

Table 1: Summary of the methods adopted in 22 studies on patient safety culture

Author and year of publication	Study design	Tradition	Sampling	Data collection technique	Data saturation	Form of data	Data analysis approach	Analytical model(s) used
Rathert *et al.*[21] (2006)	Mixed methods	Not adopted	Whole population	Survey	Not applicable	Electronic data	Not stated	Not adopted
Zhu *et al.*[22] (2012)	Qualitative	Not adopted	Purposive or criterion sampling	Focus group	Clarified	Audio records	Thematic analysis	HSOPSC framework
Lui *et al.*[23] (2014)	Mixed methods	Not adopted	Opportunity and purposive sampling	Interview	Clarified	Audio records	Thematic analysis	SSC Model and HSOPSC framework
Vaismoradi *et al.*[24] (2014)	Qualitative	Not adopted	Purposive or criterion sampling	Interview and observation	Clarified	Audio records and field notes	Content analysis	Not adopted
Abdi *et al.*[25] (2015)	Mixed methods	Case study	Critical case	Interview	Not clarified	Audio records	Framework analysis	SAQ framework
Umpiérrez *et al.*[26] (2015)	Qualitative	Dialectic hermeneutic	Purposive or criterion sampling	Interview	Clarified	Audio records	Content analysis	Not adopted
Wang *et al.*[27] (2017)	Qualitative	Not adopted	Stratified sampling	Interview	Clarified	Audio records	Grounded theory	HSOPSC framework
Wami *et al.*[28] (2016)	Mixed methods	Not adopted	Purposive or criterion sampling	Interview	Not clarified	Audio records	Content analysis	Not adopted
Pazokian *et al.*[29] (2017)	Qualitative	Not adopted	Critical case	Interview	Clarified	Audio records	Content analysis	Not adopted
Tarling *et al.*[30] (2017)	Mixed methods	Not adopted	Convenience sampling	Focus group	Not clarified	Audio records	Thematic analysis	Not adopted
Källberg *et al.*[31] (2017)	Qualitative	Not adopted	Purposive or criterion sampling	Telephone interview	Not clarified	Audio records	Content analysis	Not adopted
Danielsson *et al.*[32] (2014)	Qualitative	Not adopted	Purposive or criterion sampling	Interview and focus group	Not clarified	Audio records	Content analysis	Not adopted
Ridelberg *et al.*[33] (2014)	Qualitative	Not adopted	Purposive or criterion sampling	Interview	Not clarified	Audio records	Content analysis	Vincent's framework
Kanerva *et al.*[34] (2016)	Qualitative	Not adopted	Purposive or criterion sampling	Interview	Not clarified	Audio records	Content analysis	Not adopted
Labat and Sharma[35] (2016)	Qualitative	Social constructivism	Purposive or criterion sampling	Interview	Not clarified	Audio records	Content analysis	Not adopted
Bishop and Cregan[36] (2015)	Qualitative	Not adopted	Purposive or criterion sampling	Interview	Not applicable	Video records	Thematic analysis	Not adopted
Jones[37] (2014)	Qualitative	Not adopted	Purposive or criterion sampling	Focus group	Not clarified	Audio records	Content analysis	Not adopted
dos Reis *et al.*[38] (2017)	Qualitative	Not adopted	Purposive or criterion sampling	Interview	Not clarified	Audio records	Content and thematic analysis	Not adopted
Pelzang *et al.*[39] (2017)	Qualitative	Not adopted	Purposive or criterion sampling	Interview	Not clarified	Audio records	Content and thematic analysis	Not adopted
Elder *et al.*[52] (2008)	Qualitative	Not adopted	Convenience sampling	Focus group	Not clarified	Audio records	Thematic analysis	Not adopted
Karlsson *et al.*[53] (2011)	Qualitative	Not adopted	Whole population	Survey	Not applicable	Written data	Content analysis	Not adopted
Allen *et al.*[54] (2010)	Mixed methods	Case study	Critical case	Interview and document audit	Not clarified	Audio records	Template analysis	SAQ framework

HSOPSC = hospital survey on patient safety culture; SSC = sammer's safety culture; SAQ = safety attitude questionnaire.

Table 2: Comparison between the characteristics of four safety culture models[55–57]

Characteristic	HSOPSC model[55]	SAQ model[55]	CSS model[56]	Vincent's model[57]
1	Teamwork within units	Teamwork climate	Teamwork	Institutional context
2	Teamwork across units	Perception of management	Leadership	Organisational and management factors
3	Supervisor/manager expectations and actions promoting safety	Stress recognition	Learning	Work environment
4	Management support for patient safety	Working conditions	Evidence-based	Team factors
5	Staffing	Job satisfaction	Fair culture	Individual staff factors
6	Overall perception of patient safety	Safety climate	Patient-centred care	Task factors
7	Organisational learning which continues improvement	-	Communication	Patient characteristics
8	Non-punitive response to error	-	-	-
9	Handovers and transitions	-	-	-
10	Open communication	-	-	-
11	Feedback and communication about error	-	-	-
12	Frequency of events reported	-	-	-

HSOPSC = hospital survey on patient safety culture; SAQ = safety attitudes questionnaire; CSS = culture of safety survey.

staffing, communication, non-human resources, organisational factors and patient-related factors. Most frontline staff (e.g. doctors, nurses and pharmacists) generally linked patient safety with the availability of appropriate systems and procedures to support patient safety in the workplace. Managers embraced more proactive approaches for risk identification and management. This difference is reflected in the findings of surveys on PSC conducted in different contexts.[42–45] In addition, PSC was not uniform across healthcare providers working even in a single hospital.[41] Evidence suggests that different patient safety subcultures within the same hospital are likely related to individual factors such as diverse healthcare providers that have different national, religious, educational and occupational backgrounds.[40] This factor must be considered when exploring PSC in hospital settings; however, further research is needed to examine this area.

As previously mentioned, few studies have used theoretical models or categories offered by popular survey tools to categorise their data (deductive analysis). The benefits of using theoretical models or conceptual frameworks for qualitative data analysis can establish links between different concepts in the data and aid conceptual generalisability by illustrating how findings from one context are transferable to other contexts.[12,46,47] Theoretical models were adopted in the included studies for two purposes. First, researchers of some studies intended to develop a context-specific PSC survey questionnaire based on the PSC dimensions of an already established one. For example, both Zhu *et al.* and Wang *et al.* mentioned that the HSOPSC was widely used in China to evaluate PSC; however, they thought that the PSC dimensions of this tool should be indigenised.[22,27] Therefore, they used the HSOPSC model as an analytical tool in their qualitative inquiry in order to create a model applicable to the Chinese setting.[22,27] Second, theoretical models were adopted when data could fit in a particular pre-existing theoretical model. For example, Ridelberg *et al.* conducted a qualitative study to identify facilitators and barriers for patient safety in a Swedish hospital setting and adopted Vincent's model after data analysis since the data aligned with this model.[33]

Another limitation noted in this review's studies is that they were highly dependent on interviews and focus groups for data collection. While these techniques are good for exploring individual thoughts, experiences and shared idea, they have been criticised for being subjective—where participants can filter information before sharing it with the researchers. Other qualitative approaches, such as an observational approach, may be useful in exploring actions and verbal communication and for gathering useful contextual data.[12] For example, Vaismoradi *et al.* used observations to gain a better understanding and interpretation of nursing leadership in medical and surgical wards.[24]

Interestingly, qualitative studies seemed less prevalent in some contexts. For example, no qualitative or mixed methods studies were identified from the Gulf Corporation Council countries. However, Elmontsri *et al.* reported that the HSOPSC survey tool was adopted in 18 studies conducted in different Arabic countries from 2005–2015.[48] They also found that non-punitive response to errors and communication openness were problematic and impacted negatively on adverse events.[48] Qualitative approaches would be appropriate to explore the reasons behind these obstacles.[49]

These findings suggest that the focus of PSC research is on the healthcare providers and managers and not

Table 3: Factors influencing patient safety culture[22,24–33,35–38]

Categories	Quotation (speaker)
Staffing	
Staff number	"It is difficult to practice safely and take care of every detail of your work, when you deliver care to many patients."(Nurse)[24]
Staff awareness and commitment to patient safety	"I have undertaken education in patient safety. It was a course that I requested when I resigned as manager three years ago because I wanted to know a bit more about it." (Nurse)[33]
Staff competency	"The fact is that I just did not know what to do. These things are quite rare in your career." (Nurse)[26]
Job satisfaction	"A worker who is not well paid, at times he will say 'but why I have to spend all my time at work and it doesn't change anything in my monthly salary?" (Provider)[35]
Staff turnover	"Recently, many registered nurses have left because they have felt that there is too much pressure." (Nurse)[32]
Staff compliance with policies and procedures	"We [nurses] are supposed to double-check for high-alert medications, but it is not always done." (Nurse)[25]
Communication	
Teamwork	"In my opinion patient safety is improved by teamwork/collaboration between healthcare professionals." (Nurse)[28]
Healthcare provider- Patient relation ship	"I hope doctors or nurses alleviate my anxieties and doubts with their professional answers and psychological support." (Patient)[27]
Handover	"The first doctor that had seen Vance had gone away for the weekend and we assumed erroneously that a handover had been done, that this doctor would be taking over Vance's care, but he didn't even know Vance was there. There was no handover." (Patient)[36]
Feedback about error	"In this unit, we discuss ways to prevent errors from happening again." (Nurse)[22]
Power conflict	"You will never be able to manage [the senior nurses]." (Nurse)[35]
Non-human resources	
Availability of process and policies supporting patient safety	"We have a checklist now and we check every single patient on the ward is safe." (medical surgical ward group)[30]
Equipment availability	"Sometimes gloves and syringes which seems simple were not found when we try to give medication." (Nurse)[28]
Safety of physical environment	"We have a laminated grip flooring. They can still have a fall but it is much better for them." (Medical ward group)[30]
Availability of supporting technology	"This computer system that we now have here makes it easier to find information, I think, and that is also part of patient safety." (Nurse)[33]
Appropriateness of medical records	"Major security problems with complicated electronic health systems." (Doctor)[31]
Organisational factors	
Staff training and continuous education	"I just did not know what to do. These things are quite rare in your career, nobody tells you what to do when things go wrong." (Nurse)[26]
Openness	"Safety things are still seen as a burden, and it is not cool to speak up about them." (General surgery resident)[37]
Leadership supervision and inpatient safety process engagement	"They (supervisors) have just ordered us to follow the protocols, but no one checks on us to see if we are doing so." (Nurse)[25]
Non-punitive response to errors	"A person who makes mistakes often is incompetent and should be fired." (Manager)[27]
Staff participation in decision making	"You have to listen to the people involved in the process. We have to raise issues and this can only happen if we listen to people who provide direct care." (Nurse)[38]
Competing interest between public health and clinical services	"The government usually emphasises the importance of public health in words but not in actions." (Manager)[27]
Patient-related factors	
Patient volume	"Services where volume is the highest, that is where things will fall through the cracks." (General surgery resident)[37]
Underlying illness	"In my opinion, I have to look at the conditions of all the patients; separate rooms should be considered for patients who have the potential to disturb others." (Nurse)[29]
Patient awareness and literacy	"Now young parents are well educated and usually learn relevant information on the Internet before seeking care for their babies." (Provider)[27]

on the patient. When patients were included in studies, they demanded that healthcare providers create a closer relationship and communicate better; these concerns were not indicated by healthcare providers in the same studies. Thus, patients appear to have a different perspective on PSC compared to providers. For example, Davis *et al*.'s study evaluated the reporting of adverse event and medical errors that occurred during hospital stays.[50] They found that patients' (n = 80) reports of medical errors were not found in medical records.[50]

Following the example of King and Coldham, the current authors tentatively propose that patients should be included in future PSC studies to provide a broader perspective on the issue.[51]

Quantitative and qualitative methods seek to address different questions and, therefore, one method cannot be superior to the other. However, a vast body of literature highlights the utility of mixed methods research in healthcare. Future studies of PSC should consider using both qualitative and quantitative approaches simultaneously or sequentially to gain a comprehensive understanding of PSC in a particular healthcare organisation.[21,23,25]

While narrative synthesis helped to answer the current research questions, it had two limitations. First, only empirical studies written in English were included. Relevant data from non-English articles could provide valid input to this narrative synthesis. However, English is common in the scientific field and is nowadays used in the vast majority of published studies. Second, the search was limited to electronic databases. Literature was not searched by hand and authors were not contacted to seek out unpublished works. Although this approach may have limited the number of studies included in this review, yet all included studies have been published in peer-reviewed journals.

Conclusion

This review focused on a relatively small number of studies using qualitative approaches to explore PSC in hospital settings. Most studies lacked conceptual or theoretical frameworks. Despite this finding, there were many commonalities across diverse studies. Future studies should adopt a mixed methods approach to help gain knowledge of PSC in everyday workplaces. Such an approach would improve understanding of staff knowledge, attitude toward patient safety and help identify strategies to enhance patient safety.

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