

Key Factors and their Dimensions in Patient Safety Culture in Elderly Care: A Scoping Review

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ABSTRACT

Background: Safety in elderly patients is a critical health issue, with various studies highlighting safety concerns within the geriatric health care system. Yet, there is no clear understanding of most important things that impact culture of safety among patients residing in nursing homes, clinics and community.

Aim: The objective of this research were to determine and examine patients' safety culture factors in elderly care system and their main elements.

Material & Method: A scoping review was conducted using PRISMA-ScR guidelines. A comprehensive search of articles was performed across multiple databases (Pub-Med, Science Direct, Cochrane, CINAHL, and Embase) in August 2021. The inclusion criteria focused on studies related to patient safety culture in geriatric care settings (primary care facilities, nursing homes, and community). Thirty-nine articles were selected for data extraction, which was then mapped onto a Total Safety Culture domain developed for this study.

Result: Three key factors—person, environment, and behavior—and twenty dimensions were identified as components of patient safety culture in geriatric care.

Conclusion: Future investigations into safety culture in geriatric care should examine environmental factors through surveys to better understand and enhance multidimensional safety culture.

Keywords: Geriatric Care, Patient Safety, Safety Culture.

1. INTRODUCTION

Safety is a concept related to the safety and prevention of injuries [1]. Caring for the elderly across different locations raises this significant concern about their well being[1], [90], including in primary care facilities and the community.

The elderly, with changes they experience, become a group whose safety needs should be considered and met [3]. Because of the natural process of aging and their health status as a result of many chronic diseases, the elderly are at a higher risk of safety-related occurrences than younger people[2]. The elderly can experience a variety of adverse events during treatments. A systematic review has reported the types of adverse events that can be experienced by the elderly in the hospital [91], and geriatric facilities [5][12].

Preventing safety risks in the elderly should be accomplished through a variety of preventive programs. Implementing a safety culture is one of the ways to avoid these adverse events. Safety culture is a values, attitude, perception, individual competence, and behavior related to safety performed by a group of people [92]. Safety culture consists of several dimensions and has been developed in the context of health care in hospitals, primary care facilities or nursing homes [7]–[10].

Several studies have investigated patient safety culture in primary health care [11], family practice [93], and health care[4][13]. However, the dominant components and aspects of safety culture in geriatric care have not received much consideration in scholarly circles necessitating a concern for geriatric safety culture from a macro point of view. Geller (2001) proposed a Total Safety Culture model [94] which has three domains of safety culture, namely person, behavior and environment. These three factors could improve safety for the elderly[6].

This scoping review aimed at identifying the major variables involved in safety culture and their several aspects[14].

2. MATERIALS AND METHOD

This scoping review used the PRISMA-ScR (Preferred Reporting Items for Systematics Reviews and Meta-Analysis Extension for Scoping Reviews) [15] to find and extract the key factors and components in safety culture in geriatric care from many studies in this field. As this study did not analyze or assess the methodological quality of included studies, it is classified as a scoping review [16] that adopts the five steps of Arksey and O'Malley's [17], in the following manner:

Stage 1: Identifying the Initial Research Questions

In geriatric care, the major aim of this study was to explore the elements and factors of safety culture among patients, hence the research questions that directed our search included:

- (1) In geriatric care, what are the principal determinants of patient safety culture?
- (2) What are the dimensions of each factor?

Stage 2: Identifying Relevant Studies

We searched PubMed, Embase, Cochrane, Science direct, and CINAHL for published articles until 2021. The search was carried out on August 25 and 26, 2021. To facilitate literature retrieval on dimensions of patient safety culture in geriatric care, first we focused our search topic in PubMed, and then keywords and related phrases were identified and extracted from multiple sources. Comprehensive search of the databases used different combinations of keywords and Medical Subject Headings (MeSH) terms. In summary, Table 1 presents a list of keywords and MeSH terms that were utilized in this research study.

Table 1: Summary of Keywords and Mesh Terms Used in this Study

Database	Date of search	Results	Search string
PubMed	August 25, 2021	316	4,((#1) AND (#2)) AND (#3),,,"("safety management"[MeSH Terms] OR "safety culture"[Title/Abstract] OR "culture safety"[Title/Abstract] OR "cultures safety"[Title/Abstract] OR "safety cultures"[Title/Abstract] OR "patient safety culture"[Title/Abstract] OR "safety climate"[Title/Abstract]) AND ("aged"[MeSH Terms] OR "aged"[MeSH Terms]) AND ("nursing homes"[MeSH Terms] OR "home nursing"[MeSH Terms] OR "homes for the aged"[MeSH Terms] OR "residential facilities"[MeSH Terms] OR "home nursing"[MeSH Terms] OR "home care services"[MeSH Terms] OR "primary health care"[MeSH Terms]),316,03:28:16
Cochrane	August 25, 2021	1332	(safety Management OR Management, Safety OR Safety Cultures OR Culture, Safety OR Safety Culture OR Cultures, Safety OR Safety Climate OR Patient safety culture):ti,ab,kw AND (Aged OR elderly OR older adults OR older people):ti,ab,kw AND (Nursing home OR Homes, Nursing OR Home, Nursing OR Nursing Home OR Home care services OR Home Nursing OR Primary health care);ti,ab,kw (Word variations have been searched)
Embase	August 26, 2021	8	'patient safety':ti,ab,kw AND aged:ti,ab,kw AND 'nursing home':ti,ab,kw
Science Direct	August 26, 2021	685	Basic search ("patient safety culture" OR "safety climate" OR "safety management") AND ("nursing home" OR "residential home" OR "home care" OR "home nursing" OR "primary care")
CINAHL	August 26, 2021	108	AB (Safety management OR safety culture* OR patient safety culture*) AND AB (Elderly OR aged) AND AB (Nursing home* OR old age home* OR residential facility* OR home care* OR nonprofessional home* OR home care service*)

Stage 3: Study Selection

In the initial search, 2449 articles were identified. The inclusion criteria in this study were as follows: (1) studies published in scientific journals, (2) studies published in English, (3) studies investigating patient safety culture or safety climate, (4) studies indicating dimensions and components of factors related to patient safety culture or safety climate.

The exclusions criteria were as follows: (1) conference papers, (2) studies in languages other than English, and (3) studies that were conducted on patient safety culture but not in primary care facilities, home care or nursing home.

First, the publications were chosen based on their titles and abstracts to determine that they were relevant to the research question area. Then, articles which were obtained, were selected considering the inclusion standards with an emphasis on studying patient safety culture in geriatric care. After this, full texts of these studies were examined for more information about patient's safety culture in geriatric care. The criteria outlined earlier was followed separately by two reviewers (AH, PS) who scrutinized the papers based on title, abstract, author, publication year, country/region and article type; they both concurred on all the identified references. Figure 1 shows the articles selection process.

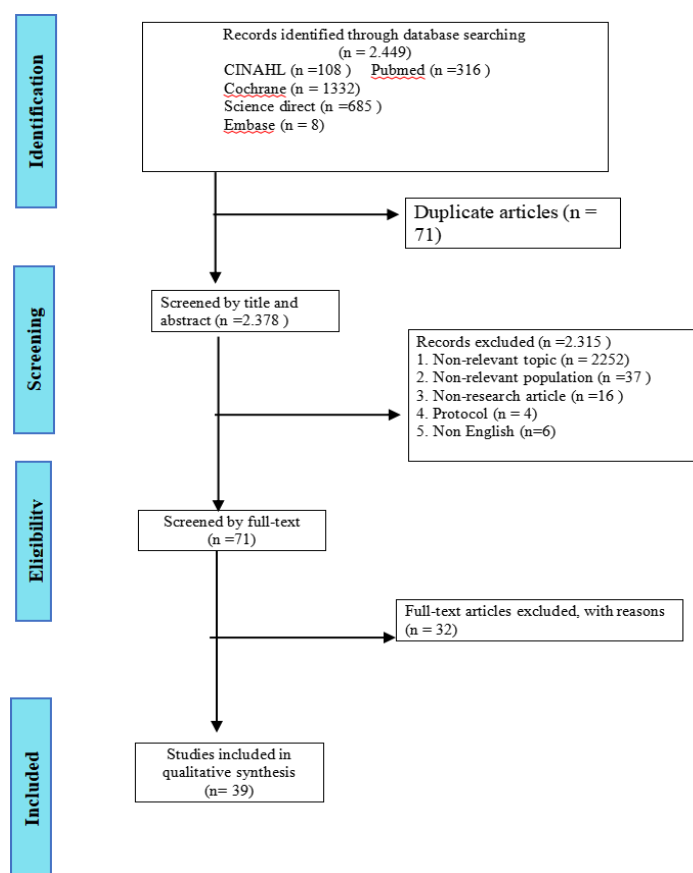


Figure 1. Prisma Flow Diagram

Stage 4: Data Charting and Collation

Initially, we developed a worksheet using Excel. In order to manage data, we entered in Excel the author, year, location of each study, and the variables used to assess patient safety culture and every component of the main factors.

Stage 5: Summary and Reporting of Findings

Utilizing data collection forms, the primary aspects of patient safety culture in geriatric care identified in the articles were extracted. Once the data had been extracted and recorded, it was condensed based on similarity and then classified through the experience and knowledge of three professionals (AH, CE and PS).

3. RESULT

Study Selection

As shown in Figure, 2,449 articles were located in the initial search from several databases: PubMed (316), Cochrane (1,332), Embase (8), Science Direct (685), and CINAHL (108). After eliminating duplicates, 71 articles remained, and 32 were retrieved. Assessing the titles as well as abstracts, and in conjunction to

guidelines for inclusion, a total of 12 papers were ruled out in line with the criteria for exclusion at the level of full-text assessment, while 39 others were left for more examination (show in Figure 1).

Characteristics of the Sources of Evidence

The overall attributes of the 39 chosen papers are outlined in Table 2. The first published one dates back to 2006 while the latest appeared in 2021. Of all articles reviewed, publication was greatest conducted in USA (36%), and the study design used a cross-sectional approach (56%). The sample size varied from 20 to 4311 staff. The location of the study mostly in nursing homes (59%). Most of the respondents in the studies were staff and management, and there were only two qualitative studies whose respondents were family.

Table 2: Characteristics of Studies (N=39)

Components	Author	Frequency
Publishing Year		
2006	[18]	1
2007	[19]	1
2009	[20], [21]	2
2011	[22]	1
2012	[23]–[26]	4
2013	[27]–[29]	3
2014	[30], [31]	2
2015	[32]–[34]	3
2016	[35]	1
2017	[36]–[45]	10
2018	[46], [47]	2
2019	[48]–[51]	4
2020	[52], [53]	2
2021	[54]–[56]	3
Country		
Australia	[32], [35]	2
Croatia	[53]	1
The Netherlands	[43]	1
France	[51]	1
Hongkong	[24]	1
Norway	[23], [30], [47], [50]	4
Poland	[49]	1
Slovenia	[41]	1
Spain	[40], [48]	2
Sweden	[38], [46]	4
Switzerland	[28], [33], [34], [37]	4
Taiwan	[39]	1
UK	[45], [54]	2
USA	[18]–[22], [25]–[27], [29], [31], [44], [52], [55], [57]	14
Study Design		
Cross-sectional	[18], [20]–[22], [25], [27], [28], [30], [31], [33], [34], [37], [38], [41], [43], [45], [49]–[53], [55], [57]	22
Mixed-methods	[46], [47], [54]	3
Qualitative	[19], [23], [32], [35], [40], [42], [56]	7
Randomized trial	[29], [39], [44], [48]	4
Survey	[24], [26], [39]	3
Sample size		
< 100	[19], [23], [32], [35], [42], [54], [56]	7
< 200	[46,48,53,57]	4
< 1000	[21], [22], [26]–[29], [31], [39],	14

	[40], [43], [47], [49], [50]	
< 10.000	[18], [20], [45], [51], [52], [55], [24]–[26], [33], [34], [37], [38], [44]	14
Location		
Nursing Homes	[18], [20], [22], [24]–[29], [33]–[35], [37], [42]–[44], [47], [50]–[52], [55]–[57]	23
Home care	[19], [23], [32], [46], [48], [54]	6
Primary care facilities	[21], [30], [31], [38]–[41], [45], [49], [53]	10

Main Dimensions of Safety Culture in Elderly Care

Safety culture is multidimensional, with numerous elements comprising different concepts. In most situations, researchers and organizations use a model of safety culture that includes several dimensions. Many researchers used the characteristics of safety culture to explain the concept, or developed or used safety culture questionnaires. However, in addition to the dispute over the nomenclature and meaning of safety culture, there is a disagreement on which elements constitute a positive safety culture. We try to map the dimensions of safety culture based on the Total Safety Culture Model from Geller [14] which has three key factors: personal factor, behavioral factor and environmental factor. Table 3 summarizes some of the most cited dimensions of safety culture in geriatric care including in primary care facilities, at home and in nursing home.

Table 3: Main Dimension of Safety Culture in Geriatric Care

Personal	Behavior	Environment
Knowledge and education[23,34,37,54] Skill[25,26,28,32,34,39,42,47,49–51,54–57] Job satisfaction[21,30,31,33,41,53] Perceptions: overall perceptions and feeling safe[18,20,25,26,28,34,37,39,40,47–49,51,54,55], perception of work risk, safety rules and procedures [24], Stress[21,22,33,53] Personal attitudes toward safety[52]: commitment, priority and non-acceptance of risk, trust in the efficacy of safety systems[38,46], dignity and respect [32], safe working attitude [24]	UNIT LEVEL Nonpunitive response to mistakes[18,22,25,26,28,38,39,47,48,50,51,55]] Communication: communication openness [18,20,24–26,28,31,32,34,37–42,45,47–51,55–57], and handoffs [20,25,26,28,39,47,48,50,51,55] Feedback and communication:They include communication about incidents [18,20,22,26,28,38,39,47,48,50,51,55], performance feedback [22], tracking small failures, resisting over simplification, remaining sensitive to operation [27,29,44], appropriate feedback [34,37,54], acceptance of input and resolution to disagreement [34,37], clinical decision making and investigative process [45] Compliance with procedures[22,25,26,28,39,47,50,51,55,56], and patient care tracking [49] Teamwork[18,20,21,25,26,28,30,31,33–35,38–41,47,49–51,53,55,57], which includes support from other personnel, well coordinated-team[34,37], taking advantage of shifting location of expertise [27,29,44], participation [22,24,43], teamwork across unit [18,20,38,40,48] and interaction [52] Culture of learning [34,37,38,46,54] Activity modification, moving [19] Supervision [19] Task related: Routines[23], task characteristic and orientation [32], process of care [53], continuity of care [32], patient care follow up [40,42]	Work environment: Physical environment: availability, including update procedures and documents [23,40,56], environmental modifications to the home [19], environment [32,42,52] resources for safety (time, money, equipment[24,32,45] Non-physical environment: working conditions[21,33,53,56], work climate [22], work load and work rhythm [40] External factors: Patients factors [32] External policy [32] Access [32,45]

	<p>ORGANIZATIONAL AND MANAGEMENT LEVEL</p> <p>Competence development [22] includes training provided in patient safety [25,26,28,39,40,47,49–51,55,57] and maintaining capabilities for resilience [27,44,58]</p> <p>Organizational learning [18,20,25,26,28,38–40,47–51,55,57]</p> <p>Staffing [18,20,25,26,28,35,39,47,50,51,55,58] and employeeship [22]</p> <p>Leadership [22,23], including responsibility in leadership [60]</p> <p>Safety climate [21,30,32–34,41,53]</p> <p>Management expectations [18,20,25,26,28,31,35,38,39,47,48,50,51,55,57]</p> <p>Management attitudes [20]</p> <p>Management support for safety [18,25,49,51,55,26,28,38–40,43,47,48]</p> <p>Management safety priority, commitment and competence [24,31,38,43,46,52]</p> <p>Management safety empowerment [38,46]</p> <p>Management safety justice [38,46]</p> <p>Perceptions of management [21,30,33,41,53]</p> <p>Management style [43]</p> <p>Other: Efficiency, goal clarity [22], vision, strategic emphasis [43], criteria for success, administration, dominant organizational characteristic [43], including office process and standardization [49]</p>	
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Personal Factor

Among the thirty-nine articles reviewed, thirty-two articles mentioned the six components of personal factors: knowledge and education, skill, job satisfaction, perceptions, stress, and personal attitudes. Perceptions and skills were the most cited dimensions of personal factors.

Behavioral Factor

All articles mentioned the components of behavioral factors. We divided them into two levels: unit level and management level. There were twenty-two dimensions and another category summarized in this review. The unit level had nine dimensions, while the management level had thirteen dimensions and another dimension. The most reported dimension in behavioral factors were communication, feedback and communication, and teamwork.

Environmental Factors

Of thirty-nine articles reviewed, only thirteen reported the components of environmental factors, which had two dimensions: internal and external factors, each with its components. The most components were internal factors which consisted of physical and non-physical environments. Of thirteen articles, nine mentioned physical environment, six mentioned nonphysical environments, and only three mentioned external environment, such as patient factors, external policy, and access.

4. DISCUSSION

The purpose of this scoping review was to examine the key dimensions of patient safety culture and their components based on Geller's Total safety Culture Model which consists of three factors: person, behavior and, environment [14].

Despite an increase in peer-reviewed studies on safety culture in healthcare during the last 29 years, many studies lack a clear definition of the term, and there is considerable disagreement over how safety culture varies [13] including in geriatric care. In the same way, the dimensions of safety culture differ. Organizational surveys frequently have revealed the characteristics of safety culture. While numerous tools for measuring safety culture

have been created, most notably quantitative surveys like Nursing Home Survey Patient Safety Culture [61] and Safety Attitude Questionnaire [62], several studies have used qualitative approaches to assess safety culture [19], [23], [32], [35], [40], [42], [56].

Several reviews have been conducted regarding the dimensions of safety culture in hospital [63], healthcare [13], and nursing [64], but they are still limited in geriatric care. One review reports the patient safety culture in care homes for older people [65], but it does not mention the dimensions of safety culture.

Personal factors include knowledge and education, and these dimensions are in line with several studies which state that education is related to patient safety culture [66]–[68]. Skill is another component of personal factor, and is the strongest predictor of work engagement [69]. Another qualitative study reveal that staffs skills and the ability to create a positive relation is important for the elderly to feel safe at home [70].

Perception about safety is another dimension of personal factor that includes overall perception, perception of work risk, safety rules and procedure. One study found that positive patient safety culture is related to perception of safety [71], which suggests that healthcare professionals should have a positive perception about safety to increase safety culture.

Stress is another dimension of personal factor. When staff experience stress, this can affect performance and increase the likelihood of human error. Employees with increased workloads and fewer resources, may have less time with patients and show lower patient care quality. Increasing external pressure may impact the ability to work toward engagement and cultural change [72].

Personal attitudes are the last dimension of personal factor. Personal attitudes include safe working attitude, commitment, priority, trust, dignity, and respect. This positive attitude is needed to increase safety for older people. Those seeking organizational culture transformation frequently perceive the task as influencing the values and attitudes of the individuals within that organization [73].

Behavioral factor is one of the factors affecting safety culture [14]. All dimensions in behavioral factors have been developed in several instruments measuring patient safety culture. The Nursing Home Survey Patient Safety Culture is one of the most commonly utilized [61]. Eleven of the 12 dimensions defined in this instrument are included in the behavioral components in both individual and managerial levels. These are nonpunitive response to mistakes, communication openness, feedback and communication, compliance with procedure, teamwork, competence development, organizational learning, staffing, management expectation, management support for safety, and handoffs. Several studies investigate the dimensions in behavioral factors which support a patient safety culture [74–79].

Communication is the most commonly reported dimensions in the studies. Communication is a crucial factor in providing excellent service in healthcare and is important in many aspects of life [80]. Communication occurs between staff and patients, with other staff and with supervisors. Many studies have illustrated the link between communication and patient safety culture [74,77,80,81], and another review in Saudi Arabia reported that poor communication is one of the main factors hindering a positive patient safety culture [76].

Environmental factors include internal and external dimensions. The most reported dimensions are physical environment. Patient safety is greatly dependent on the physical environment. In reference to this review, the physical environment is similar to that in the Safety Platform Model for studying patient safety where it constitutes tangibles like materials, the physical establishment, supplies and equipment[82]. Another review considers it as the system integrity subdimension that relates to standards and procedures, budgeting, tools and equipment [64]. Other studies show that positive safety culture is related to physical space and environment [83]. For elderly at home, the living environment is also important for their safety. The environment, specifically flooring, may contribute to elderly falls [84–86]. In contrast to other studies, a study conducted in a hospital in Indonesia reveals that environmental factors are unrelated to safety culture [87].

In addition to the physical environment, non-physical environment can also affect the patient safety culture. The non-physical environment is related to psychological aspects, including working condition, work climate, work load and work rhythm. A study found that work environment characteristics within at unit may influence missed nursing care [88], and it can affect the patient safety. When the employees have heavy workloads and less resources, they may spend less time with the patients resulting in low quality health care. Moreover, the rise in external pressure may interfere with working towards elopement and modifying culture and organizing for quality and safety[72]. Another study conducted on home care nurses found that work environment (pressure to perform) contributes to safety for older adults[89] with dementia [86].

This review, however, has some limitations. The collected literature primarily focused on geriatric care, which may not sufficiently portray the complex multidisciplinary character of patient safety culture in healthcare setting.

In this way, a theory concerning patient safety culture (reciprocal interactive theory) is proposed that promotes reciprocity in interactions. This theory outlines the essential components of the desired patient safety culture in addition to uniting these qualities into three primary categories namely personal, behavioral and environmental factors respectively.

Health care managers and other health care professionals assess and shape their patient safety cultures by

utilizing theories' key variables and each variable's component. Despite the fact that this analysis is based primarily on data from the health care system about geriatric care provided in primary health care facilities, nursing homes, and over-extended care at home, it contributes to the emergence of new knowledge and an understanding of the patient safety culture concept. Future research should determine how this idea can be modified to suit informal caregivers.

5. CONCLUSION

Based on the Total Safety Culture Model [14], there are three principal aspects that lead to patient safety culture. Our review has shown that safety culture is multidimensional. Behavioral factors are the most frequently cited elements influencing patient safety culture. Therefore, there is a need to investigate the personal and environmental factors. Future research, could develop instruments to measure patient safety culture in elderly care that are comprehensive which could include personal, behavioral, and environmental factors. In addition, the participants in the studies in this review are mostly staff and healthcare professionals. For the elderly at home, it is necessary to consider family as participants because they play a critical role as informal caregivers at home.

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