Safety Culture and Safety Climate in Health Professionals: Systematic Review

Sağlık Profesyonellerinde Güvenlik Kültürü ve Güvenlik İklimi: Sistematik Derleme

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ABSTRACT

One of the most basic human needs is security. Since health institutions are one of the places that every person visits at least once in their life, safety in these environments has a special importance. Therefore, this study was conducted with the aim of compiling studies addressing the themes of "safety culture" and "safety climate". Very few studies (n=10) have been reached due to reasons such as the lack of a current and still a clear definition, and the single dimension of security culture. In Türkiye, it has been observed that evaluating the safety culture with all its dimensions has been discussed in only three studies. In addition, within the scope of this study, seven studies conducted in different countries were examined. This systematic review is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA guidelines). In all studies, all health professionals or some occupational groups such as physicians, nurses and midwives were evaluated, and it was observed that physicians, those who work less than 40 hours a week and administrators have higher perceptions of safety culture. In almost all studies, it has been observed that the safety culture is at a moderate or good level, but it has been determined that the physical, spiritual and social dimensions are not considered together.

Keywords: Nurses, Physicians, Safety climate, Safety culture

ÖZ

İnsanın en temel ihtiyaçlarından biri güvenliktir. Sağlık kurumları her insanın hayatında en az bir kez uğradığı yerlerden biri olduğundan, bu ortamlarda güvenlik ayrı bir öneme sahiptir. Bu nedenle bu çalışma "güvenlik kültürü" ve "güvenlik iklimi" temalarına değinen çalışmaları derlemek amacı ile yapılmıştır. Güncel ve hala bir net bir tanımının olmaması, güvenlik kültürünün tek boyutta ele alınması gibi nedenlerle çok az çalışmaya (n=10) ulaşılmıştır. Türkiye'de güvenlik kültürünü tüm boyutlarıyla değerlendirmenin sadece üç çalışmada ele alındığı görülmüştür. Ayrıca bu çalışma kapsamında farklı ülkelerde yapılan yedi çalışma incelenmiştir. Bu sistematik inceleme, Sistematik İncelemeler ve Meta-Analizler için Tercih Edilen Raporlama Öğelerine (PRISMA yönergeleri) dayanmaktadır. Yapılan çalışmalarda olduğu gibi bu çalışmalarda da sağlık profesyonellerinin tamamı ya da hekim, hemşire, ebe gibi bazı meslek gruplarının değerlendirildiği, hekimlerin, hasta ile yakın temasta ve 40 saatin altında çalışanların, yöneticilerin güvenlik kültürü algılarının daha yüksek olduğu görülmüştür. Hemen tüm çalışmalarda güvenlik kültürünün orta ya da iyi düzeyde olduğu, ancak fiziksel, ruhsal ve sosyal boyutların birlikte ele alınmadığı belirlenmiştir.

Anahtar Kelimeler: Güvenlik kültürü, Güvenlik iklimi, Hemşireler, Hekimler

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INTRODUCTION

One of the most important concerns in a person's every day, personal, and professional lives is security.[1] They prioritized safety after meeting their most basic requirements.[2] in Maslow's hierarchy of requirements from 1943, [3] and Herzberg et al.'s dual component theory from 1959.[4] Health care is one of the areas where security is most crucial.

Health services have a direct impact on human life and are inherently risky and unpredictable. Mutual exposures increase the need of safety management in healthcare facilities as risks and uncertainties are shared by all parties involved in the service delivery process.[5] Patients may get care in a setting free of unneeded risks and dangers thanks to effective safety management, which also offers staff a safe place to work.[6]

Different terminologies are used to describe security in the health literature.[7,8,9] When the phrases are analyzed, it is feasible to claim that they may be categorized under three headings: employee safety, patient safety and workplace safety.[8,9,10]

Employee safety is defined as ensuring that all people working in the health industry are at the highest level possible in terms of their physical, mental, and social well-being; taking and putting into place protective measures to reduce any risks that the work may pose to the employee's health; and making sure that both the employee and the work are appropriate for each other.[9]

Patient safety refers to the security of all people admitted into medical facilities as patients, whereas workplace safety refers to the security of the services offered by the institution.[11,12]

The provision of environmental safety is without a doubt one of the fundamental components for guaranteeing both worker and patient safety from a holistic approach.[6] When the studies on ensuring the safety of working environments are examined in the literature, the terms "safety culture" and "safety climate" are encountered. The main purpose of safety culture, which can be used interchangeably despite their different meanings, is that all employees in an organization are aware of the dangers and accidents that may occur. In organizations that adopt safety culture, it is possible to talk about safety climate. Although it is stated that the first research in the literature on the concepts of "safety culture" or "safety climate" was conducted by Keenan, Kerr and Sherman (1951), it is seen that there is still no complete definition or consensus. However, IAEA (1991) defined safety culture as "a product of the values, attitudes, competencies and behavioral patterns of individuals and groups that determine the adequacy, style and persistence in implementation of an organization's health and safety programs".[13]

Seven priority areas have been identified to ensure safety in healthcare institutions. These are; (1) establishing protocols in line with those outlined in the National Patient Safety Program; (2) selecting and defining routines in the unit and evaluating these routines and protocols; (3) implementing waste disposal programs; (4) conducting joint educational activities with the pharmacy on issues such as similar-looking and similar-sounding drug names; (5) organizing evaluation meetings with managers to assess the implementation of safety strategies; (6) establishing closer links between management and staff by organizing feedback and meetings for all shifts; (7) defining a communication approach when errors occur.[10] In order to ensure a safe environment, consistent behavior is required in all the steps mentioned.[8] Communication is stated as one of the most important elements in creating this safe environment. Miscommunication or lack of communication between employee-employee, employee-manager, manager-manager is seen as one of the main factors that put safety culture and safety climate at risk.[14]

In the literature review, it was observed that there were few studies on "safety culture" and "safety climate" in terms of healthcare workers, these studies addressed the terms with different definitions, addressed the safety perceptions of the participants rather than the level of safety culture and safety climate in the institutions, and were clinically based.[15,16,17] For this reason, this study aimed to reveal the characteristics of the studies on safety culture and safety climate in terms of healthcare workers and the existing gaps in the literature on the subject. As a result of the study, the place of safety culture and safety climate in the literature will be revealed and it is thought that it will lead the studies planned to be done later.

MATERYAL AND METOT

Design

This systematic review is based on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA guidelines.[18]

Research questions

The research questions are as follows: (1) what is the perception of safety culture in healthcare organizations? (2) What is the perception of safety climate in healthcare organizations?

Screening strategy and selection criteria

The articles to be included in this systematic review were searched in Google Scholar (103) and PubMed (135) databases between (April-August 2022). Turkish and English keywords were used in the search. International databases were searched for "nurse" OR "doctor" OR "health professionals" AND "safety culture" OR "safety climate" and national databases were searched for "nurse" OR "physician" OR "health professionals" AND "safety culture" OR "safety climate".

PICOS is as follows:

Population: Health professionals

Intervention: None

Comparison: None

Outcome: perception of safety culture and safety climate

Study designs: descriptive, cross-sectional, (descriptive and cross-sectional) studies

Inclusion and exclusion criteria

The criteria for inclusion in the systematic review included (1) descriptive, cross-sectional, interventional studies on the perceptions and practices of safety culture and safety climate of healthcare workers (2) studies with full text available (3) studies with English or Turkish language of publication and (4) studies with moderate or high publication quality.

Exclusion criteria included (1) papers, case reports, review articles, cohort studies and studies for which full text was not available, (2) studies with missing data, and (3) thesis studies.

Data extraction and quality assessment

In this systematic review, a data extraction form was developed by the researchers. The data extraction form includes data on the authors, year, design, country/city, measurement tools, sample size, purpose, and results of the studies. The methodological quality assessment of the studies included in the systematic review was performed independently by two researchers (KÖ and AST), and any disagreement between the researchers was resolved by consensus. The Joanna Briggs Institute (JBI) critical appraisal tool Meta-Analysis of Statistics Assessment and Review Instrument (MAStARI) was used to assess the quality of the studies. The assessment was made according to the List of Analytical Cross-Sectional Studies. [19] There are a total of eight questions in this checklist, and each question is given a score of 0 or 1. The total score varies between 0 and 8. The scores obtained were divided into three groups: (1) low-

quality studies (<50% of the score), (2) medium-quality studies (50-80% of the score), (4) high-quality studies (>80% of the score).

As a result of the search, 238 records were reached. According to the titles and abstracts, 180 studies that were unsuitable for the study and 15 repetitive studies were excluded. The full texts of the remaining 43 studies were examined, and ten studies that met the inclusion criteria were evaluated. All steps in this process were carried out independently by two researchers (KÖ and AST), and consensus was reached through discussion in case of any disagreement. The selection and inclusion process of the articles is given in Figure 1.

Ethical Aspect of Research

Since the study is a meta-analysis study, the literature review model was used. Ethics committee approval was not obtained since the literature review did not directly affect humans or animals.

Quality assessment results of the studies

A total of 14 articles were analyzed with the JBI Critical Appraisal Checklist. As a result of the quality assessment, the number of high, medium and low quality studies was determined as 76%, 14% and 10%, respectively. Low quality studies (n=4) were excluded and medium and high quality articles were included in the review.
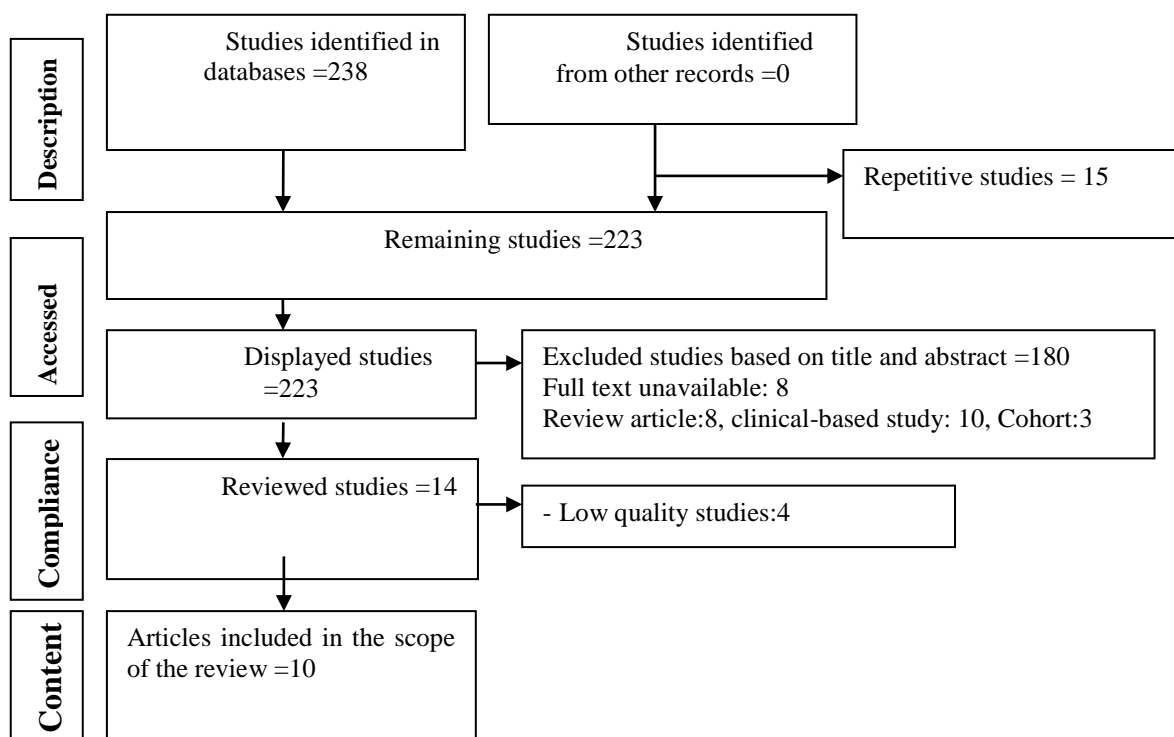

Figure 1. *Selection and inclusion process of articles*

RESULTS AND DISCUSSION

The studies analyzed in this study are discussed in two different tables according to the country in which they were conducted.

Çavuş and Keskin (2020) reported that they aimed to reach all personnel working in the field of health in their study conducted in

a single center. Within the scope of the study, a total of 419 personnel returned. It was observed that the age range of the study was kept wide and not limited to a single clinic. Participants mentioned three dimensions that make up the safety culture; safety rules,

safety communication and safety training. It was stated that no safety can be ensured without rules and that communication is another important element in the formation of safety. Another issue emphasized was that training would be very useful in the creation and development of a safety culture. Although training is important, since it was stated that the importance given to training varies according to the education level of the personnel, it was thought that the content and frequency of training may also vary.[20]

Table 1. Characteristics and results of studies conducted in Turkey and included in the systematic review (N=3)

Authors (years)	Study design	Study group	Country (City)	n	Age	Measurement tool	Objective	Outcome
Çavuş ve Keskin (2020) [20]	Descriptive	Health professional	Türkiye (Manisa)	419	18 years and more	Questionnaire form	To determine the dimensions of safety culture perceived by the participants and the factors affecting them.	According to the participants, safety culture has three sub-dimensions; safety rules, safety communication and safety training. According to the participants, the most important factor is "Safety Rules". It was stated that the "Safety Rules" factor has a positive effect on female participants; in the "Safety Training" dimension, the degree of graduation is effective (high school graduate is the lowest). As the level of education increases, the effectiveness of safety trainings increases.
Bayer ve Günal (2018) [21]	Descriptive	Nurses	Türkiye (Isparta)	180	25-50 years	Questionnaire form and Scale	To determine the perception levels of nurses towards the provision and empowerment of occupational health and safety.	It was stated that nurses' perception of occupational health and safety was at a high level (3,488 ± 0,422). In order to create a safe working environment culture of nurses; - The measures taken and safety procedures prepared within the scope of occupational health and safety should be more realistic and easily applicable, - hospital management listens to employees' suggestions and ensures their participation in decision-making processes, - the provision of the necessary protective and preventive equipment and supplies more frequently and in greater quantities, -better and more frequent security checks by the hospital management, - hospital management and colleagues should support safe behaviors and employees who follow safety procedures, and that hospital management should be as concerned with employee safety as they are with hospital outcomes.
Dirik ve Seren Intepeler (2017)[22]	Descriptive	Nurses and managers	Türkiye (İzmir)	350	Unspecified	Authentic Leadership Scale	The aims of this study were: (1) to evaluate Turkish nurses' perceptions of authentic leadership and safety climate and (2) to determine whether authentic leadership of charge nurses predicts safety climate.	The mean of the safety climate scale of nurses in Turkey was found to be quite low with 3.50 (SD = 0.62). Authentic leadership has been reported to contribute positively to safety climate. Authentic leadership has been reported to contribute positively to awareness when combined with procedural, managerial and systematic improvements in creating a safety climate.

Although Bayer and Günal (2018) emphasized that the aim of their study was to determine the level of perception towards the provision and empowerment of occupational health and safety in nurses between the ages of 25-50, they also took the opinions of the participants about creating a safe working environment. In this study, the importance of ensuring occupational health and safety was emphasized as well as the responsibilities of managers in creating a safe environment.[21]

Dirik and Seren Intepeler (2017) also discussed the responsibilities of managers in creating a safety climate and reported that managers should be predictors of safety climate. When the findings of all these studies are examined, it is seen that the subjects of "safety culture" and "safety climate" are not sufficiently covered.[22]

In some studies conducted since 2017, it has been observed that safety culture in healthcare organizations has been addressed with single dimensions such as occupational health and safety, medical errors, and communication errors. In this direction, it can be said that the psychological and social dimensions of safety culture are not sufficiently addressed, and there is a need for studies that address all dimensions. A total of seven studies from around the world that met the inclusion criteria were found. Glarcher et al (2022) on safety climate stated that safety climate has open aspects and can be improved. The results showed that the perception of safety climate varied according to gender, age and the managerial position of the participating nurses and midwives, but not according to professional experience and the hospital unit worked in. Safety culture was also briefly mentioned in the same study. Participants also stated that organizational culture enables learning from the mistakes of others, so the establishment of a safety culture and the expansion of employee-employee and manager-employee meetings will ensure that medical errors are handled appropriately.[23]

Schmidt et al (2021), in their study conducted with physicians and nurses, reported that both nurses and physicians received higher scores in the sub-dimensions of Manager Expectations, Teamwork within Units and Psychological Safety compared to the others; in the evaluation conducted one year after the training, a decrease was observed in physicians for the Psychological Safety sub-dimension, but none of these differences were statistically significant. In this case, it can be said that there is no significant change in the perception of safety culture with the training given over time. In this case, it is thought that issues such as training content, training method and frequency should be examined in more detail and appropriate training method and frequency should be determined.[24] Storm et al (2014) stated that the content and structure of training have a great impact on its effectiveness. In this case, it is seen that there is a need to evaluate different training methods in terms of effectiveness.[25]

Lorenzini et al (2020) list the barriers to a safety climate as lack of resources, poor working conditions, inadequate staff, failure of managers' actions to achieve effective results, a mechanistic management model that favors hierarchical positions, lack of feedback, clear distances between managers and employees, a culture of punishment for mistakes, and lack of training for new employees. In this case, in order to create a safety climate, first of all, the environment should be made safe, communication problems should be solved, protocols such as a practical error reporting protocol should be determined and everyone should act in accordance with this protocols.[10]

Quenon et al (2020) reported that healthcare workers perceive the safety climate primarily as patient safety, followed by the safety of those who carry occupational risks, accompanying professional groups and patient relatives. In the study, it is suggested that unacceptable risks can be reduced by developing a safety culture with a management approach that has sufficient material, human resources and responsibility in line with individual, environmental and financial goals. It was mentioned that there is a significant gap between the expectations of

managers and the managerial perceptions of health professionals. They drew attention to the impact of health managers on the development of safety culture.[14]

Table 2. Characteristics and results of worldwide studies included in the systematic review (N=7)

Authors (years)	Study design	Study group	Country (City)	n	Age	Measurement tool	Objective
Glarcher et al. (2022)[23]	Descriptive cross-sectional	Nurses and midwives	Austria	713		Safety Climate Survey-SCS	To explore the safety climate perspectives of nurses and midwives and identify areas for quality improvement.	The SCS scale mean value was 4.09 (SD = 0.53) and the mean value for each item ranged from 3.44 to 4.64. Overall, safety culture was rated quite positively. However, the perception of the safety climate had a few key open aspects that could be improved, which varied according to gender, age and whether the participants held a managerial position, but not according to professional experience and hospital unit worked in.
Schmidt et al. (2021)[24]	Descriptive	Nurses and doctors	Germany (Münster)	894		the Hospital Survey on Patient Safety Culture-HSPSC	This study was designed to investigate whether an inter professional team training given to a group of nurses and physicians would lead to a change in the perceptions of health care workers about safety culture and communication practices throughout the hospital.	The sub-dimensions in the scale are; 1) Manager Expectations 2) Teamwork within Units 3) Psychological Safety 4) 2-Way Communication 5) Information 6) Feedback Both nurses and physicians scored higher than the others in the sub-dimensions of Managerial Expectations, Teamwork within Units and Psychological Safety. In the evaluation made one year later, it was stated that the training did not provide a significant difference.
Lorenzini et al. (2020)[10]	Descriptive - mixed method	Health professionals	Brazil (Southern Region)	31		Safety Attitudes Questionnaire (SAQ)	To examine the perception of safety culture among health care workers in South Brazil.	The highest scores from the sub-dimensions of the Safety Attitudes Scale are job satisfaction, team working environment, stress recognition and safety climate, respectively.
Quenon et al. (2020)[14]	Descriptive-qualitative	Managers and caregivers	France	65		Questionnaire form	The aims of this study were: i) to assess caregivers' and managers' perceptions of safety, ii) the role of managers in developing a perceived safety culture, iii) to identify the activities of managers related to the development of a safety culture.	Themes used by participants to describe safety in healthcare facilities; -purpose of safety (individual, environmental and organizational-financial), -resources necessary to ensure safety (adoption of safe working practices and attitudes, provision of adequate material and human resources, responsible and effective management, rules and protocols, good organization), a multi-meaningful and multi-dimensional concept (a broad concept, a subject that varies by profession, a subject that is difficult to understand), the result to be achieved (management of serious risks, management of common risks, management of unacceptable risks, management of forensic risks, compliance with necessary regulations, incident-based risk management, realistic risk management). It was emphasized that managers have a great impact on the development of safety culture.

Table 2. (Continue)

Fassarella et al. (2019)[26]	Descriptive	Nurses	Brazil	195	Hospital Survey on Patient Safety Culture-HSOPSC	The aim of this study is to evaluate the safety culture perception of nurses working in a teaching hospital and also to reveal the differences in safety culture dimensions between services.	It was stated that employees working in the maternal-child care unit received the highest score in the scale sub-dimension mean scores. It also shows that the five dimensions of safety culture (organizational learning; feedback and communication about error; management support for patient safety; general perceptions about patient safety; frequency of incident reporting) are statistically different between four units of the hospital (intensive care, internal units, surgical units, maternal-child care unit).
Carvalho et al. (2015)[8]	Descriptive cross-sectional	Health professionals	Brazil (Surgical clinics)	226	Safety Attitudes Questionnaire-SAQ	The aim of this study is to evaluate the perceptions of employees in the operating room unit of a large-scale state hospital regarding safety culture.	The highest scores were for stress recognition, job satisfaction, team working environment and safety climate sub-dimension mean scores, respectively. The results of this study show that there is a weakness in the values, attitudes, skills, competencies and behaviors that determine the safety culture in a healthcare organization for professionals. Professionals observed disconnection from hospital management and unit management in relation to poor working conditions and negative safety culture.
Gehring et al. (2015)[27]	Descriptive	Health professionals	Switzerland	1845	Safety Climate Survey-SCS	The aim of this study is to determine the safety climate levels of health professionals and related factors by validating the SCS scale in French and German languages.	The mean value of the Safety Climate Questionnaire is 3.8 (SD = 0.53). At the item level, the means ranged from 3.18 to 4.38. Doctors, managers and those working in the operating room scored significantly higher. Comparison of health professionals in terms of the time spent with patients also showed significant differences.

Fassarella et al (2019) mentioned five dimensions of safety culture (organizational learning; feedback and communication about error; management support for patient safety; general perceptions about patient safety; frequency of incident reporting) and examined these dimensions within the scope of their study. They reported that employees in internal units scored significantly lower than those in maternal-child care units in the sub-dimensions of organizational learning (p=0.019), error-related feedback and communication (p=0.019) and general perceptions of patient safety (p=0.005). In addition, in the sub-dimension of management support for patient safety, the mean scores of those in internal and surgical units were significantly lower than those in both intensive care units ($p_{internal}$=0.026; $p_{surgical}$=0.002) and maternal-child care units ($p_{internal}$=0.003; $p_{surgical}$=0.017). In this case, it can be said that the safety culture perceptions of nurses working especially in internal units are at a lower level.[26]

Gehring et al (2015) examined the validity of the Safety Climate Survey (SCS) in French and German languages. The scale includes statements about patient safety in the clinical field and reporting and reporting of safety concerns about patient safety. It is seen that the safety climate is addressed at the level of patient safety. In the same study, it was stated that the mean score of safety climate perception was above the median value (2.5) (3.8±0.53), physicians scored significantly higher than nurses, managers scored significantly higher than non-managers, and those working in the operating room scored significantly higher. It was also stated that staff that had no patient contact and worked more than 40 hours per week had lower scores in direct patient care compared to staff who worked 1-40 hours. In this case, having no patient contact or working more than 40 hours per week appears to be a factor that decreases the perception of safety climate.[27]

Carvalho et al (2015) reported that healthcare organizations primarily focus on patient safety due to their highly complex structures. In the study, it was determined that there were weaknesses in the values, attitudes, competencies and practices that determine the safety culture of healthcare professionals. It was mentioned that the quality of safety culture can be improved with teamwork and systematic review of practices will give a positive contribution to the process.[8]

CONCLUSION AND RECOMMENDATIONS

Only three studies on "safety culture" in terms of employees were found in Türkiye. In these studies, it was seen that some terms that constitute safety culture were included. These are safety rules, safety communication, safety training and safe environment. Seven studies conducted in different countries were found. In these studies, it was seen that "safety culture" and "safety climate" were mentioned. In the studies, it was stated that the formation of the safety climate was affected by some characteristics such as the age, professional experience and the unit in which the employees worked. It was also stated that factors such as lack of resources, poor working conditions, inadequate personnel, lack of feedback negatively affect the safety climate. In line with all these results, it has been observed that the term "safety climate" has not yet been sufficiently included, there are few studies on the term "safety culture", there is no consensus on the definitions of "safety culture" and "safety climate" in the studies, but some risk factors are mentioned.

There are no studies addressing safety culture in healthcare professionals and safety climate in organizations from a holistic perspective such as physical, mental and social etc. Considering that safety climate and safety culture are multidimensional concepts, it is necessary to address the issue in all its dimensions in order to fully understand and apply it. For this reason, it is recommended that planned studies on safety culture and climate should be conducted in a multidimensional manner. In addition, it is recommended to organize trainings on safety culture and climate in health institutions and organizations and to organize trainings on the benefits of safety culture and climate for employees, patients and health institutions.

REFERENCES

1. Kula, S, Çakar, B. (2015). "The relationship between individuals' perception of security and life satisfaction in society in the context of Maslow's hierarchy of needs". Bartın University İ.B.F. Journal, 6(12), 191-210.

2. Çoban, G.S. (2021). "Maslow's hierarchy of needs, latent talents at the self-actualization level". European Journal of Educational and Social Sciences, 6 (1), 111 – 118

3. Maslow, A.H. (1943). "Hierarchy of Needs: A theory of human motivation". Psychol Rev, 50(4), 370-396.

4. Herzberg, F, Maunser, B. and Snyderman, B. (1959). "The motivation to work". 2nd ed. John Wiley&Sons.

5. Özcan, N. (2018) "Risk management in healthcare Organizations". J Heal Serv Educ. 2(1), 15-24. DOI: 10.26567/JOHSE.2018142108

6. Chaff, L.F. (1991). "Safety in health care facilities". J Healthc Prot Manage, 8(1), 1-22.

7. Turkish Language Association. (2023). https://sozluk.gov.tr/ (access date: 09.01.2023)

8. Carvalho, P.A, Göttems, L.B.D, Pires, M.R.G.M. ve Oliveira, M.L.C. (2015). "Safety culture in the operating room of a public hospital in the perception of healthcare professionals". Rev Latino-Am Enfermagem, 23(6), 1041-8. DOI: 10.1590/0104-1169.0669.2647

9. Gürer, A. (2018). "Employee safety in health services". Journal of Health Services and Education, 2(1), 9-14. DOI: 10.26567/JOHSE.2018142107

10. Lorenzini, E, Oelke, N.D, ve Marck, P.B. (2021). "Safety culture in healthcare: mixed method study". Journal of Health Organization and Management, 35 (8), 1080-1097. DOI: 10.1108/JHOM-04-2020-0110

11. Yılmaz, A. (2020). "Investigation of patient safety culture concept by dimensions and investigation of the effect of dimensions on patient safety practices". Health Care Acad J, 7(3), 223-230.

12. Allı, B.O. (2016). "Fundamental Principles of Occupational Health and Safety". Vol 6. Second. İLO

13. IAEA. (1991). "Safety Culture, International safety Advisory Group". Safety Series 75-INSAG-4 (Vienna: IAEA).

14. Quenon, J.L, Vacher, A, Faget, M, Levif-Lecourt, M, Roberts, T, Fucks, I, et al. (2020). "Exploring the role of managers in the development of a safety culture in seven French healthcare facilities: A qualitative study". BMC Health Services Research, 20, 517-528. DOI:10.1186/s12913-020-05331-1

15. Kocher, R. and Sahni, N.R. (2011) "Rethinking Health Care Labor". N Engl J Med, 365(15), 1370-1372. DOI: 10.1056/NEJMp1109649

16. Koinis, A, Giannou, V, Drantaki, V, Angelaina, S, Stratou, E. and Saridi, M. (2015). "The impact of healthcare workers job environment on their mental-emotional health. Coping strategies: the case of a local general hospital". Heal Psychol Res, 3(1). DOI: 10.4081/hpr.2015.1984

17. Cooper, MD. (2000). Towards a model of safety culture. Saf Sci, 36(2), 111-136. DOI: 10.1016/S0925-7535(00)00035-7

18. Moher, D, Liberati, A, Tetzlaff, J, Altman, D.G. and Prisma Group. (2009). "Reprint—preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement". Physical Therapy, 89 (9), 873-880. DOI: 10.1093/ptj/89.9.873

19. Moola, S, Munn, Z, Tufanaru, C, Aromataris, E, Sears, K, Sfetcu, R, Currie, M, Lisy, K, Qureshi, R, Mattis, P. and Mu, P. (2020). "Systematic reviews of etiology and risk". In E. Aromataris, Z. Munn (Eds.), JBI Manual for Evidence Synthesis. The Joanna Briggs Institute. https://synthesismanual.jbi.global.

20. Çavuş, Ö.H. and Keskin. R. (2020). "Analysis of the effects of occupational health and safety trainings on safety culture in the health sector". Journal of Management and Economics, 27 (3), 627-644. DOI: 10.18657/yonveek.592878

21. Bayer, E. and Günal, D. (2018). "Investigation of occupational health and safety perceptions of nurses". Mehmet Akif Ersoy University Journal of Social Sciences Institute, 10 (25), 503-519. DOI: 10.20875/makusobed.440607

22. Dirik, H.F. and Seren Intepeler, S. (2017). "The influence of authentic leadership on safety climate in nursing". Journal of Nursing Management, 25, 392-401. DOI: 10.1111/jonm.12480

23. Glarcher, M, Kaiser, K, Kutschar, P. and Nestler, M. (2022). "Safety climate in hospitals: A cross-sectional study on the perspectives of nurses and midwives". J Nurs Manag, 30, 742–749. DOI: 10.1111/jonm.13551

24. Schmidt, J, Gambashidze, N, Manser, T, Guß, T, Klatthaar, M, Neugebauer, F, et al. (2021). "Does interprofessional team-training affect nurses' and physicians' perceptions of safety culture and communication practices? Results of a pre-post survey study". BMC Health Services Research, 21, 341-351. DOI:10.1186/s12913-021-06137-5

25. Storm, M, Groene, O, Testad, I, Dyrstad, D.N, Heskestad, R.N. and Aase, K. (2014). "Quality and safety in the transitional care of the elderly (phase 2): the study protocol of a quasi-experimental intervention study for a cross-level educational programme". BMJ Open, 4:e005962. DOI:10.1136/bmjopen-2014-005962

26. Fassarella, C.S, Silva, L.D, Camerini, F.G. and Figueiredo, M.C.A. (2019). "Nurse safety culture in the services of a university hospital". Rev Bras Enferm, 72 (3), 767-73. DOI: 10.1590/0034-7167-2018-0376

27. Gehring, K, Maschere, A.C, Bezzola, P. and Schwappach, D.L.B. (2015). "Safety climate in Swiss hospital units: Swiss version of the Safety Climate Survey". Journal of Evaluation in Clinical Practice, 21, 332-338. DOI: 10.1111/jep.12326