



Systematic Review

Patient Safety Culture Instrument: A Systematic Review

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ABSTRACT

The instruments of Hospital patient safety culture are connected to organizational culture aspects. This study aimed to review and synthesize knowledge and explore various instruments to measure hospital patient safety culture. Articles from 2018 to 2022 were selected from Web of Science, Sage Journals, SpringerLink, and Scopus. The terms used were patient safety culture, safety culture, clinical supervision, web-based, electronic, and technology. The selection procedure was managed by PRISMA 2020, and the inclusion and exclusion criteria were determined using PICO. 2.120 articles were found after duplicates were eliminated and the titles, abstracts, and keywords began to be checked. After excluding an irrelevant study, only ten publications remained on assessing patient safety culture in hospitals. The prevailing definitions highlight patient safety culture as managing values, beliefs, attitudes, and competencies within a healthcare organization, influencing member behavior and the approach to errors, reporting, and learning. It aims to reduce and prevent unintended patient harm through various mechanisms and tools tailored to fit each institution's values. Paper-based or electronic-based instruments have advantages because they were created and utilized in numerous investigations. The survey response rate is also influenced by how healthcare personnel view the culture surrounding patient safety. This research is crucial for hospitals and the broader healthcare community as it equips them with the knowledge and tools needed to cultivate a culture of patient safety, reduce errors, and ultimately protect the well-being of patients. It addresses the evolving healthcare landscape, emphasizing customization, technology, and staff involvement in pursuing safer healthcare environments.

Keywords: Hospital, instruments, patient safety culture

INTRODUCTION

Patient safety has become a worldwide health issue and a prominent global theme impacting patients across diverse healthcare environments, especially in recent years. Patient safety has gained prominence as a healthcare subject due to the complexity of healthcare systems and the increased unsafe care delivered by different health service providers. It is influenced by healthcare institutions'



dedication, approach, and expertise in delivering safe care. Its evolution is heavily influenced by the actions of health professionals, who are influenced by organizational management. Its growth is heavily influenced by the performance of health professionals, who are in turn driven by organizational management (Campelo et al., 2021; de Souza et al., 2019; Kakemam et al., 2022; Sharp et al., 2019; Tavares et al., 2021).

Hospital safety culture tools can be employed to assess organizational culture aspects, impacting clinical quality and patient safety outcomes (Palmieri et al., 2020). The HSOPSC (Hospital Survey on Patient Safety Culture) has been successfully utilized in Critical Access Hospitals to strategize, implement, and evaluate targeted patient safety enhancements (Piper et al., 2018). The Hospital Survey on Patient Safety Culture (HSOPSC) is a globally utilized assessment tool in various languages (Palmieri et al., 2020). Incident reporting is the primary method to generate alert signals for delivering quality healthcare (Varallo et al., 2018). Creating a patient safety culture in hospitals is a demanding and intricate task that requires strong leadership and the dedicated commitment of employees. An organization's culture comprises its employees' conventions, values, behavioural patterns, rituals, and traditions. Safety culture, in particular, refers to the importance a company places on the safety and health of its workforce through its rules, processes, and practices, as well as a commitment to provide the resources needed to address safety concerns appropriately (Oliveira et al., 2020; Tavares et al., 2021).

According to the Institute of Medicine, patient safety involves preventing harm resulting from errors in action or inaction. On the other hand, an organization's safety culture results from the values, attitudes, perceptions, skills, and behaviors of individuals and groups. This culture determines the organization's commitment, style, and health and safety management skills. Healthcare systems must create an environment that reduces accidental injuries to ensure patients are safe. This action is done through operational processes and procedures that make mistakes less likely and make it easier to catch them before they happen. Safety culture is employees' long-term assumptions, values, beliefs, and actions about how open the organization is to finding mistakes and learning from them. Safe treatment positively affects death, illness, the length of time someone stays in the Hospital, and the cost. Patient safety depends a lot on how healthcare providers feel about their jobs. Those with more positive attitudes tend to have higher levels of patient safety (Abu-El-Noor et al., 2019; de Souza et al., 2019; Jones et al., 2019; Kakemam et al., 2022).

This healthcare system includes intangible features impacted by professional leadership, supervision, and feedback. Healthcare providers acknowledge their critical role in regularly monitoring procedures and implementing best practices for continual improvement (Kakemam et al., 2022). Several challenges hinder the establishment of a safety culture, such as a lack of inventiveness, poor professional and moral competence, limitations in judgment and clinical decision-making, inadequate knowledge and abilities in care management, and a lack of willingness to increase professional competencies. Conversely, experienced nurses can jeopardize patients' safety due to overconfidence, resistance to change, and outdated competencies (Farokhzadian et al., 2018). Insufficient communication during handover is the primary reason for Hospital catastrophic or sentinel events. As a critical safety and quality concern, health service regulators and providers actively address communication at handover. Enhancing communication, teamwork, and management support culture can significantly improve department accountability during handover (Piper et al., 2018). This study evaluates the efficacy of patient safety culture by considering the instrument used and the response rate, whether paper-based or electronic-based.

REVIEW METHOD

A systematic review followed the updated guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA 2020) (Page et al., 2021). Articles from 2018 to 2022 were chosen from Web of Science, Sage Journals, SpringerLink, and Scopus. The terms used were *patient safety culture*, *safety culture*, *clinical supervision*, *web-based*, *electronic*, and *technology*.

Table 1. Inclusion and exclusion criteria

| PICOS | Inclusion Criteria | Exclusion criteria |
|-------------------------|---|---|
| Population | Healthcare workers in Hospital | Students, lecturers, or healthcare workers other than Hospital (e.g., Homecare) |
| Interventions | Patient safety culture survey | Other than. |
| Comparators | None. | None. |
| Outcomes | Primary focus: patient safety culture | Studies focus on the disease or events |
| Study design | A quantitative study, qualitative study, and mixed method | Feature studies, Article reviews, and case reports |
| Publication Type | Studies published in English in databases chosen from 2018 – 2022 and open access | Single site reports |

Articles will be eliminated if they were conducted at home care or elsewhere through systematic reviews, interviews, or editorial reviews. They do not discuss or state the instrument employed. PRISMA 2020 guides the selection process into three steps: identification, screening eligibility, and included study. We found 2.120 papers, deleted any duplicates, and began screening titles, abstracts, and keywords. Fifty-five publications were reviewed for retrieval, and the irrelevant study was eliminated before assessing full-text articles for eligibility based on inclusion and exclusion criteria. Reference, study design, participants, survey mode/response rate, and outcome were retrieved from the included papers. The selected publications on patient safety culture, paper-based instruments, and electronic-based devices were analyzed and discussed.

REVIEW RESULT

Literature Search Results

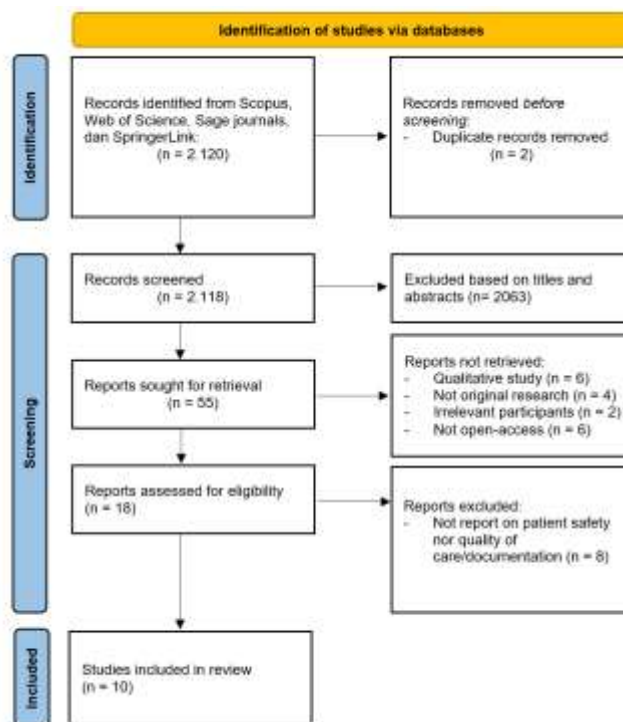


Figure 1 PRISMA Flow chart study's selection

In September 2022, searches of the designated databases (Web of Science, Sage Journals, SpringerLink, and Scopus) yielded 55 relevant papers that had been filtered, with just 10 articles remaining based on specific inclusion and exclusion criteria. (ALFadhlah et al., 2021; Ali et al., 2018; Carvalho et al., 2019; Fassarella et al., 2018; Galvao et al., 2018; Kakemam et al., 2021; Koike et al., 2022; Skoogh et al., 2022; Sørskår et al., 2018; TEREANU et al., 2018) were included in the study.

The articles used a cross-sectional study design (ALFadhlah et al., 2021; Ali et al., 2018; Carvalho et al., 2019; Fassarella et al., 2019; Galvao et al., 2018; Kakemam et al., 2021; Skoogh et al., 2022; TEREANU et al., 2018), a mixed method (Koike et al., 2022), and a web-based survey design (Sørskår et al., 2018). Published in 2018 (Ali et al., 2018; Fassarella et al., 2018; Galvao et al., 2018; Sørskår et al., 2018; TEREANU et al., 2018), 2019 (Carvalho et al., 2019), 2021 (ALFadhlah et al., 2021; Kakemam et al., 2021), and 2022 (Koike et al., 2022; Skoogh et al., 2022). More than 50% of the articles have done surveys using a paper-based questionnaire with a response rate ranging from 34% to 82% (ALFadhlah et al., 2021; Ali et al., 2018; Fassarella et al., 2018; Kakemam et al., 2021; Skoogh et al., 2022; TEREANU et al., 2018), and the other using an electronic-based questionnaire with a response rate ranging from 9,5% to 95% (Carvalho et al., 2019; Galvao et al., 2018; Koike et al., 2022; Sørskår et al., 2018). The participants of the articles consisted of employees including healthcare professionals (ALFadhlah et al., 2021; Ali et al., 2018; Carvalho et al., 2019; Galvao et al., 2018; Skoogh et al., 2022; Sørskår et al., 2018; TEREANU et al., 2018), only nurses (Fassarella et al., 2018; Kakemam et al., 2022), and reports (Koike et al., 2022).

Patient Safety Culture Perspective

Establishing a patient safety culture is crucial for improving patient safety and preventing errors. Positive safety cultures are characterized by professional communication, mutual trust, and shared beliefs in safety importance (ALFadhlah et al., 2021; Carvalho et al., 2019; Kakemam et al., 2021). Patient safety culture involves managing values, attitudes, behaviors, and processes to prevent unintended patient harm (Carvalho et al., 2019; Kakemam et al., 2021; Skoogh et al., 2022; TEREANU et al., 2018). Healthcare-related adverse events arise within healthcare organizations due to the complexity of healthcare systems, especially in hospitals. The patient safety culture in hospitals relies on open communication, mutual trust, information sharing, organizational learning, shared safety beliefs, strong leadership, and non-punitive approaches to dealing with errors and adverse events (Kakemam et al., 2021; Koike et al., 2022)

Patient safety reporting systems are standard in most institutions in developing and developed countries. However, fully implementing and establishing them as learning systems remains a significant challenge. Survey tools offer a suitable approach to enhance patient safety (Koike et al., 2022; Sørskår et al., 2018). Safety culture evaluations in healthcare organizations aim to understand professionals' perspectives on patient safety, identify strengths and weaknesses, and compare outcomes within units or other institutions (Fassarella et al., 2018). The patient safety culture reflects the attitudes and actions of an institution's employees and its overall commitment to safety. Hospital assessments of patient safety culture help identify how their systems and procedures impact patient outcomes (Ali et al., 2018; Galvao et al., 2018).

The Hospital Survey on Patient Safety Culture (HSOPSC) is widely used to assess patient safety culture, covering 12 dimensions. These dimensions include teamwork, supervisor/manager support, organizational learning, management commitment, overall perceptions, feedback and communication about errors, and communication openness. The survey's international popularity is due to its validation and utilization in various settings across different geographic locations, endorsed by the Agency for Healthcare Research and Quality (AHRQ) (Ali et al., 2018; Fassarella et al., 2018; Kakemam et al., 2021; Skoogh et al., 2022; Sørskår et al., 2018; TEREANU et al., 2018).

Patient Safety Culture Instruments

The evolution of the patient's safety culture assessment instrument has witnessed a significant transformation from traditional paper-based questionnaires to modern digital formats, reflecting the advancement of technology and introducing several advantages for users. Healthcare researchers and organizations initially relied on paper-based surveys to assess patient safety culture. However, this method had limitations, such as concerns about response rates and confidentiality, environmental impact and data handling challenges. However, the healthcare industry recognized these shortcomings and transitioned to electronic and web-based instruments like the Hospital Survey on Patient Safety Culture (HSOPS). This shift brought several benefits, including increased efficiency through streamlined data collection, reduced bias with mandatory responses and sequential question presentation, enhanced confidentiality by allowing anonymous online participation, simplified data management through automated recording, and improved accessibility for healthcare professionals, even those not physically present at the hospital.

Before employing the HSOPS, researchers assessed its validity and reliability using Cronbach's alpha and refined it by excluding low-performing questions, resulting in a more concise instrument (Galvao et al., 2018). The Agency for Healthcare Research and Quality (AHRQ)

developed the Medical Office Survey on Patient Safety Culture, comprising 38 items in ten composites for primary healthcare settings, with adaptability to address technical, linguistic, or cultural concerns (ALFadhlah et al., 2021).

The foundational step in establishing a robust safety culture is evaluating hospital patient safety culture, often achieved through paper-based questionnaires to maximize responses. This process includes obtaining informed consent through information letters and ensuring anonymous return of questionnaires in pre-printed envelopes to minimize bias (ALFadhlah et al., 2021; Ali et al., 2018; Fassarella et al., 2018; Kakemam et al., 2021; Skoogh et al., 2022; TEREANU et al., 2018). Concerns regarding questionnaire distribution by hospital leaders may arise (TEREANU et al., 2018).

Inspired by other industries like aviation, the patient safety incident reporting system plays a pivotal role in improving patient safety and healthcare systems. Koike et al. (2022) focused on deploying an electronic reporting system at Fujita Health University Hospital (FHUH) (Koike et al., 2022), emphasizing the environmental drawbacks and data entry challenges associated with paper-based questionnaires. A shift towards email and website distribution methods was adopted to address these issues, complemented by posters and folders (ALFadhlah et al., 2021; Sørskår et al., 2018). The research became practical by using a combination of email and website distribution methods. Invitations through posters and folders were sent to professionals, and a trained team collected responses using mobile devices for easy access to the survey (Carvalho et al., 2019). Furthermore, tablet-based questionnaires, like those using KoboToolbox on Samsung Tab-3 SM-T110, were utilized to protect confidentiality and ensure data accuracy. Sequential question presentation and mandatory responses reduced measurement bias, and rigorous testing ensured questionnaire comprehension and interface suitability (Galvao et al., 2018).

This multifaceted approach to assessing and enhancing patient safety culture underscores the continuous effort to refine and optimize methods, ultimately contributing to safer healthcare environments.

DISCUSSION

Assessing patient safety culture is a crucial element of healthcare quality improvement, and understanding the factors influencing patient safety culture instruments' evolution is vital for optimizing patient care and safety (Amiri et al., 2018; Jabarkhil et al., 2021; Khoshakhlagh et al., 2019). Positive patient safety culture perceptions have been linked to increased event reporting and improved overall patient safety. However, several factors impact patient safety culture and reporting differently, including staff positions, teaching status, and geographic regions (Azyabi et al., 2022; Jang et al., 2021).

Empowering healthcare professionals, particularly nurses and managers, is pivotal in enhancing patient safety culture, but addressing punitive responses to errors remains challenging (Amiri et al., 2018). Positive patient safety culture perceptions were associated with higher event reporting frequency and overall patient safety perceptions. Factors like staff position, teaching status, and geographic region impacted patient safety culture, event reporting frequency, and overall patient safety perceptions differently (Azyabi et al., 2022). Many healthcare employees feel their mistakes are documented and held against them, leading to underreporting of medical errors. Creating an environment that encourages error reporting and prioritizes safety is crucial for improving patient care (Jabarkhil et al., 2021). Leadership commitment to safety culture profoundly

impacts patient safety. Organizations with committed leadership prioritize safe healthcare practices, leading to improved patient safety outcomes (Khoshakhlagh et al., 2019).

Elliott and Fry (2021) conducted a descriptive survey with nurses and midwives in Sydney, Australia, using web and paper-based methods. Despite the instruments being designed for evaluating respondents' status over time, the response rate was 15% (505 responses from 3272 potential nurses and midwives) (Elliott & Fry, 2021). The use of patient safety culture surveys, such as the Hospital Survey on Patient Safety Culture (HSOPSC), has been instrumental in facilitating the planning, implementation, and evaluation of patient safety interventions, particularly in Critical Access Hospitals (Piper et al., 2018; Wagner et al., 2019). However, the transition from paper-based to digital instruments has been challenging. Digital surveys, while efficient, may result in lower response rates due to technical issues or concerns about email-based distribution (ALFadhlah et al., 2021; Sørskår et al., 2018). In contrast, paper-based surveys, distributed with care and reminders by chief managers, have shown better response rates (Skooch et al., 2022). Privacy concerns may arise when head nurses distribute paper surveys (TEREANU et al., 2018).

Understanding the dynamics of the patient's safety culture assessment instruments and their implementation challenges is vital for improving healthcare quality and patient safety. Factors such as leadership commitment, empowerment of healthcare professionals, and the mode of survey distribution play significant roles in shaping patient safety culture and reporting practices. Addressing these challenges can lead to more effective patient safety interventions and ultimately enhance the standard of care in healthcare settings.

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CONCLUSION AND RECOMMENDATIONS

HSOPS and MSOPS were widely employed to assess patient safety culture. With its extensive use in various studies, both paper and electronic versions of the instrument offer benefits. The Hospital and study participants determine the choice between paper-based and electronic data collection. Moreover, healthcare professionals' perspectives on patient safety culture can impact the survey response rate. The study recommends using HSOPS and MSOPS as reliable instruments to assess patient safety culture. Hospitals and participants can choose paper-based or electronic data collection methods as per their preference. Improving the survey response rate involves addressing healthcare professionals' perspectives on patient safety culture, as it influences their willingness to participate.

REFERENCES

- Abu-El-Noor, N. I., Abu-El-Noor, M. K., Abuowda, Y. Z., Alfaqawi, M., & Böttcher, B. (2019). Patient safety culture among nurses working in Palestinian governmental hospital: A pathway to a new policy. *BMC Health Services Research*, *19*(1), 1–11. <https://doi.org/10.1186/s12913-019-4374-9>
- ALFadhlah, T., Al Mudaf, B., Alghanim, H. A., Al Salem, G., Ali, D., Abdelwahab, H. M., & Elamir, H. (2021). Baseline assessment of patient safety culture in primary care centres in Kuwait: a national cross-sectional study (*BMC Health Services Research*, (2021), 21, 1,

- (1172), 10.1186/s12913-021-07199-1). *BMC Health Services Research*, 21(1), 1–18. <https://doi.org/10.1186/s12913-021-07280-9>
- Ali, H., Ibrahim, S. Z., Al Mudaf, B., Al Fadal, T., Jamal, D., & El-Jardali, F. (2018). Baseline assessment of patient safety culture in public hospitals in Kuwait. *BMC Health Services Research*, 18(1). <https://doi.org/10.1186/s12913-018-2960-x>
- Amiri, M., Khademian, Z., & Nikandish, R. (2018). The effect of nurse empowerment educational program on patient safety culture: A randomized controlled trial. *BMC Medical Education*, 18(1). <https://doi.org/10.1186/s12909-018-1255-6>
- Azyabi, A., Karwowski, W., Hancock, P., Wan, T. T. H., & Elshennawy, A. (2022). Assessing Patient Safety Culture in United States Hospitals. *International Journal of Environmental Research and Public Health*, 19(4). <https://doi.org/10.3390/ijerph19042353>
- Campelo, C. L., Nunes, F. D. O., Silva, L. D. C., Guimaraes, L. F., de Sousa, S. D. A., & Paiva, S. D. (2021). Patient safety culture among nursing professionals in the intensive care environment. *REVISTA DA ESCOLA DE ENFERMAGEM DA USP*, 55. <https://doi.org/10.1590/S1980-220X2020016403754> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Carvalho, P. A., Laundos, C. A. S., Juliano, J. V. S., Casularin, L. A., & Gottens, L. B. D. (2019). Assessment of safety culture in a public hospital in the Federal District, Brazil. *REVISTA BRASILEIRA DE ENFERMAGEM*, 72, 252–258. <https://doi.org/10.1590/0034-7167-2017-0716> WE - Emerging Sources Citation Index (ESCI)
- de Souza, M. M., Dal Ongaro, J., Lanes, T. C., Andolhe, R., Kolankiewicz, A. C. B., & Magnago, T. (2019). Patient safety culture in the Primary Health Care. *REVISTA BRASILEIRA DE ENFERMAGEM*, 72(1), 27–34. <https://doi.org/10.1590/0034-7167-2017-0647> WE - Emerging Sources Citation Index (ESCI)
- Elliott, R., & Fry, M. (2021). Psychological capital, well-being, and patient safety attitudes of nurses and midwives: A cross-sectional survey. *Nursing and Health Sciences*, 23(1). <https://doi.org/10.1111/nhs.12808>
- Farokhzadian, J., Dehghan Nayeri, N., & Borhani, F. (2018). The long way ahead to achieve an effective patient safety culture: Challenges perceived by nurses. *BMC Health Services Research*, 18(1), 1–13. <https://doi.org/10.1186/s12913-018-3467-1>
- Fassarella, C. S., Camerini, F. G., Henrique, D. D., de Almeida, L. F., & Figueiredo, M. D. B. (2018). Evaluation of patient safety culture: comparative study in university hospitals. *REVISTA DA ESCOLA DE ENFERMAGEM DA USP*, 52. <https://doi.org/10.1590/S1980-220X2017033803379> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Fassarella, C. S., da Silva, L. D., Camerini, F. G., & Figueiredo, M. (2019). Nurse safety culture in the services of a university hospital. *REVISTA BRASILEIRA DE ENFERMAGEM*, 72(3), 767–773. <https://doi.org/10.1590/0034-7167-2018-0376> WE - Emerging Sources Citation Index (ESCI)
- Galvao, T. F., Lopes, M. C. C., Oliva, C. C. C., Araujo, M. E. D., & Silva, M. T. (2018). Patient safety culture in a university hospital. *REVISTA LATINO-AMERICANA DE ENFERMAGEM*, 26. <https://doi.org/10.1590/1518-8345.2257.3014> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Jabarkhil, A. Q., Tabatabaee, S. S., Jamali, J., & Moghri, J. (2021). Assessment of patient safety culture among doctors, nurses, and midwives in a public hospital in Afghanistan. *Risk Management and Healthcare Policy*, 14. <https://doi.org/10.2147/RMHP.S292193>
- Jang, S. J., Lee, H., & Son, Y. J. (2021). Perceptions of patient safety culture and medication error reporting among early-and mid-career female nurses in South Korea. *International Journal of Environmental Research and Public Health*, 18(9). <https://doi.org/10.3390/ijerph18094853>
- Jones, K. J., Crowe, J., Allen, J. A., Skinner, A. M., High, R., Kennel, V., & Reiter-Palmon, R. (2019). The impact of post-fall huddles on repeat fall rates and perceptions of safety culture:

- A quasi-experimental evaluation of a patient safety demonstration project. *BMC Health Services Research*, 19(1), 1–14. <https://doi.org/10.1186/s12913-019-4453-y>
- Kakemam, E., Albelbeisi, A. H., Davoodabadi, S., Ghafari, M., Dehghandar, Z., & Raeissi, P. (2022). Patient safety culture in Iranian teaching hospitals: baseline assessment, opportunities for improvement and benchmarking. *BMC Health Services Research*, 22(1), 1–10. <https://doi.org/10.1186/s12913-022-07774-0>
- Kakemam, E., Gharaee, H., Rajabi, M. R., Nadernejad, M., Khakdel, Z., Raeissi, P., & Kalhor, R. (2021). Nurses' perception of patient safety culture and its relationship with adverse events: a national questionnaire survey in Iran. *BMC NURSING*, 20(1). <https://doi.org/10.1186/s12912-021-00571-w> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Khoshakhlagh, A. H., Khatooni, E., Akbarzadeh, I., Yazdanirad, S., & Sheidaei, A. (2019). Analysis of affecting factors on patient safety culture in public and private hospitals in Iran. *BMC Health Services Research*, 19(1). <https://doi.org/10.1186/s12913-019-4863-x>
- Koike, D., Ito, M., Horiguchi, A., Yatsuya, H., & Ota, A. (2022). Implementation strategies for the patient safety reporting system using Consolidated Framework for Implementation Research: a retrospective mixed-method analysis. *BMC Health Services Research*, 22(1), 1–7. <https://doi.org/10.1186/s12913-022-07822-9>
- Oliveira, P. C., dos Santos, O. P., Villela, E. F. D., & Barros, P. D. (2020). Patient safety culture in home care service. *REVISTA DA ESCOLA DE ENFERMAGEM DA USP*, 54. <https://doi.org/10.1590/S1980-220X2018040703586> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Page, M. J., Moher, D., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., ... McKenzie, J. E. (2021). PRISMA 2020 explanation and elaboration: updated guidance and exemplars for reporting systematic reviews. *BMJ*, n160. <https://doi.org/10.1136/bmj.n160>
- Palmieri, P. A., Leyva-Moral, J. M., Camacho-Rodriguez, D. E., Granel-Gimenez, N., Ford, E. W., Mathieson, K. M., & Leafman, J. S. (2020). Hospital survey on patient safety culture (HSOPSC): a multi-method approach for target-language instrument translation, adaptation, and validation to improve the equivalence of meaning for cross-cultural research. *BMC NURSING*, 19(1). <https://doi.org/10.1186/s12912-020-00419-9> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Piper, D., Lea, J., Woods, C., & Parker, V. (2018). The impact of patient safety culture on handover in rural health facilities. *BMC Health Services Research*, 18(1), 1–13. <https://doi.org/10.1186/s12913-018-3708-3>
- Sharp, L., Rannus, K., Olofsson, A., Kelly, D., Oldenmenger, W. H., Crombez, P., Jahn, P., Knoetgen, G., Lanskshear, A., Wiseman, T., Wydenkeller, G., & Grp, E. Rec. (2019). Patient safety culture among European cancer nurses-An exploratory, cross-sectional survey comparing data from Estonia, Germany, Netherlands, and United Kingdom. *JOURNAL OF ADVANCED NURSING*, 75(12), 3535–3543. <https://doi.org/10.1111/jan.14177> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Skoogh, A., Bååth, C., & Hall-Lord, M. L. (2022). Healthcare professionals' perceptions of patient safety culture and teamwork in intrapartum care: a cross-sectional study. *BMC Health Services Research*, 22(1), 1–11. <https://doi.org/10.1186/s12913-022-08145-5>
- Sørskår, L. I. K., Abrahamsen, E. B., Olsen, E., Sollid, S. J. M., & Abrahamsen, H. B. (2018). Psychometric properties of the Norwegian version of the hospital survey on patient safety culture in a prehospital environment 11 Medical and Health Sciences 1117 Public Health and Health Services. *BMC Health Services Research*, 18(1), 1–14. <https://doi.org/10.1186/s12913-018-3576-x>
- Tavares, L. T., Silva, G. S. D., Macedo, L. L. D., Guimaraes, M. A. P., Albergaria, T. F. D., & Pinto,

- E. P. (2021). EVALUATION OF PATIENT SAFETY CULTURE IN THE PEDIATRIC INTENSIVE THERAPY UNIT IN A PUBLIC HOSPITAL. *REVISTA DE PESQUISA-CUIDADO E FUNDAMENTAL ONLINE*, 13, 974–981. <https://doi.org/10.9789/2175-5361.rpcfo.v13.9739> WE - Emerging Sources Citation Index (ESCI)
- TEREANU, C., Alan SMITH, S., GHELASE, M. S., SAMPIETRO, G., MOLNAR, A., MORARU, D., DRAGOESCU, A., FURTUNESCU, F. L., STANESCU, C., GAVRILA, O. A., PATRASCU, A., GOLLI, A. L., & DRAGOMIR, M. (2018). Psychometric Properties of the Romanian Version of the Hospital Survey on Patient Safety Culture (HSOPS). *MAEDICA – a Journal of Clinical Medicine*, 13(1). <https://doi.org/10.26574/maedica.2018.13.1.34>
- Varallo, F. R., Passos, A. C., de Nadai, T. R., & Mastroianni, P. D. (2018). Incidents reporting: barriers and strategies to promote safety culture. *REVISTA DA ESCOLA DE ENFERMAGEM DA USP*, 52. <https://doi.org/10.1590/S1980-220X2017026403346> WE - Science Citation Index Expanded (SCI-EXPANDED) WE - Social Science Citation Index (SSCI)
- Wagner, A., Rieger, M. A., Manser, T., Sturm, H., Hardt, J., Martus, P., Lessing, C., & Hammer, A. (2019). Healthcare professionals' perspectives on working conditions, leadership, and safety climate: A cross-sectional study. *BMC Health Services Research*, 19(1). <https://doi.org/10.1186/s12913-018-3862-7>

APPENDIX 1. Studies result in table

| No | Reference | Study Design | Participant | Survey mode/response rate | Result |
|----|---------------------------|--------------------------------------|----------------|--|---|
| 1 | (ALFadhahah et al., 2021) | A cross-sectional quantitative study | 6602 employees | MOSPC is a self-administered questionnaire for patient safety culture, administered in a paper-based format/ 78.7% | Strengthening patient safety culture is essential for these healthcare facilities to improve the quality and security of their services. The findings of the study can serve as a guide for national policy regarding the establishment of regulatory frameworks for patient safety measures. |
| 2 | (Sørskår et al., 2018) | A web-based survey design | 1387 employees | In Norway, the HSOPSC questionnaire was conducted using the web-based tool SurveyXact, with a combined response rate of 27% from the total population (26% from GEMS and 55% from HEMS). | The study led to the development of the Prehospital Survey on Patient Safety Culture (PreHSOPSC), a validated tool for evaluating the patient safety climate in EMS settings. Furthermore, several outcome dimensions showed strong predictive power, indicating that various aspects of the safety climate significantly influenced employees' perceptions of patient safety and safety-related attitudes. |
| 3 | (Kakemam et al., 2021) | A cross-sectional study | 2295 nurses | Data was gathered through the printed Hospital Survey of Patient Safety Culture (HSOPSC) questionnaires. The positive response rate for overall patient safety culture was 34.1%, with dimensions ranging from 20.9% to 43.8%. | Nurses had an unfavorable opinion of the patient safety culture notwithstanding the observed frequency of adverse occurrences. The study demonstrated a relationship between nurses' perceptions of patient safety culture and the frequency of adverse events, with higher perception levels being associated with lower AE rates. To improve patient safety culture and decrease adverse events, managers can employ tactics such as promoting adverse event reporting and giving training. |

| No | Reference | Study Design | Participant | Survey mode/response rate | Result |
|----|---------------------------|---|---|---|---|
| 4 | (Koike et al., 2022) | A mixed-method analysis | 110,058 reports | FHUH's 2004 electronic reporting systems were analyzed using the Consolidated Framework for Implementation Research (CFIR) by examining internal documents. The number of reports was analyzed using staff information and hospital volume. | There was a favorable association between the number of implemented methods and the creation of a reporting culture at FHUH during the study period. The deployment of a reporting system for patient safety relies on the intensity of suitable techniques. The implementation methodology proved useful for analyzing the impact of patient safety efforts on the safety culture. |
| 5 | (Carvalho et al., 2019) | A cross-sectional and descriptive study | 358 professionals participated in the study | The electronic format of the Safety Attitudes Questionnaire was utilized/9.5% | The outcomes fall short of the recommended score of 75, which indicates a safe working environment. We recommend implementing policies to encourage a safety culture and conducting new research using samples representative of all worker groups. |
| 6 | (TEREANU et al., 2018) | A qualitative cross-sectional study | 969 participants | Paper surveys using The AHRQ HSOPS questionnaire/82% | The respondents' broader cultural traits should be considered when interpreting and benchmarking patient safety culture. |
| 7 | (Fassarella et al., 2018) | A cross-sectional study | 762 nurses | The AHRQ methodology was employed to compare the results of various culture composites using paper-based surveys, with a response rate of 62.5%. | "Management support for patient safety" was the factor with the highest significant difference between the studied institutions. The managers of the study hospitals may benefit from these data, enabling ongoing advancements. |

| No | Reference | Study Design | Participant | Survey mode/response rate | Result |
|----|-----------------------|-------------------------|------------------------------|--|---|
| 8 | (Galvao et al., 2018) | A cross-sectional study | 381 employees | The electronic questionnaire with the Portuguese version of HSOPS was prepared using the KoboToolbox software and accessed on Samsung Tab-3 SM-T110 tablets. Sequential disposal of questions and mandatory responses were set up to prevent data loss, achieving a 95% completion rate. | 36% of employees had a positive patient safety assessment in their work unit, while only 22% reported events in the past year. The study identified weaknesses in the Hospital's safety culture, particularly focusing on a culture of guilt. |
| 9 | (Skoogh et al., 2022) | A cross-sectional study | 184 healthcare professionals | The Swedish version of the Hospital Survey on Patient Safety Culture was employed, with a response rate of 50.4% using paper-based surveys. | The study demonstrates that perceptions of patient safety and teamwork in intrapartum care among healthcare personnel are influenced by their profession and the labor and delivery ward. Perceptions of teamwork have a substantial impact on patient safety overall. |
| 10 | (Ali et al., 2018) | A cross-sectional study | 12.092 employees | The HSOPSC paper-based survey was utilized/60.5% | This study represents the first substantial examination of patient safety culture in Kuwaiti public hospitals. While there are areas for improvement, the study identified several strengths in these hospitals. Enhancing patient safety culture is vital for improving the quality and safety of medical services. The study findings can guide and inform national strategies to strengthen the regulatory framework for patient safety practices. |