Agronomy Research **21**(X), xxx–ccc, 2023
https://doi.org/10.15159/AR.23.048

Predictors of safe behaviour and holistic framework for promoting proactive safety culture in healthcare and nursing homes

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Received: January 30th, 2023; Accepted: May 21st, 2023; Published: May 26th, 2023

Abstract. The poor safety culture in nursing homes is attributed to the lack of professional and safety competencies, management commitment, and limited empirical data. The purpose of this study is to identify potential predictors of safe behaviour among care workers and establish a holistic framework for a proactive safety culture in healthcare and nursing homes. The study was conducted in 25 care institutions between September 2014 to December 2017 using mixed-methods with quantitative (NOSACQ-50; CCQ, COPSOQ II) and qualitative (focus-group interview) components. Results revealed challenges with safety systems and management, lack of resources and time, and the importance of leadership and psychosocial well-being. The study identified subcultures of proactive safety culture, including professional competence culture and psychosocial well-being culture. These subcultures aid in identifying weaknesses and improving quality, emphasizing the need for a holistic approach to safety culture in healthcare institutions, particularly in nursing homes. The author's proposition on positive safety culture, based on the theory of situated cognition, highlights the significance of subcultures such as professional competence culture and psychosocial well-being culture in influencing care workers' professional identity and safety behaviour. In conclusion, the importance of these subcultures can be emphasised due to ensuring adequate understanding and positive attitudes towards safety. Adequate care worker training and a culture that supports professional competence are crucial for patient safety and organizational outcomes. Addressing psychosocial risks and promoting a culture of psychosocial well-being can create a safer workplace culture and improve employee performance, job satisfaction, and overall organizational outcomes.

Key words: nursing homes, professional competence culture, psychosocial well-being culture, safety climate, safety culture, safety management.

INTRODUCTION

Debates regarding the improvement of the level of occupational safety within organizations are still ongoing (Sinelnikov et al., 2015). Previous studies have revealed that nursing homes face challenges in recruiting and retaining professionally educated staff, resulting in high turnover rates (Dul et al., 2012; Hignett et al., 2013). From a managerial perspective, it is crucial to attract and retain dedicated employees with the

necessary competence, motivation, and commitment to ensuring the well-being of patients and customers (Mavor et al., 2014). Besides education, the psychosocial well-being of employees is equally important, as working in healthcare, including nursing homes, can be physically and mentally demanding (Jennings, 2009; Wald, 2015).

Safety culture was mentioned as a key concept to ensure employees´ safety, motivation, and commitment to provide quality services. In the past, many models were proposed for industries such as engineering and aircraft, with safety culture components like environment and situation, technology and procedures, and human and personal factors being the focus of models such as the Total Safety Culture Model (Geller, 1994), Reciprocal Safety Culture Model (Cooper, 2000), P2Y model (Reiniers et al., 2011), the Egg Model (Vierendeels et al., 2018), and Reason's safety culture model (1997), among others. Despite the models presented, the question of how to protect employees' health and safety and increase the efficacy of safety management remains open. Guldenmund (2010, 2016) presented three approaches to understand the safety culture as sociological paradigms. The interpretative or anthropological approach focuses on the meanings and symbols of social processes in groups, using evidence from cultural assumptions and scientific measurement through narratives, case studies, document analysis, interviews, and observations. The analytical or psychological approach views safety culture as a common attitude, measured through statistical and psychometric instruments assessing safety culture and safety climate. The pragmatic or experience-based approach looks at the processes of organizational structure dynamics and their impact on safety culture.

Another approach to describe safety culture is through the concept of a maturity model, which provides a framework to evaluate an organization's essential aspects, characteristics, and stages using multidimensional criteria to assess processes or organizations (Becker et al., 2009; Wendler, 2012). Safety culture in organizations progresses through stages, it is ranging from unsafe cultures or 'pathological' organizations and 'bureaucratic' organizations to proactive cultures or 'generative' organizations (Hudson, 2007). According to Reason's safety culture model (1997), organizational accidents can be reduced by incorporating three safety-related systems into the organizational framework: the person, the organization, and the engineering. Reason's systems align with areas such as organizational and management factors, human-system integration, and human reliability. The author suggests that each system is dynamic and reciprocally influences others. The person system incorporates individual safety performance and perceptions. The organization system includes factors related to management structure and organization, which are influenced by societal, regulatory, and cultural aspects. The engineering system comprises components related to the safety management systems (SMSs) in addition to the human factor. Organizations that prioritize fixing the system over human behaviour in line with this model prioritize safety.

In healthcare, including nursing homes, a safety approach is leading researchers to investigate safety culture and its relationship to patient safety (Ree & Wiig, 2019). Flin (2007) developed a model that defines employees' unsafe behaviours as causing errors, employee injuries, and patient injuries because of weak safety management and a low safety climate. Just subcultures, reporting, and learning are central to the Reason & Hobbes (2003) safety culture model and are named as key factors in providing quality and safe services in healthcare. As well as factors supporting organizational management in implementing safety measures and developing trust relations in the work environment (Reason & Hobbes, 2003). Previous studies have also noted that educated employees are

necessary to provide safe services (Batalden & Davidoff, 2007; Chang et al., 2012; Nilsson et al., 2014). Professional competences play an important role because employees who perceive themselves as more competent tend to have higher levels of self-esteem, job satisfaction, and commitment. Additionally, professionally educated employees tend to be more confident in solving conflicts and handling complicated situations (Grau et al., 2002; Ratnapalan & Uleryk, 2014; Neuberg et al., 2017).

Safety culture has been recognized as a multidisciplinary and contextual discipline in safety science theory (Aven, 2014; Pillay, 2016). The empirical results of research in safety culture are considered as practical scientific outputs (Aven, 2014; Klockner & Pillay, 2019). Martin (1992) proposed that an appropriate approach to investigate safety should include integration, differentiation, and fragmentation. The integration perspective of safety culture research is oriented towards cultural manifestations and shared understandings, while the differentiation perspective focuses on subcultures of safety culture and the interpretations and meanings within them (Richter & Koch, 2004). Researchers use two broad frameworks to differentiate subcultures within organizations: (a) subcultures related to special or dominant organizational values, and (b) acknowledging the subcultures related to occupational, unit, specialty, clinical network, and other affiliations (Scott et al., 2003). In healthcare organizations, different professional groups may have their own subcultures related to safety culture, including medical, nursing, allied health, administrative, and managerial groups (Davis et al., 2000). Research has shown that managers' and employees' commitment to safety in care institutions is lower than in other healthcare institutions (Gartshore et al., 2017). Additionally, a lack of a holistic concept of safety culture for healthcare and long-term care institutions has been identified (Manser et al., 2016; Gartshore et al., 2017; Wagner et al., 2018; Ree & Wiig, 2019). The purpose of this study is to identify potential predictors of safe behaviour among care workers and establish a holistic framework for a proactive safety culture in healthcare and nursing homes. The main research question of the study is: How can a proactive safety culture be ensured in care institutions?

MATERIALS AND METHODS

Study design

The research adopted the pragmatism as philosophical paradigm to investigate the complex phenomenon (Pappas, 2017). The study is based on four staged, designed according to the explanatory sequential study design (Fig. 1) (Fetter et al., 2013; Hurley et al., 2019; Othman et al., 2021). Each stage was built on the results of the previous. Mixed method study design also supports implementation of multidisciplinary approach using sociological, psychological, and educational instruments.

The research design for this study applied both quantitative and qualitative approaches. The quantitative design was descriptive and correlational, providing a clear understanding of the characteristics, trends, and relationships among the variables investigated. It was important to ensure that the questionnaires were appropriate for the research question and the population being studied. It is also important to pilot test the questionnaire to identify any issues with wording, interpretation, or response options before administering it to the entire sample (Kristensen et al., 2005; DeVellis, 2017). The qualitative approach, using focus-group interviews with an interpretative or anthropological approach, allowed a deep exploration of a specific context and a holistic understanding of the phenomenon. To enhance the validity of the study, the issue of

reliability was addressed by testing the interview schedule prior to the interviews, and the issue of validity was addressed by using various data sources.

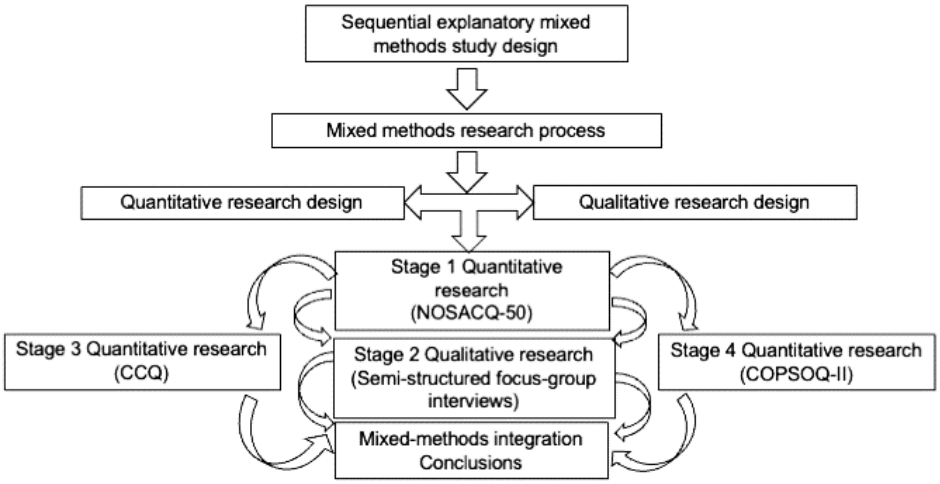

Figure 1. Study design (Sepp, 2021).

Research methods

To achieve the research question, standardized questionnaires were used. The Care workers Competence Questionnaire (CCQ) was developed, tested and validated by the author (Sepp et al., 2018). A licensed translator performed the translation of The Nordic Safety Climate Questionnaire (NOSACQ-50) and The Copenhagen Psychosocial Questionnaire, version II (COPSOQ-II) in the Estonian and Russian languages and back, the questionnaires were also validated and piloted. It was previously mentioned that the NOSACQ-50 questionnaire (Kines et al., 2011; Lipscomb et al., 2015) and COPSOQ II questionnaire (Kristensen et al., 2005) are reliable instruments to investigate safety culture and psychosocial risk management, which is in alignment with the proposed research purpose and revealed research gap. Previous research has used both questionnaires (NOSACQ-50, COPSOQ-II) in healthcare and found them to be appropriate instruments to investigate safety-related measures in care institutions. Gaber et al. (2020) used the NOSACQ-50 to assess occupational safety climate among healthcare workers, while Pousette et al. (2017) used the COPSOQ II to assess psychosocial risks in home care workers. Rais et al. (2019) used both questionnaires to assess safety climate and psychosocial work environment among nurses. In addition, Heghey et al. (2015) used the COPSOQ II to assess psychosocial work environment in nursing homes. Using the standardized NOSACQ-50 and COPSOQ II questionnaires, the authors aimed to improve the reliability and validity of the data collected, as these questionnaires are designed to measure specific constructs or variables in a consistent manner (Kristensen et al., 2005; Lipscomb et al., 2015).

In the first stage the NOSACQ-50 (Kines et al., 2011; Lipscomb et al., 2015) was used to evaluate care workers´ perceptions of safety climate. The questionnaire includes seven dimensions (dim 1. Management safety priority, commitment and competence, dim 2. Management safety empowerment, dim 3. Management safety justice, dim 4. Workers' safety commitment, dim 5. Workers' safety priority and risk

non-acceptance, dim 6. Peer safety communication, learning, and trust in safety ability, dim 7. Workers' trust in the efficacy of safety systems), 50 statements using a four-point Likert scale: 1 – strongly disagree, 2 – disagree, 3 – agree, 4 – strongly agree.

In stage two to complement results of the first phase, the semi-structured focus-group interviews were conducted to consider the deeper understanding of safety management justice. Dilshad & Latif (2013) have suggested that focus group interviews enable researchers to explore sensitive topics related to participants' needs or problems and obtain a deeper understanding of their perspectives. Employee safety behaviour is significantly impacted by safety management justice, which is positively influenced by fair treatment and procedures, as well as proper handling of accidents and near-misses by management. In the study, the focus group interviews were used by the author to gather evidence, both positive and negative, of safety management justice and its role in promoting continuous improvement in care institutions. The interviews included six topics: commitment, communication (inc. reporting), management, collaboration, teamwork and learning which were previously structured by Sepp & Tint (2017). The process of focus group interviews involved research design, data collection, analysis, and reporting of results, as outlined by Morgan, Krueger, and King (1998). According to Berry & Kincheloe (2004), conducting semi-structured focus group interviews is an effective approach for describing safety culture and complementing data obtained in the initial stage of a study. Author used open questions which were prepared for each topic to start the discussions (e.g., please characterise and give examples of the actions you believe demonstrate a strong commitment to safety in the workplace? Can you describe a time when you witnessed an accident or near-miss incident in the workplace? How was it reported and handled?). The purpose of utilizing focus group interviews was to gather superior quality data in a social environment that facilitates understanding the research phenomenon from the perspective of the participants.

In the third stage the relationship between employees' professional competences and dedication to safety was evaluated using The Care workers Competence Questionnaire (CCQ) (Sepp et al., 2018). The questionnaire includes six scales 1. Necessary skills, knowledge in living guests and patient care; 2. Necessary skills, knowledge for coping with the elderly and people with special needs; 3. Communication skills; 4. First aid; 5. Professionalism; 6. Commitment to safety, 31 statements using a five-point Likert scale.

In stage four to assess the psychosocial well-being of employees and the correlations with mental health problems (MHP) COPSOQ-II was used (Kristensen et al., 2005). The questionnaire includes 72 items covered the four psychosocial domains and 16 items grouped into the following MHP scales: burnout, stress, somatic stress symptoms and symptoms of depression. The items were scored by 6, 5, 4-point Likert scale according to validated methodology (Kristensen et al., 2005; Pejtersen et al., 2010).

Data collection

Primary data collection was carried out between September 2014 and November 2017 phase by phase. A simple random sample from 31 nursing homes and 34 inpatient care wards in hospitals registered in 2014 at the Estonia Health Insurance Fund was chosen. 19 institutions (33% of the population) from all regions of Estonia offered services according to the criteria set in the study, such as: offering the follow-up nursing and long-term care, rehabilitation, and palliative care, as well as availability of cognitive

impairment care. Total number of institutions in all four phases was 25. In first phase 19 institution were invited, four institutions declined the invitation, 15 organisations were included: 11 nursing homes and 4 inpatient care hospitals in the final sample (5 institutions from Northern, 3 from Western, 3 from Southern and 4 from Eastern parts of Estonia), where 7 of them were in the countryside and 8 in the cities. More than half (53.3%) of the selected institutions were private and 46.7% were from the public care system. In the first phase the NOSACQ-50 in Estonian or Russian language were sent to 371 full-time care workers with at least one year of experience, 233 fulfilled questionnaires were returned (62.8%) (Table 1). The criteria (full-time care workers with at least one year of experience) for the employees' participation were the same for all studies.

Table 1. The Characteristics of the data (Sepp, 2021)

Phase	Institution	Sample	Participants	Percent of sample
1. Quantitative NOSACQ-50	15	371	233	62.8%
2. Qualitative Focus-group interviews	6	73	73	
3. Quantitative CCQ	7	362	241	66.6%
4. Quantitative COPSOQ II	9	509	340	66.8%

In the second phase 73 care workers from the first phase participated into the focus group-interviews. The criteria for institutions were organizational sizes, geographical locations, follow-up nursing and long-term care services, rehabilitation, and palliative care, as well as availability of cognitive impairment care. A simple random sample of institutions was selected (three nursing homes and three inpatient care hospitals). The interviews in the study were conducted in small groups, specifically in care institutions at the workplace. The maximum number of participants in each group was ten, as suggested by Krueger (1994), as this group size allows for a diversity of perspectives while remaining manageable and organized. Conducting focus group interviews enabled the exploration of a common topic among a relatively homogenous group (Dilshad & Latif, 2013). The authors' role in the study was to act as facilitators, guiding the discussions among the group members during the focus group interviews (Nyumba et al., 2018). Each discussion was divided into two parts, lasting approximately four hours in total with a brief break.

Third stage included four institutions from the previous phases (2 nursing homes and 2 inpatient care hospitals) and three of new ones (1 inpatient care hospital and 2 nursing homes). The criteria for participation in the third study for the institutions were the same as for the previous one. A questionnaire was distributed to 362 care workers, 241 was fulfilled (66.6%).

Fourth stage included 2 nursing homes and 2 inpatient care hospitals from the previous phases and two inpatient care hospitals, and three nursing homes were new ones. In the last study of 509 full-time care workers that participated in the sample, 340 completed it (66.8%).

Data analysis

Upon receiving the completed questionnaires, the data was entered into an Excel program for each questionnaire (NOSACQ-50, CCQ, COPSOQ-II) separately to ensure

its accuracy. Once the data was entered, it was imported into the Statistical Package for Social Sciences software for further analysis. Statistical analyses were performed using IBM SPSS Statistics version 22.0 for the NOSACQ-50 questionnaire and version 24 for the CCQ and COPSOQ-II questionnaires. Descriptive statistics, such as standard deviation, means, frequency tables, minimum, and maximum, were applied to analyze the data. In addition, inferential statistics, such as t-tests, Spearman's correlations, Pearson correlations, linear regression, and Cronbach's alpha, were employed.

To analyse the data, which were collected during focus-group interviews, the conventional content analysis was selected. Firstly, all the data were read several times to acquire impressions and an overall sense. The word-by-word results of the interviewees were secured with codes, and at first highlighting of the exact word from the text that appeared to capture key thoughts or concepts was used. The basis for development of these criteria was the objective of the study.

Ethical considerations

Ethical permissions for all phases were obtained from the management of each institution. The study design addressed the objectives of the research. Used methods and questionnaires were validated and reliability was tested. Participation was voluntary, the confidentiality of participants was guaranteed. The purpose, objective and procedure of the study were introduced, each questionnaire had a cover letter, as well as an option to refuse from participation were added to the same document. Information was added to the introductory page of the focus group interview participants that they could refuse to participate and leave at any time and for any reason. Without anyone having to specify the reason or give any other explanation. Participants signed the consent form before the interviews.

The next chapter presents the important results of all four phases.

RESULTS

The results, including quantitative surveys and focus group interviews, demonstrate that safety culture differentiation to subcultures which are specific to a particular field provided strong evidence to reliable results of the assessment of safety culture.

The first stage of assessing care workers' perceptions of safety climate involved utilizing the NOSACQ-50. The questionnaire was used to measure seven dimensions (Table 2). A score of over 2.5 was deemed positive, as this is the average of the highest and lowest possible scores. The results of the first phase revealed that the safety climate in care institutions is positively assessed by the care workers. Employees trust the efficacy of safety system (3.61) and rate their commitment to safety highly (3.57), safety communication, learning and trust ability as well as management safety justice (3.52). The lower score was given to workers' safety priority and risk non-acceptance (2.89).

The focus-group interviews revealed challenges of safety system and safety management. There is lack of resources, ergonomic tools as well as inappropriate work organisation and not enough time to perform nursing activities correctly and safely. In addition, the results of the second stage study revealed that open communication, teamwork, mutual trust, and employee involvement in occupational health and safety (OSH) activities and decision-making processes increase motivation and collaboration among care workers. However, reporting practices and safety communication in

Estonian care institutions are poor due to employees' fear of being stigmatized and punished. Although care workers are aware of the main occupational risks and required safety measures, lack of resources, professional and safety-related training, and ineffective communication mechanisms contribute to unsafe behaviour.

Table 2. The dimensions of Nordic Safety Climate Questionnaire (NOSACQ-50) (Sepp, 2018)

Dimensions		Items	Scores	M	SD
Dim 1.	Management safety priority, commitment and competence	9	3.39	30.36	3.73
Dim 2.	Management safety empowerment	7	3.49	24.38	3.66
Dim 3.	Management safety justice	6	3.52	21.15	3.17
Dim 4.	Workers' safety commitment	6	3.57	21.56	2.81
Dim 5.	Workers' safety priority and risk non-acceptance	7	2.89	20.12	3.93
Dim 6.	Peer safety communication, learning, and trust in safety ability	8	3.52	28.18	2.97
Dim 7.	Workers' trust in the efficacy of safety systems	7	3.61	25.34	2.91

To assess the level of internal consistency for the CCQ and COPSOQ-II scales and variables, Cronbach's coefficient alpha was calculated. The reliability values range from zero, indicating poor reliability, to one, indicating high reliability. Table 3 presents the results of the Care workers Competence Questionnaire (CCQ). The scales show a high level of internal consistency. Furthermore, the mean scores and standard deviations reveal that Scale 1 has the highest score, followed by Scale 2 and Scale 6. This indicates the importance of the necessary skills and knowledge in living guests and patient care, as well as coping with the elderly and people with special needs, for the commitment to safety.

Table 3. The scales of Care workers Competence Questionnaire (CCQ) (Sepp et al., 2018)

Scales		Items	Cronbach's alpha	M	SD
Scale 1.	Necessary skills, knowledge in living guests and patient care	10	0.897	43.42	5.77
Scale 2.	Necessary skills, knowledge for coping with the elderly and people with special needs	6	0.877	30.13	3.91
Scale 6.	Commitment to safety	6	0.845	25.59	3.81

The Table 4 includes the items, Cronbach's alpha, mean, and standard deviation (SD) for each psychosocial factor and MHP. Overall, the COPSOQ-II questionnaire provides a comprehensive assessment of psychosocial factors and MHPs in the workplace. The Cronbach's alpha values indicate good to excellent internal consistency reliability for most of the items, and the mean scores and SDs provide an understanding of the prevalence and variability of these factors and MHPs in the workplace. The results of this study suggests that work demands, work organisation, interpersonal relationships, values at the workplace, and mental health problems are all important factors that influence the wellbeing of employees. The findings of this study can help employers to identify areas that need to be improvement, and provide interventions that help employees to cope better with their work environment. By improving the workplace environment, employers can reduce mental health problems and enhance the wellbeing of their employees.

Table 4. The psychosocial factors and MHPs of Copenhagen Psychosocial Questionnaire (COPSOQ-II) (Sepp et al., 2019)

Psychosocial factors and MHPs	Items	Cronbach's alpha	M	SD
Demands at work				
Quantitative demands	3	0.858	50.7	25.80
Work pace	4	0.849	30.1	19.04
Cognitive demands	4	0.676	29.1	13.52
Emotional demands	3	0.712	27.1	15.01
Demands for hiding emotions	3	0.739	26.4	18.29
Work organisation and job content				
Influence	4	0.777	50.3	19.99
Possibility for development	4	0.761	29.6	15.97
Meaning of work	3	0.836	17.1	14.35
Commitment to the workplace	3	0.575	38.1	18.81
Interpersonal relationships and leadership				
Predictability	2	0.725	33.3	19.75
Rewards	5	0.853	28.2	15.58
Role clarity	3	0.848	19.0	15.05
Role conflicts	4	0.835	52.2	22.70
Quality of leadership	4	0.848	35.1	18.72
Social support from colleagues	3	0.763	25.5	16.85
Social support from supervisors	3	0.827	29.7	19.57
Social relationships at work	3	0.774	19.0	13.58
Values at the workplace				
Trust	7	0.622	47.3	14.99
Justice and respect	4	0.853	37.3	18.26
Social inclusiveness	3	0.670	39.9	22.77
Mental health problems				
Burnout	4	0.904	63.5	21.48
Stress	4	0.845	69.1	17.77
Somatic symptoms	4	0.641	79.4	14.28
Symptoms of depression	4	0.736	77.1	15.32

Table 5 displays the correlation coefficients between employees' awareness of specialty and occupational competences at a significance level of $p = 0.001$. The results indicate a strong positive correlation between employees' awareness of necessary skills and knowledge in guest and patient care (scale 1) and their level of professionalism (scale 5). Similarly, employees' awareness of necessary skills and knowledge for coping with the elderly and people with special needs (scale 2) is strongly positively correlated with their level of professionalism (scale 5). Furthermore, communication skills (scale 3) and first aid (scale 4) are also strongly positively correlated with professionalism. Finally, commitment to safety (scale 6) is moderately positively correlated with professionalism. The results suggest that employees' awareness of necessary skills and knowledge in guest and patient care, skills for coping with the elderly and people with special needs, communication skills, and first aid are strongly related to their level of professionalism. Additionally, their commitment to safety is moderately related to professionalism. Researchers have emphasized that employees' commitment to safety depends on their affiliation with professional competences and self-esteem (Chen et al., 2016; Hignett et al., 2013; Dul et al., 2012).

Table 5. Correlations between employees' awareness of speciality and occupational competences (Sepp et al., 2018)

Scales	Scale 2	Scale 3	Scale 4	Scale 5	Scale 6
1 Necessary skills, knowledge in living guests and patient care	0.783	0.687	0.681	0.645	0.629
2. Necessary skills, knowledge for coping with the elderly and people with special needs		0.678	0.677	0.749	0.607
3. Communication skills			0.593	0.667	0.563
4. First aid				0.574	0.345
5. Professionalism					0.536

$p = 0.001$.

Table 6 presents the results of the Copenhagen Psychosocial Questionnaire (COPSOQ-II) on various psychosocial factors and mental health problems (MHPs) in the workplace. The results indicate that quantitative demands are negatively correlated with burnout and cognitive demands have a weak positive correlation with stress. Emotional demands, on the other hand, are strongly positively correlated with burnout, stress, depressive symptoms, and somatic symptoms. Demands for hiding emotions are also positively correlated with depressive and somatic symptoms.

Regarding work organization and job content, influence is negatively correlated with burnout, stress, and depressive symptoms. Possibility for development has a weak positive correlation with burnout and stress. Commitment to the workplace is negatively correlated with burnout, stress, and depressive symptoms.

Interpersonal relationships and leadership also play a role in employees' mental health. Predictability is negatively correlated with burnout and stress. Rewards are strongly negatively correlated with burnout, stress, depressive symptoms, and somatic symptoms. Quality of leadership is negatively correlated with burnout, stress, depressive symptoms, and somatic symptoms. Social support from colleagues and supervisors is also negatively correlated with various MHPs.

Finally, social inclusiveness is negatively correlated with burnout. The results suggest that various psychosocial factors in the workplace can impact employees' mental health. Emotional demands, rewards, and quality of leadership are strongly related to burnout, stress, depressive symptoms, and somatic symptoms. Improving these factors may be important in promoting employee mental health and well-being.

Stage four showed that psychosocial well-being of employees and their safe performance is also dependent on organisational priorities and management. Leadership has a crucial role in preventing employees' mental health problems. According to the study results, quality of leadership is negatively correlated with burnout, depressive symptoms, and somatic symptoms. Additionally, employee's reward is negatively correlated with burnout, stress, depressive symptoms, and somatic symptoms. Results of phase four are in line with previous findings of Dehring and colleagues (2018) and showed that employees' rewards, work predictability, social support from supervisors, social inclusiveness, and quality of leadership negatively correlate with mental health problems. Social support from supervisors has a negative correlation with burnout, stress, and depressive symptoms, consistent with previous research by Dehring et al. (2018), which found that a lack of social support negatively impacts employee satisfaction and is associated with work stress and burnout.

Table 6. Cross-sectional correlation analysis for psychosocial hazards and mental health problems COPSOQ-II (Sepp et al., 2019)

Psychosocial factors (scales)***	Burnout	Stress	Depressive symptoms	Somatic symptoms
Demands at work				
Quantitative demands	-0.229**	0.055	0.015	-0.01
Cognitive demands	0.108*	0.082	0.093	0.083
Emotional demands	0.201**	0.169**	0.174**	0.226**
Demands for hiding emotions	0.190**	0.051	0.118*	0.124*
Work organisation and job content				
Influence	-0.141**	-0.281**	-0.118**	0.002
Possibility for development	0.124*	0.139*	-0.023	0.033
Meaning of work	-0.043	-0.096	-0.052	-0.004
Commitment to the workplace	-0.287**	-0.165**	-0.161**	-0.098
Interpersonal relationships and leadership				
Predictability	-0.150**	-0.131**	-0.046	-0.024
Rewards	-0.427**	-0.186**	-0.227**	-0.155**
Role clarity	0.102	-0.093	-0.049	0.021
Role conflicts	-0.183**	-0.077	-0.067	-0.016
Quality of leadership	-0.247**	-0.217**	-0.183**	-0.178**
Social support from colleagues	-0.08	-0.105	-0.168**	-0.035
Social support from supervisors	-0.183**	-0.174**	-0.114*	-0.098
Social relationships at work	0.130*	-0.055	-0.136*	0.026
Values at the workplace				
Social inclusiveness	-0.178**	-0.072	0.005	-0.168**

*Statistically significant p-value ($p < 0.05$); **Statistically significant p-value ($p < 0.01$); ***Numerical values based on Pearson's correlations adjusted using sequential Bonferroni correction.

Nursing homes have been identified as a high-risk sector for negative impacts on employee´s psychosocial well-being and mental health (Flin, 2007; Garrett, 2008; Li et al., 2010), and the results of this study support these previous findings. Emotional exhaustion was identified as a predictive factor for burnout, somatic symptoms, and symptoms of depression among nursing home employees. Based on the four stages conducted by the author, it can be concluded that ensuring employees' safety behaviour requires an understanding and recognition of various risk factors. These risk factors can be related to employees' personal factors such as their attitudes, perceptions, and behaviours, as well as the factors related to their work environment and management. Therefore, it is important for organizations to take a holistic approach to promoting safety behaviour among their employees, which includes addressing both individual and environmental factors. By doing so, organizations can create a safe and healthy work environment that promotes employee´s well-being and performance.

DISCUSSION

The results of the four stages conducted by the author provide important context for understanding the complex interplay between individual and environmental factors that contribute to safety behaviour in the workplace. The results showed that safety culture differentiation should be seen through two perspectives: perceptions of crucial occupational groups and sustainable assessment of crucial subcultures. In healthcare, it

was previously defined that to provide quality and safe services, trust culture including subcultures - just, reporting and learning - should be developed (Reason & Hobbes, 2003). In addition, differentiated perspectives allowed the investigation of the interaction of safety culture components through defined subcultures among one occupational group (care workers). The study emphasizes the need for care workers to share information, knowledge, and experiences and to talk openly about mistakes among colleagues. The results highlight the importance of properly managed and exchanged knowledge as a part of the safety management system and call for involvement in OSH activities and decision-making processes based on mutual trust and responsibility among employees and management. The results demonstrate that employees value safety, but do not see the relationships between safety measures and their daily performance. The results on the stage one support this and could be explain by the anthropological approach and the influences of historical memory related to Soviet time. When the regulations were perceived as a formal aspect not the part of the organisational existents (Sepp, 2021).

The results of stage two and interviews conducted in care institutions support previous findings and showed that a trust culture promotes open communication (DeJoy & Schaffer, 2015), accountability, continuous learning, and job satisfaction among employees (Schein, 2010; Bhuiyan et al., 2018). Open communication is not an expected practice in investigated care institutions. According to results of qualitative phase care workers noted that they do not have enough time and opportunities to discuss safety issues, and their supervisors do not consider it important either. These findings are in line with previous results that discussing the errors and safety problems in healthcare is more common for nurses and doctors (Danielsson et al., 2014). The interviews revealed care workers´ concessions on safety are initiated by professional distance between supervisors and employees as well as poor involvement is decision-making processes. Wagner and colleagues (2018) proposed that to provide safety in healthcare the distance between different occupations as well as management should be minimized, and safety measures focused on proactive safety management systems approach. Gorini and colleagues (2012) stated that errors and mistakes in healthcare are usually caused by the factors related to safety management systems also, which should be prevented, and negative consequences eliminated. In a trust culture, employees are more likely to report safety concerns, incidents, and near misses without fear of retribution. This enables organizations to identify potential hazards and risks early and take appropriate measures to address them before they can cause harm. Developing a trust culture encourages identifying potential problems and conflicts, taking responsibility for actions, sharing knowledge and experiences, and valuing employees. This leads to increased productivity, reduced turnover, and better overall performance. A trust culture that includes subcultures of justice, reporting, and learning is essential for creating a safe, open, and accountable work environment. This approach is supported by previous research, which has confirmed that a just culture in healthcare organizations can improve employee commitment to safety and encourage safe behaviour (Cooper et al., 2017; Pousette et al., 2017).

Study results also demonstrated that professional and safety-related training increase employees' commitment to safety. Regular safety training, open communication and systematic continuous improvement process are the precondition for proactive safety management (Collins et al., 2009; Frank-Cooper, 2014; Battard, 2017) as well as employees' commitment to safety (Karami et al., 2017). Study results match

with previous findings that employees' ability to solve problems and conflicts depend on their self-confidence, motivation, job satisfaction (Chang et al., 2012; Ahancing et al., 2015; Heydari et al., 2016) and professional competences (Epstein & Hundert, 2002). According to phase three organisations should develop professional competence culture as a subculture of safety culture and support employees all opportunities from formal education systems and informal training programs in their life-long learning process (Sepp, 2021). Employees professional competencies should be seen as an organisational value and capacity enhancing successful SMSs and productivity of organisational outcome (Sujan et al., 2017).

In healthcare, employees' professional competences have been found to influence their motivation, self-efficacy, commitment, and safe performance positively. Professional competence culture is a precondition for the systematic development of proactive safety culture in the context of OSH management (Kines et al., 2010). Employees' professional competences and professional identity should be seen as predictors of safety behaviour, as employees who estimate their knowledge more supreme are more committed to safety (Fernández-Muñiz et al., 2007). Therefore, it is essential for organizations to identify, assess, and model professional competences at the workplace to ensure employees' continuous development. The development of new technologies and techniques creates requirements for ongoing professional development, which should be addressed not only during professional studies but also through in-service training. Organizations should transform workplaces into learning and collaborative work environments that support employees in the continuing development of their professionalism. At the organizational level in the work environment, the interests of individuals and the organization coincide with, where through informal social interaction, knowledge sharing takes place, which in turn is reflected in the organization's outputs and results. The basis of interaction is previously proposed cultures of trust and subcultures of justice, reporting, and learning, as well as new subcultures of professional competence and psychosocial well-being.

At the organisational level high psychosocial safety culture ensures employees' psychosocial wellbeing through the balance of resources and demands (Dollard & McTernan, 2011). The management of employees' psychosocial well-being has been recognized as an integral part of Occupational Safety and Health (OSH) management for the past decade (Iedema, 2009). To promote employees' positive mental health, organizations should focus on developing a psychologically safe working environment, positive social support (Qin et al., 2014; Ribeiro et al., 2018), and fostering good relationships between colleagues (Chen et al., 2016; Wagner et al., 2018). Previously, researchers have demonstrated that appropriate work organization, social inclusiveness, justice, respect in the workplace, meaningful work, and development opportunities are associated with positive mental health in employees (Eatough et al., 2012; Ribeiro et al., 2018). Psychosocial well-being is essential for safe performance in healthcare, and it depends on psychological, physical, and social dimensions (Eatough et al., 2012; McCaughey et al., 2014; Khamisa et al., 2015; Dhaini et al., 2016). Dollard & McTernan (2011) concluded that a psychosocial safety climate refers to a climate that ensures the psychosocial well-being of workers through the balance of resources and demands. This includes organizational systems, policies, practices, procedures, senior management commitment, organizational communication, and employees' participation in health and safety activities. Eklöf and colleagues (2014) confirmed that appropriate safety

management and evaluation of safety processes lead to improved communication, promoting occupational and psychosocial well-being. The allocation of resources is crucial according to employees' perceptions, as it demonstrates inclusiveness towards OSH management. Availability of ergonomic equipment and training influences employees' motivation and safe performance, resulting in social support and adequate resource allocation leading indicators for the prevention of occupational illnesses related to employees' mental health (Park et al., 2009; Kamioka & Honda, 2012; Ribeiro et al., 2012) and safe performance (Dhaini et al., 2016).

To prioritize and regularly assess employees' psychosocial well-being, it should be supported by organizational culture, focusing on psychosocial well-being as a value shared by all organizational members, including supervisors, senior management, and colleagues (Brown et al., 2016). A positive working environment supported by a psychosocial well-being culture facilitates proactive assessment and management of psychosocial risks, ensuring workers' mental health and supporting safe behaviour. Such a culture is characterized by quality leadership, appropriate work demands, supportive interpersonal relationships between colleagues, and between employees and supervisors. Overall, it is important for organizations to recognize the significance of employees' psychosocial well-being and adopt a culture that supports it, as it is essential for safe performance, productivity, and overall well-being. The findings of the study support previous research, which has revealed that the health and safety of employees in the healthcare sector have a significant impact on patient outcomes (Cooper et al., 2017; Pousette et al., 2017). It has been suggested that both phenomena are influenced by similar managerial mechanisms, highlighting the need for a comprehensive and integrated approach to workplace safety (Cooper et al., 2017).

Safety management systems include risk assessment and evaluation of safety climate which help to identify areas for improvement (Eklöf et al., 2014). Differentiative perspective enabled to investigate safety culture through the multidisciplinary approach (Quinlan et al., 2010) and revealed the external (Aven, 2014; Klockner & Pillay, 2019) and internal influences (Hofmann & Mark, 2006; Heerkens et al., 2017) as well as improvement areas in the context of complex social processes. Safety management should be integrated into the general management of the organisation and approached proactively (Agnew et al., 2013; Pousette et al., 2017; Wagner et al., 2018). One important proactive standpoint is that to implement SMSs, perceptions of different occupational groups about influential safety aspects within the organisations should be identified and addressed, risks assessed, and valuable information shared within the organisation.

These findings highlight the critical role of management in promoting employee safety and well-being by identifying the challenges and needs of employees and addressing them through the development of a supportive work environment. Specifically, the results suggest that positive relationships and the development of employees' professional competencies are key factors in promoting safety behaviour and reducing the negative impacts of high psychosocial risks. These findings reinforce the need for a holistic approach to promoting safety behaviour that considers both individual and environmental factors. According to the results of the current study, the author has identified two new subcultures for transferring safety culture and knowledge from an individual's subjective viewpoint to a more functional approach among healthcare and nursing institutions (Fig. 2). Just, reporting and learning culture were previously

proposed by Reason & Hobbes (2003), and professional competences culture and psychosocial well-being culture were identified as new subcultures which are crucial for the work environment of healthcare and nursing contexts. Differentiated approach allows creating a bridge between individual and organizational perspectives and transferring safety-related knowledge from one site to another. This can be seen as an opportunity to fill a research gap, which in the context of this work is defined as a deficiency of a holistic approach.

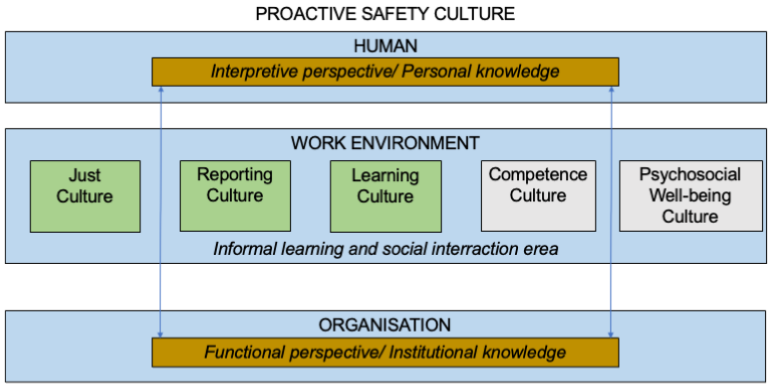

Figure 2. Safety culture subculture (Sepp, 2021).

From the organisational and managerial perspective measurement and continuous improvement of defined safety subcultures could be seen as a proactive approach of safety culture as well as efficient measures for implementation of occupational and safety management system into the organisational management with the special focus on qualitative improvement of organisational outcomes. Organisations are seen as an innovative working environment where functional and interpretive perspective creates opportunities for knowledge interaction between personal and institutional level with the special focus on improvement of employees' behaviour and increase organisational values. Transformations to collaborative working environments should be part of organisational strategy and human resource management (Jennings, 2009; Mulder, 2016) because all knowledge cannot be addressed without social, cultural, and physical interaction (Wald, 2015).

CONCLUSIONS

The results of this study have important implications for organizations seeking to promote the safety and well-being of their employees, particularly in high-risk sectors such as nursing homes. By enlightening the complex interplay between individual and environmental factors that contribute to safety behaviour, this study provides valuable insights into the specific risk factors that are most strongly associated with negative outcomes such as MHS among nursing home employees. These findings underscore the need for a holistic approach to promoting employee safety and well-being, which includes addressing both personal and environmental factors. In particular, the critical role of management in creating a supportive work environment that fosters the

professional development and well-being of employees cannot be overstated. The implications of these findings are wide-reaching and have the potential to improve the lives and well-being of countless employees in high-risk sectors. The study's findings revealed that to ensure a proactive approach, a positive safety climate, workplace mental health, psychosocial risks should be addressed, and a culture of professional competence should be developed to create a safe and healthy work environment. Effective integration of safety management systems into routine administrative processes and the role of supervisors in this process is critical. By prioritizing a culture of psychosocial well-being and continuous learning for professional development, healthcare organizations can improve employee performance, job satisfaction, and overall organizational outcomes.

The study adds to the position of previous research by identifying two new subcultures, professional competence culture, and psychosocial well-being culture, in the human component of safety culture. The study highlights the importance of professional competence culture and psychosocial well-being culture in the human component of safety culture within healthcare organizations. The lack of proper care worker training can have a significant impact on patient safety, and a culture that supports professional competence is crucial to ensure that care workers are adequately trained and competent in their roles The connection between professional competence culture and continuous training in the educational system is discussed, emphasizing the need for comprehensive training before entering the workforce. Organizations should adopt a culture that values and uses all opportunities from formal education systems and in-service safety training programs to provide a lifelong learning process within and outside the organization. The development of a professional competence culture is a contribution and innovative aspect in the safety culture theory, as it promotes a lifelong learning approach and enhances safety and productivity in the organization.

It is essential for organizations to prioritize employee´s mental health and well-being by promoting a psychosocial well-being culture that values positive working relationships, social support, and work-life balance. This can include measures such as providing training on stress management and resilience, promoting flexible work arrangements, and creating a supportive work environment that fosters a sense of community and belonging. By addressing psychosocial risks and promoting a culture of psychosocial well-being, organizations can create a safer workplace culture and improve employee performance, job satisfaction, and overall organizational outcomes. The promotion of a psychosocial well-being culture is suggested as a potential solution to this issue, and measures such as management training, flexible work arrangements, and supportive work environments are discussed.

The conclude the study the need for a multidisciplinary approach to reveal the complex social processes influencing safety culture. The significance of effective integration of safety management systems into routine administrative processes is also discussed, with the critical role of supervisors in this process emphasized. The study highlights the importance of a comprehensive approach to promoting a proactive safety culture in healthcare organizations. The reciprocal influence of multiple components, including the human, environment, and organization, on safety behaviour should be considered equally for successful implementation of safety management systems. The study emphasizes the need for a multidisciplinary and differentiative approach to reveal the complex social processes influencing safety culture and effective integration of

safety management systems into routine administrative processes, with the critical role of supervisors in this process emphasized.

ACKNOWLEDGEMENTS. The development of the safety culture framework was supported by Tallinn Health Care College project 1-16/61 'Proactive safety management in healthcare'.

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