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Dear Our Valuable Readers,

"Care in a Changing World"

Nursing care takes shape within relationships, care environments, and the broader social context in which individuals live. As we begin 2026 with the third issue of the Journal of Nursing Care Research, this issue brings into focus how care is influenced by interpersonal dynamics, communication practices, psychosocial factors, and emerging challenges in health systems.

The articles presented in this issue reflect the multidimensional nature of nursing care across different populations and settings. One original study examines father attachment, perceived parental relationships, and psychological control, emphasizing how early relational experiences continue to shape emotional bonds and attachment patterns in emerging adulthood. This perspective contributes to a deeper understanding of relational backgrounds that influence mental health and well-being. The importance of communication as a cornerstone of nursing care is addressed through research conducted in intensive care units. Findings related to nurses' communication skills and psychosocial care competencies underline that even in highly technical environments, effective communication remains central to holistic and patient-centered care. Another original article explores the relationship between COVID-19 phobia and health-promoting and protective behaviors. This study highlights the lasting psychosocial dimensions of the pandemic and reminds us that nursing care must consider emotional responses and behavioral adaptation alongside physical health measures.

This issue also includes two review articles that strengthen the evidence base for nursing practice. A scoping review on nursing interventions for the prevention of falls in older adults addresses a critical patient safety concern in geriatric care. Additionally, the review on Su Jok therapy as a complementary approach in postoperative symptom management offers a critical evaluation of integrative practices within surgical nursing. Finally, the letter to the editor expands the discussion on health literacy by drawing attention to community-level challenges in an increasingly digital health landscape. This contribution invites reflection on the evolving responsibilities of nursing in supporting informed decision-making and equitable access to health information.

Taken together, the studies in this issue reaffirm that nursing care is grounded in evidence, shaped by relationships, and responsive to changing societal needs. We believe that the articles presented here will contribute to clinical practice, research, and education, while supporting the ongoing development of nursing care.

We sincerely thank our authors, reviewers, and editorial board members for their valuable contributions. Journal of Nursing Care Research remains committed to advancing knowledge that strengthens nursing practice and improves patient care.

Sincerely,

Assoc. Prof. Hilal Seki Öz, PhD
Editor in Chief

Journal of Nursing Care Research

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ORIGINAL ARTICLES

REVIEW

LETTER TO THE EDITOR

MHA MEDIHEALTH ACADEMY
Journal of Nursing Care Research
Original Article
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The effect of communication skills of nurses working in the intensive care unit on their self-assessments of psychosocial care competence

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ABSTRACT

Aims: This study was conducted to determine the effect of communication skills of nurses working in intensive care units on their self-assessment of psychosocial care competence.

Methods: This descriptive and correlational study was conducted with 330 nurses actively working in the intensive care unit of a city hospital between June 15 and August 15, 2024. "Descriptive Information Form", 'Psychosocial Care Competence Self-Assessment Scale' and 'Communication Skills Inventory' were used to collect the data.

Results: The communication skills (162.64±17.79) and psychosocial care competence self-assessment levels (63.22±15.66) of nurses working in the intensive care unit were found to be above average. In this study, a significant positive relationship was found between nurses' communication skills and their self-assessments of psychosocial care competence ($r=0.36$, $p<0.001$). Nurses' communication skills explained 13.1% of the variation in their self-assessments of psychosocial care competence (Adj. $R^2=0.131$).

Conclusion: It is recommended that effective and need-oriented training programs should be conducted to improve nurses' communication skills and support their psychosocial care competencies.

Keywords: Intensive care nursing, psychosocial care, communication skills

INTRODUCTION

Intensive care units are units that provide uninterrupted health care services in the treatment and care of patients with serious physical illnesses and in the prevention of complications (Dasai et al., 2011). In intensive care units, environmental characteristics of intensive care, being under life risk, treatment and practices, inability to communicate, physical restrictions, isolation, inability to protect patient privacy, lack of information, feeling unsafe and prolonged hospitalization may cause psychosocial reactions in patients (Alaca, 2008; Dedeli & Akyol, 2008; Zengin, 2010; Şahin & Köçkar, 2018). Common psychosocial reactions in intensive care patients include anger, anxiety, fear, powerlessness, hopelessness, spiritual distress and intensive care syndrome (Prevost, 2001; Grandell, 2002). As a result of these reactions, conditions such as inability to cooperate in self-care, slow recovery due to weakening of the patient's immune system, and prolonged stay in intensive care may occur (Gomez et al., 2007). When patients do not receive psychosocial support for these reactions, they continue to experience these problems after discharge (Wade et.al, 2014). In intensive care units, nurses should be able to implement interventions for the psychosocial care of patients, including interventions such as providing information, listening, interviewing, empathy, coping with stress, identifying and addressing psychosocial needs, and establishing therapeutic relationships (Kocaman, 2006). These interventions also require good communication skills. Effective patient-nurse communication is necessary to better understand patient behaviors and needs and to make plans to meet these needs. The fact that nurses have effective communication skills contributes positively to increasing patient satisfaction, ensuring the safety of the care environment, treatment compliance and the healing process of the disease (Charlton et al., 2008; Boynton, 2016; Gilber&Hayes, 2009). Effective communication skills are a fundamental nursing skill in the first stage of psychosocial care. Since it is the person who establishes a direct relationship with the patient, the communication skills of the nurse are also important in terms of the quality of psychosocial care (Kocaman, 2006).

A review of the literature revealed that there are no studies examining the relationship between the communication skills of nurses working in intensive care units and their self-

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assessment of psychosocial care competencies. This study aimed to evaluate the relationship between the communication skills of nurses working in intensive care units and their self-assessment of psychosocial care competencies.

METHODS

Ethics Approval and Consent

The study was conducted by the Ankara Etlik City Hospital Non-interventional Clinical Researches Ethics Committee (Date: 24.04.2024, Decision No: AEŞH-BADEK-2024-298). Informed consent forms were obtained from all patients. All procedures were carried out in accordance with ethical rules and the principles of the Declaration of Helsinki. The study was conducted with 330 nurses working in the intensive care unit between June 15 and August 15, 2024.

Study Design

In this descriptive-correlational study, the study population consisted of 800 nurses working in the intensive care unit. The study was completed with 330 nurses who agreed to participate. This number represents 41.2% of the study population. Data collection forms were distributed to nurses who agreed to participate in the study. Completing the forms took 15-20 minutes.

Data Collection Tools

The data of the study were collected using the Personal Information Form, Psychosocial Care Competence Self-Assessment Scale (PCCSAS) and communication skills inventory (CSI).

1. **Personal information form:** It is a form consisting of 14 questions including professional and sociodemographic information of the participants developed by the researcher in line with the relevant literature.
2. **Psychosocial Care Competence Self-Assessment Scale (PCCSAS):** It was developed by Karataş and Kelleci (2021) to determine to what extent nurses can diagnose patients psychosocially, to what extent they can determine their psychosocial needs, to determine their self-assessment of psychosocial care competencies and to determine the current situation in this regard. The scale items are in 5-point Likert type. The scale consists of 18 items and four sub-dimensions called "symptom identification", "using information", "intervention" and "diagnosis". The cronbach alpha values of the scale were found to be 0.93 for the whole scale and the sub-dimensions ranged between 0.80 and 0.93. In our study, the cronbach alpha value for the whole scale was found to be 0.88.
3. **Communication Skills Inventory (CSI):** The scale was developed by Ersanlı and Balcı (1998) and consists of 45 items and three sub-dimensions: cognitive, emotional and behavioral. The scale is 5-point Likert type. The highest score that can be obtained from the scale is 225 and the lowest score is 45. High scores on the scale indicate that the communication skill level of that individual is high. The cronbach alpha coefficient of the scale is 0.72. In our study, the cronbach alpha value was 0.97.

Statistical Analysis

The data analysis of the data was performed using the Statistical Package for the Social Sciences (SPSS 20.0) software package. The significance level was set at $p<0.05$. Descriptive statistics were presented as numbers, percentages, and standard deviations. Pearson correlation analysis was used to examine the relationship between the two scales. A simple linear regression model was used to examine whether intensive care nurses' communication skills affected their psychosocial care skills self-efficacy.

RESULTS

Sociodemographic and Occupational Characteristics of Nurses

It was determined that 71.5% of the nurses participating in the study were female, 96.4% were between the ages of 20 and 30, 95.5% had a bachelor's or master's degree, 79.5% were single, and 46.7% described their economic situation as having less income than expenses. When examining the nurses' years of experience in the profession, it was found that 73.3% had been working for 2-5 years, and 61.2% had been working in intensive care for the same period of 2-5 years. 83.9% of nurses reported working 48 hours or more per week. 84.5% reported caring for 1 or 2 patients per workday. 88.2% of nurses reported receiving training in communication, and 75.8% reported receiving training in psychosocial care (Table 1).

Findings Related to Communication Skills of Intensive Care Nurses

Table 2 shows the subscale and total mean scores of the general communication skills scale for intensive care nurses. The subscale mean scores of the scale were determined as 54.01±5.95 in the mental dimension, 56.95±6.99 in the behavioural dimension, and 51.68±7.21 in the emotional dimension. The total mean score of the scale was 162.64±17.79.

Findings Related to Intensive Care Nurses' Self-Assessment of Psychosocial Care Competence

When nurses' self-assessments of psychosocial care competence were examined, the PCCSAS subdimensions were found to be 17.88±4.95 for symptom identification, information use 17.59±4.65, intervention 13.89±3.51, diagnosis 13.86±3.69, and total psychosocial care competence 63.22±15.66 (Table 3).

Pearson Correlation and Regression Analysis Results for the Relationship Between Nurses' Communication Skills and Self-Assessment of Psychosocial Care Competence

In our study, a statistically significant positive correlation was found between the total score of communication skills and the total score of psychosocial care competence self-assessments ($r=0.36$, $p<0.001$) (Table 4).

A simple linear regression model was used to examine whether intensive care nurses' communication skills affected their self-assessments of psychosocial care competence. The model, in which communication skills were the independent variable and psychosocial care competence self-assessment was the dependent variable, was found to be statistically significant ($F=50.658$; $p<0.001$). The model's coefficient of determination is $R^2=0.134$. This result indicates that

Table 1. Sociodemographic and occupational characteristics of nurses (n=330)

	Number of people	Percent (%)
Gender		
Female	236	71.5
Male	94	28.5
Age		
20-30 years old	318	96.4
31-40 years old	12	3.6
Education status		
Health vocational high school	15	4.5
Undergraduate and postgraduate	315	95.5
Marital status		
Married	68	20.6
Single	262	79.4
Economic situation		
Income expense equal	139	42.1
Income less expenses	154	46.7
Income exceeds expenditure	37	11.2
Length of service in the profession		
1 year and less	64	19.4
2-5 years	242	73.3
6 years and above	24	7.3
Working time in intensive care		
1 year and less	128	38.8
2-5 years	202	61.2
Intensive care unit worked in		
Internal medicine ICU	146	44.2
Neurology ICU	93	28.2
Coronary ICU	26	7.9
Anesthesia and reamination ICU	38	11.5
Surgical ICU	27	8.2
Mode at work		
Daytime only	22	6.7
Night and day	308	93.3
Working hours per week		
40 hours	53	16.1
48 hours and over	277	83.9
Number of patients per nurse		
1-2	279	84.5
3-4	51	15.5
Communication training status		
Yes	291	88.2
No	39	11.8
Status of training on psychosocial care		
Yes	250	75.8
No	80	24.2

Table 2. Communication Skills Inventory (CSI) sub-dimensions and total score values (n=330)

CSI total	Mental dimension	Behavioral dimension	Emotional dimension
X±SD	X±SD	X±SD	X±SD
162.64±17.79	54.01±5.95	56.95±6.99	51.68±7.21

CSI: Communication Skills Inventory, SD: Standard deviation

Table 3. Psychosocial Care Competence Self-Assessment Scale (PCCSAS) sub-dimensions and total score values (n=330)

PCCSAS total	Symptom identification	Using knowledge	Intervention	Diagnostics
X±SD	X±SD	X±SD	X±SD	X±SD
63.22±15.66	17.88±4.95	17.59±4.65	13.89±3.51	13.86±3.69

SD: Standard deviation

Table 4. Pearson correlation analysis results for the relationship between nurses' communication skills and psychosocial care competency self-assessments

	Mental dimension	Behavioral dimension	Emotional dimension	CSI total
Symptom identification	0.26**	0.31**	0.34**	0.35**
Using knowledge	0.27**	0.31**	0.34**	0.35**
Intervention	0.21**	0.25**	0.28**	0.28**
Diagnostics	0.28**	0.31**	0.35**	0.36**
PCCSAS total	0.27**	0.32**	0.35**	0.36**

**p<0.001 CSI: Communication Skills Inventory. PCCSAS: Psychosocial Care Competence Self-Assessment Scale

communication skills explain 13.4% of the total variance in self-assessments of psychosocial care competence. The CSI scores, which are independent variables in the model, have a statistically significant effect on PCCSAS scores (t=7.117 p<0.001). Accordingly, when CSI scores increase by one unit, PCCSAS scores increase by 0.322 (β=0.322) (Table 5).

Table 5. The effect of nurses' communication skills on psychosocial care self-efficacy

Independent variable	β	Std. error	Std. Beta	t	p	β for 95% Cİ. Lower	β for 95% Cİ. Upper
Fixed	10.872	7.399		1.469	0.143	-3.684	25.428
CSI total points	0.322	0.045	0.366	7.117	0.000**	0.233	0.411
Model summary: R=0.366;. R^2=0.134; Adj. R^2=0.131; F=50.658; p<0.001							

Dependent variable: Psychosocial care self-efficacy. **p<0.001, Std. error: Standard error, Std. beta: Standard beta, Adj. R^2: Corrected R^2, F: Test statistic, p: Significance level, CI: Confidence Interval, CSI: Communication Skills Inventory

DISCUSSION

The study we conducted to determine the relationship between psychosocial care competency self-assessments and communication skills of nurses working in intensive care units is discussed.

Communication is an important tool for nurses to provide quality healthcare. Patients treated in intensive care units may be conscious, unconscious, conscious but intubated, or unconscious but intubated. When the different characteristics of intensive care units are added to these factors, nurses' communication skills become even more important for communicating with patients. In our study, the average communication skills score of nurses working in intensive care units was 162.64±17.79, which was above average. Güler et al. (2021) found that the communication skills of 260 nurses working in intensive care units were above average. Other studies conducted with nurses have also found that nurses' communication skills are above average or high (Aydoğan & Özkan 2020, Demir & Dinç 2024). It is known that communication training for healthcare personnel improves their self-efficacy in communication (Güler et al., 2021;

Wolderslund et al., 2021; Banerjee et al., 2017). It is believed that nurses' high communication skills stem from the support provided for communication skills in nursing education and in-service training afterwards.

This study found that the psychosocial care competence levels of nurses working in intensive care units were above average (63.22±15.66). Gerçek et al. (2024) reported in their study of 199 nurses working in intensive care units that the psychosocial care competence levels of intensive care nurses were above average. Similarly, Şahin and Kutlu's (2024) studies with 100 nurses found that intensive care nurses' psychosocial care competence levels were moderate. Our findings are consistent with the literature. The holistic perspective of the nursing profession ensures that it focuses not only on physical needs but also on psychological, social and spiritual needs. These findings are thought to be related to nurses taking courses to develop communication and psychosocial care skills throughout their education, and maintaining and strengthening these skills through in-service training during their working lives.

The study found a high positive correlation between the communication skills of nurses working in intensive care and their self-assessments of psychosocial care competence (**Table 5**). From this finding, it can be concluded that as nurses' communication skills improve, their self-assessments of psychosocial care competence also increase. According to the research findings, nurses' communication skills are a significant predictor of their psychosocial care self-efficacy. The model's coefficient of determination R^2=0.134, which falls within the moderate effect range according to Cohen's (1988) classification (R^2≈0.02=low, R^2≈0.13=moderate, R^2≥0.26=high). This suggests that improving nurses' communication skills can significantly increase their self-assessments of psychosocial care competence. In their studies with nurses, Demir and Dinç (2024) also found a significant relationship between nurses' communication skills and their psychosocial care self-efficacy. Communication skills are among the most important psychosocial care skills. In fact, when considering other psychosocial skills, these skills emerge as the most fundamental. In their study, Yava and Koyuncu (2006) examined nurses' communication experiences with intubated patients and investigated the effect of communication difficulties during the intubation process on recovery. They determined that effective and accurate communication is effective in shortening the intensive care process and reducing patient anxiety.

Limitations

The results of this descriptive study are limited to nurses working in the intensive care unit of a city hospital. The results can only be generalized to this group.

CONCLUSION

In light of the findings of this study, we can say that intensive care nurses' communication skills and psychosocial care competencies are above average, and that as communication skills increase, psychosocial care competencies also increase. Considering that patients in intensive care units face many psychosocial risks, providing qualified psychosocial care to patients in intensive care becomes even more important. It is important that psychosocial care is provided by competent individuals. However, the lack of Consultation-Liaison Psychiatry nursing in all areas in our country prevents access to competent individuals for psychosocial care. At this point, identifying the educational needs of intensive care nurses and developing educational programmes that support communication and psychosocial care skills in line with these needs will not only make intensive care nurses more competent but also ensure that patients receiving treatment in intensive care units receive qualified psychosocial care.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was conducted by the Ankara Etlik City Hospital Non-interventional Clinical Researches Ethics Committee (Date: 04.24.2024, Decision No: AEŞH-BADEK-2024-298).

Informed Consent

Written informed consent was obtained from all individual participants prior to their inclusion in the study. Participants were fully informed about the study's aims, procedures, potential risks and benefits, and their rights-including the right to withdraw at any time without consequence. All participants voluntarily signed a written informed consent form.

Peer Review Process

This manuscript was subject to external peer review.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

Financial Disclosure

The authors received no financial support for the conduct or publication of this research.

Author Contributions

The author is solely responsible for the conception, data collection, analysis, and writing of this manuscript.

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Father attachment, perceived parental relationships, father psychological control, and attachment in romantic relationships: a study on men in emerging adulthood

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ABSTRACT

Aims: This study was conducted to evaluate the relationship between attachment styles to fathers, perceived parental relationships, and psychological control of fathers among men in emerging adulthood and their attachment styles in romantic relationships.

Methods: The study is descriptive and exploratory in nature. The study data were collected from 146 participants using the Descriptive Characteristics Questionnaire, Perceived Parenting Scale-Father Form, Psychological Control Scale-Father Form, Father Presence Scale, and Close Relationships Experience Inventory. The analysis of the study data involved the use of numbers, percentages, means, standard deviations, and Pearson correlation analysis.

Results: A positive relationship was found between the father's psychological control and his authoritarian and indifferent attitude toward the mother, and a negative relationship was found between his democratic and protective attitude ($p<0.01$). A negative relationship was found between the father's psychological control practices and the mean scores of the subdimensions of the Father's Presence Scale ($p<0.01$). A negative relationship was found between the mean scores of the subdimensions of the Father's Presence Scale and the mean scores of the father's authoritarian and indifferent attitude toward the mother, while a positive relationship was found between the mean scores of the protective and democratic attitude toward the mother ($p<0.01$). However, no relationship was found between father's psychological control, father's attitude towards mother, father's presence scale and close relationships scale ($p>0.05$).

Conclusion: It has been shown that father-child relationships and family climate have significant psychosocial effects both during the developmental process and in adult life. Although the relationship established with the father may not be directly related to romantic relationships, it is thought that the needs met and unmet in the relationship with the father will shape individuals' romantic relationships in later life. It is recommended that supportive interventions be designed to strengthen father-child relationships such as family counseling and father support program.

Keywords: Perceived parenting, father attachment, emerging adulthood, psychological control, attachment in romantic relationships

INTRODUCTION

People go through many developmental stages from infancy to old age, and one of these developmental stages is emerging adulthood. Over the past half-century, it has been emphasized that individuals do not transition directly from adolescence to adulthood, and emerging adulthood has been defined as a new developmental stage covering the late teens and twenties (ages 18-29). As in other developmental stages, individuals in emerging adulthood also have certain tasks and responsibilities to fulfill (Arnett, 2000). During emerging adulthood, individuals have responsibilities such as continuing the secure separation from parents that began in adolescence and reducing their dependence on parents, asserting their autonomy and individuality, establishing close and trusting relationships with others, and developing a healthy sense of identity and self-concept (Arnett, 2000; 2007). In emerging adulthood, individuals focus on issues related to autonomy and individualization, forming close emotional relationships, career planning, choosing a profession, and forming views on life and the world (Arnett, 2000). The focus of self-concept issues during this period determines the developmental responsibilities that individuals must fulfill, and individuals during this period focus on deciding on their future profession and beginning education toward that end, establishing and maintaining peer relationships, forming close relationships

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based on trust, developing a philosophy of life, and planning their lives accordingly. In order for individuals to fulfill their developmental responsibilities during this period, become autonomous, and express their individuality, they need to form secure attachments with their parents and achieve secure separation (Arnett, 2000; 2007).

In order for individuals to safely separate from their parents, secure attachments must first be established (Erzar and Erzar, 2008). Secure attachment is a process that occurs when individuals establish physical, emotional, and social bonds with their primary caregivers and when their needs in these areas are consistently met by their caregivers. Separations, losses, and the inability to form bonds in the desired manner between the individual and the caregiver led to the development of anxious, resistant, and avoidant attachment styles. Insecure attachment behaviors can affect individuals' self-development and identity formation, as well as lead to problems in mental health, behavior, social functioning, and interpersonal relationships (Bowlby, 1988). Secure attachment to parents contributes to the development of trust-based relationships in adulthood. The trust relationship established with parents and parental attitudes affects not only the relationships established and to be established during the current period but also the close relationships that individuals will establish in their adult lives, i.e., their romantic relationships. Maintaining one's identity while forming trust-based bonds in romantic relationships is one of the tasks individuals must accomplish during emerging adulthood (Ercan and Eryılmaz, 2013; Erzar and Erzar, 2008). Although the mother figure is generally important in attachment relationships, the trust-based relationship that individuals establish with their father in early childhood also has significant effects on close and romantic relationships in adulthood. Trust-based bonds formed with the father in early childhood contribute to the formation of secure bonds in romantic relationships in emerging adulthood, high self-esteem, increased relationship quality and satisfaction, and the development of healthy dynamics in relationships. However, insecure, anxious, or avoidant attachment styles formed with the father negatively affect individuals' attachment styles, leading to a decrease in the quality and satisfaction of romantic relationships (Martinez-Alvarez et al., 2014; Jaroudi, 2005).

While secure attachment behavior in individuals is important in the close relationships they will form in adult life, the most important factor affecting secure attachment is the family. The family plays an important role in children's mental, emotional, social, physical, and identity development (Kooraneh and Amirsardari, 2015). Important factors affecting a child's development within the family include parents' attitudes toward their children, the relationship between parents, and the family climate. All these factors affect children's emotional, mental, social, and behavioral development processes (Roskam et al., 2014; Kooraneh and Amirsardari, 2015). In particular, parents' negative, authoritarian, and controlling attitudes toward their children cause problems in children's self-perception and identity. Parents with authoritarian parenting attitudes do not support children's autonomy, physical punishment is frequently used, and psychological control over the child is high (Baumrind, 1978). All parental behaviors cause problems in the child's self-perception, sense of self-efficacy, and self-esteem (Altaf et al., 2021). Therefore, excessive authoritarian attitudes and psychological control practices by parents can also cause problems in romantic relationships. In particular, authoritarian attitudes and psychological control practices applied by fathers toward their sons can cause significant problems in the individual's self-perception. Additionally, studies in the literature indicate that secure attachment to the father and perceived paternal attitudes are associated with secure attachment styles and relationship satisfaction in romantic relationships (Gleeson and Fitzgerald, 2014; Black and Schutte, 2006). Karre (2015) noted that the relationship with the father has a direct or indirect effect on romantic relationships and that psychological and behavioral control practices applied by the father cause problems in romantic relationships. Similarly, it has been found that parenting attitudes toward children and insecure attachments formed with parents lead to anxious and avoidant attachment styles in romantic relationships, which in turn affect violence, relationship satisfaction, and quality in romantic relationships (Sabelnikova, Kashirsky, & Garvard, 2020). Similarly, it has been observed that secure attachment styles and increased romantic relationship quality are associated with trust-based relationships with fathers and perceived support and closeness from fathers, while the father's cold-rejecting, aggressive, and inconsistent attitudes are associated with decreased romantic relationship quality and support anxious and avoidant attachment patterns (Santona et al., 2019; Yılmaz Olcay, 2022). Whittington and Turner (2023) noted that individuals raised with high paternal psychological control experience more problems related to self-efficacy, which negatively affects their attachment styles, leading to unbalanced power dynamics, relationship problems, and decreased satisfaction in romantic relationships. Another factor influencing individuals' attitudes and beliefs about romantic relationships is the relationship between the father and mother and the father's attitude toward the mother.

While the relationships men establish with their fathers contribute significantly to the learning of masculine roles, the relationship the father establishes with the mother serves as an important guide for romantic relationships. The family environment in which individuals grow up, problems in the mother-father relationship, and dysfunctional patterns encountered within the family can lead to bullying and violence in romantic relationships in adult life, as well as a decrease in relationship satisfaction and quality (Velotti et al., 2018). Similarly, Zagefka et al. (2021) noted in their study with emerging adults that the dysfunctional patterns individuals encountered in their families led to dysfunctional patterns and insecure attachment patterns in their romantic relationships in adulthood. When examining studies in the literature, it is observed that positive perceptions of parental relationships and positive perceptions of the father in the parental relationship reduce anxious attachment in romantic relationships (Parekh et al., 2023), and the father's overly controlling attitudes toward both the child and the mother lead to the development of negative beliefs and attitudes toward romantic relationships and a decrease in the quality of romantic relationships (Tartakovsky, 2024). Although the literature indicates that fathers are an important factor for both women and men, there are no studies that specifically evaluate the effect of the relationships that men establish with their fathers in early childhood and the parenting attitudes

of fathers on attachment styles. Therefore, this study will be conducted to evaluate the relationship between attachment styles to fathers, perceived parental relationships, and paternal psychological control in romantic relationships among men in emerging adulthood.

METHODS

Ethics

The study was conducted with the approval of the Aksaray University Human Researches Ethics Committee (Date: 25.04.2023, Decision No: 2023/03-57). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. After ethical approval for the study was obtained, an online survey was sent to participants. Participants were informed about the study and their consent was obtained before responding to the survey.

Purpose and Type of the Study

This study was conducted as a descriptive and correlational study to evaluate the relationship between attachment styles to fathers, perceived parental relationships, and psychological control of fathers among men in emerging adulthood and their attachment styles in romantic relationships.

Participants

The study was conducted with men aged 18-29 who were in the emerging adulthood period, and the sample consisted of 146 participants. The inclusion criteria for the study were being aged 18-29, being male, having no diagnosis of mental or psychological illness, and volunteering to participate in the study. Participants who were not between the ages of 18 and 29, were female, had any mental or psychological disorders, or were not willing to participate in the study were excluded. Study data were collected using a convenience sampling method, with the research questionnaire sent online to participants who met the inclusion criteria.

Data Collection Tools

The data were collected using the Descriptive Characteristics Questionnaire, Perceived Parenting Scale, Psychological Control Scale Father Form, Father Presence Scale, and Romantic Relationship Attachment Styles Scale.

Introductory features questionnaire: This form, created by researchers, was designed to assess the introductory characteristics of participants and contains a total of 16 questions.

Perceived Parenting Relationship Scale-Father Form (PPRS-FF): PPRS-FF was developed by Çelik and Öziş (2016) to measure individuals' perceptions of their parental relationships, and the scale includes both mother and father forms. The scale consists of five subscales: Authoritarian Attitude (3 items), Indifferent Attitude (9 items), Protective Attitude (6 items), Democratic Attitude (12 items), and Dependent Attitude (7 items), totaling 37 items. Responses for each item are rated on a four-point Likert scale ranging from "Strongly disagree (0)" to "Strongly agree (3)." The authoritarian attitude subscale ranges from a minimum of 0 to a maximum of 9 points, the indifferent attitude subscale ranges from a minimum of 0 to a maximum of 27 points, the protective attitude subscale ranges from a minimum of 0 to a maximum of 18 points, the democratic attitude subscale ranges from a minimum of 0 to a maximum of 36 points, and the dependent attitude subscale ranges from a minimum of 0 to a maximum of 21 points. As the score for each subscale increases, it can be said that the father's attitude toward his spouse is higher in relation to that subscale. When examining the Cronbach's alpha values of the subscales of the original scale's father form, the values were found to be as follows: Authoritarian Attitude =0.73, Indifferent Attitude =0.89, Protective Attitude =0.81, Democratic Attitude = 0.95, and Dependent Attitude =0.86. When examining the Cronbach's Alpha values of the subdimensions of the father form for this study, the authoritarian attitude subdimension was found to be 0.80, the indifferent attitude subdimension was 0.91, the protective attitude subdimension was 0.79, the democratic attitude subdimension was 0.95, and the dependent attitude subdimension was 0.78.

Psychological Control Scale-Father Form (PCS-FF): The PCS-FF was developed by Barber and colleagues (2012) to measure the psychological control exercised by parents, and its Turkish adaptation was carried out by Sayıl and Kındap (2010). The scale consists of both a mother and father form, with two subscales: Parental Neglect (8 items) and Psychological Control (8 items), totaling 16 items. Responses for each item are rated on a four-point Likert scale ranging from "Does not apply at all (1)" to "Applies very much (4)." A minimum of 8 and a maximum of 32 points can be obtained from the scale's subdimensions, and high scores indicate a high level of psychological control perceived from the father or mother in relation to that subdimension. The Cronbach's alpha values of the original scale's Father Form were found to be .83 for the Parental Neglect subdimension and .90 for the Psychological Control subdimension. The Cronbach's alpha values for the Turkish adaptation of the Father Form were found to be .89 for the Parental Neglect subscale and .79 for the Psychological Control subscale. For this study, the Cronbach's alpha values were found to be .93 for the Parental Neglect subscale and .82 for the Psychological Control subscale.

Father's Presence Scale (FPS): FPS was developed by Krampe and Newton (2006) to assess individuals' relationships with their biological fathers and the psychological presence of the father during childhood. The validity and reliability study of the scale in Turkish was conducted by Çelik and Bulut (2019). The scale consists of eight subscales and a total of 94 questions: Feelings Toward the Father, Mother's Support in the Relationship with the Father, Perception of Father's Involvement, Physical Relationship/Contact with the Father, Parent-Child Relationship, Views on the Father's Influence, Mother's Relationship with Her Father, and Father's Relationship with His Own Father. The Turkish validity and reliability study of the scale indicates that the selected sub-dimensions can be used separately if desired. Therefore, in this study, the sub-dimensions Feelings Towards the Father (13 items), Perception of Father Involvement (14 items), and Physical Relationship/Contact with the Father (9 items) will be used. The scale is a five-point Likert-type measurement tool, with responses ranging from "Never" (1) to "Always" (5) for each question. The scale allows for separate scores to be calculated for each sub-dimension as well as a total score. As the score obtained from the scale increases, it is interpreted

as indicating a high level of father-child interaction and the father's emotional presence in the developmental process. In the Turkish validity and reliability study of the scale, Cronbach's alpha values were found to range from .82 to .96. In this study, the Cronbach's alpha values of the subscales used in the study were found to be .95 for the Feelings Toward Father subscale, .94 for the Perception of Father's Involvement subscale, and .93 for the Physical Contact with Father subscale.

Close Relationships Life Inventory-II (CRLI-II): CRLI-II was developed by Fraley, Waller, and Brennan (2000) to determine attachment styles in close relationships among adults. The validity and reliability study of the scale in Turkish was conducted by Selçuk, Günaydın, Sümer, and Uysal (2005). The scale consists of two subscales, Anxious and Avoidant Attachment, and a total of 36 items. Eighteen of the scale questions assess the anxious attachment style, while the other 18 questions assess the avoidant attachment style. Participants respond to each question using a seven-point Likert-type measurement tool ranging from "Strongly Disagree" (1) to "Strongly Agree" (7). The scores obtained from the scale are calculated separately for anxious attachment and avoidant attachment styles. As the scores from the subscales increase, it can be said that participants exhibit attachment styles and behavioral characteristics related to that subscale. The Cronbach's Alpha values for the Anxiety and Avoidance subscales of the scale were found to be .86 and .90, respectively. For this study, the Cronbach's Alpha values were found to be .60 for the Anxiety subscale and .65 for the Avoidance subscale.

Data Collection

After obtaining ethical committee approval, the data collection forms to be used in the study were transferred to an online environment, and online questionnaires (via email, WhatsApp, etc.) were sent to participants who met the inclusion criteria. Before participants began answering the questionnaire, they were provided with information about the study, their consent was obtained, and they then began filling out the questionnaire. The necessary adjustments have been made to the online form settings to prevent the same participant from submitting multiple responses. Study data were collected from 146 participants between May 15 and December 15, 2023. The average time required for participants to complete the questionnaire was estimated to be 20 minutes.

Statistical Analysis

After collecting the data, the online data was transferred to the SPSS 23.0 software package. In the analysis of descriptive data, the mean, standard deviation, number, and percentage were used, while in the analysis of scale scores, the mean, standard deviation, minimum, and maximum values were used. To determine whether the data showed a normal distribution, skewness and kurtosis values were examined, and it was determined that these values were between -2 and +2 and showed a normal distribution. Pearson's correlation analysis was used to determine the relationship between the measurement tools.

RESULTS

The descriptive characteristics of the participants in the study sample are presented in Table 1. When the descriptive

Table 1. Descriptive characteristics of participants

Descriptive characteristics		n	%
Age (mean±SD) 22.42±2.42	18-21	53	36.3
	22-25	76	52.1
	26-29	15	11.6
Marital status	Single	105	71.9
	Married	41	28.1
Educational status	High school and below	8	5.5
	University and above	138	94.5
Family type	Core family	108	74.0
	Extended family	29	19.9
	Broken family	9	6.2
Active working status	Yes	37	25.3
	No	109	74.7
Economic status	Less than expenses	45	30.8
	Equal to expenses	77	52.7
	More than expenses	24	16.4
Mother's educational level	Elementary school or below	104	71.2
	High school	27	18.5
	University and above	15	10.3
Father's educational level	Elementary school or below	76	52.1
	High school	40	27.4
	University and above	30	20.5
Current romantic relationship status	Yes	60	41.1
	No	86	58.9
Previous romantic relationship experience	Yes	94	64.4
	No	52	35.6
Experienced violence or abuse in your romantic relationship	Yes	26	17.2
	No	120	82.8
If you have been exposed to bullying, what type of bullying have you been exposed to? (n=26)*	Physical	2	7.6
	Emotional	22	84.6
	Economic	2	7.7
Engaged in violent or abusive behavior in your romantic relationship	Yes	14	9.6
	No	132	90.4
If you have, what type of bullying behavior did you engage in? (n=14)*	Physical	3	21.4
	Emotional	10	71.5
	Economic	1	7.1
Perception of relationship with father	He showed interest and affection, and I could talk to my father about anything.	51	34.9
	He was strict, cold, and authoritarian and did not show his feelings much, nor did he take much interest in us.	76	52.1
	He was overly protective and caring.	11	7.5
	He allowed everything and did not control my behavior.	8	5.5
Parent-to-parent relationship	They were warm and caring towards each other and showed their love.	82	56.2
	There were constant conflicts and disagreements at home.	21	14.4
	My father physically, emotionally, and psychologically abused my mother, and my mother did the same to my father.	14	9.5
	They did not show violence towards each other, but they did not show their love either.	29	19.9
Total		146	100

* The line percentage has been taken. SD: Standard deviation

characteristics of the participants were examined, the mean age was found to be 22.42±2.42, and the vast majority of participants were single (71.9%) and had a nuclear family (74.0%). When the educational status of the participants was evaluated, it was found that almost all of them (94.5%) had a university degree or higher, the vast majority (74.7%) did not have a regular income-generating job, and more than half (52.7%) had an economic status where their income was equal to their expenses. When the educational levels of the participants' parents were evaluated, it was found that the vast majority of mothers (71.2%) had an elementary school education or below, while more than half of the fathers (52.1%) had an elementary school education or below. More than half of the participants (58.9%) did not currently have a romantic relationship, while most participants (64.4%) reported having had a romantic relationship in the past. The vast majority of participants (82.8%) stated that they had not encountered violence or abuse in their romantic relationships, while the vast majority of participants who stated that they had encountered violence or abuse (84.6%) stated that they had encountered emotional violence/abuse. The vast majority of participants (90.4%) stated that they did not engage in violent or abusive behavior toward their partners in their romantic relationships, while the vast majority of participants who did engage in violent or abusive behavior (71.4%) stated that they engaged in emotionally violent/abusive behavior. When participants' relationships with their fathers were evaluated, more than half of the participants (52.1%) described their fathers as "cold, distant, authoritarian, unable to show their emotions, and not very interested in them." When the participants' mother-father relationships were evaluated, more than half of the participants (56.2%) described their mother-father relationship as "warm, caring, and affectionate towards each other."

Table 2 shows the average scale scores of the participants. First, the average scores of the participants' Psychological Control Scale-Father Form subdimensions were evaluated, and the average score for the Parental Neglect subdimension was found to be 12.22±5.82, while the average score for the Psychological Control subdimension was 16.23±5.36. These mean scores indicate that participants' perceived levels of paternal psychological control for the Parental Neglect subscale are below the average value, while their perceived levels of paternal psychological control for the Psychological Control subscale are at the average value. Second, participants' parent-child relationships were assessed using the Perceived Parenting Relationships Scale-Father Form. When the fathers' attitude scores toward mothers were evaluated, the average score for the Authoritarian Attitude subscale was found to be 7.56±2.72, which is above the average value. The average score for the Indifferent Attitude subscale was found to be 16.37±7.23, which is close to the average value. The mean score for the Protective Attitude subscale was found to be 15.13±4.26, and it was observed that this score was above the average value. The mean score for the Democratic Attitude subscale was determined to be 33.41±9.65, and it was observed that this score was above the average value. Finally, the mean score for the Dependent Attitude subscale was evaluated and found to be 13.49±5.55, indicating that this score is above the average value that can be obtained from the scale. When the subscale mean scores of the Father's Presence Scale were evaluated, the subscale mean score for Feelings Toward Father was found to be 45.93±13.31, while the subscale mean score for Perceived Father Involvement was found to be 45.36±13.51. It was determined that the mean scores of these two subscales were above the average score and close to the upper limit value that could be obtained. The subscale mean score for Physical Contact with Father was determined to be 27.07±9.52, and it was observed that this mean score was above the average value. When the subscale mean scores of the Participants' Close Relationships Inventory were evaluated, the mean score for the Avoidant Attachment subscale was found to be 74.26±9.08, while the mean score for the Anxious Attachment subscale was found to be 72.51±10.50. It was determined that these mean scores were above the average value that could be obtained from the scale.

Table 2. Father psychological control, perceived parent relationship, father's presence, and close relationships scales scale total and subscale mean scores

Measuring instruments	Sub-scales	Mean±SD	Obtained min-max values
PCS-father form	Parental neglect	12.22±5.82	8-32
	Psychological control	16.23±5.36	8-32
PPRS-father form	Authoritarian attitude	7.56±2.72	3-12
	Indifferent attitude	16.37±7.23	9-36
	Protective attitude	15.13±4.26	6-24
	Democratic attitude	33.41±9.65	12-48
	Dependent attitude	13.49±5.55	7-24
FPS	Feelings toward the father	45.93±13.31	13-65
	Perception of father involvement	45.36±13.51	14-70
	Physical contact with the father	27.07±9.52	9-45
CRLI	Avoidant attachment	74.26±9.08	46-94
	Anxious attachment	72.51±10.50	30-103

SD: Standard deviation, Min: Minimum, Max: Maximum, PCS: Psychological Control Scale, PPRS: Perceived Parenting Relationship Scale, FPS: Father's Presence Scale, CRLI: Close Relationships Life Inventory

Table 3 shows the relationship between measurement tools. A positive relationship was found between the PCS-FF subdimensions of parental neglect and the father's authoritarian attitude (r=0.33) and indifferent attitude (r=0.48) toward the mother, while a negative relationship was found between protective attitude (r=-0.33) and democratic attitude (r=-0.45). Negative correlations were found between parental neglect and feelings toward the father (r=-0.71), perceived father involvement (r=-0.66), and physical contact with the father (r=-0.51). no significant relationship was found between parental neglect and the avoidant and anxious attachment subdimensions of the CRLI in men during adulthood. Among the PCS-FF subscales, a positive relationship was found between psychological control and the father's authoritarian attitude (r=0.45) and indifferent attitude (r=0.44) toward the mother, while a negative relationship was found between protective attitude (r=-0.29), democratic attitude (r=-0.35), and dependent attitude (r=-0.19) of the father toward the mother. A negative relationship was found between psychological control and feelings toward the father (r=-0.58), perceived father involvement (r=-0.48), and physical contact with the father (r=-0.35). No significant

Table 3. Correlation analysis to determine the relationship between scale and subscale mean scores

Scales and Sub-scales		1	2	3	4	5	6	7	8	9	10	11
PCS-FF PPRS-FF	1-Parental neglect	1.00										
	2-Psychological control	0.75**	1.00									
	3-Authoritarian attitude	0.33**	0.45**	1.00								
	4-Indifferent attitude	0.48**	0.44**	0.44**	1.00							
	5-Protective attitude	-0.33**	-0.29**	-0.16	-0.38**	1.00						
	6-Democratic attitude	-0.45**	-0.35**	-0.32**	-0.45**	0.72**	1.00					
	7-Dependent attitude	-0.15	-.19*	-0.08	-0.05	0.37**	0.38**	1.00				
FPS	8-Feelings towards the father	-0.71**	-0.58**	-0.40**	-0.63**	0.48**	0.57**	0.15	1.00			
	9-Perception of father involvement	-0.66**	-0.48**	-0.27**	-0.58**	0.41**	0.51**	0.19*	0.85**	1.00		
	10-Physical contact with father	-0.51**	-0.35**	-0.21*	-0.46**	0.28**	0.40**	0.16	0.66**	0.77**	1.00	
CRLI	11-Avoidant attachment	-0.14	-0.16	-0.11	-0.16	-0.01	0.03	-0.11	0.09	0.04	0.01	1.00
	12-Anxious attachment	0.15	0.14	0.07	0.01	0.03	0.07	0.05	-0.12	-0.08	-0.09	-0.33**

**p<0.01, *p<0.05 PCS: Psychological Control Scale, FF: Father form, PPRS: Perceived Parenting Relationship Scale, FPS: Father's Presence Scale, CRLI: Close Relationships Life Inventory

relationship was found between psychological control and the avoidant and anxious attachment subdimensions of the CRLI in adult men.

A negative relationship was found between the PPRS-FF subdimension authoritarian attitude and the FPS subdimensions feelings toward father (r=-0.40), perception of father's involvement (r=-0.27), and physical contact with father (r=-0.21), while no significant relationship was found between the CRLI subdimensions. There was a negative relationship between the PPRS-FF subdimension of indifferent attitude and the FPS subdimensions of feelings toward father (r=-0.63), perception of father's involvement (r=-0.58), and physical contact with father (r=-0.46), while no significant relationship was found between the CRLI subdimensions. There was a positive relationship between the protective attitude subdimension of PPRS-FF and the feelings toward father subdimension (r=0.48), perception of father involvement (r=0.41), and physical contact with father (r=0.28) subdimensions of FPS, but no significant relationship was found between the CRLI subdimensions. There was a positive relationship between the PPRS-FF subdimension democratic attitude and the FPS subdimensions feelings toward father (r=0.57), perception of father's participation (r=0.51), and physical contact with father (r=0.40), but no significant relationship was found between the CRLI subdimensions. A positive and significant relationship was found between the PPRS-FF subdimension dependent attitude and only the FPS subdimension perceived father involvement (r=0.19), while no significant relationship was found between the CRLI subdimensions. No significant relationship was found between the FPS subdimensions and the CRLI subdimensions.

DISCUSSION

Emerging adulthood is a developmental period that spans the ages of 18 to 29, during which individuals strive to maintain interpersonal relationships, such as making new friends and pursuing romantic relationships, while also managing their ongoing relationships with their families and striving for independence (Arnett, 2000; Nelson et al., 2011). During this developmental period, individuals may face numerous developmental crises, and if these crises are not effectively managed, they can lead to various psychosocial issues. To prevent psychosocial problems that individuals may experience during this period, to enable them to assert their autonomy and individuality, and to establish healthy interpersonal and romantic relationships, secure attachment, functional family patterns, and parental attitudes are of great importance.

In this study, the relationship between paternal psychological control and perceived parental relationships was first evaluated. A positive relationship was found between the PCS-FF Parental Neglect and Psychological Control subscale and the father's authoritarian and indifferent attitude toward the mother, while a negative relationship was found between the protective and democratic attitudes. The father's attitude toward the mother is considered to be an important indicator of his attitude toward the child. Spouses who are authoritarian and indifferent toward their partners may also exhibit similar attitudes toward their children, and in such cases, it is thought that fathers may apply higher levels of psychological control toward their children. Sayıl and Kındap (2010) concluded in their research findings that perceived psychological control and parental neglect are negatively related to democratic parenting style and positively related to authoritarian parenting style. McKinney, Milone, and Renk (2011) found that psychological control practices applied by parents lead to certain negative psychosocial effects on adult men and cause difficulties in adapting to the developmental stage they are in. In addition, authoritarian parents' behaviors involving excessive psychological control led to low self-esteem and dissatisfaction in the parent-child relationship, while indifferent parents' attitudes lead to negative emotional and social development in children (Baumrind, 1991).

Secondly, a negative relationship was determined between the PCS-FF subdimensions of Parental Neglect and Psychological Control and the FPS subdimensions of Feelings Towards Father, Perception of Father's Involvement, and Physical Contact with Father. High levels of psychological control by fathers prevent children from establishing trusting relationships with their fathers, resulting in their psychosocial needs not being met. In Turkish culture, fathers may exercise excessive psychological control in order to discipline their children and protect them from possible developmental risks. This causes the child to see the father as an object of fear and thus creates an obstacle to secure attachment. Secure

attachments with fathers, as well as secure attachments with mothers, have important effects on individuals' psychosocial well-being, in addition to influencing the close relationships they will establish with others in their current age and adult life. In their study, Brown, McBride, Shin, and Bost (2007) stated that the father's attitudes and behaviors are important for children's secure attachment patterns and that as the quality of interaction with the father increases, children form secure bonds. Similar to our study, it has been reported that children who fail to establish secure bonds with their fathers in early childhood and are emotionally and psychologically neglected by their fathers experience feelings of worthlessness and abandonment and behavioral problems more frequently, and that their satisfaction with their relationships with their fathers is low (Rees, 2008). Similarly, Salma and Rachma (2023) reported in their research findings that children raised in neglectful environments struggle with emotional regulation and experience increased levels of distressing emotions such as anxiety, anger, and sadness.

Another finding obtained in this study was that no significant relationship was found between the PCS-FF and FPS subdimensions and the Avoidant and Anxious Attachment subdimensions of the CRLI. Although relationships established with the father in early childhood may influence relationships with others, relationship satisfaction, and the individual's self-development, it is thought that the lack of a direct relationship with attachment in close relationships stems from the fact that the primary attachment figure is the mother. The relationship established with the mother serves as a foundation for relationships with others. At the same time, it is thought that the sociocultural characteristics of Turkish society may have an effect on this situation. In Turkish society, a patriarchal family structure is more commonly adopted, and men are emphasized to possess "strong" and "tough" characteristics. This situation is thought to stem from men being less able to express their emotions, fathers being unable to show their emotions in close relationships, and this parenting style being adopted by both the culture and the child. Contrary to the findings of our study, the literature shows that secure attachments formed with fathers contribute to secure attachments in individuals' romantic relationships, high self-esteem, and improved romantic relationship quality. In contrast, it has been found that individuals who form avoidant or anxious attachments with their fathers have lower romantic relationship quality and levels of satisfaction from the relationship (Jaroudi, 2005; Martínez-Álvarez et al., 2014). Beyarslan and Uzer (2022) concluded in their study that perceived childhood experiences of parental psychological control and negative parental attitudes affect adolescents' attachment styles in romantic relationships and may even be a risk factor for emotional abuse in romantic relationships. Tartakovsky (2024), on the other hand, noted that emerging adults who experienced positive parenting (providing care and autonomy) formed more secure attachments in their romantic relationships and had positive attitudes toward romantic relationships.

Another finding obtained in this study is that as the father's authoritarian and indifferent attitudes toward the mother increase, the mean scores of the FPS subdimensions Feelings Toward Father, Perception of Father's Involvement, and Physical Contact with Father decrease. This situation is thought to stem from fathers who exhibit authoritarian and indifferent attitudes toward their spouses also exhibiting similar attitudes toward their children, failing to contribute to the psychosocial and physical care process required by their children during their developmental process, and being unable to form secure bonds. Gaertner et al. (2007) stated that fathers' authoritarian attitudes negatively affect their relationships with their children, especially in care and play activities, reduce the quality of the father-child relationship, and may lead to less physical contact and emotional bonding between father and child. Authoritarian, aggressive, and neglectful attitudes among parents not only contribute to the development of attachment patterns toward parents in children but also cause internalizing problems such as anxiety and depression and externalizing problems such as aggression and rule-breaking in children (Pinquart, 2017; Tavassolie et al., 2016). This study indicates that there is a positive relationship between fathers' protective and democratic attitudes toward their wives and their children's feelings toward their fathers, perceptions of their fathers' involvement, and physical contact with their fathers. Fathers who possess these attitudes will be sensitive to their children's physical and psychosocial needs and will contribute to their children's upbringing in a positive family environment, leading to strong father-child relationships and bonds. In a study conducted by Cabrera, Shannon, and Tamis-LeMonda (2007), fathers who maintain supportive relationships with their spouses are sensitive to their children's needs and have children with high emotional intelligence. They emphasize that the father's presence from an early age is crucial for the development of emotional skills and intelligence. Lee (2007) states that fathers' protective behavior toward their wives improves the quality of marriage, that fathers are more involved with their children, and that fathers are more sensitive to their children's needs during their developmental process. It is stated that in families with a democratic family climate, tolerance and respect for individuals' independence and differences are encouraged, and children raised in democratic families have better communication skills and higher self-confidence (Velasco-Rauda and Castillo-Martínez, 2024).

The final finding of the study was that there was no significant relationship between the PPRS-FF subdimensions and the CRLI subdimensions. This situation is thought to stem from mothers playing a more dominant role as the primary attachment figure and the attachment relationship established with the mother forming the basis for relationships with others. Research findings supporting the study's findings are available in the literature, indicating that various factors influence the formation of attachment styles in romantic relationships, including gender, the quality of the relationship with the mother (Carr et al., 2019; Fan, 2024), general family dynamics (Fan, 2024; Pinquart, 2017), and children's own experiences and relationships (Suh and Fabricius, 2020). However, research findings also indicate that fathers' relationships with their spouses not only affect children's perceptions of and relationships with their fathers but also influence children's attitudes toward romantic relationships (Haodong, 2024; Xu, 2023). It is stated that children internalize these dynamics by observing their fathers' interactions with their mothers and exhibit similar behavioral patterns in their future relationships (Xu, 2023).

Limitations

This study has some limitations. First, the study used a convenience sampling method, so the results cannot be generalized to all men aged 18-29. Another limitation of the study is the low number of participants. Although various strategies were identified to increase the number of participants, the sample size could not be increased. Another limitation is that the measurement tools used in the study are based on self-report and the risk of bias. Another limitation of this study is that although the Cronbach's alpha reliability values of the CRLI-II scale subscale mean scores are within acceptable ranges, they were low in this study. The final limitation of the study is that it is a correlational study, and the results obtained are limited to the responses provided by the participants in the questionnaires.

CONCLUSION

This study examined the relationship between adult men's attachment styles to their fathers, their perceptions of parental relationships, paternal psychological control, and attachment styles in romantic relationships. A positive relationship was found between paternal psychological control and the father's authoritarian and indifferent attitude toward the mother, and a negative relationship was found between paternal psychological control and the father's democratic and protective attitude. Additionally, it was determined that as paternal psychological control increased, secure attachment patterns toward the father decreased. Furthermore, it was found that the father's democratic, and protective attitudes toward the mother positively supported the children's positive feelings and perceptions toward their fathers. Based on these findings, it is recommended that supportive interventions be designed to strengthen father-child relationships such as family counseling and father support programs. Furthermore, studies that consider the cultural context and mothers' attitudes toward fathers together will provide important contributions. Finally, it is recommended that the relationships of emerging adult men with their fathers, as well as the effects of their experiences in these relationships on their romantic relationships and psychosocial well-being, be examined in depth quantitative studies with large and diverse socio-demographic samples and using qualitative research methods.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was conducted with the approval of the Aksaray University Human Researches Ethics Committee (Date: 25.04.2023, Decision No: 2023/03-57).

Informed Consent

Written informed consent was obtained from all individual participants prior to their inclusion in the study. Participants were fully informed about the study's aims, procedures, potential risks and benefits, and their rights-including the right to withdraw at any time without consequence. All participants voluntarily signed a written informed consent form.

Peer Review Process

This manuscript was subject to external peer review.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

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Author Contributions

Concept: Y.K., N.Ö.; Design: Y.K., N.Ö.; Control: Y.K., N.Ö.; Data collection and/or processing: Y.K., N.Ö.; Analysis and/or interpretation: Y.K.; Literature review: Y.K., N.Ö.; Article writing: Y.K., N.Ö.; Critical review: Y.K., N.Ö.

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Examining the relationship between COVID-19 phobia and health-promoting and protective behaviors during the pandemic

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ABSTRACT

Aims: The study aimed at analyzing the relationship between COVID-19 phobia and health promoting and protective behaviors during the pandemic.

Methods: This was a web-based cross-sectional survey. A total of 800 individuals responded to the survey between September 2020 and March 2021. Data was collected using Personal Information Form, COVID-19 Phobia Scale, and the Promotive and Protective Health Behaviors Scale.

Results: In this study, 66.1% of the participants were aged between 18 and 24, 78.9% were female, 77.5% were single, and 49.1% had a bachelor's degree. The participants' mean COVID-19 Phobia Scale score was 52.57±14.54, and the mean Promotive and Protective Health Behaviors Scale score was 65.95±6.65. There was no statistically significant relationship between this two scales scores ($p>0.05$). It was determined that the mean score of the Promoting and Protective Health Behaviors Scale was low during the pandemic period.

Conclusion: We recommend that nurses playing a role in primary health care services continue to provide education and counseling for the importance and maintenance of healthy lifestyles after the COVID-19 outbreak.

Keywords: COVID-19, phobia, health promotion, health behavior.

INTRODUCTION

The COVID-19 outbreak quickly spread around the world, and the World Health Organization (WHO) proclaimed it a global pandemic (Değirmenci, 2020). In Turkey, the first COVID-19 case was reported on March 10, 2020, and the first death due to COVID-19 was reported on March 15, 2020 (Budak & Korkmaz, 2020). COVID-19 is transmitted through contact with droplets spread by the coughing and sneezing of infected people, which then reach the mucous membranes. Transmission is mostly through infected persons, and asymptomatic cases play an important role in the spread of the disease. It can be asymptomatic or mild in many people and can be severe and fatal in some, leading to pneumonia, acute respiratory failure, and death (Uğraş Dikmen et al., 2020).

The COVID-19 pandemic is one of the major global pandemics. It has serious negative physiological, social, psychological, and economic effects worldwide. Studies reported that people experienced psychological problems in particular due to many factors such as the rapid transmission and spread of COVID-19, high mortality rates, insufficient data on its treatment in the early period of the pandemic, and the emergence of different mutants of the virus (Değer, 2022; Duan & Zhu, 2020; Kaçer et al., 2022; Şavkın et al., 2022). Moreover, studies reported that people experienced intense fear of being infected with COVID-19 and started to develop phobic reactions due to the multiple problems experienced in the pandemic (Sun et al., 2021; Şavkın et al., 2022). Thus, the concept of COVID-19 phobia emerged in the pandemic. Phobia is defined as an excessive and persistent fear of any situation or object; in this sense, COVID-19 phobia is the emotional response to COVID-19-related risks. People may experience despair, anxiety, fear, phobia, panic, irritability, anger, distress, frustration, guilt, and loneliness as a result of restrictive situations caused by the pandemic (Ammar et al., 2020; Değirmenci, 2020; Eime et al., 2022). Several studies indicated that individuals have a high rate of fear of catching COVID-19, and they also worry that their families and friends will catch the virus and spread it to them (Doğan & Düzel, 2020; Mertens et al., 2020). Individuals' lifestyle behaviors and habits may change due to these intense reactions, emotions, and lockdown measures.

The WHO defines health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity." Therefore, each individual should be assessed holistically from a biopsychosocial perspective.

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Health promotion and protection, which emphasize the holistic understanding of health, come into play at this stage. Health promotion strengthens individuals' awareness, shapes their attitudes, and establishes their alternatives. On the other hand, health protection entails improving the biological, physical, and social environments. Health-promoting and protective behaviors include concepts such as adequate nutrition, physical activity, regular sleep, stress management, regular health check-ups, and interpersonal relationships (Bostan et al., 2016). Maintaining health-promoting and protective behaviors is crucial for protecting public health, and especially for the prevention of chronic diseases (Lee et al., 2020). Studies reported that the pandemic process had a negative impact on individuals' eating habits and sleep patterns, and that the quarantine periods led to a significant decrease in physical activity levels and an increase in anxiety and stress levels (Dilber & Dilber, 2020; Matsungo & Chopera, 2020; Yang et al., 2022). A study reported that fear of COVID-19 positively affects health-promoting behaviors (İnci & Çelik, 2022). Similarly, it was found that health-protective and health-promoting behaviors were higher in students with low health anxiety (Yıldız et al., 2022). In this regard, assessing individuals' ability to perform health-promoting and protective behaviors during the pandemic period is important in terms of maintaining public health. The literature contained a limited number of studies on this subject (Ersin et al., 2021). Therefore, this study aimed to examine the relationship between COVID-19 phobia and health-promoting and protective behaviors during the pandemic.

METHODS

Ethics

The study was conducted with the permission of the Aksaray University Human Researches Ethics Committee (Date: 31.08.2020, Decision No: 2020/01/34). All procedures were carried out in accordance with the ethical rules and the principles of the Declaration of Helsinki. It was obtained from the COVID-19 Scientific Research Studies Commission on the Turkish Ministry of Health website. In addition, permission was obtained from the authors of the scales used in the study. All participants were informed about the content of the study. The informed consent form was added to the first section of the online survey, and thus the participants declared that they voluntarily participated in the study. In addition, participants answered the following questions.

Aim and Type of Study

This web-based descriptive cross-sectional survey was conducted to examine the relationship between COVID-19 phobia and health-promoting and protective behaviors during the pandemic between September 2020 and March 2021.

Study Design and Sampling

The study population consisted of individuals over 18 years old in Turkey without any provincial restrictions. The study sample consisted of 800 adults who were accessible online who could fill out the online data collection forms, who met the study inclusion criteria, and who consented to participate in the study. The inclusion criteria were: being over 18 years old, being literate, having physical and cognitive health suitable for filling out the online data forms, and consenting to participate in the study.

Sample Size

The study sample size was calculated using GPower V3.1.9.7, using a correlation approach. Accordingly, if the two scales had a low Cohen's effect size correlation (ρ=0.10), the minimum sample size required for a power of 0.85 (1-β error probability) and a type I error of 0.05 (α error probability) was calculated as 714 individuals. The study was conducted with 800 participants to reveal the relationship between the scales and to take into account possible losses in the data collected online.

Data Collection

The study data were collected by delivering the online questionnaire form created on Google Forms to individuals through social media groups (WhatsApp groups and Facebook accounts) due to the social distancing rule and physical restrictions during the pandemic process. When participants clicked the link to the questionnaire, they first saw the information about the study, and then the question asking whether they consented to participate in the study. The participants were able to access the questions in the questionnaire after giving their consent.

Data Collection Instruments

We collected the study data by using a "Personal Information Form," which contained questions about the socio-demographic characteristics of participants, the "COVID-19 Phobia Scale (C19P-S)," and the "Promotive and Protective Health Behaviors Scale (PPHBS)."

Personal Information Form: A Personal Information Form was created by the researchers based on the literature (Faasse & Newby, 2020; Matsungo & Chopera, 2020). It consisted of questions about participants' age, gender, marital status, educational status, perception of income level, employment status during the pandemic, presence of chronic diseases, COVID-19 infection status, and the measures taken during the pandemic.

COVID-19 Phobia Scale (C19P-S): This scale was developed by Arpaci et al. (2020) to assess phobia against COVID-19. Its validity and reliability study was conducted by the same authors. It is a 5-point Likert-type self-report instrument. It measures psychological, psychosomatic, social, and economic sub-factors. The sum of the factor scores gives us the C19P-S score, which ranges between 20 and 100. Higher scores indicate increased coronavirus-related phobia (Arpaci et al., 2020). The Cronbach alpha value was reported as 0.92; in our study, it was 0.93.

Promotive and Protective Health Behaviors Scale (PPHBS): The PPHBS was developed by Bostan et al. (2016). Its validity and reliability study was conducted by the same authors (Bostan et al., 2016). It was developed based on the theoretical infrastructure of four trans-theoretical models. It consists of 24 items in three sub-dimensions (Physical, psychosocial and protection). It is designed as a five-point Likert scale scored as "never 1," "very rarely 2," "sometimes 3," "mostly 4," and "always 5". A minimum of 24 and a maximum of 120 points can be obtained from the scale. A low score indicates

protective behaviors (such as exercising regularly, meeting physiological needs such as eating and drinking, making time for himself and his environment) (Bostan et al., 2016). The Cronbach alpha value of the scale was 0.83 in the scale development study; it was 0.72 in our study.

Statistical Analysis

IBM SPSS Statistics V21 package program was used for data analysis. The Kolmogorov Smirnov (K-S) test was used to test the normality assumption of the sample distribution; it showed that the sample was not normally distributed. Descriptive variables were summarized using number, frequency, and percentage, and ordinal data were summarized using the mean and standard deviation. For the data not suitable for normal distribution, Mann Whitney U and Kruskal Wallis tests were used according to the groups in the variables. The Spearman correlation test was used to determine the relationship between the two scales. In the study, $p<0.05$ level was considered statistically significant.

RESULTS

In this study, 66.1% of the participants were aged between 18 and 24, 78.9% were female, 77.5% were single, and 49.1% had a bachelor's degree. 67.1% reported not working during the pandemic, 43.5% had an income less than expenses, 82.5% were non-smokers, and 11% had at least one chronic disease. We found that 12.6% took at least one medication regularly; 4.8% had caught COVID-19; 19.1% had a history of contact with a COVID-19 patient; 23.3% had spent 14 days in quarantine due to COVID-19; and 66.1% had a family member diagnosed with COVID-19. For the main measures taken to protect themselves from COVID-19, they checked: "I go out wearing a mask and keep a distance of 1.5 meters when it is necessary" and "I go out wearing a mask and keep a distance of 1.5 meters when I want to." Participants also stated that their levels of fear (53.1%), stress (58.8%), and anxiety (61.8%) increased during the pandemic (Table 1).

The participants' mean C19P-S score was 52.57±14.54 and their mean PPHBS score was 65.95±6.65 (Table 2). We compared the participants' descriptive characteristics and the mean C19P-S score. We found that mean C19P-S scores were higher for the following groups: females; those whose income was less than their expenses; those who had chronic diseases and took medication regularly; those with high levels of stress, fear, and anxiety; and those who took measures to protect themselves from COVID-19 in the pandemic. The difference was statistically significant ($p<0.05$) (Table 3).

We compared the participants' descriptive characteristics and the mean PPHBS score and found that the difference in the mean PPHBS score was statistically significant according to the variables of age, gender, marital status, level of fear and anxiety about COVID-19, and taking measures to protect against COVID-19.

In this study, the correlation analysis examining the relationship between the participants' COVID-19 phobia and health-promoting and protective behaviors showed that there was no statistically significant relationship between COVID-19 phobia and mean the PPHBS score ($p>0.05$) (Table 4).

Table 1. Characteristics of the participants (n=800)

Variables	n	%
Age (years)		
19-24	529	66.1
25-34	149	18.6
35-44	78	9.8
45 and above	44	(5.6
Gender		
Female	631	78.9
Male	169	21.1
Marital status		
Married	180	22.5
Single	620	77.5
Education level		
Primary school	37	4.6
High school	231	28.9
University	459	57.4
Master's/PhD graduate	73	9.1
Income level		
Income>expense	143	17.9
Income<expense	348	43.5
Income=expense	309	38.6
Use of drugs		
Yes	101	12.6
No	699	87.4
Presence of chronic disease		
Yes	88	11.0
No	712	(89.0
Diagnosis of COVID-19		
Yes	38	4.8
No	762	95.3
Measures taken during the pandemic		
I'm definitely not leaving the house	34	4.3
In mandatory situations, I gout by following the mask and1.5meters distance rule.	509	63.6
I go out whenever I want by following the mask and1.5meters distance rule.	254	31.8
I gout like before without taking any precautions.	3	0.4
Total	800	100

Table 2. Total mean scores of Promotive and Protective Health Behaviors Scale and COVID-19 Phobia Scale

Scales	Mean±SD	Min.-max.
Total PPHBS score	65.95±6.65	35-84
Physical sub-dimension score	30.93±3.02	20-40
Psychosocial sub-dimension score	19.49±2.29	11-25
Protection sub-dimension score	25.80±3.15	15-34
Total C19P-S score	52.57±14.54	20-100
Psychological sub-dimension score	20.09±5.47	6-30
Psycho-somatic sub-dimension score	9.74±3.81	5-25
Economic sub-dimension score	14.29±4.61	5-25
Social sub-dimension score	8.43±3.28	4-20

PPHBS: Promotive and Protective Health Behaviors Scale, C19P-S: COVID-19 phobia scale, SD: Standard eviation, Min: Minimum, Max: Maksimum.

Table 3. Comparison of the socio-demographic variables promotive and protective health behaviors and COVID-19 phobia levels of participants during the COVID-19 pandemic

	PPHBS		C19P-S	
Variables	**Mean±SD**	**Test value/p value**	**Mean±SD**	**Test value/p value**
Age (years)				
19-24	75.43±5.89	KW=29.069 p<0.001***	52.48±14.80	KW=0.738 p=0.864
25-34	77.51±6.09		51.65±14.01	
35-44	77.76±6.07		53.34±13.80	
45 and above	79.29±5.06		58.88±13.46	
Gender				
Female	76.58±5.82	Z=-2.587 p=0.010*	53.13±14.21	Z=-2.321 p=0.020*
Male	74.92±6.51		50.48±15.58	
Marital status				
Married	78.77±5.51	Z=-6.650 p<0.001***	54.23±14.05	Z=-1.885 p=0.059
Single	75.49±5.95		52.09±14.65	
Education level				
Primary school	78.29±6.60	KW=8.989 p=0.059	55.64±13.71	KW=3.561 p=0.313
High school	75.69±5.95		52.64±14.05	
University	76.22±5.98		52.18±14.77	
Master's/PhD graduate	77.013±5.84		53.23±15.07	
Income level				
Income>expense	76.19±6.677	KW=5.860 p=0.053	50.17±14.541	KW=6.959 p=0.031*
Income<expense	75.63±6.145		53.79±14.717	
Income=expense	76.93±5.459		52.31±14.242	
Use of drugs				
Yes	77.09±6.342	Z=-1.577 p=0.115	55.41±14.669	Z=-2.134 p=0.033*
No	76.11±5.958		52.16±14.490	
Presence of chronic disease				
Yes	76.89±7.053	Z=-1.269 p=0.204	57.38±16.598	Z=-3.073 p=0.002**
No	76.15±5.872		51.97±14.170	
Diagnosis of COVID-19				
Yes	77.18±6.96	Z=-1.441 p=0.150	54.89±14.21	Z=-1.104 p=0.270
No	76.18±5.96		52.45±14.56	
Measures taken during the pandemic				
I'm definitely not leaving the house	77.70±5.83	KW=20.145 p<0.001***	55.44±18.32	KW=18.178 p<0.001***
In mandatory situations, I go out by following the mask and 1.5 meters distance rule.	76.83±5.68		53.65±14.44	
I go out when ever I want by following the mask and 1.5 meters distance rule.	74.82±6.34		49.83±13.78	
I go out like before without taking any precautions.	76.66±14.57		69.33±11.93	
The level of fear in the pandemic				
Increased	76.78±5.90	KW=9.601 p=0.022*	58.15±13.72	KW=169.572 p<0.001***
Decrease	75.69±6.07		49.23±10.28	
Not changed	76.16±5.96		47.90±11.986	
I do not experience fear.	74.52±6.23		39.95±14.46	
Stress level in pandemic				
Increased	76.54±5.90	KW=7.180 p=0.066	57.59±13.77	KW=157.231 p<0.001***
Decrease	74.54±6.11		49.26±9.56	
Not changed	76.58±5.26		45.72±10.79	
I do not experience stress.	75.36±7.34		41.96±15.89	
Anxiety level in the pandemic				
Increased	76.67±5.86	KW=8.115 p=0.044*	57.05±13.84	KW=146.600 p<0.001***
Decrease	74.71±6.49		48.74±9.43	
Not changed	76.27±5.41		46.47±10.82	
I do not experience anxiety.	74.90±7.01		40.71±16.01	

*p <0.05; **p<0.01; ***p<0.001; PPHBS: Promotive and Protective Health Behaviors Scale, C19P-S: COVID-19 Phobia Scale, SD: Standard deviation, KW: Kruskal-Wallis test, Z: Mann-Whitney U test

Table 4. Correlation between health-promoting and protective behaviors and COVID-19 phobia levels of participants during the COVID-19 pandemic (n=800)

Scales	C19P-S mean	Psychological	Psycho-somatic	Social	Economic
Total PPHBS score					
r	0.038	0.056	0.004	0.024	0.033
p	0.289	0.114	0.918	0.489	0.355
Physical sub-dimension					
r	0.053	0.070	0.011	0.052	0.049
p	0.132	0.047	0.753	0.140	0.169
Psychosocial sub-dimension					
r	0.005	0.004	-0.013	-0.001	0.028
p	0.890	0.899	0.723	0.984	0.428
Protection sub-dimension					
r	0.010	0.038	-0.027	-0.007	-0.005
p	0.785	0.287	0.441	0.843	0.898

PPHBS: Promotive and Protective Health Behaviors Scale, C19P-S: COVID-19 Phobia Scale

DISCUSSION

The COVID-19 pandemic is an important global public health problem that affects people's lives in many ways due to its effects on health, social, psychological, and economic fields. It has been reported that the rapid spread of COVID-19 and its lethal effects have caused individuals to experience intense fear, stress, and anxiety among individuals (Çay, 2021; Peker & Cengiz, 2021). We thought that the fear experienced due to COVID-19 may have also affected individuals' health-promoting and protective behaviors. From this point of view, we conducted this study to examine the relationship between COVID-19 phobia and the implementation of health-promoting and protective behaviors during the pandemic.

In current study, we can say that the participants' COVID-19 phobia was at a moderate level. In addition, we found that individuals with increased levels of fear, stress, and anxiety about COVID-19 during the pandemic period had higher levels of COVID-19 phobia. The study conducted by Akarsu et al. (2022) reported that the COVID-19 phobia of individuals under the age of 65 was above average. Another study conducted with adults found that COVID-19 phobia was at a moderate level (55.28 ± 15.00) (Turan et al., 2022). We thought that these differences in the results may be due to many variables, such as the difference in the populations and dates of the studies, the start of COVID-19 vaccination practices, and the mortality and morbidity risks of COVID-19 (Turan et al., 2022).

As phobias are both the conditions that individuals have and emotions affected by these conditions, they might have a relationship with some demographic characteristics of individuals. Similarly, our study found that women had higher COVID-19 phobia than men did. Another study reported that women had a higher fear of the coronavirus and were more affected by it (Çay, 2021). The study conducted by Karaaslan et al.(2021) found that gender was an important factor affecting coronaphobia and that women had higher COVID-19 phobia. Another study found that women's COVID-19 phobia was significantly higher than men's (Zorlu et al., 2021). Another study conducted with women during the pandemic period reported that gender was an independent risk factor for anxiety and depression, and women had a higher risk (Özdin & Bayrak Özdin, 2020). In addition, the literature reported that the disease and the loss of loved ones were very effective in causing COVID-19 phobia (Mertens et al., 2020). We think that women in Turkish society have more responsibilities, especially in the field of childcare and housework, and therefore their phobias may be higher in parallel with their efforts to protect themselves from COVID-19.

In terms of the perception of income level, we found that those whose income was less than their expenses had higher COVID-19 phobia than those whose income was more than their expenses. Similarly, the literature reported that the COVID-19 pandemic increased economic concerns (Gashi, 2020; Thunström et al., 2020). Different results were obtained in studies on economic status and COVID-19 phobia. The study by Gashi (2020) found no significant relationship between economic status and COVID-19 phobia, but also found that individuals with poor economic status had higher anxiety levels than individuals with good economic status. Another study reported that there was a significant difference between coronavirus phobia and income level in Turkey and that individuals with low income status had higher levels of coronavirus phobia (Akarsu et al., 2022). This can be explained by the fact that individuals with better economic status can access services that can be purchased with financial power in crisis situations and better treatment opportunities when needed (Gashi, 2020).

It is known that individuals with chronic diseases are among the groups most affected by the pandemic. In our study, we found that individuals with chronic diseases and regular medication use had higher COVID-19 phobia. Similarly, the studies conducted by Karaaslan et al. (2021) and Zorlu et al. (2021) found that the presence of chronic disease was associated with coronaphobia and individuals with chronic diseases had higher COVID-19 phobia. The literature reported that individuals with chronic diseases are more likely to experience coronaphobia than those without chronic diseases (Gökkaya et al., 2022). This may be a result of the emotional reactions caused by the more severe course of COVID-19 and the high risk of complications and mortality in individuals with chronic diseases (Gökkaya et al., 2022).

The study found that the health-protective and health-promoting behavior score was at a moderate level. Studies conducted with different groups obtained different results in terms of PPHBS scores.

A study conducted with nurses (Ersin et al., 2021) and nursing students (Yıldız et al., 2022) during the pandemic period found the PPHBS score to be above average. In a study conducted in the pre-pandemic period, the mean PPHBS score was 84.82 ± 11.05 (Caz & Yildirim, 2019). The PPHBS scores in other studies were higher than the one in our study. This may be the result of the lockdown and social distancing restrictions imposed during the pandemic and the focus on compliance with COVID-19 protection measures rather than health-promoting and protective behaviors.

This study found that age was an important factor in implementing health-promoting and protective behaviors and that such behaviors increased with increasing age. The literature reported that individuals' tendency towards

health-promoting and protective behaviors increased with age (Sanaati et al., 2021; Tan et al., 2018). Similarly, the literature reported that the level of compliance with behaviors to prevent COVID-19 was lower, especially in younger age groups (Kucukkarapinar et al., 2022). We think that increased disease prevalence and disease risk perception with advanced age may be effective in increasing compliance with health protective behaviors.

We found that women had higher mean PPHBS scores than men, and married individuals had higher mean PPHBS scores than single individuals. Studies in the literature obtained similar results (Yıldız et al., 2022;Yiğitbaş, 2022). The study by Yiğitbaş (2022) with working individuals found that women had healthier lifestyle behaviors than men. Another study conducted during the pandemic reported that men had a lower tendency towards health-protective behaviors (Faasse & Newby, 2020). The study by Küçükpınar et al. (2022) found that women exhibited more COVID-19 protection behaviors than men, as was the case at the start of the pandemic. There were also studies reporting that singles had more positive health behaviors (Bostan & Beser, 2017). These findings showed that marital status affected health-promoting behaviors.

Our assessment of the measures taken by participants to prevent COVID-19 revealed that there was a significant difference in terms of COVID-19 phobia and the mean PPHBS score for individuals in the group who never left home. Individuals in this group had higher COVID-19 phobia and PPHBS scores. It was expected that the participants who did not leave the house and went out by taking measures when necessary would have a high COVID-19 phobia score. It has been reported that individuals with high COVID-19 phobia took more measures, such as using masks and gloves (Tural, 2020). In addition to the increased number of cases and deaths due to COVID-19, restrictions to contain the pandemic have led to the emergence of many psychosocial problems such as anxiety, fear, increased stress levels, social isolation, and loneliness (Eime et al., 2022; Rubio-Tomás et al., 2022; Yang et al., 2022). Studies reported a positive relationship between fear and infection prevention behaviors (Harper et al., 2021; Xu et al., 2021). In our study, we found that individuals who reported increased levels of fear, stress, and anxiety during the pandemic period had higher HPPBS scores. However, there was no statistically significant relationship between the participants' COVID-19 phobia and their health-promoting and protective behaviors. We found only one study in the literature examining the relationship between COVID-19 phobia and health-promoting and protective behaviors in adults (Ersin et al., 2021). This study found that there was a positive and moderately significant relationship between COVID-19 phobia and PPHBS among nurses (Ersin et al., 2021). When we examined the studies on compliance with health-promoting and protective behaviors during the pandemic period, we saw that they mostly focused on behaviors including infection control measures to protect against COVID-19 (Faasse & Newby, 2020; Xu et al., 2021). A study in China found that infection prevention behaviors were implemented more than health protection behaviors between the new year period when the COVID-19 outbreak started and the summer period of 2020, when the number of cases increased rapidly (Xu et al., 2021). Considering these results, we think that measures such as lockdown and the closure of many places to contain the pandemic, as well as the psychological problems experienced with the rapid increase in the number of cases and deaths, prevented people from implementing health-promoting activities.

A study conducted with adults in Zimbabwe during the pandemic found that physical activity level decreased, unhealthy eating behaviors and obesity risk increased, and alcohol consumption, sedentary lifestyle (screen time), stress, and anxiety levels increased because of the COVID-19 quarantine measures (Matsungo & Chopera, 2020). Similarly, a study reported that physical and mental health were affected because of decreased healthy lifestyle behaviors such as physical inactivity, weight gain, and sleep disturbance during the pandemic period (Azzouzi et al., 2022). Another study examining the status of healthy lifestyle behaviors before and during the pandemic period reported that people's body mass index increased, physical activity level decreased, sedentary lifestyle increased, and quality of life decreased during the pandemic (Deıedhıou et al., 2021).

Considering the period in which the study was conducted, the lack of a significant relationship between COVID-19 fear and health-promoting and protective behaviors can be explained by the fact that people were more focused on measures to protect themselves from COVID-19 and were unable to engage in many health-promoting activities because of quarantine and restrictions.

Limitations

This study has several limitations. First, this study was conducted online and illiterate individuals were not included in the study and this may affect the results. Second, the research data was self-reported by the participants' and may be affected by recall bias. Finally, the results of this study cannot be generalized to other countries. In addition, we recommend that studies be conducted with larger sample groups, especially with older individuals.

CONCLUSION

We found that the COVID-19 phobia and health-promoting and protective behaviors of adults were at a moderate level during the pandemic. There was no statistically significant the relationship between the participants' COVID-19 phobia and health-promoting and protective behaviors. In line with this result, we think that, due to the phobia caused by the pandemic, people focused on the measures to protect against COVID-19, which caused stress, anxiety, and phobia in people. In our opinion, people moved away from the health-promoting and protective behaviors, which are important for preventing chronic diseases that may occur especially in advanced ages and pose a great risk to public health. In this regard, it is important to evaluate COVID-19 phobia and health-promoting and protective behaviors and to encourage health-protective and improving behaviors during pandemic periods. We recommend carrying out trainings and plans to maintain health-promoting and protective behaviors by using different communication technologies within the conditions of the pandemic period. We recommend that you continue to inform the public about the importance of healthy lifestyles during and after the COVID-19 pandemic and develop guidelines to encourage individuals to engage in health-promoting and protective behaviors in case similar situations occur again.

ETHICAL DECLARATIONS

Ethics Committee Approval

The study was conducted with the permission of the Aksaray University Human Researches Ethics Committee (Date: 31.08.2020, Decision No: 2020/01/34).

Informed Consent

Written informed consent was obtained from all individual participants prior to their inclusion in the study. Participants were fully informed about the study's aims, procedures, potential risks and benefits, and their rights-including the right to withdraw at any time without consequence. All participants voluntarily signed a written informed consent form.

Peer Review Process

This manuscript was subject to external peer review.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

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Author Contributions

Concept: C.K.Y., F.Ş.K; Design: C.K.Y., F.Ş.K; Control: C.K.Y., F.Ş.K; Data collection and/or processing: C.K.Y., F.Ş.K.; Analysis and/or interpretation: C.K.Y.; Literature review: C.K.Y., F.Ş.K.; Article writing: C.K.Y., F.Ş.K; Critical review: All authors.

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Effectiveness of Su Jok therapy as a complementary approach in postoperative symptom management in surgical nursing: review

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ABSTRACT

Postoperative symptom management is a key responsibility in surgical nursing. In addition to pharmacological methods, complementary and alternative therapies have emerged as effective approaches to support recovery. Su Jok therapy, based on Korean hand and foot microsystems, is a non-invasive complementary method aligned with holistic nursing philosophy.
This systematic review aims to examine the effects of Su Jok therapy on postoperative symptom management within the context of surgical nursing. A comprehensive literature search was conducted in seven databases between January 2010 and December 2025 using the keywords "Su Jok therapy," "surgical nursing," "postoperative care," and "complementary and alternative therapies." A total of 41 records were identified. After applying the inclusion criteria, 20 studies were included, four of which were randomized controlled trials. The findings indicate that Su Jok therapy may be effective in reducing postoperative symptoms such as pain, nausea-vomiting, anxiety, fatigue, and sleep disturbances. Its safety, low cost, and ease of application support its potential integration into nursing care. However, most existing evidence is based on small sample sizes. Therefore, large-scale, multicenter randomized controlled trials are needed to evaluate its effectiveness and support the development of clinical guidelines.

Keywords: Su Jok therapy, surgical nursing, postoperative care, complementary and alternative therapies

INTRODUCTION

Surgical science continues to evolve due to technological advances and ongoing research innovations. In recent years, minimally invasive and robotic surgical procedures have increasingly replaced traditional open techniques, contributing to an increase in the number of operations performed. However, these rapid developments in surgical practice also require new approaches to patient care and bring various health-related challenges to the forefront (Gül et al., 2022). It is estimated that more than 300 million major surgical procedures are performed worldwide each year. Postoperative complication rates vary between 5 percent and 30 percent depending on the type of surgery and patient characteristics. Symptoms such as pain, nausea, sleep disturbances, and difficulties in mobilization are particularly common during the first 72 hours following surgery (World Health Organization [WHO], 2023).

The type of anesthesia administered, the nature of the surgical procedure, and individual patient characteristics are associated with the development of postoperative complications. During this period, patients may experience pain, nausea-vomiting, delayed bowel movements, hypothermia, circulatory and respiratory problems, urinary retention, loss of appetite, wound infections, fatigue, sleep disorders, anxiety, and depression. These complications can prolong hospital stays, increase readmission rates, reduce quality of life, and decrease patient satisfaction, thereby creating significant health burdens (Bölükbaş & Irmak, 2020).

A primary responsibility of surgical nursing is the early identification and prevention of postoperative complications, as well as the delivery of effective care for emerging symptoms. Today, this responsibility extends beyond physical care to include psychological support and complementary interventions that facilitate recovery. Although pharmacological treatments remain fundamental in postoperative management, complementary and alternative approaches have gained increasing recognition in recent years. These non-pharmacological interventions are intended to support medical treatment, reduce medication-related side effects, enhance immune function, regulate sleep, alleviate stress and anxiety, improve quality of life, and preserve the biopsychosocial integrity of the individual (Ay, 2018).

Over the past decade, numerous studies have suggested potential benefits of acupuncture, aromatherapy, yoga, music therapy, and reflexology in alleviating postoperative symptoms. Among these approaches, Su Jok therapy, which

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aligns with holistic nursing philosophy, has gained particular attention. Holistic nursing views individuals as integrated beings consisting of physiological, psychological, and social dimensions. From this perspective, illness is believed to arise from disruptions in energy balance, and true healing is thought to occur through the restoration of this balance (Korkut Bayındır & Biçer, 2019).

In the literature, Su Jok therapy is reported to be well accepted by nurses in symptom management because it is easy to administer, non-invasive, and has no known adverse effects. Recent randomized controlled studies and doctoral-level research have provided evidence suggesting its effectiveness in reducing postoperative pain, anxiety, nausea, fatigue, and sleep disturbances (Gür et al., 2025; Çoban & Göktaş, 2025; Elmali Şimşek et al., 2022). Its alignment with holistic nursing philosophy and its reported benefits in symptom management enhance its potential for integration into clinical practice in surgical nursing.

The aim of this systematic review is to examine the literature on Su Jok therapy as a complementary and alternative method in surgical nursing and to summarize its mechanisms of action, areas of application, and use in postoperative symptom management.

Su Jok Therapy

In Korean, "Su" means hand and "Jok" means foot. Su Jok therapy was developed in the mid-1980s by Korean researcher Park Jae Woo and is based on the principle that the hands and feet represent microsystems reflecting the entire human body (Park, 1991). During the late 1980s, therapy was further expanded through the integration of additional modalities such as seed therapy, color therapy, and magnetic stimulation. These developments were later reflected in clinical practice, with therapeutic benefits reported particularly in periarthritis and other musculoskeletal pain conditions (Park, 1991; Torés et al., 2011).

During the 1990s, Su Jok therapy gained widespread use, particularly in countries such as Russia, India, and several Eastern European nations. After the 2000s, Su Jok therapy was incorporated into various training and certification programs, primarily in India and Russia. These developments contributed to the international recognition of Su Jok therapy and to the expansion of its areas of application (Park, 1991). Since 2010, academic interest in acupressure and Su Jok therapy has increased, with early clinical studies appearing in international databases such as PubMed and Scopus (Cruz et al., 2018; Huber et al., 2016; Oliva et al., 2017; Torés et al., 2011). In the 2020s, an increasing number of clinical studies have been published, particularly in the fields of oncology, palliative care, and surgical nursing (Çoban & Göktaş, 2025; Elmali Şimşek et al., 2022; Güneş & Yılmaz Karabulutlu, 2025).

Theoretical Framework and Proposed Mechanism of Action of Su Jok Therapy

Su Jok therapy is based on several core concepts, including the correspondence system, microsystem theory, the flow of energy (Qi) through meridians, and various stimulation modalities. These modalities include manual pressure, seed therapy, color therapy, magnetic stimulation, heat stimulation, and micro-needles. Within this theoretical framework, the hands and feet are conceptualized as miniature representations of the human body, with specific organs, systems, and anatomical regions corresponding to defined points on these surfaces. Stimulation of these points is proposed to influence the flow of energy and to contribute to the regulation of functional imbalances in the corresponding organs or physiological systems. According to Su Jok theory, disturbances in the body's energy flow may manifest in related hand or foot areas as pain, tenderness, or changes in skin characteristics. The application of different forms of stimulation, such as manual pressure, seeds, magnets, color, heat, or needles, is theorized to support energetic regulation, with each modality contributing through distinct pathways (Park, 1991).

The mechanisms proposed for Su Jok therapy resemble those underlying acupuncture, acupressure, and reflexology. Stimulation of microsystem points is believed to influence both peripheral and central nervous system activity, potentially suppressing pain transmission and modulating neurophysiological responses.

In addition, Su Jok therapy and related complementary modalities have been suggested to influence autonomic nervous system regulation, particularly by supporting parasympathetic activity. Such modulation may contribute to improvements in gastrointestinal function and may help alleviate symptoms such as nausea and vomiting, while also being associated with reductions in anxiety levels and enhanced overall comfort (Güneş & Yılmaz Karabulutlu, 2025; Gür et al., 2025; Kaur & Singh, 2015; Mehta et al., 2016; Whatley et al., 2022).

The literature consistently reports that Su Jok therapy, when administered appropriately, is considered safe and is not associated with serious adverse effects (Park, 1991; Cruz et al., 2018). Although no strict contraindications specific to Su Jok therapy have been formally established, evidence derived from acupressure and reflexology research suggests that caution should be exercised in certain situations. Clinical judgment is recommended when applying the therapy in individuals who are pregnant, immunosuppressed, have active infections, open wounds, bleeding disorders, or severe psychiatric conditions. In such circumstances, consultation with appropriate healthcare professionals is advised prior to application (Larki et al., 2025; Whatley et al., 2022).

Application Process of Su Jok Therapy

1. Identifying the treatment point through assessment: The first step is to evaluate the patient's current symptoms and determine the corresponding reflection area based on the hand or foot map. These points are typically identified through palpation using a diagnostic probe. Sensitive points may present as tenderness or pain and are identified through palpation using a diagnostic probe (Park, 1987; Park, 1991).

2. Frequency and duration of application: Park Jae Woo states that Su Jok therapy does not have a standardized duration or a fixed number of sessions, and that its application may vary depending on the patient's condition and whether the symptoms are acute or chronic. In acute conditions, short and more frequent stimulation of sensitive points is recommended, whereas longer and more continuous applications may be preferred in chronic conditions. In Su Jok

seed therapy, the duration of application may vary according to individual needs but is generally limited to several hours. It is recommended that seeds be kept on the corresponding reflection area for approximately 3–8 hours, and that new seeds with germination potential be used for each daily application (Park, 1987).

Clinical studies in the literature suggest that Su Jok therapy may be beneficial in the management of acute postoperative pain using various application durations. In women undergoing cesarean delivery, a single 30-minute session combining Su Jok therapy with aromatherapy was reported to result in a significant reduction in pain within a short period of time (Elmali Şimşek et al., 2022). Similarly, in patients undergoing lumbar disc herniation surgery, Su Jok therapy applied on postoperative days 1, 2, and 3 was found to significantly reduce pain following each 30-minute session (Çoban & Göktaş, 2025).

These findings indicate that the frequency and duration of Su Jok therapy can be flexibly adapted according to clinical conditions and that short, repeated applications may be particularly effective in the management of acute postoperative pain.

3. Application techniques: The application techniques used in Su Jok therapy consist of various methods aimed at stimulating the selected correspondence point. In acute conditions, stimulation is typically achieved through short-duration manual pressure, whereas in chronic problems, longer and more continuous forms of stimulation may be preferred. In this context, seeds or magnetic sticks can be fixed to the selected area with adhesive tape to provide mild and continuous stimulation throughout the day. In the seed therapy method described by Park Jae Woo, light pressure is recommended to be applied to the seeds using a probe at intervals during the day in order to support the therapeutic process. To further support the intervention, additional complementary techniques such as moxibustion (heat application), color therapy, miniature needles, or magnetic sticks may be selectively used by trained practitioners according to the patient's symptoms (Park, 1987; Park, 1991).

Clinical Applications of Su Jok Therapy

In his early writings, Park Jae Woo emphasized pain management as the primary application area of Su Jok therapy. He developed simple, short-duration techniques based on stimulating reflection areas on the hands and feet, particularly for acute and chronic pain. These applications were reported to provide rapid relief for common complaints such as headaches, dental pain, low back and neck pain, rheumatic pain, and muscle tension. These early clinical observations later formed the foundation for subsequent experimental and clinical studies (Park, 1991).

The literature suggests that the potential benefits of Su Jok therapy are not limited to a narrow range of pain conditions but have been explored across a broad spectrum. Various studies have reported analgesic outcomes in conditions such as carpal tunnel syndrome, periarthritis, herpes zoster, heel spur, hydrosalpinx, cervical pain, knee pain, tension-type headache, cancer-related pain, low back pain, posture-related pain, and postoperative pain (Albert, 2018; Cruz et al., 2018; Huber et al., 2016; Oliva et al., 2017; Rodríguez et al., 2018; Torés et al., 2011; Yagil, 2019). Collectively, these findings indicate that Su Jok therapy may represent a safe, non-invasive complementary approach to pharmacological analgesic methods.

Beyond pain management, Su Jok therapy has been explored in a variety of other clinical contexts. The available literature suggests that Su Jok applications may offer potential benefits not only for physical symptoms but also for psychological and functional complaints. Favorable outcomes have been reported in conditions such as diabetes, gastrointestinal symptoms (including nausea and vomiting), fatigue, insomnia, anxiety, and stress. Recent studies suggest that Su Jok therapy may contribute to the alleviation of both physiological and psychological symptoms, potentially through mechanisms such as modulation of autonomic nervous system activity and the promotion of endogenous opioid release (Çoban & Göktaş, 2025; Güneş & Yılmaz Karabulutlu, 2025; Gür et al., 2025; Yagil, 2019; Yagil & Pathak, 2021).

METHODS

This study was conducted using a systematic review methodology and reported in accordance with the PRISMA 2020 (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Page et al., 2021).

Databases and Search Strategy

A comprehensive literature search was carried out between January 2010 and December 2025 in the following databases: PubMed, Scopus, Web of Science, CINAHL, Cochrane Library, Google Scholar, ULAKBİM. Boolean operators (AND, OR) were used to combine the following keywords: "Su Jok therapy", "surgical nursing" OR "perioperative nursing", "postoperative care", "complementary and alternative medicine", and "non-pharmacological interventions." Medical Subject Headings (MeSH) terms and their Turkish equivalents were also included in the search strategy.

Inclusion and Exclusion Criteria

Inclusion criteria

- Published between 2010 and 2025
- Written in English or Turkish
- Examining the use of Su Jok therapy within the context of surgical nursing or postoperative care
- Designed as randomized controlled trials, quasi experimental studies, retrospective clinical studies, or observational research

Exclusion criteria

- Case reports, editorials, or articles of a purely theoretical/philosophical nature
- Laboratory-based experimental studies
- Publications for which the full text could not be accessed

A total of 41 records were identified through database searches. After removing 7 duplicate entries, 34 unique studies were screened. Following the title and abstract review, 4 studies were excluded for not meeting the inclusion criteria. Subsequently, 30 full-text articles were assessed for eligibility. Of these, 10 were excluded because they met the exclusion

criteria (case reports, theoretical book chapters or reviews, and protocol-only studies). The remaining 20 studies were included in the final synthesis of this systematic review. Most of the included studies were conducted in non-surgical patient populations. Because only a limited number of randomized controlled trials specifically investigated the effects of Su Jok therapy in postoperative patients, the detailed analysis was based on the 4 RCTs that met these criteria. The remaining publications were classified as supportive, observational, or non-surgical studies (Table).

Table. PRISMA 2020 flow diagram of the literature selection process

Stage	Description	Number of records (n)
Identification	Records identified through database searching (PubMed, Scopus, CINAHL, Web of Science, Cochrane Library, Google Scholar, ULAKBİM)	41
	Duplicate records removed	7
Screening	Records screened by title and abstract	34
	Records excluded after title and abstract review (not relevant or not eligible)	4
Eligibility	Full-text articles assessed for eligibility	30
	Full-text articles excluded with reasons (case reports, theoretical papers, protocols)	10
Included	Studies included in the systematic review	20
	Of which randomized controlled trials (RCTs)	4

RESULTS

Su Jok Therapy in Surgical Nursing

In the 2020s, an increase has been observed in the number of randomized controlled trials as well as other clinical and experimental studies conducted in the fields of surgical nursing, oncology, and palliative care. In surgical patients, Su Jok therapy has predominantly been administered using plant seeds. Findings from studies published during this period suggest that Su Jok therapy, as a complementary and alternative method, may be effective in the management of common postoperative symptoms, including pain, nausea and vomiting, sleep disturbances, and anxiety (Çoban & Göktaş, 2025; Elmali Şimşek et al., 2022; Güneş & Yılmaz Karabulutlu, 2025; Gür et al., 2025).

1. Su Jok therapy in postoperative pain management: Postoperative pain is one of the most common complications following surgical procedures and significantly affects both recovery and quality of life. Inadequate pain control can delay healing, prolong hospitalization, and reduce patient satisfaction. Although pharmacological methods such as opioids and nonsteroidal anti-inflammatory drugs are widely used in postoperative pain management, their use is often limited due to adverse effects including nausea, constipation, and respiratory depression. Consequently, interest in non-pharmacological and complementary interventions has increased. In this context, Su Jok therapy has emerged as a holistic complementary approach that has been increasingly explored for postoperative pain management. Recent studies suggest that Su Jok therapy may be beneficial in reducing postoperative pain. Elmali Şimşek et al. (2022) reported that a combined intervention of Su Jok therapy and aromatherapy was associated with improved pain control after cesarean delivery, reduced analgesic requirements, and enhanced patient comfort. Similarly, in patients undergoing lumbar disc herniation surgery, Su Jok therapy was associated with significant reductions in pain and anxiety, along with improvements in overall recovery quality (Çoban & Göktaş, 2025).

Collectively, these findings suggest that Su Jok therapy may represent a safe, economical, and non-invasive complementary approach to postoperative pain management. Its ease of application and non-invasive nature support its potential integration into nursing care, with possible benefits for patient comfort, recovery, and satisfaction when used alongside pharmacological interventions. When considered together, the available evidence indicates that Su Jok therapy may contribute to reductions in postoperative pain, improvements in comfort, and enhanced overall recovery quality. As a cost-effective and easily administered technique, it may serve as a supportive adjunct to pharmacological analgesia and aligns well with holistic, patient-centered nursing care. Accordingly, Su Jok therapy may be incorporated into multimodal pain management strategies to support improved postoperative outcomes.

2. Su Jok therapy in the management of postoperative nausea and vomiting: Postoperative nausea and vomiting (PONV) are among the most common complications following surgical procedures and significantly affect patient comfort. These symptoms not only reduce patient satisfaction but may also delay early mobilization, hinder oral intake, and prolong hospital stay, thereby increasing healthcare costs (Bölükbaş & Irmak, 2020). Although pharmacological antiemetics such as ondansetron and metoclopramide are widely used in clinical practice, their effectiveness may be limited in some patients and they may be associated with adverse effects. This highlights the importance of complementary and non-pharmacological approaches. In this context, Su Jok therapy is regarded as a complementary method that is compatible with holistic nursing care, easy to administer, and cost-effective. Findings from a single clinical study suggest that Su Jok therapy may be beneficial in the management of postoperative nausea and vomiting. In a study conducted among patients undergoing thyroidectomy, Su Jok–based Korean hand acupressure applied during the early postoperative period was associated with lower levels of nausea, vomiting, and retching, as well as a reduced need for antiemetic medication (Gür et al., 2025). When considered together, these findings indicate that Su Jok therapy may represent a safe, non-invasive, and low-cost complementary approach for the management of postoperative nausea and vomiting. Its ease of application supports its potential integration into nursing care as an intervention that may enhance patient comfort and reduce reliance on pharmacological antiemetics..

3. Su Jok therapy in the management of anxiety: Preoperative anxiety is a common psychological problem among surgical patients and can significantly affect postoperative outcomes. Elevated anxiety levels increase sympathetic nervous system activity, lower the pain threshold, increase analgesic requirements, and negatively influence the recovery process. For this reason, anxiety management is a fundamental component of surgical nursing care. As a complementary and non-pharmacological intervention, Su Jok therapy

has attracted increasing interest due to its regulatory and calming effects on the nervous system. Findings from a randomized controlled trial suggest that Su Jok therapy may be effective in reducing anxiety. In a randomized controlled trial conducted by Çoban and Göktaş (2025) among patients undergoing lumbar disc herniation surgery, anxiety scores in the Su Jok group were found to be significantly lower after the intervention compared with the control group, demonstrating that Su Jok therapy significantly reduced anxiety levels. These findings suggest that stimulation of specific points located on the hand and foot microsystems may exert a balancing effect on the autonomic nervous system, thereby supporting both physiological and psychological relaxation. Integrating Su Jok therapy into surgical nursing practice may contribute to reducing anxiety, enhancing patient satisfaction, and supporting the recovery process. Its safety, affordability, and ease of application make Su Jok therapy a valuable complementary tool within holistic nursing care, supporting both the physical and psychological dimensions of patient care.

4. Functional recovery (quality of recovery, mobilization, fatigue, and sleep quality): Postoperative recovery involves not only physical healing but also the restoration of comfort, mobility, energy levels, and sleep quality. In the early postoperative period, surgical patients frequently experience pain, fatigue, and sleep disturbances, which may delay mobilization and prolong the overall recovery process. Therefore, complementary non-pharmacological interventions play an important role in supporting rehabilitation, enhancing patient comfort, and improving recovery quality. Su Jok therapy is one such method that has gained attention for its potential to promote functional recovery during the postoperative period.

Recent research suggests that Su Jok therapy may contribute to functional recovery by alleviating multiple symptoms simultaneously. In a randomized controlled trial conducted by Çoban and Göktaş (2025) among patients undergoing lumbar disc herniation surgery, Su Jok therapy was associated with reductions in postoperative pain and anxiety, along with improvements in overall quality of recovery. These findings indicate that Su Jok therapy may support both physical and psychological healing in the postoperative period, contributing positively to patients' general well-being. In addition to studies focusing on surgical patients, evidence from non-surgical oncology populations further supports the potential contribution of Su Jok therapy to functional recovery. In a randomized controlled study conducted by Güneş and Yılmaz Karabulutlu (2025) among patients diagnosed with gastrointestinal system cancer, Su Jok therapy was associated with significant reductions in pain, fatigue, and insomnia. Although this study did not involve a surgical intervention, improvements in energy levels, sleep quality, and overall comfort suggest that Su Jok therapy may enhance functional recovery. These findings indicate that Su Jok therapy may hold similar potential for postoperative patients who experience comparable symptoms.

Based on these findings, the integration of Su Jok therapy into nursing care protocols may support the postoperative recovery process and contribute to increased functional capacity and improved patient satisfaction.

CONCLUSION

The findings of this systematic review indicate that Su Jok therapy is an effective and promising complementary approach within surgical nursing practice. Evidence demonstrates that therapy plays a significant role in managing postoperative pain and anxiety, while also providing beneficial effects in reducing nausea, vomiting, fatigue, and sleep disturbances. Thanks to its non-invasive, safe, low-cost, and easy-to-apply nature, Su Jok therapy offers a practical option that can be integrated into holistic nursing care. By supporting pharmacological treatments, it contributes to multimodal and patient-centered care, thereby increasing patient comfort, accelerating recovery, and enhancing overall satisfaction. However, most existing studies are limited by small sample sizes, single-center designs, and short follow-up periods. The absence of standardized intervention protocols and insufficient investigation of long-term outcomes further reduce the generalizability of the current evidence.

Methodological heterogeneity across studies also limits the comparability and strength of the findings.

- In line with these considerations, the following recommendations are proposed:
- Development of Su Jok therapy training programs for surgical nurses,
- Establishment of standardized clinical guidelines to facilitate safe and consistent integration of Su Jok therapy into nursing care
- Conducting large-scale, multicenter randomized controlled trials to evaluate the effectiveness, standardization, and long-term outcomes of Su Jok therapy in postoperative care.

ETHICAL DECLARATIONS

Peer Review Process

This review was externally peer-reviewed.

Conflict of Interest

The authors declare no conflicts of interest.

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Author Contributions

Concept: S.A.I, S.K.; Design: S.K., S.A.I; Control: S.A.I, S.K.; Data collection and/or processing: S.K., S.A.I.; Analysis and/or ınterpretation: S.K., S.A.I.; Literature review: S.A.I., S.K.; Article writing: S.K., S.A.I.; Critical review: All authors.

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Nursing interventions for the prevention of falls in elderly individuals and the role of nurses: a scoping review

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ABSTRACT

Falls, which have negative effects on functional independence and quality of life in elderly individuals, are closely related to increased morbidity, mortality and health-related costs. The aim of this scoping review is to synthesise the current available information on nursing interventions for falls in elderly individuals and to provide a practical resource mapping for health professionals. Searches were queried using a combination of the keywords "falls in the elderly", "falls prevention" and "nursing intervention in falls prevention", including PubMed, SCOPUS, CINAHL, Medline and Google Scholar. The review included only English-language studies published in the last 5 years (between 2018 and 2023). All study types were assessed, including systematic reviews, case studies and clinical guidelines. As a result of the review, eleven relevant studies were selected and these were grouped under five main themes. The themes have been determined as assessing the elderly individual (identifying the individual at risk) (1), performing periodic examination/monitoring (2), making the environment safer (3), improving the self-efficacy/self-care of the elderly individual (4) and informing/educating (patient/family/caregiver/nurse) (5). According to the studies analysed, falls are important problems in elderly individuals and with a series of measures to be taken, individuals at risk can be identified and the size and number of injuries can be reduced. Protecting the health of the elderly and preventing injuries is one of the most important duties of all healthcare professionals, and some nursing interventions can contribute to the prevention and reduction of falls in elderly individuals.

Keywords: Elderly, fall prevention, nursing intervention, scoping review

INTRODUCTION

According to the World Health Organisation (WHO), the population over the age of 65, which is defined as the elderly, is gradually increasing all over the world. In consequence of the changes that occur due to the nature of old age; elderly individuals face various health problems and different risks (WHO, 2015). Falls are one of the most common and serious problems causing injury and disability, especially among the elderly (Montero-Odasso et al., 2022). It has been reported that despite all precautions and efforts, falls occur in 30% of elderly individuals every year (Ganz & Latham, 2020). Among the factors that lead to an increased risk of falls among elderly individuals is a decline in the functionality of sensory information such as muscle strength, muscle tone, vision, hearing and proprioception (Al-Aama, 2011). However, factors such as the coexistence of multiple medical problems and polypharmacy are closely associated with an increased tendency to fall and thus increased susceptibility to injury (Dionyssiotis, 2012; Al-Aama, 2011). Other fall risk factors include; balance disorder, cognitive problems, psychoactive drugs, walking difficulties, depression, orthostasis or dizziness, functional limitations. The risk of falls increases as the number of risk factors increases. Drugs related to falls include antihypertensives, antidepressants, neuroleptics and antipsychotics, sedatives and hypnotics, non-steroidal anti-inflammatory drugs and benzodiazepines (Al-Aama, 2011).

Falls, which are also an important safety problem for hospitalised patients, prolong the length of hospital stay, reduce the quality of life and create a financial burden for both patients and hospitals (Chu, 2017). At the same time, patient falls are a sensitive indicator for nursing that affects patient care outcomes and is one of the quality markers of care (Montalvo, 2007). Fall prevention requires a multidisciplinary approach to create a safe patient environment and reduce fall-related injuries. Especially the training of nurses who provide uninterrupted 24-hour health care services to patients and their interventions for the prevention of falls are important in the prevention of falls (Chu, 2017). Nurses provide the most consistent communication with patients due to their 24-hour presence and continuous close monitoring of changes in condition (King et al., 2018). Therefore, establishing patient safety should be a priority for nurses and they should develop interventions to reduce risk and create a secure environment

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(Brás et al., 2020). Nurses caring for patients need to make an accurate assessment to determine the fall risk level of patients and develop a care plan appropriate to their needs (Ojo & Thiamwong, 2022). However, there is limited data in the literature about the strategies used by nurses to prevent falls in elderly patients or to reduce the risk. This scoping review was conducted to synthesize current nursing interventions for fall prevention in elderly individuals and integrate quantitative and qualitative evidence on relevant measures for healthcare professionals.

The ultimate aim is to identify gaps in the literature for new primary studies on current nursing interventions for falls in elderly individuals and to provide a practical resource for health professionals by mapping relevant measures. The following research questions were specifically addressed:

1. What are the current measures taken to prevent falls in elderly individuals?

2. How can nursing interventions and the role of the nurse to prevent falls in elderly individuals be summarized?

METHODS

This scoping narrative review has been conducted to synthesise current nursing interventions for falls prevention in elderly individuals and to comprehensively map relevant measures for health professionals. This scoping review has been conducted using the framework and principles reported by Arksey and O'Malley (Arksey & O'Malley, 2005) and further recommendations provided by Levac, et al. (Levac et al., 2010). The PRISMA-ScR extension for scoping reviews has been developed to improve the reporting quality and conduct of scoping reviews (McGowan et al., 2020). This study utilized The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) and was used as a reference checklist. The nature of the evidence being reviewed has been taken into account by making appropriate adjustments (i.e. only secondary evidence). The review includes the following 5 main stages. These stages are: identifying the research question (1), identifying relevant studies (2), selecting studies (3), charting the data (4) and collating, summarising and reporting the results (5) (Arksey & O'Malley, 2005).

Search Strategy

Keywords and MeSH terms for the search strategy were developed by examining the methods used in comprehensive review protocols. Search terms included "falls in the elderly", "falls prevention", and "nursing intervention in falls prevention". To provide a comprehensive search, searches were conducted across three major databases PubMed, SCOPUS, and CINAHL along with Medline and Google Scholar, encompassing both primary and secondary data sources. The review included only English-language studies published within the last 5 years (between 2018 and 2023). Since this is a comprehensive review of the published literature, ethics approval is not required.

Inclusion and Exclusion Criteria

All study types were assessed, including systematic reviews, case studies and clinical guidelines. Articles published in languages other than English, non-refereed articles, conference papers, abstracts, theses, book chapters, editorials and opinion pieces have been excluded from this review.

Search Outcome

An initial literature search identified eleven studies that met the criteria. Data from the included articles have been summarised and presented qualitatively through a narrative synthesis. An initial search will identify appropriate search terms, followed by a search using keywords and index terms. The data analysis process has been organised in a descriptive way with the synthesis of each article, from the results obtained by identifying points related to participation in nursing care for the prevention of falling risk in elderly people, and five thematic categories have been created.

RESULTS

The results have been presented in the PRISMA-ScR diagram flow (Figure 1). The initial evaluation for this study yielded 1144 articles. After screening all article titles for eligibility, a total of 1110 articles were excluded for duplication or not meeting the inclusion criteria. This resulted in 34 articles suitable for full reading. Finally, on the basis of the inclusion criteria, eleven studies focussing on nursing interventions for the prevention of falling in elderly individuals and the role of nurses have been included. Of the eleven studies included as a result of the literature review, one was qualitative, three were reviews, one was a clinical practice guideline, one was an implementation project, two were a randomised clinical trial, two were a quasi-experimental study and one was a cross-sectional, descriptive survey study (Table 1).

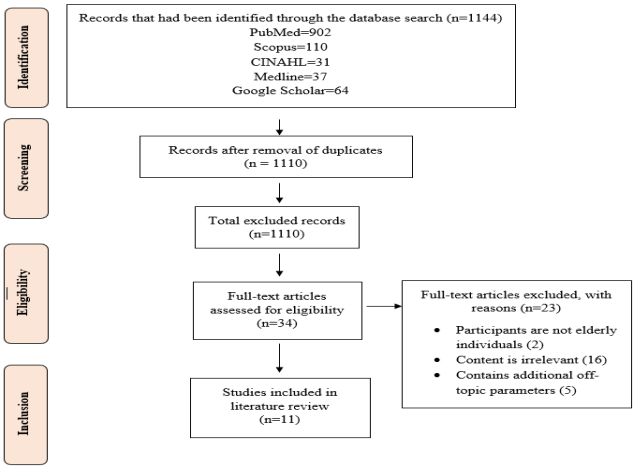

Figure 1. Adapted preferred reporting items for scoping review flow diagram of the study selection process (Page et al., 2021)

At the end of the review, eleven relevant studies have been selected and these have been grouped under a total of five main themes. In the review, articles were divided into various themes to demonstrate the diversity of the literature. As a result of the reading and review, taking into account the inductive thematic grouping method, some specific elements were focused on and five main themes were decided upon. The first theme has been determined as assessing the elderly individual (diagnosing the individual at risk) (1), performing periodic examination/monitoring (2), making the environment safer (3), improving the self-efficacy/self-care of the elderly individual (4) and providing information/education (patient/family/caregiver/nurse) (5) (Table 2).

Table 1. Characterization and recommendations of articles published between 2018 and 2023 selected for scoping literature review

No	Author(s) (year) country	Title/design and type	Objective	Main results	Thematic content
1	Cerilo & Siegmund, (2022) USA	- Pilot testing of nurse led multimodal intervention for falls prevention - A single-group pre and post-test pilot study	To examine the impact of a nurse-led multimodal intervention on hospitalized adults' levels of fall risk awareness, self-efficacy, and engagement in fall prevention.	Results of the study show that as the self-efficacy of falling increases, participation also increases. New research is needed to examine self-efficacy and engagement in fall prevention in hospitalized elderly individuals.	To develop self-efficacy/self-care of the individual
2	Montejano-Lozoya et al., (2020) Spain	- Impact of nurses' intervention in the prevention of falls in hospitalized patient - A quasi-experimental study	To evaluate the effectiveness of an educational intervention for nurses in hospitals (systematic assessment of fall risk) in reducing the incidence of falls.	The intervention group received an educational programme, while a control group was included for comparison. Nurses in the intervention group participated in a training activity on the systematic assessment of fall risk. As a result, systematic evaluation of the patient's fall risk during hospital processes have been found to be an effective intervention in reducing the frequency of falls.	To conduct a periodic inspection/monitoring
3	Moreira et al., (2022) Brazil	- Effects of nursing intervention on falls prevention in older adults with arterial hypertension using NANDA-I, NIC and NOC - A randomized, open, parallel, and multicenter clinical trial	The study has been conducted to measure the effects of fall prevention of NIC intervention on the magnitude of NANDA-I Fall Risk risk factors and fall-related NOC indicators in elderly individuals with arterial hypertension	The study included 118 elderly individuals who were divided into intervention and control groups. The intervention has been conducted at three different times in the participants' homes and consisted of nursing activities within the scope of NIC falls prevention and a protocol including operational definitions. Three months after the intervention, there was a significant difference between the groups in terms of frequency of falls and risk factors/environmental conditions. In conclusion, the NIC intervention was effective in changing risk factors for fall prevention, fall risk in elderly individuals, and fall-related NOC indicators.	- Assessing the individual (identifying the individual at risk) - Making the environment safer
4	Sena et al., (2021) Brazil	- Nursing care related to fall prevention among hospitalized elderly people: an integrative review - An integrative literature review	To determine scientific information regarding nursing care to prevent the risk of falls in hospitalized elderly.	As a result of the synthesis of the studies; it has been stated that nursing care regarding the prevention of falling risk in hospitalized elderly individuals contributes to improving clinical assessment, risk factors and strategies such as nursing care, self-care behavior and encouraging safety for elderly individuals.	-Assessing the individual (identifying the individual at risk) - To develop self-efficacy/self-care of the individual
5	Innab, (2022) Saudi Arabia	- Nurses' perceptions of fall risk factors and fall prevention strategies in acute care settings in Saudi Arabia - A cross-sectional, correlational, descriptive study	It has been conducted to determine nurses' perceptions of fall-related factors and fall prevention strategies in acute care settings in Saudi Arabia.	Deterioration in balance and muscle strength, limitation of movement, and failure to comply with safety instructions have been reported as the most important factors in falls in patients. Multidisciplinary fall prevention strategies have been found to be effective in reducing the prevalence of falls, and nurses with higher education levels had higher perceptions of fall risk factors. Patient safety education, including fall prevention education programs, has been shown to reduce falls by making nurses more aware of fall risk factors and prevention strategies.	Information/conduct education (patient/family/carer/nurse)
6	King et al., (2018) Madison, Wisconsin, USA	- Impact of fall prevention on nurses and care of fall risk patients - A qualitative study	To investigate nurses' experiences of fall prevention in the hospital setting and the impact of these experiences on how nurses provide care to patients at risk of falling.	A qualitative study using Grounded Dimensional Analysis (GDA) was conducted and twenty-seven registered nurses and certified nursing assistants participated in in-depth interviews. As a result, intense messages from hospital management to prevent falls at all caused nurses to develop a fear of falling, to protect themselves and their unit, and to restrict patients at risk of falling as a way to stop the messages and achieve the hospital goal.	Information/conduct education (patient/family/carer/nurse)
7	Ojo & Thiamwong, (2022) USA	- Effects of nurse-led falls prevention programmes for older adults: a systematic review - A systematic review	It aimed to address the effects of nurse-led fall prevention programs in elderly individuals.	After the review, the roles of nurses have been stated as patient assessment, patient education, management of exercise programmes and post-intervention follow-up. Fall prevention programs that include educational components specific to elderly individuals and nursing staff have shown positive results. Nurses make a significant contribution to improving patient outcomes, and a falls prevention program that focuses on reducing the rate of falls that lead to injury and improving the behavior of participants can maximize its effects.	- Assessing the individual (identifying the individual at risk) - To conduct a periodic inspection/monitoring

The table continues

Table 1. Characterization and recommendations of articles published between 2018 and 2023 selected for scoping literature review (The table continues)

8	dos Santos et al., (2021) Brazil	- Nursing interventions for the prevention of falls in the elderly in primary care: Integrative review - An integrative literature review	The aim of the study is to determine how to determine recommended nursing interventions to prevent falls in the elderly in primary health care institutions.	In the studies examined, nursing interventions to prevent falls include assessing the risk of falling, increasing safety at home and guiding elderly people/caregivers on behavioral changes, encouraging permanent training of the healthcare team on the subject, and leading multi-professional programs with a fall prevention panel. It has been stated that these findings could contribute to the planning of actions of professionals in primary care who face the problem of preventing falls in the elderly every day.	- Assessing the individual (identifying the individual at risk) - Information/conduct education (patient/family/carer/nurse)
9	Schoberer at.al., (2022) Austria	- Fall prevention in hospitals and nursing homes: clinical practice guideline -Clinical practice guideline	The aim of the study is to avoid falls and their consequences in elderly individuals and to develop a practice guide for nurses to prevent falls by reviewing all relevant research literature on fall prevention.	During the creation of the guideline, a total of 79 randomized controlled studies containing recommendations for fall prevention has been examined. Highly recommended measures for both settings included multifactorial interventions, professionally supported physical exercise interventions, and education and counseling interventions. The panel and team did not recommend the use of a specific assessment tool for fall risk assessment, low-floor beds in hospitals, or physical exercise interventions in frail residents.	Information/conduct education (patient/family/carer/nurse)
10	Albertini, et al., (2023) Brazil	- Person-centered care approach to prevention and management of falls among adults and aged in a brazilian hospital: a best practice implementation project - Implementation project	A project study to evaluate compliance with evidence-based criteria for a person-centered care approach to the prevention and management of falls among adults and elderly in hospital.	The implementation protocol has been designed based on key barriers and facilitators identified in the baseline audit, as well as an educational program and modifications to the electronic medical record. Nursing documentation available in the medical record, interviews with nurses working on the oncology and medical-surgical wards, and interviews with patients admitted to the oncology and medical-surgical wards have been used to assess compliance rates for baseline and follow-up supervision. In conclusion, baseline and follow-up audits associated with the falls education program and changes to the electronic nursing record has been supported to increase adherence rates to evidence-based practice of a person-centered care approach to preventing and managing falls.	Information/conduct education (patient/family/carer/nurse)
11	Valieiny, et al., (2023) Iran	- The effects of simulated video education about falling on falling rate and fear of falling among hospitalized elderly people: a randomized clinical trial - A randomized clinical trial	This study was conducted to evaluate the effects of simulated fall video education (SVE) on fall speed and fear of falling (FOF) in hospitalized elderly.	In this randomized controlled clinical study, participants in the intervention group individually watched three simulated videos (fifteen minutes in total) and has been given access to the videos for frequent viewing. Outcomes have been assessed on the first day of hospitalization, at hospital discharge, and one and three months after hospital discharge. As a result, simulated video education is effective in significantly reducing the falling rate and fear of falling. Context-based simulated video education is recommended to reduce the fall rate and fear of falling in hospitalized elderly.	Information/conduct education (patient/family/carer/nurse)

Table 2. Themes obtained as a result of literature review

Themes
Assessing the individual (identifying the individual at risk)
To conduct a periodic inspection/monitoring
Making the environment safer
To develop self-efficacy/self-care of the individual
Information / to conduct education (patient/family/caregiver/nurse)

After this review, a flow chart including the recommendations obtained in the evaluated studies has been created. The role of nurses and possible nursing interventions for the prevention of falls in elderly individuals generally emphasise the following flow chart (Figure 2).

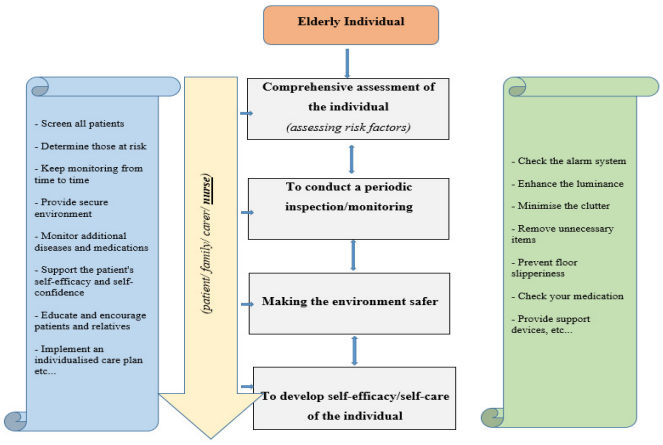

Figure 2. Flow chart regarding interventions to prevent falls in elderly individuals and the role of nurses (created by the author)

DISCUSSION

Within this comprehensive review, studies on the prevention of falls in elderly individuals have been examined and nursing interventions and the role of nurses have been revealed in the light of the current literature. In accordance with the findings, five main themes have been identified as assessing the elderly individual (identifying the individual at risk), performing periodic examination/monitoring, making the environment safer, improving the self-efficacy/self-care of the elderly individual, and providing information/education (patient/family/caregiver/nurse).

Comprehensive Assessment of the Ederly Individual

Falls are indicative of a complex systems problem that requires multifactorial evaluation and intervention (Nowak & Hubbard, 2009). Nurses have important roles in assessing patients in the prevention of falls in patients, developing care plans including patient education and providing appropriate care. Nurses' assessment of the risk of falls in patients is an important step that provides individualised interventions by providing a basis for patients' fall risks (Ojo & Thiamwong, 2022; Wilson et al., 2016). It is important that all aspects of the individual, including physical ability, fall history, medical conditions, medications, social, mental and environmental factors, are comprehensively addressed and evaluated. In addition, limited mobility due to pain, dyspnoea or other treatable conditions may also predispose to falls. In addition, a thorough physical examination is an important part of the assessment and healthcare personnel should be trained in this regard. Vital signs, orthostatic blood pressure measurement, laboratory evaluation, body weight, height and visual examination should be performed. Neurological examination should be performed to assess muscle strength and cerebellar function and to evaluate peripheral sensory neuropathy (Moylan & Binder, 2007; Phelan et al., 2015). Early identification of high fall risk in elderly individuals is a prerequisite for providing adequate care in a timely manner to reduce the risk of falls. Many tools are available for assessing falls risk, including the Tinetti Balance, the Timed Up and Go (TUG) test, the Berg Balance Scale (BBS) and the American Geriatrics Society/ British Geriatrics Society guidelines for clinical practice (Moylan & Binder, 2007). The most commonly used measure for assessing risk is the Morse fall scale, which has the advantage of being a relatively simple tool to administer. In addition, it has been shown to be effective in measuring the risk of falls in different settings. Another commonly used scale is the STRATIFY scale, which is less generalisable than the Morse falls scale and focuses specifically on elderly individuals in hospital settings. Once the scales are calculated for each patient by a healthcare professional, the cut-off values for low, medium and high risk categories should be calibrated according to the conditions of the relevant care facility (Gu et al., 2016). In the evaluation of a patient who has fallen or is at high risk of falling, it should be aimed to identify modifiable factors and the conditions of the fall should be revealed (Moylan & Binder, 2007). In this context, ideally, patients at risk of falls should be identified before any serious injury occurs and modifiable risk factors should be comprehensively addressed.

Periodic Inspection/Monitoring

The assessment of fall risk generally consists of fall history, review of medication, physical examination, and functional and environmental assessments (Phelan et al., 2015). It is especially important in cases of recurrent and unexplained falls that the patient should be confirmed by a witness, because such falls can sometimes be caused by unrecognised syncope (Richardson et al., 1997). One of the quality indicators in the prevention and management of falls is the documentation of fall history (Chang & Ganz, 2007). Manuals recommend annual screening to identify patients at high risk of falls, comprehensive risk assessment, and management of modifiable fall risk factors for high-risk patients (Montero-Odasso, et al., 2022; Morris & O'Riordan, 2017). Especially in high-risk patients with multiple modifiable risk factors, it is necessary to address each risk factor separately over time to avoid confusing the patient. These patients often have multiple health problems and should see specialists who make recommendations, adjust medications and schedule visits to monitor the patient (Tinetti & Kumar, 2010). Furthermore, it is recommended to develop and implement a targeted intervention plan by addressing modifiable risk factors after a detailed assessment by more than one health professional in the prevention of falls (Waldron et al., 2012; Panel on Prevention of Falls in Older Persons, 2011). Current guidelines indicate that primary care providers should screen elderly individuals for falls and fall risk at least once a year by asking questions about falls and instability during walking (Morris & O'Riordan, 2017). Health professionals' follow-up and active involvement can help to ensure that patients act on the recommendations. Effective educational strategies require co-operation between patients and health professionals. Patients also need to be educated and informed about the assessment process and their willingness to participate in interventions to ensure compliance (Chegini Z, Islam SMS, Kolawole I et al., 2022).

Making the Environment Safer

Environmental factors may often trigger falls by interacting with patient-related factors (Moylan & Binder, 2007). The identification of environmental dangers where the individual lives and the assessment of their capacities and behaviours in relation to these by a clinician trained in this area is part of a multifactorial fall risk assessment (Montero-Odasso, et al., 2022). It is important to assess and modify environmental risk factors such as clutter, electrical cables and slippery floors in the patient room. However, for patients with problems such as vision and hearing, improvements can be made such as increased lighting, audible warning devices, alarms, etc. To reduce night time falls, by reducing nocturia, appropriate lighting, avoiding sedatives at bedtime and using a bedside commode (if it is not safe to walk to the toilet). Patients should also be encouraged to wear slip-resistant, supportive, low-heeled shoes and avoid wearing slippers or walking barefoot (Moylan & Binder, 2007). In a review conducted by Valieiny et al. (2022) to investigate nursing interventions in the field of falls in the elderly; making the environment safer, conducting periodic examinations, teaching safe and self-care behaviours to the elderly, adjusting drug therapy and exercising have been reported as the most effective steps to reduce the risk of falls in the elderly (Valieiny, et al., 2022).

To Develop Self-efficacy/Self-care of the Individual

It is essential to consider the beliefs, attitudes and priorities of elderly individuals regarding falls and falls management (Montero-Odasso et al., 2022). Patients' awareness of the risk of falls, self-efficacy and participation in fall prevention activities is one of the important aspects of fall prevention (Cerilo & Siegmund, 2022). Self-efficacy is the belief in personal abilities to organise and execute the action resources needed to manage possible situations and self-efficacy mediates between thoughts, feelings and actions (Bandura, 1986; Bandura, 1997). In a study by Chegini et al. (2022) investigating the effects of educational interventions on patients' self-efficacy and fall prevention knowledge, hospitalised patients have been given an educational brochure on the prevention of falls. The study showed that hospitalised patients had little knowledge about fall prevention and that educational interventions increased their knowledge about fall prevention (Chegini et al., 2022). One of the effective interventions to prevent falls is for patients to participate in an individualised safe exercise programme to improve strength and balance (Sherrington et al., 2019; Sherrington et al. 2017). It is considered that these exercise programmes increase the strength and capacity of the patients, thus contributing to the patient's self-efficacy and self-confidence. In this context, especially educational and motivational interventions can change patients' perceptions of their own fall risks in the hospital, improve their self-management and self-care skills and mobilise them for fall prevention. However, one of the situations that is overlooked, especially in elderly individuals with chronic diseases, and is thought to be closely related to self-care skills and behaviors, is medication use. In this context, medications are a well-known risk factor for falls, but they are often overlooked. It is important for the individual to have sufficient knowledge and awareness about medication use. Each medication used for pain, depression or other conditions in elderly individuals should be evaluated separately at regular intervals, and the benefits and risks of continuing or stopping use should be carefully considered (Al-Aama, 2011).

Providing Information/Conducting Education

The training of healthcare professionals in the prevention of falls can reduce the rate of falls and fall-related injuries and contribute to evidence-based patient education (Morris, et al., 2022). In order for nurses to classify patients appropriately, they should also receive training on the fall assessment tool. At the same time, nurses are part of an interdisciplinary team of healthcare professionals who prevent falls, including physiotherapists, pharmacists, occupational therapists, patients and their family members who collaborate to achieve fall prevention goals (Ojo & Thiamwong. 2022). Since hospitalised elderly individuals cannot adequately predict their own fall risk, associated factors should be further explored for assessment tools and interventions to reduce fall rates in inpatients (Ojo &Thiamwong. 2022; Montero-Odasso, et al., 2022). It is stated that discussing the positive aspects such as social and health benefits of fall prevention in elderly individuals who have multiple risk factors together and ensuring the participation of the family will increase compliance (National Falls Prevention for Older People Initiative, 2000). In this regard, in a randomised controlled clinical trial conducted by Valieiny et al. (2023), participants in the intervention group have been individually shown three simulated videos and provided access to the videos for frequent viewing. As a result, simulated video training has been found to significantly reduce fall rate and fear of falling (Valieiny, et al., 2023). Albertini et al. (2023) conducted a study in a private hospital in Brazil to evaluate the compliance of the person-centred care approach for the prevention and management of falls among adults and the elderly with evidence-based criteria. As a result of the study, it has been stated that changes in basic and follow-up supervised electronic nursing records linked to the falls education programme increased the rates of compliance with evidence-based practice regarding the person-centred care approach in the prevention and management of falls (Albertini, et al., 2023). A guideline for the prevention of falls also mentions multifactorial interventions, including professionally supported physical exercise and education and counselling interventions (Schoberer, et.al., 2022). The strong evidence in the recommended guidelines on this topic emphasises that all hospitalised elderly individuals or younger individuals identified by health professionals as being at risk of falls should be provided with personalised single or multi-domain fall prevention strategies based on identified risk factors, behaviours or situations (Montero-Odasso, et al., 2022). It is recommended to consider the cognitive status of the individual (e.g., delirium, dementia) and the use of various educational methods (e.g., face-to-face discussion, video, handouts, etc.) when implementing educational programmes (Heng et al., 2020). Nurses are one of the critical stakeholders of fall prevention programmes and it is thought that education and information programmes for the prevention of falls should be aimed at both patients, their relatives and health personnel.

CONCLUSION

Nevertheless, most falls are caused by interactions between multiple fall risk factors, which are often modifiable. It is not possible to say a single and definite nursing intervention for the prevention of falls in elderly individuals. However, it can be argued that falls are preventable, especially by intervening in modifiable risk factors. Certain physical environmental factors can trigger unsafe behaviors that increase the risk of falls, particularly in elderly individuals with pre-existing health conditions. Both social and physical environmental factors should be a primary focus in fall prevention strategies, and nurses have a key role in this area. At the same time, it is seen that effective results are obtained when multidisciplinary nursing interventions adapted to fall risk factors are applied in elderly individuals. This literature review showed that more than one nursing intervention strategy and intervention may have a positive effect on the prevention of falls in elderly individuals.

Implications for Nursing and Health Policy

Falls are common in elderly people both in their living environment and in the hospital environment. Falls in older individuals are closely associated with increased morbidity, mortality and health-related costs. It is important to prevent falls and create a safe patient environment. Health professionals, especially nurses, have important roles and responsibilities in this regard, and a multidisciplinary team approach is required.

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The author is solely responsible for the conception, data collection, analysis, and writing of this manuscript.

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Algorithmic Community Health Literacy: extending health literacy into the age of artificial intelligence

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Dear Editor,

At present, Algorithmic Community Health Literacy (ACHL) does not appear as a clearly defined concept within the health literacy literature (Paakkari & Okan, 2020; Kickbusch et al., 2013). This absence is notable, given how frequently algorithmic systems are now embedded in public health decision making. The aim here is not to offer a definitive framework or a closed model. Rather, the intention is to give a name to an emerging set of practices and challenges that are already shaping everyday public health work (Rajkomar et al., 2019; Topol, 2019). By bringing these issues into the language of health literacy, ACHL may help researchers, educators, and practitioners better describe what is already happening, even if the concept itself remains open to refinement.

The concept of algorithmic literacy has been widely discussed in media and education studies, where it refers to individuals' ability to understand and critically engage with recommendation systems and digital platforms. However, this discourse has not yet been translated into the literature of health literacy or applied to public health practice (Wright, 2020. We see this as a critical gap.

To address it, we propose the concept of ACHL the collective capacity of populations to interpret, evaluate, and act upon health information generated by AI-driven systems. ACHL goes beyond eHealth literacy, which emphasizes navigating static online resources, by focusing on the dynamic, probabilistic, and sometimes opaque nature of algorithmic outputs. Importantly, ACHL also highlights the community dimension: in pandemics, disasters, or climate-related crises, AI-based early warning systems are only effective if entire communities can interpret and act upon them (Paakkari & Okan, 2020; Rajkomar et al., 2019). The main dimensions of ACHL are summarized in Table.

Table. Dimensions of Algorithmic Community Health Literacy (ACHL)

Dimension	Description	Public health relevance
Understanding AI outputs	Ability to interpret probabilistic and dynamic information generated by AI systems.	Prevents misinterpretation of risk scores, health alerts, or chatbot advice.
Critical appraisal	Capacity to evaluate reliability, bias, and limitations of AI-driven recommendations.	Reduces algorithmic harm and builds trust in digital health tools.
Community engagement	Collective skills to act on AI-based early warning systems during crises (pandemics, disasters).	Strengthens preparedness and resilience at the population level.
Ethical awareness	Recognition of privacy, equity, and ethical implications of algorithmic health interventions.	Promotes equitable and responsible use of AI in public health.

Without ACHL, vulnerable populations risk not only digital exclusion but also algorithmic harm over-trusting opaque outputs, ignoring data privacy implications, or misinterpreting health alerts (Topol, 2019; Wright, 2020). Conversely, with ACHL, communities can be empowered to engage critically with AI while reinforcing resilience, equity, and collective preparedness. Schools, primary care centers, and community health programs are critical venues to embed ACHL in public health practice (Kickbusch et al., 2013).

Based on available studies, ACHL has not been clearly defined in the health literacy literature so far. In this study, the concept is introduced and named in order to support further academic discussion and conceptual development. The proposed framework aims to connect existing discussions on complex information use with current public health needs. In this way, ACHL may contribute to future research, educational approaches, and policy-related considerations in the field of health literacy.

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Health literacy once bridged the gap between medical expertise and lay understanding. Today, ACHL must bridge the gap between human judgment and machine intelligence at the population level.

Sincerely,

ETHICAL DECLARATIONS

Peer Review Process

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Conflict of Interest

The authors declare no conflicts of interest.

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