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Healthcare Professionals' Ethical Dilemma in Out-of-Hospital Cardiopulmonary Arrest: A Scoping Review

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ABSTRACT

Objective: Cardiopulmonary arrest (CPA) is a prevalent scenario outside the hospital. When a nurse, the most qualified professional present during such an event, encounters a CPA situation, they may face an ethical and legal dilemma. Legally, they lack the authority to declare death, thus necessitating the initiation of advanced life support (ALS) maneuvers without the ability to determine whether to cease them. This study aims to identify the factors influencing the ethical dilemma experienced by healthcare professionals in out-of-hospital CPA situations.
Method: Utilizing the scoping review approach following the Joanna Briggs Institute method, we analyzed article relevance, data extraction, and synthesis performed independently by two reviewers. Following the application of predefined inclusion criteria, 11 studies were included in the review.
Results: Studies were categorized based on factors influencing the ethical dilemma encountered by healthcare professionals in CPA situations outside the hospital, ethical principles guiding such situations, the roles of healthcare professionals involved, the contextual aspects of CPA incidents, and strategies facilitating decision-making for healthcare professionals.
Conclusion: This scoping review has contributed to understanding factors affecting ethical dilemmas healthcare professionals face in CPA situations outside the hospital.
Keywords: Healthcare Professional, Out-of-Hospital Cardiopulmonary Arrest, Ethics, Professional, Emergency Medical Services

INTRODUCTION

At present, various forms of assistance are accessible, enabling the application of advanced life support (ALS) maneuvers even at the site of cardiopulmonary arrest (CPA), which proves advantageous due to their promptness, given that the likelihood of survival for the individual in CPA largely hinges on the intervention time. In such instances, immediate life support (IVS) ambulance nurses frequently encounter an ethical dilemma.

In Portugal, Law No. 141/99, enacted on August 28th, governs the principles underlying the verification and confirmation of death, stipulating that this responsibility falls upon a physician. This legal mandate necessitates that nurses operating in IVS ambulances, when confronted with CPA situations, must initiate and sustain resuscitation maneuvers utilizing advanced life support (ALS) procedures and await the arrival of the medical emergency and resuscitation vehicle (VMER) or even the arrival at the emergency unit with a doctor present, as only a legally authorized physician can decide whether to continue or terminate resuscitation.[1]

Ethics is grounded on the principle of the inherent value of human life. Nevertheless, it is imperative to avoid therapeutic obstinacy, and resuscitation should not commence in cases where the procedure proves futile.[1]

Given the aforementioned circumstances and recognizing that nationally, this remains a topic necessitating substantial investment and advancement, a systematic literature review was conducted. This endeavor stems from the need to synthesize findings from conducted research, aiming to establish a robust scientific foundation on the subject for potential future initiatives to update protocols or guidelines. For instance, there is a need for updating the CPA protocol in

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IVS ambulances at the national level, as internationally, various protocols exist with criteria for refraining from initiating or ceasing resuscitation, such as Basic Life Support-Termination of Resuscitation (BLS-TOR), Non-shockable initial rhythm, Unwitnessed arrest, Eighty years or older (NUE), and Advanced Life Support-Termination of Resuscitation (ALS-TOR). [2]

Thus, this article seeks to delineate the scientific evidence regarding the factors impacting the ethical dilemma encountered by healthcare professionals when addressing CPA outside the hospital setting. Furthermore, our objective is to pinpoint the ethical principles manifest in instances of out-of-hospital CPA as articulated by healthcare professionals, identify the specific healthcare professionals involved in these incidents, delineate the locations of CPA occurrences, and elucidate strategies that facilitate the decision-making process in such situations.This objective stems from the imperative to discern the outcomes of conducted investigations, thereby establishing a solid foundation of scientific understanding on the subject matter.

The research inquiry adheres to the Population, Concept, Context framework, with the population (P) being healthcare professionals, the concept (C) being the factors influencing the ethical dilemmas faced by healthcare professionals in cases of out-of-hospital CPA, and the context (C) being the out-of-hospital setting.

Considering this, the formulated research question is as follows: "What factors contribute to the ethical dilemmas experienced by healthcare professionals when confronted with cardiorespiratory arrest in an out-of-hospital context?"

Specifically, this review seeks to address the following secondary questions:

- What ethical principles underlie the occurrence of CPA for healthcare professionals in an out-of-hospital setting?
- Which healthcare professionals are involved in cases of CPA outside the hospital environment?
- Where do incidents of CPA typically occur?
- What strategies facilitate decision-making for healthcare professionals when faced with CPA?

To expound upon the concepts delineated in the *scoping review*, the following definitions from the literature are provided:

An ethical dilemma arises when an individual must select between two or more alternatives that possess equivalent ethical weight.[3] Opting for one alternative engenders internal conflict within the individual.[4]

Additionally, dilemmas are regarded as pivotal in professional development, fostering a more introspective and discerning approach among professionals, particularly in matters pertaining to business ethics.[5]

Bioethics pertains to human behavior or conduct in relation to life, denoting ethics applied to life, with a particular emphasis on the fundamental principles guiding human actions. The teleological principles of beneficence and respect for autonomy delineate the ultimate ends toward which actions should be directed and upheld. Conversely, deontological principles such as nonmaleficence and justice denote the duties that professionals must adhere to in patient care, mandated by the inherent rights of their profession.[6]

Ethical principles necessitate discernment, contingent upon individual character, moral judgment, and a sense of responsibility and reflection. Developing reflective ethical thinking is imperative for individuals to discern their personal and professional values effectively.[7]

CPA represents a sudden occurrence and stands as one of the primary causes of mortality in Europe and the United States.[8] In the absence of basic life support (BLS) interventions, blood circulation to vital organs is nearly halted, resulting in cellular hypoxia, irreversible damage, and inevitable death.[9]

An out-of-hospital emergency refers to any sudden occurrence of illness, trauma, crisis, or disaster affecting an individual, group, or community, necessitating immediate evaluation and intervention at the location and moment, ensuring high-quality, comprehensive, and timely care.[10]

METHODS

This *scoping review* adheres to the methodological recommendations outlined in the *Joanna Briggs Institute Reviewer's Manual*. The selection of studies for inclusion in the review was based on specific criteria, namely studies exploring the identification of ethical dilemmas in cases of CPA among healthcare professionals; studies addressing the out-of-hospital context; studies focusing on CPA; studies available in Portuguese, English, and Spanish; and studies with unrestricted access.

Given the nature of a *scoping review*, various study designs were considered for inclusion, including primary quantitative, qualitative, and mixed-methods studies, as well as literature reviews, opinion pieces, reports, dissertations, and gray literature.

The search strategy aimed to identify all relevant studies meeting the aforementioned inclusion criteria. Initially, a preliminary search was conducted in databases such as MEDLINE (via PubMed) and CINAHL (via EBSCOhost) to identify articles related to the topic. Text words from article titles and abstracts, along with indexed terms used to describe the articles, were employed to develop a comprehensive search strategy across MEDLINE and CINAHL. Additionally, the bibliographies of identified articles were examined to include further relevant sources. The search strategy, encompassing all identified keywords and indexing terms, was tailored for each information source utilized and is detailed in Table 1.

The quest for unpublished articles was conducted within the Portuguese Open Access Scientific Repository (RCAAP) database.

As stipulated in the introduction, only studies written in English, Portuguese, and Spanish were considered, with no temporal constraints regarding the publication years of the studies.

Following the search process, all located studies were collected and transferred to *Mendeley*, a bibliographic *software*, which identified and removed duplicate articles. Subsequently, a pilot test was conducted, wherein the titles and abstracts of the articles were scrutinized by two independent reviewers, adhering to the predefined inclusion criteria for the review. Potentially pertinent documents were retrieved in full, and the complete texts of the selected articles were meticulously assessed by two independent reviewers, ensuring compliance with the inclusion criteria. Any discrepancies arising between the reviewers at each stage of the selection process were resolved through discussion and, if necessary, the involvement of a third reviewer.

Formal evaluation of the methodological quality of the studies incorporated into a *scoping review* is typically omitted, as it does not align with its objective, which, in this instance, entails mapping knowledge on the selected topic (Peters et al., 2020).

Data extraction from the studies included in the *scoping review* was performed by two independent reviewers employing a standardized data extraction tool. The extracted data encompassed specific details pertaining to the factors influencing the ethical dilemmas encountered by healthcare professionals confronting CPA in an out-of-hospital context, the ethical principles evident in the occurrence of CPA among healthcare professionals in an out-of-hospital setting, the healthcare professionals engaged in instances of CPA in an out-of-hospital context, the location of the CPA incidents, and the strategies facilitating ethical decision-making in such occurrences for healthcare professionals. To achieve this, two distinct data extraction instruments were devised and utilized, as delineated in Tables 2 and 3. The data extracted from the studies included in the review are presented both narratively and through tables, aiming to address the main research question, secondary questions, and overall objectives of the study.

The synthesis of the data involved the participation of two reviewers, and no disagreements emerged, obviating the necessity for involving a third reviewer.

RESULTS

As depicted in Figure 1 using the PRISMA 2020 flowchart, the initial search yielded 470 studies that were potentially relevant. Among these, 70 duplicates were identified and removed. Subsequently, upon title evaluation, 337 studies were excluded, followed by the exclusion of 41 studies based on abstract assessment. After a thorough examination of the full text, 11 studies were excluded as they did not meet the inclusion criteria or address the research question. Consequently, 11 studies were ultimately included in this review. **Figure 1**. Modified PRISMA 2020 flowchart illustrating the process of study selection[11]

Among the 11 studies incorporated into the review, 2 were conducted in the United States and 9 in Europe, spanning from the oldest study in 1997 to the most recent in 2022.

Details regarding the analyzed articles, including title, authors, year, origin, type, and study objective, are provided in Table 2.

To address the main research question and the secondary questions, Table 3 was compiled.

Table 1. Research Strategy

Data base	Strategy Research carried out on May 10, 2023; no time limit	Number of finds
MEDLINE (via PubMed)	((((((((("Out- of -hospital cardiac arrest "[Title / Abstract]) OR (" Cardiac arrest "[Title / Abstract])) OR (" Heart arrest "[Title / Abstract])) OR (" Resuscitation "[Title / Abstract])) OR ("Out- of -Hospital Cardiac Arrest "[Mesh])) OR (" Heart Arrest "[Mesh])) AND (((((Ethic *[Title / Abstract]) OR (" Ethical dilemmas"[Title / Abstract])) OR (" Ethics , Professional"[Mesh])) OR (" Ethics Committees , Clinical "[Mesh])) OR (" Principle- Based Ethics "[Mesh])))) AND ((((" Prehospital "[Title / Abstract]) OR ("out of hospital"[Title / Abstract])) OR (" Emergency medical services "[Title / Abstract])) OR (" Emergency Medical Services " [Mesh]))	315
CINAHL Complete (via EBSCO)	S1- TI "Out- of -hospital cardiac arrest " OR AB "Out- of -hospital cardiac arrest " OR TI " Cardiac arrest " OR AB " Cardiac arrest " OR TI " Heart arrest " OR AB " Heart arrest " OR TI " Resuscitation " OR AB " Resuscitation " OR (MH " Heart Arrest ") OR (MH " Rapid Response Team")	155
	S2- TI Ethic * OR AB Ethic * OR TI " Ethical dilemmas" OR AB " Ethical dilemmas" OR (MH " Codes of Ethics ") OR (MM " Ethics , Nursing ") OR (MH " Medical Futility ") OR (MH " Decision Making , Ethical ")	
	S3- TI " Prehospital " OR AB " Prehospital " OR TI "out of hospital" OR AB "out of hospital" OR TI " Emergency medical services " OR AB " Emergency medical services " OR (MM " Prehospital Care ") OR (MM " Emergency service ")	
	S4- S1 AND S2 AND S3	
RCAAP	(Health professionals (subject) AND ethical dilemma subject)) OR (Ethical dilemma (subject) AND cardiopulmonary arrest (subject)) OR (Health professionals (subject) AND extra-hospital (subject))	0

Note: MEDLINE: *Medical Literature Analysis and Retrieval System Online* , CINAHL: *Cumulative Index to Nursing and Allied Health Literature* , RCAAP: Portugal's open access scientific repository.

Table 2. Identification of articles analysed

A1 12	**Title**	Non-medical factors in prehospital resuscitation decision-making : a mixed-methods systematically review
	Author(s)/Year	Milling L, Kjær J, Binderup LG, de Muckadell CS, Havshøj U, Christensen HC, Christensen EF, Lassen AT, Mikkelsen S, Nielsen D. (2022)
	Country of origin	Denmark
	Kind of study	Systematic review
	goal	Explore how non-medical factors influence healthcare professionals' decisions to initiate pre-hospital resuscitation maneuvers in adults undergoing cardiac arrest
A2 13	**Title**	Some Ethical Issues in Prehospital Emergency Medicine
	Author(s)/Year	Erbay H. (2014)
	Country of origin	Türkiye
	Kind of study	Revision
	goal	Describe ethical conflicts that occur in the pre-hospital environment
A3 14	**Title**	Prehospital Providers ' Perspectives about Online Medical Direction in Emergency End-of-Life Decision-Making
	Author(s)/Year	Waldrop DP, Waldrop MR, McGinley JM, Crowley CR, Clemency B. (2022)
	Country of origin	USA
	Kind of study	Descriptive and cross-sectional exploratory study
	goal	Explore the decision-making process by the pre-hospital emergency team in an end-of-life context
A4 15	**Title**	Guidance for ambulance personnel on decisions and situations related to out-of -hospital CPR
	Author(s)/Year	Ågård A, Herlitz J, Castrén M, Jonsson L, Sandman L. (2012)
	Country of origin	Sweden
	Kind of study	Review article
	goal	Address and clarify the ethical aspects related to out-of-hospital CPR, based on our knowledge and experience of healthcare professionals, and summarize the key points in a guideline
A5 16	**Title**	ethical dilemmas during cardiac arrest incidents in the patient's man
	Author(s)/Year	Karlsson M, Karlsson N, Hilli Y. (2019)
	Country of origin	Sweden
	Kind of study	Descriptive design with a qualitative approach
	goal	Investigate the ethical dilemmas experienced by pre-hospital nurses in cases of CA in homes
A6 17	**Title**	Ethics in treatment decisions during out -of -hospital resuscitation
	Author(s)/Year	Naess AC, Steen E, Steen PA. (1997)
	Country of origin	Norway
	Kind of study	Qualitative (semi-structured interview)
	goal	Investigate ethical issues during out-of-hospital resuscitation
A7 18	**Title**	Swedish ambulance nurses ' experiences of nursing patients Suffering cardiac arrest
	Author(s)/Year	Larsson R, Engström Å. (2013)
	Country of origin	Sweden
	Kind of study	Descriptive, qualitative design, anchored in the naturalistic paradigm
	goal	Describe the experiences of nurses with patients who suffered pre-hospital cardiac arrest
A8 19	**Title**	ethical issues of cardiopulmonary resuscitation : current practice among emergency doctors
	Author(s)/Year	Marco CA, Bessman ES, Schoenfeld CN, Kelen GD. (1997)
	Country of origin	USA
	Kind of study	Revision
	goal	Determine practice among physicians regarding initiation and termination of CPR
A9 20	**Title**	The ethics of resuscitation : how do paramedics experience ethical dilemmas when faced with cancer patients with cardiac arrest ?
	Author(s)/Year	Nordby H, Nøhr Ø. (2012)
	Country of origin	Norway

	Kind of study	Qualitative study (semi-structured interviews and interpretative cognitive-emotional approach)
	goal	Understand how paramedics experience ethical dilemmas in relation to CPR of cancer patients
	Title	Documentation of ethically relevant information in out -of -hospital resuscitation is rare : Danish nationwide observational study of 16,495 out -of -hospital cardiac arrests
A10 21	**Author(s)/Year**	Milling L, Binderup LG, de Muckadell CS, Christensen EF, Lassen A, Christensen HC, Nielsen DS, Mikkelsen S. (2021)
	Country of origin	Denmark
	Kind of study	Qualitative study (retrospective observation)
	goal	Determine the transparency of records regarding decision-making in pre-hospital resuscitation
	Title	Family members , ambulance clinicians and attempting CPR in the community : the ethical and legal imperative to achieve collaborative consensus at speed
	Author(s)/Year	Cole R, Stone M, Ruck Keene A, Fritz Z. (2021)
A11 22	**Country of origin**	England
	Kind of study	Qualitative study
	goal	Present the personal perspectives of two authors on the ethical dilemmas they face in CPR

Note: A1: article 1, A2: article 2, A3: article 3, A4: article 4, A5: article 5, A6: article 6, A7: article 7, A8: article 8, A9: article 9, A10: article 10, A11: article 11.

DISCUSSION

The findings from the analyzed studies were interpreted in light of the synthesized knowledge generated to address the formulated questions.

As a result, the factors most prominently discussed in the examined articles, which influence the ethical dilemmas faced by healthcare professionals in an out-of-hospital CPA scenarios, include the presence of family members (A1, A2, A4, A5, A7, A9, A10, and A11) and the personal beliefs of healthcare professionals (A1, A2, A3, A4, A5, A6, A8, and A11). Furthermore, family members' beliefs were found to impact professionals' decision-making (A2, A3, A6, and A9), as well as the attributes of healthcare professionals themselves (A1, A2, A3, A5, A7, A9, A10, and A11).

Regarding professional attributes, two of the articles noted that differences in opinions among team members influence decision-making (A3 and A5).

Apart from these four primary factors previously mentioned, additional factors associated with the patient were identified

Table 3. Results of the articles analysed

Article	Health Professionals / Sample	Factors influencing the Ethical Dilemma/Ethical Principles	PCR location	Facilitating Strategies for Decision Making
A1 [12]	Doctors, paramedics and nurses (n=not mentioned)	Factors related to the patient (patient characteristics; prognosis *vs* quality of life) Family members (desires and emotions; presence of family members) Factors related to healthcare professionals (emotions and values; professional characteristics/experience and team interaction) External conditions (professional environment; legislation). Conflicts of expectations ; Fear of litigation and uncertainty **Justice** (challenged through PCR site)	Public or private place; Tight and dark places	Knowledge of the existence of an advance directive
A2 [13]	Health professionals (n=does not refer)	Experience and training of health professionals ; Personal values and attitudes ; Perception of the duty to sustain life ; Absence of physical presence of the doctor; End of CPR (family acceptance due to the fact that CPR takes place outside the hospital); Personal belief (futile CPR) vs Internal procedure ; Presence of the family during CPR .	Does not mention	If in doubt about the appropriatenes s of withholding resuscitation attempts, CPR should be initiated.
A3 [14]	Basic, advanced, critical care emergency medical technicians and paramedics**(n=50)**	Family wants to revoke DNR ; Lack of written documents ; Agreement between all elements . **Autonomy** (defending the wishes documented by the person at the end of life and managing the suffering experienced by family members)	PCR in nursing home (questioned OLMD)	Importance and necessary support of Online Medical Direction in the CPR process (recommended and useful practice)

A4 [15]	Health profession als (n=does not refer)	Dignity in death ; Psychologically more difficult to stop CPR rather than start it: **4 "psychological " factors** for continuing CPR considered futile: influence of the presence of family members. **Autonomy** (presence of an advance directive)	PCR at home	Know the family's wishes ; Medical support; If there is any doubt about discontinuing CPR, CPR should be initiated .
A5 [16]	Nurses **(n=9)**	- Doubts about the presence of family members ; - Exposure of the person (protection of the person's dignity); - Cultural and religious aspects (exposure of intimate parts of the person); Inability to provide support to family members (emergency team only on site); - Participation of family members in decision- making ; - Personal values and guidelines/policies ; - Importance of Communication; - Conflict of personal values among the emergency team; - Provide support to family members . **Beneficence** (nurses acted according to the reason for caring, alleviating the person's suffering).	Reside nce	Always start CPR maneuvers in case of PCR (they did not always have the necessary information in the situation or were under time pressure on site); Follow the law/guideline s and the constitution .
A6 [17]	Paramedi cs (n=35) and doctors (n=9)	**4 Factors: 1** - Patient's perspective : **prognosis** and **ethical criteria** (patient's right to live or die with dignity); 2- Viewer's perspective (expectations expressed by family members) 3- Perspective of the paramedic or doctor (system reputation) **4** -Community perspective (making a "good appearance")	Does not mentio n	Does not mention
A7 [18]	.Nurses (n=7)	- Taking care of family members (Dichotomy of the presence of family members) - Termination of CPR (Difficulty in making a decision - transmitting confidence to people around)	Does not mentio n	**Reflection-** team support.

Note: A1: article 1, A2: article 2, A3: article 3, A4: article 4, A5: article 5, A6: article 6, A7: article 7, A8: article 8, A9: article 9, A10: article 10, A11: article 11., n: sample, PCR: cardiorespiratory arrest, CPR: cardiopulmonary resuscitation, DNR: decision not to resuscitate.

(A1, A6, A8, and A10), such as honoring "dignity in death" (A6), adhering to the patient's wishes (A10), and assessing the patient's clinical status, prognosis, and age (A8 and A10). Moreover, factors pertaining to the environment, particularly legislation (A1, A5, A7, A8, and A9), the preservation of the emergency system's reputation (A6), the patient's exposure to public scrutiny (A5), and the absence of physician's physical presence (A2), were acknowledged.

Concerning the healthcare professionals included in the studies, various professional categories were identified, with doctors being mentioned in several articles (A1, A6, A8, and A10), followed by nurses (A1, A5, and A7), paramedics (A1, A3, A6, A9, and A11), and emergency technicians (A3). Articles A2 and A4, however, do not specify the studied population.

Regarding the ethical principles underlying the ethical dilemma, among the 11 analyzed articles, the principle of autonomy (A3, A4, and A10), non-maleficence/beneficence principle (A5, A9, A10, and A11), and the principle of justice (A1 and A10) were identified. Articles A2, A6, A7, and A8 do not explicitly mention any ethical principle.

Analysis of the studies reveals the significance of the location of the incident in the decision-making process of healthcare professionals during CPA, as the presence of family members or bystanders influences their decisions. Four articles discussed incidents in private locations (A1, A3, A4 and A5), one article focused on a public location (A1), and seven articles did not specify the location of the CPA (A2, A6, A7, A8, A9, A10, and A11).

In all studies encompassed within the review, except for one (A6), various strategies were identified to facilitate decision-making for healthcare professionals during CPA incidents. These strategies include familiarity with advanced directives (A1), initiation of CPR in case of uncertainty regarding the appropriateness of resuscitation cessation (A2, A4, A5, and A11), medical guidance via telephone for decision-making (A3 and A4), availability of protocols or guidelines aiding in determining circumstances justifying CPR cessation (A4 and A8), adherence to local legislation (A5), opportunities for team reflection (A7, A9, and A10), and emphasizing effective communication among team members (A11).

It is noteworthy that only articles published in English, Portuguese, and Spanish were considered for inclusion in this review. Consequently, articles published in other languages may have held significance for this review. However, since the primary objective of the scoping review does not involve assessing the methodological quality of the included studies, no practice recommendations are provided.

CONCLUSION

The objective of this *scoping review* was to delineate the scientific evidence regarding factors influencing the ethical dilemmas encountered by healthcare professionals when confronting CPA in out-of-hospital settings. Additionally, an examination was conducted on the ethical principles inherent

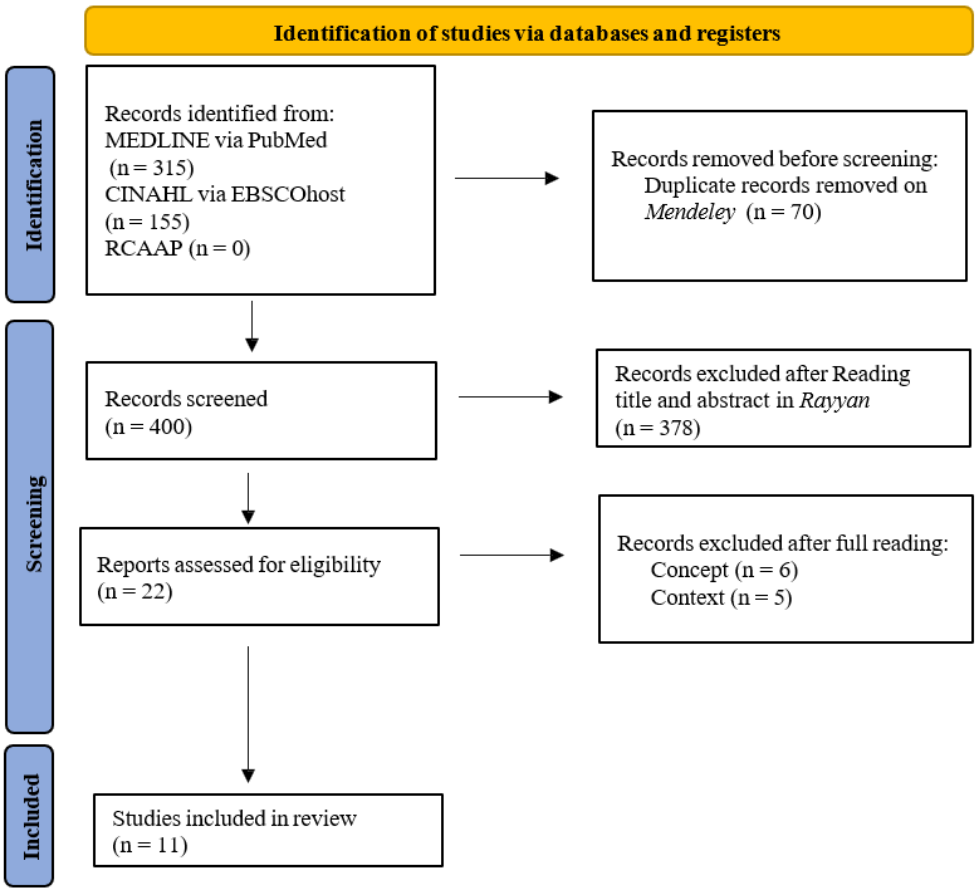

Figure 1. Adapted PRISMA 2020 flowchart of the study selection process.

in such occurrences, the healthcare professionals implicated, the location of the cardiac arrest incidents, and the strategies facilitating decision-making among healthcare professionals.

Eleven articles were identified, revealing several factors influencing the ethical dilemmas faced by healthcare professionals during CPA situations. These factors primarily fall into two categories: those associated with family members and those linked to the healthcare professionals involved. It was also observed that multiple healthcare professionals are involved in out-of-hospital care, albeit varying by country. Notably, the implementation of guidelines/protocols to aid professionals' decision-making and the significance of effective communication among members of the out-of-hospital emergency team emerge as notable facilitating strategies.

Future studies should aim to clearly delineate the factors impacting professional decision-making in ethical dilemmas and their implications for nursing practice. Moreover, there is a need to invest in randomized studies to ensure robust and transparent results, enabling evidence-based clinical decision-making. This would translate into practice recommendations in out-of-hospital settings and facilitate the updating of protocols and procedures based on the latest scientific evidence.

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- A.P., L.P., S.B.; Data Acquisition- A.P., L.P., S.B.; Data Analysis/Interpretation- A.P., L.P., S.B.; Drafting Manuscript- A.P., L.P., S.B.; Critical Revision of Manuscript- A.P., L.P., S.B.; Final Approval and Accountability- A.P., L.P., S.B.

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The Relationship Between Nursing Students' Attitudes Towards Violence Against Women, Gender Roles and Self-Esteem

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ABSTRACT

Objective: This study aims to determine the relationship between nursing students' attitudes towards violence against women, gender roles, and self-esteem.
Method: The descriptive cross-sectional study was conducted with 100 nursing students who met the research criteria. The study data were obtained using a 25-item information form, the Attitudes Towards Violence Against Women Scale, the Gender Roles Attitudes Scale, and the Rosenberg Self-Esteem Scale-Short Form. Descriptive statistical methods (minimum, maximum, mean, frequency, standard deviation) and Spearman's correlation tests were used to evaluate the relationship between the scales.
Results: The mean age of the students was 20.76±1.49. It was found that 47.0% of the students had witnessed violence, and 21% had been subjected to violence. The scale scores showed that the mean score of the Attitudes Towards Violence Against Women Scale was 132.83±10.06; the mean score of the Gender Roles Attitudes Scale was 161.85±14.41; the mean score of the positive sub-dimension of the Rosenberg Self-Esteem Scale-Short Form was 54.60±9.23, and the mean score of the negative sub-dimension was -20.65±9.69. According to the correlations between the scales, there was a positive significant relationship between the Attitudes Towards Violence Against Women Scale and the Gender Roles Attitudes Scale (r=.84, p<.050); and a negative significant relationship between the Gender Roles Attitudes Scale and the negative sub-dimension of the Rosenberg Self-Esteem Scale-Short Form (r=-.20, p<.050).
Conclusion: It was determined that the students had contemporary attitudes towards violence against women and gender roles, and that students with opposing attitudes towards violence against women had more contemporary attitudes towards gender roles. While the students' self-esteem was found to be high, students with contemporary attitudes towards gender roles had lower negative self-esteem.
Keywords: Gender roles, nursing student, self-esteem, violence

INTRODUCTION

Gender-based violence, particularly against women, encompasses any act of oppression, coercion, threat, or violence that adversely affects women physically, sexually, and psychologically (1). This issue is a significant public health concern and a severe human rights violation globally, including in Turkey. It hinders women's ability to fulfil their personal and societal roles, impedes their empowerment, and restricts their progress (2,3). In Turkey, the Domestic Violence Against Women Survey (4) reported that 44% of women faced emotional violence, 38% physical violence, and 12% sexual violence.

In healthcare settings, nurses frequently serve as the initial point of contact for women experiencing violence, placing them in a crucial position to intervene. However, current research reveals that many nurses feel inadequately prepared to manage cases of violence against women (2,3). According to some studies this lack of preparedness is due to insufficient education on the topic during their training (5,6,7). While there are studies exploring healthcare workers' attitudes towards gender-based violence, fewer studies specifically address the perceptions and attitudes of nursing students. Available research shows that nursing students, similar to practising nurses, often feel undertrained in recognising and responding

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to domestic violence (2,9-11). University students with high self-esteem typically hold more progressive attitudes towards violence against women, underscoring the importance of fostering high self-esteem in combating violence (10).

Early detection, intervention, and treatment are crucial for women who suffer from violence. Nurses often serve as the initial point of contact in healthcare settings for these individuals. However, many nurses feel inadequately prepared to manage such situations (2,3). Nurses play a vital role in addressing violence against women through detection, treatment, support, and rehabilitation (1,2). They are essential in fostering a culture free from violence by providing prevention, protection, and early intervention services. Therefore, it is crucial to educate nursing students about violence against women and gender roles from the undergraduate level to prepare them to support individuals who have experienced violence (11). This study not only examines the relationship between nursing students' attitudes towards violence against women, their views on gender roles, and their self-esteem but also investigates their own experiences with violence. By including the personal experiences of students in the research, the study highlights the importance of providing support to nursing students themselves. Addressing the effects of violence on the students' well-being is crucial to both their professional development and their ability to support victims effectively. Therefore, the study seeks to reinforce the need for educational interventions that foster self-esteem, awareness, and coping mechanisms, both for future nurses and for students as potential survivors of violence.

MATERIAL AND METHOD

Study Design

This study employed a descriptive and correlational cross-sectional design and was conducted with students from the School of Nursing at a university in Bilecik between October and December 2021. The study population consisted of 348 students: 109 first-year, 96 second-year, 85 third-year, and 58 fourth-year students. A power analysis determined a sample size of 98 students, based on a 95% confidence level, a 0.5 effect size, a 5% margin of error, and 80% power. Ultimately, 100 students were included in the study. The simple random sampling determined for the number of students in the sample. The face-to-face interview technique was used to obtain the data.

The research questions are as follows:

Is there a relationship between nursing students' attitudes towards violence against women and gender roles?

Is there a relationship between nursing students' attitudes towards violence against women and their self-esteem?

Data Collection Tools

The study data were obtained using a 25-item questionnaire prepared by the researchers based on the literature (2,3,8), which included demographic information and data on violence against women, the Attitudes Towards Violence Against Women Scale, the Gender Roles Attitudes Scale, and the Rosenberg Self-Esteem Scale-Short Form. Data were collected through an online survey (Google Forms) due to the pandemic.

Attitudes Towards Violence Against Women Scale (ATVAWS): The ATVAWS was developed by Kanbay et al. (12). The scale consists of two identifiable and summable factors with 30 items. The first factor (attitudes towards the body) has 16 items, and the second factor (attitudes towards identity) has 14 items. Items 5 and 24 are reverse scored. The total score of the scale is obtained by summing the scores from the specified factors. A minimum score of 16 and a maximum score of 80 can be obtained from the first factor. A minimum score of 14 and a maximum score of 70 can be obtained from the second factor. The overall scale score ranges from a minimum of 30 to a maximum of 150. Higher scores indicate a negative attitude towards violence against women (i.e., the person is against violence towards women), while lower scores indicate a positive attitude towards violence against women (i.e., the person is not against violence towards women). In the study by Kanbay et al.'s (12), the Cronbach's alpha value for the scale was .80 for the first factor, .83 for the second factor, and .86 for the entire scale. In this study, the Cronbach's alpha value was .86 for the first factor, 0.85 for the second factor, and 0.88 for the entire scale.

Gender Roles Attitudes Scale (GRAS): Developed by Zeyneloğlu and Terzioğlu (13), the GRAS consists of 38 items and five sub-dimensions. The sub-dimensions are as follows; gender role in marriage (8 items), female gender role (8 items), egalitarian gender role (8 items), traditional gender role (8 items), and male gender role (6 items). The scale is a 5-point Likert type, with responses ranging from 5 points (strongly agree) to 1 point (strongly disagree). The total score ranges from a minimum of 38 to a maximum of 190. Higher scores indicate an egalitarian attitude towards gender, whereas lower scores indicate a traditional attitude. The Cronbach's alpha value of the GRAS was .92. In this study, the Cronbach's alpha value was 0.89.

Rosenberg Self-Esteem Scale-Short Form (RSES-SF): Developed by Rosenberg (14) and shortened to 20 items by Lecomte et al. (15), the RSES-SF was adapted into Turkish and validated by Tukuş (16). The scale consists of 10 positively and 10 negatively loaded items. The RSES-SF is scored between +70 and 70, with a Cronbach's alpha value of .91 for positive items and .87 for negative items (16). A high score obtained from the scale indicates high self-esteem. In this study, the Cronbach's alpha value was .87 for positive items and 0.90 for negative items.

Data Analysis

The study data were analysed using the SPSS (Windows 15.0) package programme. Descriptive statistical methods (minimum, maximum, mean, frequency, standard deviation) and Spearman's correlation tests were used to evaluate the relationship between the scales.

Ethical Approval

Ethical approval was obtained from the Non-Interventional Ethics Committee of a university (Decision No: 10; Date: October 21, 2020). Participants received comprehensive information about the study, which adhered to the Helsinki Declaration guidelines. Informed consent was obtained before applying the data collection tools.

RESULTS

The mean age of the students participating in the study was 20.76±1.49 years, with 90.0% (n=90) of the students being in the 18-22 age range, and 86.0% of them being female. It was found that 67.0% (n=67) of the students' mothers and 48% (n=48) of their fathers were primary and secondary school graduates. Additionally, 99.0% (n=99) of the students used social media (Table 1).

When examining the data related to violence against women, it was found that 84.0% (n=84) of the students followed news about violence against women through social media. 21% (n=21) of the students had experienced violence, with physical violence being the most common type at 10.0% (n=10). Furthermore, 47.0% of the students had witnessed violence, with physical violence being the most commonly witnessed type at 24.0%. The rate of experiencing violence within the family was 11%. In the case of encountering violence against women, 85.0% of the students were inclined to report it to the relevant authorities, with police stations being the most preferred institution at 91.0% (Table 2).

When examining the scale scores, the average score for the Attitudes Towards Violence Against Women Scale (ATVAWS) was 132.83±10.06, the average score for the Gender Roles Attitudes Scale (GRAS) was 161.85±14.41, the average score for the positive subscale of the Rosenberg Self-Esteem Scale-Short Form (RSES-SF) was 54.60±9.23, and the average score for the negative subscale was -20.65±9.69 (Table 3).

Table 1. Demographic Characteristics of Students and Data on Social Media Use

Characteristics		n	%
Age (20.76±1.49)	*18-22*	90	90.0
	23-27	10	10.0
Gender	*Female*	86	86.0
	Male	14	14.0
Class	*1*	4	4.0
	2	36	36.0
	3	35	35.0
	4	25	25.0
Mother's Graduate Level	*Illiterate*	6	6.0
	Literate	7	7.0
	Primary School	67	67.0
	High School	18	18.0
	Graduate or Master's Degree	2	2.0
Father's Graduate Level	*Illiterate*	2	2.0
	Literate	6	6.0
	Primary School	48	48.0
	High School	26	26.0
	Graduate or Master's Degree	18	18.0
Use of the Mass Media	*Yes*	87	87.0
	No	13	13.0
Use of Social Media	*Yes*	99	99.0
	No	1	1.0

Table 2. Students' Data on Violence Against Women

Characteristics		n	%
Following News on Violence Against Women	*Social Media Applications*	84	84.0
	Mass Media	16	16.0
Experiencing Any Violence	*Yes*	21	21.0
	No	79	79.0
Type of Violence Experienced	*Physical*	10	10.0
	Psychological	9	9.0
	Sexual	1	1.0
	Economics	1	1.0
Witnessing Violence	*Yes*	47	47.0
	No	53	53.0
Type of Violence Witnessed	*Physical*	24	24.0
	Psychological	19	19.0
	Sexual	1	1.0
	Economics	3	3.0
Witnessing Violence Within the Family	*Yes*	15	15.0
	No	85	85.0
Experiencing Violence Within the Family	*Yes*	11	11.0
	No	89	89.0
Attitude Towards Encountering Violence Against Women	*Reporting to the Relevant Authorities*	85	85.0
	Remaining Unresponsive	5	5.0
	Undecided	10	10.0
Places Approached in the Case of Violence Against Women	*Gendarmerie Stations*	27	27.0
	Police Stations	91	91.0
	Social Services Agency	28	28.0
	112 Emergency Call Centre	32	32.0
	Public Prosecutor's Office	16	16.0
	Family Court	15	15.0

Table 3: Scale Scores

Scales	X̄ ±(SD)	Min	Max
Attitude Towards the Violence Against Women Scale	132.83±10.06	30	150
Attitudes Towards Body Subscale	73.43±3.05	16	80
Attitudes Towards Identity Subscale	59.40±7.87	14	70
Gender Roles Attitudes Scale	161.85±14.41	38	190
Egalitarian Gender Role Subscale	38.12±2.97	8	40
Female Gender Role Subscale	27.95±4.47	8	40
Gender Role in the Marriage Subscale	37.61±3.57	8	40
Traditional Gender Role Subscale	32.95±5.08	8	40
Male Gender Role Subscale	25.22±2.06	6	30
Rosenberg Self-Esteem Scale-Short Form			
Positive Dimensions	54.60±9.23	10	70
Negative Dimensions	-20.65±9.69	-10	-70

Table 4: Correlations Between Scales

Scales	A	A1	A2	B	B1	B2	B3	B4	B5	C1	C2
Attitude Towards the Violence Against Women Scale (A)	1.00										
Attitudes Towards Body Subscale (A1)	**.66***	1.00									
Attitudes Towards Identity Subscale (A2)	**.98***	**.56***	1.00								
Gender Roles Attitudes Scale (B)	**.84***	**.49***	**.84***	1.00							
Egalitarian Gender Role Subscale (B1)	**.61***	**.42***	**.59***	**.68***	1.00						
Female Gender Role Subscale (B2)	**.70***	**.37***	**.71***	**.86***	**.52***	1.00					
Gender Role in the Marriage Subscale (B3)	**.64***	**.45***	**.62***	**.77***	**.57***	**.57***	1.00				
Traditional Gender Role Subscale (B4)	**.78***	**.42***	**.78***	**.90***	**.56***	**.71***	**.68***	1.00			
Male Gender Role Subscale (B5)	**.38***	**.22***	**.39***	**.40***	**.21***	**.20***	.18	**.27***	1.00		
RSES-SF Positive Dimensions (C1)	.10	.03	.11	.18	.14	.19	.07	.19	**.23***	1.00	
RSES-SF Negative Dimensions (C2)	-.10	-.11	-.08	**-.20***	-.16	-.16	-.16	-.15	**-.33***	**-.57***	1.00

***: p<.050 Spearman's correlation**

Table 4 shows the correlations between the scales. Accordingly, a strong statistically significant positive correlation was found between the ATVAWS and the GRAS (r=.84, p<.050). A weak statistically significant negative correlation was found between the GRAS and the negative subscale of the RSES-SF (r=-.20, p<.050), while no significant correlation was found between the ATVAWS and the subscales of the RSES-SF (p>.050) (Table 4).

DISCUSSION

The study revealed that the nursing students had progressive attitudes towards violence against women and gender roles. The mean ATVAWS score of the students was 132.83±10.06, indicating a strong opposition to violence against women. Additionally, the mean GRAS score was 161.85±14.41, and the students held egalitarian views on gender roles. In Büyükgöze et al. (17), it was also found that 98.4% of nursing students used social media. In the world, social media applications have become widespread communication tools whose popularity and use are rapidly increasing, especially among young people. Today, social media has become a means for individuals to follow developments occurring around the world instantly, aside from being a source of entertainment (18-20).

The study revealed that 47.0% of the students had witnessed some form of violence, and 21.0% had experienced violence themselves (Table 2). Sabancıoğulları et al. (10) found similar results, with 47.9% of students witnessing violence and 20.5% experiencing it. Likewise, Alan Dikmen and Marakoğlu (2) reported that 51.8% of students had witnessed violence, and 21.4% had been subjected to it. In this study, physical violence was the most witnessed (24.0%) and experienced (10.0%) form of violence. The incidence of violence within the family was 11.0%. Diaz et al. (21) reported that one-fifth of nursing students had experienced physical violence, and Karabulutlu et al. (22) found that 18.2% of students had experienced physical violence, with 95.0% of these incidents occurring within the family. The students' average score on the ATVAWS was 132.83±10.06, indicating a strong oppositional attitude towards violence against women. This may be influenced by the students' family structures, the high proportion of female participants, socioeconomic factors, their general opposition to all forms of violence, their progressive views, and their empathy for women who have been subjected to violence, especially since a significant number (47%) had witnessed violence. The average score on the GRAS was 161.85±14.41, reflecting an egalitarian attitude towards gender roles. According to the score students not only oppose violence against women but also support gender equality.

There was a positive correlation between the GRAS and the ATVAWS scores (Table 4). As students' egalitarian attitudes increased, so did their opposition to violence against women. This is consistent with the findings of Kodan Çetinkaya (23), who reported an inverse and significant relationship between attitudes towards gender roles and tendencies towards violence. There was no significant difference between the RSES-SF and the ATVAWS scores. While violence is often seen as a factor that lowers self-esteem, Sabancıoğulları et al. (10) found that nursing students with high self-esteem exhibited more progressive attitudes towards violence against women. In the current study, the lack of a significant relationship between attitudes towards violence against women and self-esteem could be due to the generally high ATVAWS scores among the students.

LIMITATIONS

The study has some limitations. The study was conducted with some nursing students at a single university.

CONCLUSION

This study found that nursing students had progressive attitudes towards violence against women and gender roles. Additionally, students with more progressive views on gender roles tended to have lower negative self-esteem. These findings underscore the importance of incorporating gender roles and self-esteem education into nursing curricula to prepare students to effectively address and support individuals who have experienced violence.

However, beyond education, it is equally crucial to provide targeted support for students who may have personal experiences with violence. Screening nursing students for their own experiences of violence could be recommended as part of a broader initiative to ensure their well-being. This would allow educators and healthcare professionals to identify students who might need psychological or emotional support and provide them with the necessary resources. By addressing the students' personal experiences with violence, institutions can better prepare them to support others effectively, ensuring they are emotionally equipped to handle the challenges of caring for victims of violence in their future careers.

Ethics Committee Approval: This study was approved by the ethics committee of the Non-Interventional Ethics Committee Of Bilecik Şeyh Edebali university (Decision No: 10; Date: October 21, 2020).

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- M.T., D.A.; Data Acquisition- M.T., D.A.; Data Analysis/Interpretation- M.T.; Drafting Manuscript- M.T. ; Critical Revision of Manuscript- M.T.; Final Approval and Accountability- M.T.

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Factors Affecting Sleep in Hospitalised Children and Adolescents with Cancer

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ABSTRACT

Objective: Children and adolescents with cancer may have sleep problems. There are environmental and patient/disease-related factors affecting the sleep of a child with cancer. This study evaluates the factors affecting the sleep of children and adolescents with cancer.
Method: The study was conducted as a descriptive study to determine the factors affecting sleep problems in children and adolescents with cancer. The data was collected using a survey of children and adolescents with cancer and their mothers. The researchers developed the two-part Factors Affecting the Sleep of children and adolescents with Cancer Survey. The sample included 75 children and adolescents with cancer.
Results: Sixty-eight percent of the children stated that sleep was "bad" and six percent as "very bad" in the hospital, whereas 86% of the mothers said that their sleep was "bad/very bad" in the hospital. Hospital environments such as crowded rooms, frequent visits of the nurses for treatment at night, noise and light in the room, and odours in the room were the most reported environmental factors associated with sleep problems in children. Excessive urination, nausea, vomiting, pain, and nightmares were the most reported symptoms disturbing the sleep of the children.
Conclusion: The hospital environment, including noise, light levels, and room interruptions, may disrupt sleep. Nurses and doctors should regularly assess sleep in all children hospitalised in the paediatric oncology ward. The patient's chemotherapy and fluid therapy should be planned according to sleep patterns. Nurses may be able to control some factors that affect sleep duration in hospitalised paediatric patients with cancer.
Keywords: Cancer, children, adolescent, hospital, sleep, nurse

INTRODUCTION

Both children and their caregivers have severe problems due to the diagnosis and treatment of cancer. Although the survival of children and adolescents with cancer has increased significantly in developing countries, the quality of life has become an important issue (1,2). There are many factors that influence the quality of life. One of these factors is that sleep problems affect the quality of life of children and their caregivers (3,4).

The prevalence of sleep problems in children and adolescents in the general population is reported to be up to 30% (5-11). The exact prevalence of sleep problems in children with cancer is unknown (5-8). Sleep problems were defined as “feeling disturbed due to disturbance of sleep time or negatively affecting the way of life.” It was determined that children with cancer had sleep problems such as difficulty falling asleep, sleepiness, and frequent waking (4,9-11).

Sleep problems affect the child’s bio-psycho-social health, disease, and treatment process, and activities of daily life (12-14). Difficulties in adapting to the disease and treatment, neurocognitive dysfunction and learning disabilities, depression, anxiety, and behaviour problems in children with cancer who have sleep problems were found to be high (10,14). Persistent sleep problems can impair cognitive development, influence emotional regulation, and intensify behavioural issues, making

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adherence to treatment protocols more difficult for children and their caregivers. Furthermore, poor sleep may reduce a child's resilience, causing a decline in mental health outcomes such as increased risk of depression and heightened anxiety**.**

There are many environmental and institutional factors affecting the sleep of a child with cancer and causing deterioration in sleep patterns (15-21). These factors include environmental and institutional factors (such as noise, light, excess of room temperature irregularity, and unknown environment) (15,16), patient and disease factors (such as anxiety, stress, depression, side effects of chemotherapy and other drugs) (15,17), and symptoms (such as fatigue, pain, vomiting) (16-21). Beyond these, familial stress and frequent interruptions for medical assessments and treatments throughout the night can also contribute to disrupted sleep. Nurses and healthcare providers frequently encounter challenges in balancing necessary medical interventions with maintaining a restful environment for the child, emphasising the importance of targeted interventions to support sleep in paediatric oncology settings.

The deterioration of sleep habits in children with cancer is an essential and priority problem because sleep is one of the basic life requirements of the individual. Health workers should understand the importance of sleep in terms of the growth and physical-psychological-social health of the child. They are essential in detecting sleep disturbances in children with cancer and educating the family and child about healthy sleep habits (12). Supporting healthy sleep practises can significantly enhance the quality of life for both children and their caregivers, potentially improving treatment adherence and outcomes. Health workers, especially nurses, should be alert to these potential problems while assessing and caring for patients. This study aimed to identify the factors affecting sleep in hospitalised children and adolescents with cancer.

Research questions;

· Does the diagnosis of cancer affect the sleep of children and adolescents?

· What are the factors that affect the sleep of children and adolescents with cancer?

MATERIAL AND METHODS

Settings

The aim of this study was to evaluate the factors affecting the sleep of children and adolescents with cancer. The study was conducted in the Istanbul University Oncology Institute paediatric haematology-oncology unit. Two or three patients and their mothers shared most rooms, which had a common bathroom. Only women were accepted as caregivers in the ward. In this study, all caregivers were the children's mothers.

Sample

Children were eligible to participate if (1) they were between 7 and 18 years of age, (2) they had been diagnosed with cancer, (3) they were hospitalised in the oncology unit for at least one week, (4) both parent and child were willing to participate in the study.

Data Collection

We developed a survey that consisted of two parts. In the first part, there were questions regarding the sociodemographic characteristics of the mother and child, such as age, gender, diagnoses of the child, and age, education level, and occupation of the mother. The second part consisted of questions regarding factors that affect the sleep quality of children in the hospital. Sleep quality was graded as good, bad, and very bad. "**Very bad sleep"** is defined as waking up more than 3 times during the night, not being able to fall asleep more than 60 minutes after waking up at night, and less than 5 hours of sleep in the preceding 24 hours**. "Bad sleep"** is defined as waking up 1-3 times during the night, not being able to fall asleep more than 30 minutes after waking up at night, 5-6 hours of sleep in the preceding 24 hours**. "Good sleep"** is defined as falling asleep quickly, not waking up at night, and having at least 8 hours of sleep in the preceding 24 h. The grade of sleep and the factors that affected sleep quality were determined from various studies (6,15,17,19) in the literature (Table 3). The feedback and opinions of 5 experts (paediatric oncologists, nurses with more than 15 years of experience in paediatric oncology, and patient advocates) were obtained for the survey. A simple grading system was generated after the discussions.

Table 1. Descriptive characteristics (N=75)

Age	n	%
7-12	48	64.0
13-18	27	36.0
Gender		
Girl	33	44.0
Boy	42	56.0
Diagnosis		
ALL	11	14.7
Hodgkin lymphoma	8	10.7
Sarcoma	21	28.0
Brain tumours	11	14.7
Germ cell tumours	8	10.7
Others	16	21.3
Mother's Education		
Only literate	2	2.7
Primary education	47	62.7
High school	17	22.7
University	9	12.0
Mother's Age		
28-36	27	36.0
37-45	38	50.7
46-54	10	13.3
Mother's Occupation		
Housewife	57	76.0
Employed	18	24.0
Total	75	100.0

All data were collected from children and adolescents. The clinical nurse asked the child to fill out the questionnaire. The nurse provided the necessary explanations for the questions when they were asked.

Statistical Analyses

All data analyses were conducted using the Statistical Package for IBM SPSS Statistics 22 (SPSS IBM, Turkey). The means and 95% confidence intervals (CI) were calculated for descriptive data analysis.

Ethics

The study was approved by Koç University's Ethics Review Board (2017.028.IRB3.015). Additionally, institutional permission from İstanbul University Oncology Institute was obtained before the study.

RESULTS

Sample Characteristics

The sociodemographic characteristics of the participants are presented in Table 1. The study included 75 children and adolescents with cancer. Sixty-four percent of the participants were school-age children (7-12), and 36% were adolescents (13-18). The male-female ratio was 1.2:1. The diagnoses of the patients were sarcomas (n=21; 28.0%), brain tumours (n=11; 14.7%), leukaemia (n=11; 14.7%), lymphoma (n=8; 10.7%), germ cell tumour (n=8; 10.7%), and other (n = 16; 21.3%). Half of the mothers were approximately 37-45 ages. Most (62.7%) had graduated from primary school, and most were housewives (76%).

All the children and adolescents stated that their sleep at home was good, but only 24% had good sleep at the hospital. Sixty-eight percent of the children indicated that sleep was bad in the hospital.

The most common environmental and institutional factors affecting sleep were the feeling of lack of fresh air in the room (94.7%), the frequent entering and leaving of the room (92.0%), many patients in the room (90.7%), and the odours in the environment (88.0%). The most common factors that were related to patient and disease included medical devices (81.3%), homesickness (76.0%), medication used (74.7%), and not feeling confident and safe (72.0%). Symptoms affecting the sleep patterns of children were excessive urination at night (82.7%), nausea and vomiting (76.0%), pain (68.0%), nightmares (58.7%), and sweating (45.3%).

DISCUSSION

Sleep is one of the basic requirements for the quality of life of all children. Cancer and its treatments cause sleep disturbance in children (4,8,19). In this study, all the children reported good sleep at home but had sleep disturbances in the hospital environment. The children and adolescents stated that the crowd in the room, odours (some foods or sweat), noise, and light affected their sleep. Hospitalisation disturbs sleep, even in developed countries where, most of the time, each patient has a private room.

In most developing countries, patients and caregivers must share the same room/ward due to the high number of patients and inadequate infrastructure. In this study, four to six people, including mothers, shared the same room.

This study grouped the factors affecting children's sleep under three headings: 1) environmental and institutional, 2) patient and disease, and 3) symptoms.

Environmental and institutional factors:

These findings show the importance of the physical environment in the paediatric oncology ward. The physical environment, such as sound, noise, and light, in the hospital is important (14, 19). Although each room had air conditioning, most mothers would not allow it to be used due to the misperception that their children may feel cold; this misperception is common in the community (20-22).

The children also stated that the hospital's sleep and wake-up hours differed from their routines. Similarly, the unknown environment, differences in sleep routines, and lack of private rooms negatively affect the sleep process and quality in the literature (23-25).

Factors related to patient and disease

Patient- and disease-related factors also affect the child's sleep. This study determined frequent nurse visits for intravenous (IV) treatment and assessed the vital signs that disturbed the children's sleep. In addition, factors such as the patient's homesickness, feeling unsafe in the hospital, and failure to provide adequate information about the interventions and disease have negatively affected the child's sleep. It has been reported that frequent visits by the nurse woke children up at night (9,15, 26-28).

Table 2. Sleep of children (N=75)

		Good		Bad		Atrocious	
		n	%	n	%	n	%
Children's sleep							
At home	75		100.0	-	-	-	-
At hospital	18		24.0	51	68.0	6	8.0

Table 3. Factors affecting the sleep in the hospital

Factors	Yes		No	
	n	%	n	%
Environmental and Institutional Factors				
The feeling of lack of fresh air in the room	71	94.7	4	5.3
Frequent entry and exit in the room	69	92.0	6	8.0
Too many patients in the room	68	90.7	7	9.3
Odours in the ward	66	88.0	9	12
Noise around	64	85.3	11	14.7
Frequent entrance to the room	63	84.0	12	16
Hospital sleep and waking hours	61	81.3	14	18.7
Change of the environment	57	76.0	18	24
Intervention and treatments during the sleep time	56	74.7	19	25.3
Patient and Disease Factors				
Medical devices (serum, medication, etc.)	61	81.3	14	18.7
Homesickness	57	76.0	18	24.0
Medication used	56	74.7	19	25.3
Not Feeling confident and secure	54	72.0	21	28.0
Inability to apply pre-sleep habits	41	54.7	34	45.3
Failure to provide adequate information about the interventions and disease	29	38.7	46	61.3
Having concerns about the disease	24	32.0	51	68.0
No daytime activities and daytime constant sleep	26	34.7	49	65.3
Symptoms				
Excessive urination	62	82.7	13	17.3
Nausea and vomiting	57	76.0	18	24.0
Pain	51	68.0	24	32.0
Nightmares	44	58.7	31	41.3
Sweating	34	45.3	41	54.7
Diarrhoea	21	28.0	54	72.0
Constipation	25	33.3	50	66.7
Hunger/thirst	18	24.0	57	76.0

Symptoms

In this study, the children stated that excessive urination was most affected by their sleep. The child may need to go to the bathroom frequently because of the abundant hydration and the medications he/she takes, which negatively affects the child's sleep.

More than half of the children reported that their sleep was affected by nausea, vomiting, and pain. The symptoms of pain, nausea, vomiting, and fatigue were found to affect sleep in previous studies (2,29-31). Nearly half of the children stated that their sleep was affected by night nightmares in this study. Nightmares, mostly due to anxiety caused by illness and treatment, have been reported in children with cancer (4,14,30).

CONCLUSION

In this study, the sleep of children and adolescents with cancer has changed by hospitalisation. The hospital environment, including noise and light levels and room interruptions, disrupted sleep. Practical solutions have been postulated regarding the results of the study. We planned to provide each patient and mother with free eye bands to decrease light exposure at night. We have renovated the rooms with donations and increased the number of bathrooms, and we provide hot water 24 hours a day so that they can shower when they want. The light system has been changed to provide soft lights for the nights. It was built a new common kitchen, albeit small, with more refrigerators where families could store the foods that they brought for their children. This has decreased the odours of food in the rooms. It was bought a new air conditioner to help reduce the odours and educated the mothers on using air conditioners. However there were not private one-bedrooms since the area is limited, and ıt was not reduced the number of beds since we have a lot of patients in Istanbul and most hospital beds in all hospitals are full. Some arrangements have been made, such as changing the processes to accommodate earlier chemotherapy administration times and reducing the amount of IV hydration at night.

In summary, hospitalisation causes sleep disturbances in children with cancer. Assessing the contributing factors in the local centres, especially in low-resource settings, may help to find some practical solutions.

The limitation of the study is that it is only based on self-reported data. The study was conducted in only one institution. A larger sample size could be used.

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Ethics Committee Approval: This study was approved by the Koç University's Ethics Review Board (2017.028.IRB3.015).

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RESEARCH ARTICLE
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Evaluation of Needlestick and Sharp Injuries, Contributing Factors, and Preventive Measures Among Nursing Students

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ABSTRACT

Objective: This study evaluates the frequency of needlestick and sharp injuries (NSI), the contributing factors, and the preventive measures among nursing students.
Material and Methods: This descriptive study's population consisted of all second, third, and fourth-year students enrolled in the nursing department of a health sciences faculty during the 2018-2019 academic year (N=577), while the sample consisted of 280 students who volunteered to participate. The ethics committee and institutional approvals were obtained. Data were collected using the "Student Information Form' and analysed with the SPSS 29.0 programme.
Results: It was found that 95.4% of the students who participated in the study received education related to NSI, mostly from school orientation programmes (88.2%) and various courses given at school (43.6%). It was determined that 16.8% (n=47) of the students were exposed to NSI during their undergraduate education, and injuries mainly occurred during clinical practise (95.7%) and in internal medicine clinics (57.4%). It was found that 48.9% of the students were injured in their first year, and 63.8% had been exposed to needlestick and sharps injuries at least once. The most common device causing injury was a syringe needle (63.8%), and 68.1% had taken protective measures before the injury, with the most common precaution being gloves (59.6%). Injuries frequently occurred while breaking the ampoules (55.3%) and when trying to remove the needle cap (34.0%). The most common response after injury was washing the area with soap/water or disinfectant, and students often reported the injury to a friend or nurse. The leading causes of the injuries were carelessness (51.1%) and rushing (27.7%).
Conclusion: This study highlights that needlestick and sharps injuries among nursing student injuries, which require attention. Based on these results, it is recommended that education on the importance and prevention of needlestick and sharps injuries be emphasised.
Keywords: Needlestick and sharp injuries, nursing students, nursing training

INTRODUCTION

Injuries caused by needlestick and sharp devices are among the leading occupational accidents and risks faced by healthcare workers healthcare workers face (1-4). Because needlestick and sharps injuries pose a high risk and can lead to occupational injuries, serious complications, and fatalities, ensuring occupational safety for healthcare personnel is of great importance. The monitoring of treating needlestick and sharps injuries is also economically costly, and complications can cause stress in affected individuals (5-7). Of the 35 million healthcare workers worldwide, 3 million experiences percutaneous exposure to blood-borne pathogens yearly (6,7). Healthcare workers can be exposed to more than 20 pathogens, including Hepatitis B, Hepatitis C, and HIV, through needlestick and sharp injuries (4). According to the World Health Organisation's 2002 reports, 37.6% of healthcare workers are occupationally exposed to Hepatitis B, 39% to Hepatitis C, and 4.4% to HIV/AIDS (8). Although nurses are a high-risk subgroup for needlestick and sharps injuries, nursing students may be at similar or even greater risk due to their limited clinical skills and experience (2,5,9). Nursing is a practise-based profession, so nursing education includes both classroom and clinical learning. To apply theoretical knowledge,

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students must perform various skills and procedures involving sharps and subcutaneous, intramuscular, and intravenous needles (10,11). Nursing students in clinical practise at hospitals are particularly vulnerable to accidental exposures to blood-borne pathogens due to their limited clinical experience, lack of skills in handling needles and sharps safely, lack of knowledge and attention to safety measures, anxiety, and fear of making mistakes (2-4,5,9,10,12-15). Global studies show that the rate of needlestick and sharps injuries among nursing students varies between 16.20% and 88.60% (10,16-20). Various studies conducted in Turkey have found that 25-83.9% of nursing students experienced needlestick and sharp injuries, with most injuries involving needle tips and ampoules (3,9,15,21-23). Furthermore, it was determined that 50.3-68.6% of injured students did not report their injuries (3,21,22). These data indicate that the frequency of injuries among nursing students is high, putting them at risk of blood-borne infections. This study determines the frequency of needlestick and sharp injuries among nursing students, the contributing factors, and the preventive measures taken. The results of this study could be used to raise awareness about needlestick and sharps injuries among nursing students and help identify strategies to reduce the frequency of such injuries.

MATERIAL AND METHODS

Study Design: This descriptive study aimed to evaluate the frequency of needlestick and sharp injuries among nursing students, the factors influencing these injuries, and the preventive measures taken by the students. The research questions for this study were as follows:

1. What are the socio-demographic characteristics of nursing students?

2. What is the frequency of needlestick and sharp injuries among nursing students?

3. What factors influence needlestick and sharp injuries among nursing students?

4. What preventive measures nursing students take in the event of an injury?

Population and sampling: The study population consisted of all second-, third-, and fourth-year nursing students (N=577) enrolled in the Nursing Department of the Faculty of Health Sciences during the 2018-2019 academic year. The sample consisted of 280 nursing students randomly selected using a non-probability sampling method and volunteered to participate in the study. First-year students who were excluded from the study did not need to gain laboratory or clinical practise experience or exposure to needlestick or sharp instruments during the period when the research was conducted.

Data Collection: Data were collected through interviews conducted by researchers in the classroom. Completing the research form took an average of 15 min.

Data Collection Tools: The researchers prepared this form based on the relevant literature (4,9,14-17,22-24). It consisted of 30 questions aimed at evaluating students, including the frequency of needlestick and sharp injuries they experienced, the factors influencing these injuries, and the preventive measures taken by the students.

Ethics Committee Approval: To conduct the research, written permission was obtained from Bursa Uludağ University Health Research and Publication Ethics Committee (Ethics Committee Date/Number: 05.02.2019 / 2019-02-13) and from the institution where the data was collected (Research Commission Date/Number: 22.03.2019/ 2-518/59). The research was conducted according to the Helsinki Declaration. All participants provided written informed consent.

Statistical Analysis

The Statistical Package for Social Science (SPSS), version 29.0, was used for data analysis. In the descriptive statistics, the numerical data were presented as the mean and standard deviation, whereas the categorical variables were expressed as frequencies and percentages. The Pearson chi-square test was used to analyse the categorical data.

RESULTS

Sociodemographic Characteristics of the Students

The average age of the study participants was 20.93±1.7 years, with 81.8% being female. Among the students, 83.9% graduated from a high school outside the health field. Additionally, 49.6% were second-year students, 31.1% were third-year students, and 19.3% were fourth-year students. The overall average academic score of the students was 2.87±0.481, with 56.1% perceiving their academic performance as “average.” It was found that 86.8% of the students were not employed. In contrast, those who were primarily employed worked in different part-time jobs outside of nursing (such as cafes/restaurants/shopping centres or in various units within the university), with 89.3% having health insurance. A statistically significant relationship was found between the type of high school graduate and the incidence of needlestick and sharp injuries ($p<0.05$). The distribution of the sociodemographic characteristics of nursing students and the comparison of these characteristics with the incidence of needlestick and sharp injuries are presented in Table 1.

Characteristics Related to Needlestick and Sharp Injuries

Ninety-five point four percent (n=267) of the students reported having received training related to needlestick and sharp injuries, primarily through school orientation programmes (88.2%), various mandatory and elective courses offered at school (43.6%), and hospital orientation programmes (31.1%). It was found that 16.8% (n=47) of the students experienced a needlestick or sharp injury during their undergraduate education, with 100% of the injured students (n=47) sustaining their injuries before performing procedures on patients and

Table 1: Distribution of Socio-Demographic Characteristics of Nursing Students and Comparison with the Incidence of Needlestick and Sharps Injuries (n=280)

Variables		n	%	Exposure to needlestick and sharps injuries
Age (X+SD)	20.93±1.7 years			r_s=-0.005 p=0.935
Gender	Woman	229	81.8	*X2*=0.033
	Man	51	18.2	p=0.856
High school graduated from	Health Vocational High School	45	16.1	***X2*=3.930**
	Other High Schools	235	83.9	**p=0.047**
Class	2nd Grade	139	49.6	*X2*=0.557
	3rd Grade	87	31.1	p=0.757
	4th Grade	54	19.3	
Cumulative Grade Point Average (X+SD)	2.87±0.481			r_s=-0.037 p=0.539
Perceived academic success	Excellent	14	5.0	*X2*=1.782 p=0.878
	Good	76	27.1	
	Average	157	56.1	
	Poor	27	9.6	
	Very Poor	6	2.1	
Employment status	Employed	243	86.8	*X2*=1.315
	Unemployed	37	13.2	p=0.518
Workplace	As a nurse in a hospital	7	2.5	
	As a part-time student at the university	5	1.8	
	In a café/restaurant/shopping centre, etc. outside classes	25	9.0	
Existence of health insurance	There is	250	89.3	*X2*=2.463
	There is not	30	10.7	p=0.117

X=Mean, **S**D = Standard Deviation, *X2*= Chi-Square Test, r_s= Spearman Correlation

Table 2: Characteristics Related to Needlestick and Sharp Injuries (n=280).

Variables		n	%
Receiving training on sharps injuries	Educated	267	95.4
	Not Educated	13	4.6
Place of training*	In school orientation programmes	247	88.2
	In various compulsory and elective courses	122	43.6
	Before clinical practise from the hospital	87	31.1
	From various articles on the internet	21	7.5
	Other	4	1.4
Exposure to needlestick and sharps injuries	Yes	47	16.8
	No	233	83.2
The time of occurrence of sharp injury (n=47)*	Before performing the procedure on the patient	47	100.0
	During/after the procedure on the patient	15	31.9
Distribution of injuries by cases (n=47)*	1st Grade	23	48.9
	2nd Grade	19	40.4
	3rd Grade	6	12.8
	4th Grade	7	14.9
Injury frequency (n=47).	Once	30	63.8
	Twice	9	19.1
	Three Times	6	12.8
	Four Times	0	0.0
	Five Times	2	4.3
Devices that most frequently cause ınjuries (n=47)*	Injector needle	30	63.8
	Sterile glass fragments	20	42.6
	Iv cannula needle	0	0.0
	Scalpel	0	0.0
	Lancet	3	6.3
	Suture needle	1	2.1
	Other	0	0.0

		26	55.3
		16	34.0
	While breaking an ampoule	7	14.9
	While attempting to open the needle cap	5	10.6
	While drawing medication from an ampoule/vial	3	6.4
	While attempting to close the needle cap		6.4
	While trying to dispose of the waste in the sharp-object waste bin	3	6.4
	While attempting to separate the needle from the syringe		
	Due to the anxiety experienced during clinical practise	3	4.3
	While ınjecting medication into an ınfusion	2	4.3
	While trying to open the vial	2	4.3
	While administering the IV medication	2	4.3
How the ınjury occurred (n=47)*	While measuring the blood sugar levels	2	4.3
	Because of leaving a needle in the patient's bed	2	2.1
	While ınflating the balloon of a urinary catheter	1	2.1
	While taking a blood sample	1	2.1
	While attempting to establish an ıntravenous line	1	2.1
	While trying to catch a fallen syringe	1	2.1
	Due to used sharps disposed in a treatment tray containing clean equipment	1	2.1
	Due to the anxiety experienced during laboratory practise	1	2.1
	Because of colliding with someone working with a sharp object		
	While trying to transfer blood from the syringe to the tube	1	2.1
		1	2.1
Area where the ınjury occurred (n=47)*	Laboratory	4	8.5
	Clinical Practise	45	95.7
Field where the ınjury occurred (n=47)*	Internal Medicine Clinics	27	57.4
	Surgical Clinics	14	27.7
	Paediatric Clinics	3	6.4
	Obstetrics and Gynaecology Clinics	3	6.4
	Emergency Department	1	2.1
	Public Health Application Area	0	0.0
	Psychiatry Clinics	0	0.0
	Other (Laboratory, etc.)	9	19.1
Emotions experienced after the ınjury (n=47)*	I Didn't Care	10	21.3
	Excitement	18	38.3
	Fear	26	55.3
	Unhappiness	8	17.0
	Helplessness	8	17.0
	Horror	3	6.4
	Hopeless	1	2.1
	I Hesitated to Seek Help	1	2.1
	Insecure	4	8.5
	Other	2	4.3

* Multiple choices were selected

31.9% during or after performing procedures on patients. When examining the distribution of injuries by class, it was observed that injuries frequently occurred in the first (48.9%) and second (40.4%) years, with 63.8% of the students having been exposed to needlestick or sharp injuries at least once. The most common devices responsible for the injuries were found to be syringe needles (63.8%) and glass shards (42.6%). Injuries primarily occurred during clinical practise (95.7%), most frequently in internal medicine clinics (57.4%) and surgical clinics (27.7%). Students felt fear (55.3%) and

Table 3: Factors Affecting the Frequency of Needlestick and Sharp Injuries and Preventive Measures Taken by Students (n=47)

Verables		n	%
Reasons for needlestick and sharp ınjuries	Carelessness	24	51.1
	Rushing	13	27.7
	Inadequacy of protective equipment	5	10.6
	Getting excited while practicing with the instructor/nurse	5	10.6
	Lack of knowledge	4	8.5
	Practice alone	1	2.1
	Not using safe products	1	2.1
	Other	2	4.3
Use of protective equipment while working with sharp devices	Yes	32	68.1
	No	15	31.9
Protective measures taken when working with sharp devices	Wearing gloves	28	59.6
	Receiving hepatitis B vaccination	9	19.1
	Having a waste bin readily available	7	14.9
	Other	4	8.5
If the injury occurred before the procedure was performed on the patient			
To whom the injury was reported	I hid it	2	4.3
	I shared it with a friend	19	40.4
	I shared it with a faculty member	12	25.5
	I shared it with a nurse	22	46.8
	I shared it with a doctor	2	4.3
	I shared it with my family	3	6.4
	Other	1	2.1
Actions taken after the injury*	I did nothing	7	14.9
	I washed the injured area with soap and water.	24	51.1
	I cleansed the injured area with an antiseptic solution.	22	46.8
	I informed the responsible faculty member about the situation.	8	17.0
	I have reported the incident.	3	6.4
	I provided a blood sample (HBsAg, Anti HCV, Anti HBs VE Anti HIV)	4	8.6
	I informed the infectious diseases specialist about immunisation with the tetanus vaccine	2	4.3
	Other	1	2.1
If the injury occurred during/after the procedure on the patient			
To whom the injury was reported	I hid it	0	0.0
	I shared it with a friend	4	8.5
	I shared it with a faculty member	8	17.0
	I shared it with a nurse	11	23.4
	I shared it with a doctor	3	6.4
	I shared it with my family	2	4.3
	Other	0	0.0
Actions taken after the injury*	I did nothing	0	0.0
	I washed the injured area with soap and water.	9	19.1
	I cleansed the injured area with an antiseptic solution.	10	21.3
	I informed the responsible faculty member about the situation.	7	14.9
	I have reported the incident.	10	21.3
	I provided a blood sample (HBsAg, Anti HCV, Anti HBs VE Anti HIV)	10	21.3
	A blood sample was taken from the patient.	10	21.3
	I informed the infectious diseases specialist about immunisation with the tetanus vaccine	3	6.4
	I initiated a forensic case record.	2	4.3
	Other	1	2.1

* Multiple choices were selected

excitement (38.3%) after sustaining an injury. The distribution of characteristics related to needlestick and sharp injuries among the students is presented in Table 2.

Factors Affecting the Frequency of Needlestick and Sharp Injuries and Preventive Measures Taken by Students

The students' most significant causes of needlesticks and sharp injuries were inattention (51.1%) and hasty behaviour (27.7%). It was found that 68.1% of the students used protective equipment before working with needles and sharp instruments, with the most commonly adopted preventive measures being wearing gloves (59.6%) and receiving the Hepatitis B vaccine (19.1%). Injuries occurring before performing procedures on patients were reported to be shared with nurses (46.8%) and peers (40.4%). The injured area was frequently washed with soap and water (51.1%) and cleaned with an antiseptic solution (46.8%). Injuries that occurred during or after procedures on patients were reported to be shared with nurses (23.4%) and faculty members (17.0%). After such injuries, the area was cleaned with an antiseptic solution (21.3%), the student reported the incident (21.3%), and blood samples were taken from both the student (21.3%) and the patient (21.3%). The findings related to the factors affecting the frequency of needlestick and sharp injuries and the preventive measures taken by students are presented in Table 3.

DISCUSSION

Needlesticks and sharp injuries are among the healthcare services' most common occupational accidents. Injuries from contaminated needles, scalpels, ampoules, broken glass, and other sharp materials can lead to infections that are transmitted through the blood, resulting in significant morbidity and mortality (23). Although nurses are a high-risk subgroup for needlestick and sharp injuries, nursing students may be at similar or greater risk due to their limited clinical experience. In clinical practise, students are particularly vulnerable to accidental exposure to blood-borne pathogens (2,5,9). Student nurses are at a significant risk of occupationally acquired infections, as many of their needlestick and sharp injuries involve devices that have been used on a patient. While in their clinical training, students encounter sharp instruments and infections daily; therefore, they must be trained on handling sharps and infection control before and during their ward training (17). Studies have shown that students who learned about sharp and infection control were less likely to sustain sharp/needlestick injuries than those who did not receive such training (10,14,17,25). In this study, 95.4% of the students reported having knowledge and training regarding needlestick injuries. They indicated that they often received their education from school orientation programmes (88.2%), various compulsory and elective courses offered at school (43.6%), and hospital orientation programmes (31.1%). Studies conducted in Turkey have shown that most students are aware of needlestick injuries (15,26). In this study and other studies conducted in Turkey, although the percentage of students who stated they received education was high, the sharp/needlestick injuries rate was also high (9,15,22,26). Before clinical training in hospitals begins, risks related to needlestick injury protective measures and what to do after exposure are taught through various mandatory and elective courses included in the curriculum, pre-clinical occupational safety training, and hospital orientation programmes. However, behavioural change in students regarding the implementation of preventive measures for needlestick and sharp injuries can take time through the training provided. This result shows that education alone is not sufficient to prevent sharp/needlestick injuries.

As a result of the research, it was determined that there were 47 (16.8%) cases of needlestick and sharp injuries among the nursing students who participated in the study period the four years from 2015 to 2019. The four-year prevalence was calculated to be 8.15 cases per 100 nursing student. Different studies conducted with nursing students also indicate high rates of injuries (4,9,10,14-17,22-24). In a systematic review study conducted by Xu et al. (2022) to determine the rates of needlestick injuries among nursing students worldwide, the results showed that 35% of nursing students had experienced needlestick injuries (27). Bouya et al. (2020) analysed 11 studies and found a prevalence rate of 45.3% for needlestick injuries among nursing students (28). A recent systematic review and meta-analysis investigated occupational injuries among nursing interns and found that the prevalence of needlestick injuries in this group was 27% (29). These results demonstrate that nursing students are at high risk for occupational exposure to bloodborne pathogens due to needlestick and sharp injuries, indicating that preventive measures must be taken.

This study determined that students had been injured at least once (63.8%). Studies have indicated that students generally sustain injuries only once (1,24). In a study by Bagnasco et al. (2020), more than one-third of the students (39%) reported they had been injured at least once with a sharp or a needlestick, and nearly half of these (48.9%) experienced more than one injury (range: 2–6) (2). In a study by El Bouazzi et al. (2023), data analysis showed that 43.75% of the students had experienced at least one accidental exposure to blood and body fluids (16).

Nursing students are exposed to these risks daily when administering drugs in the healthcare setting and when practising in the clinical skill laboratory (9). In this study, it was determined that injuries frequently occurred in the first (48.9%) and second (40.4%) years, and our findings are consistent with studies conducted on nursing students (1-3,15,30). It is thought that first- and second-year nursing students are more exposed to sharp injuries due to their manual skills needing to be fully developed, limited clinical experience, and a lack of knowledge and attention regarding personal safety measures. Students are gradually exposed to fewer needle and sharp injuries as their competency improves and their clinical skills develop. Contrary to the results obtained from this research, some studies indicate that sharp injuries are more prevalent

among upper-class students. The study by Doğru and Akyol (2018) found that fourth-year students had a higher injury rate than other classes (3). Similarly, in the studies by Ünver et al. (2012) and Kurşun and Arslan (2014), it was determined that the number of injuries among nursing students increased with each academic year (15,31). In these relevant studies, this situation has been associated with more clinical practise, medical interventions, and taking on more responsibilities in patient follow-up.

Despite training on occupational health and safety, needlestick and sharps injuries occur in healthcare institutions and are most commonly caused by syringes (12). In this study, it was found that injuries frequently occurred during contact with sterile glass shards while breaking ampoules (42.6%) or due to syringe needles during drug applications (63.8%). In the study by Öztürk-Menteşe and Karaca (2021), 64.2% of the injured students reported being injured by needle tips, while 31.2% reported injuries from ampoules (23). In the study by Doğru and Akyol (2018), it was determined that among students, needlestick and sharps injuries were mainly caused by syringe needles (72.1%) and sterile glass shards (44.1%) (3). Similar results have been found in studies conducted with nursing students (4,9,10,15,22,24,32,33). In a study by Bagnasco et al. (2020), the devices that mainly caused injury were vials (68.5%) and infusion syringes (15.8%) (2). In Çakar et al. (2019), 9.8% of students (n=33) indicated that the injury occurred while preparing medication (24). Therefore, it is important that students are trained to develop their hand skills before clinical practise. This study determined that most injuries (n=45) occurred before performing the procedures on patients. Similarly, Yurdakoş's study found that the injury instruments were clean (91.4%) (1). This research found that a large portion of the injuries caused by syringe needles occurred while attempting to open the needle cap. Similarly, in the study by Yang et al. (2004), 23.7% of students were injured while opening needle caps, and in the study by Cheung et al. (2010), 27.9% of students reported injuries while opening needle caps (4,33). In the study by Yurdakoş (2023), it was found that students were mostly injured while opening/closing the needle cap with the syringe (75.9%). Using force to remove the needle cap with screwing threads is likely to cause students' needlestick injuries. Various studies have reported that injuries occur during drug administration (2,14) and due to sudden movements by the patient during procedures (14). The causes of needlestick and sharps injuries vary. Identifying the practises that lead to sharp injuries will help determine the necessary precautions to reduce occupational risk.

This study determined that 45 injuries occurred during clinical practise, primarily in internal medicine and surgical clinics. Upon reviewing studies on this topic, it has been observed that the frequency of injuries is higher in units where internal and surgical interventions are performed (2,3,33). This situation is thought to be related to the higher frequency of parenteral drug administration in clinical areas, thus increasing the likelihood of sustaining sharp/needlestick injuries. In a study by Elisa et al. (2023), it was found that injuries occurred in all wards, with the majority happening in the emergency/casualty ward (30%), followed by the surgical ward (21.9%) (17).

In a systematic review by Hambridge et al. (2016), psychological and physical impacts of sharps injuries on student nurses were reported, such as fear, anxiety, and depression (34). In this study, students also expressed that they frequently experienced fear and excitement after an injury. Given that the impact of sharps injuries can be severe, it is essential to evaluate the physical, psychological, and social effects of injuries on nursing students. However, the fact that 10 students indicated they did not take the injury seriously indicates that they do not understand the significance of exposure to needlestick injuries. In a study by Bagnasco et al. (2020), of the 147 injuries reported by the students, 8.8% occurred with a contaminated device: 15.4% of these participants did not access the emergency department because "not deemed necessary"(55.6%) or because "I considered the risk was low or none" (44.4%) (2).

In this study, students stated that the most important causes of injury were carelessness, rushing, lack of protective equipment, and getting excited while practising with a faculty member or nurse. In studies conducted among nursing students in Turkey, the factors affecting the rate of exposure to needlestick and sharps injuries were hurrying, inattentiveness, heavy workload (15) and carelessness (22). In other studies, the factors affecting the rate of exposure to needlestick and sharps injuries included carelessness, stress, lack of practise, lack of familiarity with the devices, and lack of training (11); inattention, tiredness, and heavy workload (32); rushing while performing procedures, and the patient being uncooperative (17).

To prevent contamination stemming from blood-borne pathogens via needlestick and sharps injuries, it is essential to prevent such injuries. Because contact with infected materials is unlikely to be avoided, appropriate measures should be taken immediately after exposure to injuries (15). The Centres for Disease Control and Prevention (CDC) has developed "universal precautions" to prevent transmission from infected blood and body fluids. Under this guideline, all individuals receiving health services are considered potentially infected with blood and other body fluids, making it mandatory to take necessary precautions. These precautions include washing hands before and after all procedures, removing gloves, and using protective barriers (gloves, gowns, masks, goggles) to prevent transmission from the skin and mucous membranes (3). Implementing the measures recommended by the CDC can reduce the incidence of sharps injuries (3,23). Zhang et al. (2018) showed that nursing students who did not use protective equipment experienced more injuries (10). In the studies by Kurşun et al. (2014), it was found that 67.5% of nursing students and in Zhang et al. (2018), 78.7% of students did not use protective equipment (10,15). In a study performed in Turkey, it was stated that among students experiencing needlestick and sharp injuries, 65.2% were found not to wear gloves (26). In this study, 15 injured students (31.9%) indicated that they did not use protective equipment, showing that their awareness of preventive measures was low. In this study, the protective measures taken while working with

sharp instruments were found to be wearing gloves (59.6%) and receiving the Hepatitis B vaccine (19.1%). Doğru and Akyol (2018) found that 86.4% of students had received the Hepatitis B vaccine, 68.1% used gloves, 2.6% wore masks, and 29.3% did not take any protective measures (3).

The following needlestick and sharps injuries, students must promptly inform their practise teacher or hospital staff and complete the relevant needlestick and sharps injury reports (33). In instances where injuries occurred without direct patient treatment, it was found that hospital staff or classmates often were the first to be notified. When needlestick and sharps injuries involved contaminated needles, students reported these incidents to hospital personnel or their practise teachers. Injuries occurring before procedures on the patient made students feel less at risk. In contrast, those occurring after such procedures were reported differently due to concerns about blood-borne diseases. The reporting rate for injuries sustained before patient procedures was low (6.4%), whereas 21.3% of students injured after performing procedures reported the incident. Various studies involving nursing students have indicated that incident reporting rates are generally low (3,10,15,23,24,30). The most common reasons provided by students for not reporting incidents included a belief that it was not essential to report (53.5%) and a lack of awareness regarding the reporting system (18.5%), as noted in a study by Yeshitila et al. (2015) (14). In the research conducted by Zhang et al. (2018), it was found that 86.9% of students did not report the incidents, with reasons including the use of devices not applied to patients (35.4%), a subjective assessment that the patient was not infectious (35.0%), and a belief that reporting was unnecessary (24.5%) (10). These findings indicate that students do not perceive injuries caused by sharp instruments that did not come into contact with patients as risks and may lack the necessary knowledge about the importance of reporting all injuries. The results indicate that nursing students require education on the significance of reporting needlestick and sharps injuries.

To prevent the transmission of bloodborne pathogens to healthcare professionals via needlestick and sharps injuries, it is essential to avoid such injuries. However, if an injury occurs despite all precautions, immediate appropriate measures should be taken after exposure to infected materials. The affected area is recommended to be cleaned with water, soap, or an antiseptic solution, the incident be reported, a risk assessment be conducted for both the source and the exposed healthcare worker, and a monitoring/treatment programme be established (15). This study found that students who sustained injuries from sharp instruments frequently cleaned the affected area with antiseptic solutions and washed it with soap and water. Similar results have been reported in various nursing student studies (14,15,23,24).

CONCLUSION AND RECOMMENDATIONS

Needlestick and sharps injuries represent a significant occupational hazard for nursing students. It was determined that 16.8% of the students experienced needlestick and sharps injuries during their undergraduate education, with injuries most commonly occurring during clinical practise in internal medicine and surgical clinics, where invasive procedures are frequent. The findings indicated that injuries predominantly occurred among first-year students, with the most common cause being the injection needle. The injuries frequently happened while breaking the ampoules and attempting to remove the needle cap. The reporting rates for injuries were low, and the most common action taken after an injury was washing the affected area with soap and water or disinfectant. It was observed that students most often reported injuries to their classmates and nurses. Students indicated that the injuries resulted from carelessness and rushing. Occupational safety training targeting nursing students should be enhanced before they begin their clinical practise in Turkey. Further studies are needed to develop and evaluate effective interventions to prevent needlestick and sharps injuries among Turkish nursing students.

Ethics Committee Approval: To conduct the research, written permission was obtained from Bursa Uludağ University Health Research and Publication Ethics Committee (Ethics Committee Date/Number: 05.02.2019 / 2019-02-13) and from the institution where the data was collected (Research Commission Date/Number: 22.03.2019/ 2-518/59).

Informed Consent: Written consent was obtained from the participants.

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Transforming Pain into a Purpose: Post-Traumatic Growth and Life Meaning in Gynaecological Cancer

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ABSTRACT

Objective: This study explores the transformative journey of women diagnosed with gynaecological cancer, focusing on how post-traumatic growth (PTG) occurs and how the search for meaning in life intertwines with the recovery process. By examining the relationship between PTG and the search for life meaning through various socio-demographic factors, this research highlights the inner strength and resilience that often emerge during some of life's most challenging moments.
Method: A cross-sectional, descriptive, and correlational design was applied, involving 134 women undergoing treatment for gynaecological cancer. Data were collected using the Personal Information Form, Post-Traumatic Growth Inventory (PTGI), and Meaning in Life Questionnaire (MLQ). Statistical analyses were conducted to explore the relationships between the key psychological and demographic variables.
Results: Participants, with a mean age of 58.47 ± 12.47 years, reported profound growth in areas like spiritual understanding and meaning in life, although they faced challenges in rediscovering new interests and setting life goals. PTG levels were higher among married women and parents, and those with moderate incomes reported a deeper sense of meaning in life. A positive correlation between PTG and meaning in life emerged, indicating that personal growth is closely tied to finding purpose after trauma.
Conclusion: The findings highlight that many women with gynaecological cancer experience meaningful personal transformation, suggesting that addressing both psychosocial and existential dimensions is crucial in cancer care. Healthcare professionals, especially nurses, should adopt patient-centred, compassionate approaches that nurture resilience and support growth. Future research is encouraged to explore how cultural nuances shape PTG and meaning-seeking processes, offering deeper insights for holistic cancer care.
Keywords: Gynaecological cancer, post-traumatic growth, meaning in life, nursing care, women's health

INTRODUCTION

Cancer remains one of the most significant health challenges of the modern era, triggering a range of emotional responses, including fear, a sense of meaninglessness, and existential crisis (1,21). Gynaecological cancers, in particular, can profoundly impact a woman's psychological well-being by influencing sexual health, fertility, and self-identity (17,23). Global Cancer Observatory (GLOBOCAN) data from 2020 reported that approximately 1.39 million women worldwide were diagnosed with gynaecological cancer, including 12,906 in Turkey, underscoring the prevalence and significant emotional burden of the disease (21). Concepts such as femininity, motherhood, and sexuality are intrinsically linked to gynaecological health, making the diagnosis of cancer in this region deeply traumatic for many women (11,23). High levels of anxiety (66%) and depression (59%) are frequently observed among women diagnosed with gynaecological cancers, further highlighting the need for comprehensive psychosocial care (2).

Given the profound emotional toll associated with cancer, it is essential to explore how individuals adapt to these challenges and find ways to grow despite their distress. Post-traumatic growth (PTG) is defined as the perceived positive psychological change experienced because of the struggle with highly challenging life circumstances (18). Despite the emotional toll of a cancer diagnosis, evidence suggests that many patients experience significant personal growth and resilience following their diagnosis (14,9). These positive changes span five key dimensions: [1] an enhanced appreciation for life, [2] improved

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relationships, [3] greater personal strength, [4] recognition of new possibilities, and [5] spiritual and existential growth (19).

Incorporating strategies to foster PTG becomes particularly valuable for women facing gynaecological cancer, as it offers significant advantages in improving their overall well-being. PTG promotes emotional well-being, bolsters coping mechanisms, and encourages a deeper engagement with life. These benefits are essential in helping patients navigate the challenges of cancer treatment, reclaim control over their lives, and discover new purpose and motivation—elements that contribute to improved health outcomes and enhanced quality of life. Recent meta-analyses indicate that personality traits such as resilience, alongside coping strategies like religious coping and social support, play crucial roles in fostering PTG among cancer survivors (13).

However, it is important to recognise that PTG and distress are distinct constructs that often coexist. Tedeschi and Calhoun's model emphasises that PTG does not necessarily alleviate distress; rather, it arises from the process of grappling with trauma, where emotional pain and personal growth can occur simultaneously (20). This coexistence highlights the complexity of the recovery process and underscores the need for targeted interventions that address both psychological growth and emotional distress.

The search for meaning in life (MiL) further complements the concept of PTG, offering an essential avenue for emotional resilience. MiL becomes particularly relevant for cancer patients due to the existential challenges posed by a life-threatening illness. Establishing a connection with an existential source—whether spiritual or philosophical—allows individuals to cultivate resilience and discover purpose during adversity (7). Research has consistently demonstrated that finding meaning plays a critical role in how cancer patients navigate their diagnosis and treatment, alleviating anxiety and enhancing overall psychological well-being (16).

Moreover, the significance of MiL becomes even more pronounced in the advanced stages of cancer, where unresolved existential concerns can negatively affect the quality of life (10). Thus, addressing both PTG and MiL through integrated care approaches is essential for enhancing psychological well-being throughout the cancer journey, particularly for women managing the unique challenges of gynaecological cancers**.**

MATERIAL AND METHODS

Participants

The study included women who applied to the Gynaecology-Oncology outpatient clinic of Isparta City Hospital for a control examination or cancer treatment and met the inclusion criteria, including that at least two months had passed since their diagnosis. Women with other serious life-threatening diseases, psychotic and neurological disorders, or who underwent surgery for benign conditions were excluded from the study. The sample size was calculated using the "Exact Binomial" test family and the single sample ratio test, with 85% power to detect a medium effect size. Although the sample size was initially set at 127, the study was completed with 134 participants to account for potential non-response.

Procedure

Data were collected between January and July 2021 through face-to-face interviews conducted by the researcher. The Personal Information Form was used to evaluate socio-demographic characteristics, the Post-traumatic Growth Inventory (PTGI) was used to measure positive changes post-cancer diagnosis, and the Meaning in Life Questionnaire (MLQ) was employed to assess whether patients found meaning after diagnosis.

Tools

Personal Information Form

The form used in this study consists of 21 questions designed to collect detailed demographic and cancer-related information. This will help us better understand the participants' backgrounds and medical histories. The form includes socio-demographic details such as age, education level, marital status, perceived income, and household composition. Additionally, it addresses whether participants have had to leave their jobs due to illness and assesses their financial stability.

Post-Traumatic Growth Inventory (PTGI):

PTGI was developed by Tedeschi and Calhoun (18) and has been adapted into Turkish (22). It consists of 21 items, each scored from 0 to 5, with higher scores indicating greater post-traumatic growth (PTG). In this study, the Cronbach's alpha value was 0.924, demonstrating a strong internal consistency.

The Meaning in Life Questionnaire (MLQ)

Adapted into Turkish by Demirbaş et al. (2020), this questionnaire consists of two sub-dimensions: Presence of Meaning and Search for Meaning. It includes 10 items, each scored on a 7-point Likert scale. The Cronbach's alpha value was 0.797 for the Presence subscale and 0.710 for the Search subscale.

Ethics

The study was approved by the Ethics Committee of Süleyman Demirel University (SDU), and written informed consent was obtained from all participants. The inclusion of the study's instruments was also authorised. The study protocol was reviewed and approved under the decision number [39247].

Data Analysis

Statistical analysis was conducted using SPSS 20.0. The Tukey Summability Test was performed to assess the adequacy of the scales, and the Kolmogorov-Smirnov method was used to check for normality. Both parametric and non-parametric tests were applied as appropriate, including t-tests, ANOVAs, and

Pearson correlations. In addition, a multiple linear regression model was developed to explore the relationship between post-traumatic growth (PTG) and the meaning of life, while controlling for demographic characteristics.

RESULTS

Participant Characteristics

The study participants had an average age of 58.47 years (±12.47). The majority had completed primary education (73.7%), and most were married (78.4%) and parents (92.5%). Furthermore, approximately 26% of the participants reported that they had stopped working after receiving a cancer diagnosis, indicating a significant impact of the disease on their professional lives. Detailed demographic and clinical characteristics are presented in Table 1, which offers an overview of the participants' education levels, marital status, and other relevant demographic factors related to the study.

PTG and Meaning in Life Scores

The participants displayed relatively high overall Post-traumatic Growth (PTG) scores, with an average of 62.41±24.16. The sub-dimension scores were highest for spiritual understanding (3.94±1.44) and life meaning (5.90±1.81). In contrast, lower scores were found in discovering new interests (1.98±1.95) and having a clear life purpose (2.19±2.06). This suggests that while participants experienced significant spiritual and existential growth, they faced challenges in identifying new directions and purposes in life following their diagnosis. Detailed PTG and Meaning in Life (MiL) scores are outlined in Table 2, illustrating the variations across different growth dimensions.

Relationship Between PTG and Meaning in Life

A low to moderate positive correlation was observed between PTG and MiL scores (r=0.226; p=0.009), indicating that women who reported higher levels of post-traumatic growth also typically experienced greater meaning in life. This highlights the relationship between personal growth after traumatic events such as a cancer diagnosis and an individual's capacity to derive meaning from their experiences. Further exploration of these relationships, including the connection to demographic and clinical factors such as age and time since diagnosis, is illustrated in Table 3.

Sociodemographic and Disease-related Factors

Marital status significantly influenced PTG levels, with married participants showing markedly higher scores than their single or widowed counterparts (Table 4). Additionally, parents scored higher on the Meaning in Life scale, indicating the potential for children to enhance a sense of purpose following a cancer diagnosis. Income levels also impacted MiL, as lower-income participants exhibited higher scores in the search for meaning subscale, possibly indicating that economic struggles may intensify existential questioning. A detailed analysis of these socio-demographic factors is presented in Table 4.

Table 1. Participants' Distribution Based on Demographic Characteristics (n=134)

Categories	Subcategories	n	%
Age	years	58.47	12.47
Surgery time	months	23.97	23.18
Time since learning about the disease	months	24.25	22.77
Education	Primary education	98	73.7
	High school	28	21.1
	University	7	5.2
Marital status	Married	105	78.4
	Single	3	2.2
	Divorced	8	6.0
	Husband passed away	18	13.4
Have children	Yes	124	92.5
	No	10	7.5
Persons living with	Partner	39	29.1
	Partner and children	36	26.9
	Mother and father	41	30.6
	Other	18	13.4
Employment status	Yes	30	22.4
	No	104	77.6
Stopped working because of illness	Yes	34	26.0
	No	97	74.0
Income rate	Low	47	35.1
	Medium	83	61.9
	High	4	3.0
The type of cancer	Endometrium	75	56.4
	Cervix	16	12.0
	Ovary	42	31.6
Cancer stage	Stage 1	57	42.9
	Stage 2	34	25.6
	Stage 3	37	27.9
	Stage 4	5	3.8
Status of the surgery	Yes	126	94.0
	No	8	6.0
Status of having cancer in the immediate area	None	58	43.2
	Available	76	56.7
Sharing the experience of the disease with a relative	Yes	104	78.2
	No	29	21.8
Receiving social support after diagnosis	Yes	105	78.4
	No	29	21.6
Receiving psychological support	Yes	85	63.4
	No	49	36.6
Inability to perform duties	Yes	74	55.3
	No	60	44.7

Associations Between PTG, MiL, and Socio-demographic Characteristics

Table 5 presents the bivariate associations among PTG, MiL, and various socio-demographic characteristics. Marital status

emerged as a significant factor, with married participants reporting higher scores across multiple PTG dimensions, such as "New Possibilities" and "Improved Relationships" (p=0.001 and p=0.0018, respectively). In contrast, divorced or widowed individuals exhibited lower scores, particularly in "Spiritual Growth" and "Appreciation for Life," suggesting that a lack of a supportive partner may hinder growth post-diagnosis.

Table 2. Items with the Highest and Lowest Scores on PTGI and MiL (n=134)

Items	Mean±SD
Post-traumatic growth scale	
I have a better understanding of spiritual matters.	3.94±1.44
I better accept needing others.	3.49±1.78
I set a new direction for my life.	2.53±1.89
I established a new path for my life	1.98±1.95
Scale total score (n=21)	62.41±24.16
Meaning In Life	
I understand my life's meaning.	5.90±1.81
I have a good sense of what makes my life meaningful.	5.66±1.90
I am seeking a purpose or mission for my life	2.21±1.95
My life has no clear purpose	2.19±2.06
Scale total score (n=10)	35.67±9.63

Participants with children showed enhanced scores in "Personal Strength" and "Improved Relationships," indicating that family dynamics may bolster personal growth. Income rates also played a role; those in the high-income bracket scored higher on "Presence of Meaning" (p=0.0031), while lower-income participants excelled in the "Search for Meaning" (p=0.0417), suggesting that financial stability may influence meaning derivation.

Additionally, those who shared their illness experiences with close relatives reported significantly higher PTG and MiL scores, underscoring the importance of social support in fostering growth and meaning after a cancer diagnosis (Table 5). Overall, these findings reveal the crucial role socio-demographic factors play in shaping experiences of post-traumatic growth

Table 3. The Relationship between PTGI, MiL, and Their Sub-dimensions with Age, Duration of Surgery, and Time to Learn About the Disease (n=134)

	POM	SOM	MiL	Age	DOS	TTLATD
New Possibilities	0.175	-0.102	0.073	-0.202	0.079	0.117
	0.042*	0.239	0.401	**0.024***	0.374	0.177
Personal Strength	0.204	-0.173	0.020	-0.191	0.149	0.175
	0.018*	**0.045***	0.821	**0.033***	0.092	**0.043***
Spiritual Growth	0.134	-0.067	0.024	-0.167	-0.104	-0.079
	0.123	0.441	0.780	0.063	0.239	0.362
Appreciation for Life	0.271	-0.148	0.075	-0.207	0.046	0.078
	0.002*	0.089	0.387	**0.021***	0.608	0.372
Improved Relationships	0.181	-0.126	0.055	-0.110	0.087	0.120
	0.037*	0.145	0.529	0.220	0.324	0.166
PTGI General	0.226	-0.131	0.070	-0.192	0.075	0.113
	0.009*	0.131	0.421	**0.032***	0.397	0.193

POM: Presence of Meaning, SOM: Search for Meaning, MiL: Meaning in Life, DOS: Duration of Surgery, TTLATD: Time to Learn About the Disease
Values in bold are correlation values that are significant at the 0.05 level.

Table 4. Factors Affecting Post-Traumatic Growth Areas (n = 134)

Variables	Beta	p-value	95% CI (Lower, Upper)	SE (Standard Error)
Meaning in Life	0.062	0.790	(-0.345, 0.470)	0.104
Age	-0.001	0.998	(-0.030, 0.029)	0.015
Duration of the Surgery	-0.385	0.656	(-0.992, 0.492)	0.159
Time to Learn About the Disease	0.341	0.696	(-0.437, 1.119)	0.198
Education Level	-1.759	0.706	(-2.351, 1.792)	0.571
Marital Status	-7.497	**0.024***	(-13.550, -1.444)	3.070
Childbearing Status	-6.795	0.445	(-14.012, 2.417)	2.796
Income Rate	1.803	0.684	(-1.202, 4.808)	0.953
Cancer Stage	0.182	0.941	(-0.512, 0.876)	0.167
Quitting Work Due to Illness	-13.885	**0.017***	(-24.776, -2.994)	4.218

Model Statistics:
F-value: 5.162; Degrees of freedom (df): 9; Adjusted R^2: 0.312; $p < 0.05$, indicating overall model significance.
Explanations:
Beta: Standardised coefficients used to compare the effect size of the variables; 95% Confidence Interval (CI): Represents the range within which the true value of the coefficient likely falls; Standard Error (SE): Indicates the accuracy and precision of the coefficients; Variables with significant impact are highlighted in bold, and p-values less than 0.05 are marked with an asterisk (*) to denote statistical significance.

Table 5. Bivariate Associations Between PTGI, MiL, and Socio-Demographic Characteristics (n=134)

	New Possibilities	Personal strength	Spiritual Growth	Appreciation for Life	İmproved Relastionship	PTGI General	Search for Meaning	Presence of Meaning	MiL General
Marital Status									
Single	9,00±3,61[a]	7,33±2,08[a]	4,33±4,04	3,67±4,04[a]	10,33±5,51[a]	34,67±16,01[a]	17,33±10,69	13,33±9,71	30,67±19,22
Married	15,67±6,00[b]	11,73±5,17[b]	6,50±2,65	6,63±2,74[b]	21,95±8,08[b]	62,48±21,32[b]	24,04±5,82	11,38±7,84	35,42±9,03
Divorced	15,63±8,28[c]	11,38±5,68[c]	6,88±3,36[a]	6,50±3,30	19,5±12,29	59,88±30,64	21,88±8,64	9,63±4,57	31,50±9,29
His wife passed away	9,89±5,49	7,72±4,98	3,50±3,09[b]	3,61±2,91	17,06±8,31	41,78±21,97	23,28±6,60	16,56±8,71	39,83±10,80
Test value	**F=5,630 p=*0,001* *b>a;b>c;c>a***	**F=3,666 p=*0,014* b>a;b>c;c>a**	**F=6,576 p=*<0,001* a>b**	**F=6,690 p=*<0,001* *b>a***	**F=3,495 p=*0,018* b>a**	**F=5,810 p=*0,001* *b>a***	F=1,410 p=*0,606*	F=2,511 p=*0,118*	F=1,956 p=*0,124*
Childbearing status									
Yes	14,70±6,41	11,05±5,39	6,04±2,91	6,10±3,00	21,03±8,59	58,92±23,29	24,10±5,90	11,75±7,95	35,85±9,50
No	15,20±6,03	11,40±4,09	6,40±3,50	6,80±2,97	19,10±8,81	58,90±21,68	18,20±8,05	15,30±8,03	33,50±11,44
Test value	t=0,056 p=0,813	t=0,041 p=0,841	t=0,137 p=*0,712*	t=0,508 p=*0,477*	t=0,466 p=*0,496*	t=0,000 p=*0,998*	**t=8,742 p=*0,005***	t=1,842 p=*0,287*	t=0,548 p=*0,481*
Person living at home									
Spouse	15,44±7,45	10,92±5,54	6,46±3,15	6,46±2,58	21,69±9,65	60,97±25,66	22,62±7,00	13,18±8,06	35,79±9,88
Spouse and children	16,22±5,64[a]	13,06±4,96[a]	6,58±2,67	7,08±2,77[a]	22,39±7,81	65,33±20,78[a]	25,06±5,65	10,03±8,06	35,08±9,98
Family	14,51±5,62	10,41±4,98	6,05±2,51[a]	6,12±3,00	20,66±7,68	57,76±20,22	24,29±5,02	11,37±7,00	35,66±7,66
Other	10,78±5,48[b]	8,94±5,22[b]	4,22±3,42[b]	3,67±3,11[b]	16,67±8,94	44,28±22,91[b]	21,67±7,65	14,94±9,10	36,61±12,74
Test value	**F=3,317 p=*0,022* *a>b***	**F=3,007 p=*0,033* a>b**	**F=3,094 p=*0,029* a>b**	**F=6,051 p=*0,001* a>b**	F=1,981 p=*0,120*	**F=3,684 p=*0,014* a>b**	F=1,746 p=*0,161*	F=1,960 p=*0,123*	F=0,102 p=*0,959*
Working Status									
Yes	16,1±4,62	11,73±4,11	6,67±1,94	7,17±2,20	21,8±7,10	63,47±16,28	22,43±5,21	14,07±8,36	36,50±9,11
No	14,35±6,75	10,88±5,59	5,89±3,17	5,86±3,14	20,63±8,99	57,61±24,63	24,01±6,49	11,42±7,81	35,43±9,80
Test value	t=1,780 p=*0,184*	t=0,597 p=*0,441*	t=1,608 p=*0,207*	**t=4,581 p=*0,034***	t=0,434 p=*0,511*	t=1,505 p=*0,222*	t=1,491 p=*0,224*	t=2,584 p=*0,110*	t=0,284 p=*0,595*
İncome rate									
Low	13,91±6,14	10,57±4,27	6,06±3,26	5,79±2,80	20,72±7,91	57,06±20,77	60,45±21,76	62,41±24,16[a]	27,00±2,83
Middle	15,19±6,49	11,4±5,74	6,01±2,79	6,29±3,11	20,84±9,06	59,73±24,36	63,28±25,46	23,30±6,72[b]	23,66±6,24
High	15±7,07	10,25±7,41	7,25±2,75	7,5±2,89	23,75±7,59	63,75±26,76	67,5±28,08	23,70±6,07[c]	14,32±8,57
Test value	F=0,605 p=0,547	F=0,409 p=*0,665*	F=0,334 p=*0,717*	F=0,839 p=*0,435*	F=0,229 p=*0,796*	F=0,288 p=*0,750*	F=0,650 p=*0,417*	**F=3,377 p=*0,031* *a>b; c>b; a>c***	**F=2,302 p=*0,043***

Table 5. Continue

	New Possibilities	Personal strength	Spiritual Growth	Appreciation for Life	İmproved Relastionship	PTGI General	Search for Meaning	Presence of Meaning	MiL General
Talking about her illness									
Yes	15,52±6,10	11,78±5,07	6,47±2,85	6,39±2,98	21,91±8,39	62,08±22,01	23,86±6,10	11,62±7,50	35,47±8,77
No	11,62±6,33	8,45±5,42	4,55±2,89	5,14±2,86	17,17±8,57	46,93±23,51	22,97±6,90	13,69±9,50	36,66±12,43
Test	**t=1,045**	**t=0,384**	**t=0,000**	**t=0,143**	**t=2,221**	**t=0,840**	t=0,378	t=0,146	t=0,471
value	**p=0,003**	**p=*0,002***	**p=*0,002***	**p=0,045**	**p=0,008**	**p=0,002**	p=0,501	p=0,218	p=*0,561*
Status of fulfilling duties									
Yes	15,51±6,16	11,78±5,03	6,26±2,83	6,70±2,87	22,11±7,99	62,36±21,92	24,59±5,84	11,12±7,74	35,72±9,35
No	13,78±6,52	10,2±5,51	5,83±3,09	5,47±3,03	19,38±9,12	54,67±23,97	22,50±6,57	13,12±8,21	35,62±10,05
Test	t=1,706	t=2,313	t=0,391	**t=1,796**	t=1,026	t=1,794	t=0,467	t=0,237	t=0,002
value	p=*0,118*	p=*0,085*	p=*0,410*	**p=*0,017***	p=*0,068*	p=*0,055*	p=*0,053*	p=0,151	p=0,953
Receiving hormone therapy									
Yes	19,80±4,82	10,95±5,29	8,00±2,12	8,60±1,34	28,40±5,98	79,20±17,34	25,40±2,19	11,60±13,15	37,00±14,28
No	14,54±6,35	14,40±4,72	5,99±2,95	6,05±3,00	20,60±8,56	58,13±22,98	23,59±6,34	12,03±7,80	35,62±9,48
Test	t=1,342	t=0,054	t=0,022	t=0,508	**t=0,699**	**t=0,325**	t=0,057	t=0,112	t=0,187
Value	p=*0,070*	p=*0,153*	p=*0,135*	p=*0,062*	**p=*0,046***	**p=*0,045***	p=*0,603*	p=*0,746*	p=*0,724*

and meaning in life, emphasising the necessity for healthcare providers to address these aspects in supporting cancer patients during recovery.

DISCUSSION

This study aimed to explore the relationship between post-traumatic growth (PTG) and meaning in life (MiL) among women diagnosed with gynaecological cancer. Our findings show a positive correlation between PTG and MiL, indicating that personal meaning significantly enhances psychological resilience, consistent with previous research (14). By cultivating a sense of purpose, patients are better equipped to cope with the emotional challenges of diagnosis and treatment, as PTG contributes to effective coping strategies (1).

MiL plays a crucial role in alleviating anxiety and depression among patients with cancer. As Oh et al. (16) highlight, higher MiL levels are associated with reduced psychological distress, supporting our findings that participants with higher MiL scores demonstrate better psychological well-being. These results reinforce the importance of interventions that focus on meaning-making processes to promote emotional health.

As shown in Table 5, socio-demographic factors significantly influence PTG and MiL outcomes. Marital status emerged as a key variable, with married participants reporting higher PTG scores than single or widowed participants ($p < 0.05$), aligning with research indicating that emotional support from spouses fosters resilience (3). Participants living with both a spouse and children exhibited higher PTG scores, especially in areas such as personal strength and improved relationships ($p = 0.033$), underscoring the role of family support (23, 9).

Income also influenced MiL outcomes, with participants in the higher-income bracket reporting higher MiL scores ($p = 0.031$). This suggests that financial stability may ease existential concerns, making it easier for patients to find meaning (16). Furthermore, sharing the cancer experience with others was associated with higher PTG ($p = 0.002$), emphasising the value of social support in fostering psychological growth (2, 23).

The cultural and familial contexts significantly shaped the outcomes. In Turkey, family involvement is integral to the healthcare experience, which likely amplifies the benefits of social support (11, 12). This aligns with prior research showing that cultural dynamics strengthen emotional well-being and enhance PTG (23).

PTG and distress often coexist, as Tedeschi and Calhoun (20) noted, with growth arising alongside emotional pain. Our findings confirm this duality, suggesting that psychosocial interventions should address both aspects to ensure comprehensive care. Meaning-centred therapies, such as those proposed by Breitbart et al. (4), offer promising ways to foster growth while managing distress among gynaecological cancer patients.

A key limitation of this study is the clinical heterogeneity of the sample, which included patients with varying cancer

types, stages, and treatment modalities. These differences may have influenced PTG and MiL levels, as different cancers elicit varied psychological responses (3, 13). For example, patients in advanced stages may show distinct patterns of distress and growth, requiring tailored interventions (9). Future research should employ stratified analyses to explore these clinical factors, while longitudinal studies could further elucidate the evolution of PTG and MiL over time (17).

The inclusion criterion requiring at least 2 months post-diagnosis was essential to minimise variability in the initial psychological responses. This aligns with Tedeschi and Calhoun's (20) model, which emphasises that PTG develops only after individuals have processed traumatic events. However, different treatment phases, such as active treatment versus remission, may still influence the outcomes. For instance, patients undergoing intensive treatment may experience higher distress, whereas those in remission may report greater growth and personal strength (14). Future research could benefit from stratifying participants by treatment stage to provide more precise interventions throughout the cancer care continuum (4, 1).

In conclusion, this study underscores the importance of integrating PTG-focused interventions into gynaecological cancer care. Health professionals, particularly nurses, should adopt patient-centred approaches that address both physical and emotional needs. Care plans should include meaning-centred therapies, mindfulness practises, and social support networks to foster psychological growth and resilience (5). These culturally tailored interventions align with patients' values, promoting holistic recovery and well-being throughout their cancer journey.

Clinical Impact Statement

This study significantly contributes to the understanding of the connection between post-traumatic growth (PTG) and meaning in life (MiL) for women with gynaecological cancer, highlighting notable growth in spiritual understanding and life meaning. Notably, married individuals and those with moderate incomes demonstrated higher PTG and life meaning. These findings emphasise factors to consider in evaluating patients' psychosocial well-being and guiding healthcare professionals, especially nurses, in adopting more effective patient-focused care. Future research, with cultural considerations, holds potential for insights on how to integrate PTG more effectively into clinical applications.

Limitations

This study has several limitations that should be acknowledged. First, the sample was not fully representative, limiting the generalizability of the findings to the broader population of women with gynaecological cancer. Additionally, the cross-sectional design restricts our ability to draw causal conclusions about the relationships between PTG and MiL. Longitudinal studies are necessary to track how these variables interact over time, particularly as patients progress through different stages of treatment and recovery.

Furthermore, the clinical heterogeneity within the sample, such as differences in cancer type, stage, and treatment modalities, may have influenced the results. Future studies could benefit from focusing on more homogenous samples or adjusting for these variables more rigorously. Additionally, the reliance on self-reported data, particularly for clinical characteristics, poses a risk of bias, as patients may not accurately recall or interpret their medical histories.

Lastly, the cultural context of the Turkish population may limit the applicability of these findings to other regions, as cultural norms around family support, religion, and coping mechanisms differ significantly across countries. Expanding this research to include more diverse populations could provide a more comprehensive understanding of how PTG and MiL manifest in different cultural contexts.

CONCLUSION

This study highlights the importance of addressing both the psychosocial and existential needs of women diagnosed with gynaecological cancer. The positive relationship between post-traumatic growth (PTG) and meaning in life (MiL) suggests that many cancer survivors derive personal significance from their challenging experiences. Therefore, healthcare providers must consider not only the physical treatment of cancer but also the emotional and existential challenges faced by patients.

The findings indicate that while a higher level of PTG is associated with a stronger sense of meaning in life, PTG and psychological distress often co-exist. Psychosocial interventions should focus on fostering PTG while also addressing the emotional pain that can accompany it. Nurses and mental health professionals play a crucial role in supporting patients in navigating both the positive and negative aspects of their cancer journey.

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Complications of Bariatric Surgery and Nursing Care

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ABSTRACT

The incidence of obesity is increasing worldwide, and obesity is recognized as a public health problem. Obesity negatively affects the quality of life of individuals because it causes chronic diseases. Obesity is also known to cause psychiatric disorders. Although there are multiple options for the treatment of obesity, bariatric surgery is considered an effective and long-term method for treating obesity. Furthermore, the incidence of chronic diseases reportedly decreases with postoperative weight loss. With the advancements in technology, bariatric surgery is now being performed laparoscopically. Laparoscopic bariatric surgery is associated with a shorter hospital stay and less pain. Thus, the number of bariatric surgeries performed has increased worldwide in recent years. The incidence of complications after bariatric surgery is high in patients with coexisting chronic diseases. Early complications are observed within the 1st month after surgery, and late complications are observed after the 1st month. Bleeding, atelectasis, venous thromboembolism, anastomotic leakage, and rhabdomyolysis are early complications of bariatric surgery. Dumping syndrome, marginal ulcer, and nutritional and vitamin deficiencies are late complications of bariatric surgery. Nurses are essential members of the multidisciplinary teams for bariatric surgery, and they play an important role in patient care, patient education, and early recognition of complications. Nurses should have sufficient knowledge to provide high-quality care and reduce possible complications. In this review article, we have discussed the nursing interventions necessary to prevent the development of complications in patients undergoing bariatric surgery.

Keywords: Bariatric surgery, Complication, Nursing care

INTRODUCTION

Obesity and Bariatric Surgery

The World Health Organization defines overweight and obesity as abnormal or excessive fat accumulation that poses a health risk. The prevalence and incidence of obesity are increasing rapidly worldwide. According to the WHO, more than 650 million adults worldwide who were aged 18 years were obese in 2016 (1). Obese individuals are at high risk for developing several diseases, including cancer, coronary heart disease, type 2 diabetes mellitus, hypertension, gastroesophageal reflux, and degenerative joint disorders (2,3). Obesity increases the risk of developing numerous chronic diseases and reportedly causes psychiatric disorders such as depression and anxiety (4,5).

Bariatric surgery is accepted as the most effective treatment option for obesity (5,6,7,8). Bariatric surgery is performed in patients with a body mass index (BMI) of ≥40 kg/m^2 or patients with a BMI of ≥35 kg/m^2 in addition to comorbidities such as hypertension, diabetes, and sleep apnea (3,4). According to the Federation of Obesity and Metabolic Disorders Surgery, the number of bariatric surgeries performed worldwide has increased 10-fold in the last 25 years. Weight loss after bariatric surgery clinically improves several comorbidities present before surgery (9,10).

Complications of Bariatric Surgery and Nursing Care

Complications are frequently observed in patients undergoing bariatric surgery due to the complexity of patient's anatomy and the presence of comorbidities accompanying obesity (11, 12). The complications of bariatric surgery are divided into the following two categories: early and late. Early complications are observed in the first postoperative month, and late complications are observed after the first postoperative

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month (13). Nurses play an essential role in the preoperative and postoperative care of patients who have undergone bariatric surgery and in recognizing the signs and symptoms of complications (9,10).

Early Complications of Bariatric Surgery

Bleeding

Approximately 11% of patients develop bleeding after bariatric surgery (12). Bleeding is more common following Roux-en-Y gastric bypass surgery due to ulcer formation at the gastrojejunal anastomosis.

Bleeding occurring within 24–48 hours after bariatric surgery frequently occurs at the staple site (14). Thus, nurses need to regularly monitor a patient's vital signs, oxygen saturation, and drainage after surgery and ensures fluid balance (12, 15). Excessive amounts of blood in the drain, unstable vital signs, tachycardia, hypotension, fatigue, decreased hematocrit, melena, and hematemesis should be looked for by healthcare professionals. Upon receiving the physician's orders, nurses immediately initiate supportive treatment for bleeding and measure the patient's hematocrit (13, 14).

Atelectasis

Obesity suppresses respiratory functions in individuals (15). Impaired diaphragm function, abdominal distension, pain, and pleural effusion are the causes of postoperative atelectasis **(**16). Respiratory problems are common complications in the first few days after bariatric surgery. The nurses provide oxygen via a nasal cannula to patients with respiratory problems (5). Additionally, nurses frequently monitor a patient's respiratory rate, respiratory sounds, and oxygen saturation (17). Furthermore, patients are encouraged to mobilize early, by controlling the postoperative pain, to prevent postoperative pulmonary complications (15).

Spirometry encourages patients to achieve maximum inspiration by providing visual feedback, and it is widely used postoperatively to prevent pulmonary complications. In obese patients, deep breathing and coughing exercises are recommended before and after surgery to reduce pulmonary complications and increase lung capacity and oxygenation (18). To reduce the risk of atelectasis, nurses need to educate the patients about the importance of preoperative and postoperative spirometry, deep breathing, and cough exercises and ensure that the patients performs them (17).

Venous Thromboembolism

Venous thromboembolism (VTE) is the leading cause of morbidity and mortality following bariatric surgery, with an incidence of 3.5%–17%. Pharmacological and non-pharmacological methods are used to prevent VTE in patients after bariatric surgery. Patients at high risk for developing VTE should be identified preoperatively. Postoperatively, the risk of VTE is reduced by administering anticoagulant drugs, initiating early mobilization, and applying compression stockings. Furthermore, the nurses should observe the patients for signs of VTE. Low molecular weight heparin can be administered postoperatively according to the physician's instructions (19). The Enhanced Recovery After Surgery protocols also highlight the importance of early mobilization postoperatively. All patients should be evaluated preoperatively for the risk of deep vein thrombosis (20). Homans sign, hypersensitivity, unilateral gode-leaving (pitting) edema, local rise in temperature, and redness are essential clinical findings of deep vein thrombosis (21). Redness, swelling, temperature, tenderness, and pain in the limb should be evaluated before applying the stockings. The sock is applied when the patients is in the supine position. The importance of walking for 4 h on postoperative day 0 and 6 h on the following days should explained to the patient. Additionally, during the preoperative period, the nurses should inform the patients about the importance of foot-leg exercises and support the patient in performing them (15,16,17,18,19).

Anastomotic Leakage

Anastomotic leakage is the most feared complication of bariatric surgery, with a mortality rate of 15%. Anastomotic leakage can result in tachycardia, malaise, back and shoulder pain, respiratory distress, leukocytosis, high fever, abdominal pain, and abdominal tenderness. These symptoms usually appear on the 3rd postoperative day (12,13). Thus, nurses should monitor a patient's vital signs after surgery and recovery (17,22,23). Monitoring for tachycardia after the surgical procedure enables early recognition of complications, which will facilitate the use of necessary precautions. Nurses should also monitor abdominal distension, potassium level, and C-reactive protein level (23).

Elevated levels of potassium and C-reactive protein indicate anastomotic leakage. Furthermore, computed tomography with oral contrast material can be performed to identify the leak. Once the anastomotic leakage is determined, oral intake should be stopped, and intravenous feeds should be initiated upon physician's orders (13).

Rhabdomyolysis

Rhabdomyolysis is a rare complication of bariatric surgery. Skeletal muscle injury induces the release of intracellular enzymes and myoglobin. This leads to hyperkalemia, hypokalemia, diffuse intravascular coagulation, and acute renal failure. Prolonged operative time, presence of chronic disease, male sex, and overweight status are important risk factors for the development of rhabdomyolysis (13,17). Pain, numbness in the hips and back, and signs of myoglobinuria are observed in patients with rhabdomyolysis. Thus, postoperatively, the patient's vital signs should be monitored, patient's urinary output should be documented, feeds should be administered parenterally. Furthermore, the fluid-electrolyte balance should also be evaluated before and after bariatric surgery (17).

Late Complications of Bariatric Surgery

Dumping Syndrome

Dumping syndrome occurs when large amounts of simple carbohydrates are consumed after bariatric surgery (8, 24). Although the incidence of dumping syndrome is 7%–12% on average, it can increase to 50% in patients who have consumed large amounts of simple carbohydrates after gastric bypass. Individuals who undergo laparoscopic Roux-en-Y gastric bypass and who have a history of hyperlipidemia and gastroesophageal reflux disease are at high risk for developing dumping syndrome (25). Because the pyloric sphincter is usually bypassed after surgery, the ingested nutrients rapidly pass into the small intestine (17). The symptoms of dumping syndrome include gastrointestinal complaints (abdominal pain, diarrhea, bloating, and nausea) and vasomotor changes (flushing, palpitation, sweating, tachycardia, hypotension, and syncope). Postoperatively, the nurses should inform the patients regarding the appropriate diet. Furthermore, the patients should be instructed to separate the liquids from the solid foods and consume small amounts of food often. Nurses should instruct the patients to avoid foods with high sugar content and foods and beverages that trigger the syndrome. Furthermore, the patients should remain seated for 30 minutes after meals and drink 1.5 liters of water daily (8,25).

Marginal Ulcer

Marginal ulcers occur in approximately 2%–4.3% of the patients who undergo bariatric surgery. They are usually observed in the region of the anastomosis between the new gastric pouch and the small intestine (26). Marginal ulcers are usually observed more often in patients who undergo Roux-en-Y gastric bypass, with an incidence of 25% (24,27). A history of *Helicobacter pylori* infection, smoking, immunosuppression, nonsteroidal anti-inflammatory drug use, obstructive sleep apnea, female sex, smoking and alcohol addiction, substance abuse, and gastric pouch size are risk factors for the development of marginal ulcers. In addition, diabetes and hypertension reportedly slightly increase the risk of marginal ulcers (27,28). Marginal ulcers most commonly occur at the edge where the small intestine joins the gastric pouch, and they irritate the gastrointestinal mucosa (29,30). The symptoms of marginal ulcers include epigastric pain, nausea, vomiting, and hematemesis (15). Marginal ulcers are diagnosed by endoscopy, and treatments include proton pump inhibitors and nonsteroidal anti-inflammatory drugs (24, 30). Patients who smoke and use anti-inflammatory and/or corticosteroid drugs may require lifelong anti-ulcer treatment. Thus, patients should be informed about the risk factors for marginal ulcers in the postoperative period (26).

Nutritional and Vitamin Deficiencies

Nutritional and vitamin deficiencies are common after bariatric surgery. Restructuring the gastrointestinal anatomy causes nutritional and vitamin deficiencies due to changes in motility, pH, and enzymatic profiles (8). Bariatric surgery is associated with deficiencies in iron (33%–55%), calcium and vitamin D (24%–60%), vitamin B12 (24%–70%), and thiamine (33%–55%). Roux-en-Y gastric bypass surgery is frequently associated with deficiencies in iron (60%) and vitamin B12 (70%). Iron and vitamin B12 deficiencies can be supplemented orally or intravenously (3).

Following sleeve gastrectomy, patients are at a high risk of developing dehydration due to early satiety. Therefore, nurses need to inform patients regarding the consumption of daily fluids. Nurses should monitor the patients closely for Wernicke's encephalopathy that can occur due to thiamine deficiency after bariatric surgery. The symptoms of Wernicke's encephalopathy include neuropathy, myopathy, and encephalopathy. Thiamine deficiency can be corrected by replacing thiamine orally or intravenously (5,30). Selenium is an essential trace mineral and an important component of several enzymes and proteins in the human body. A meta-analysis reported that selenium deficiency developed in patients after bariatric surgery (31). Postoperatively, epigastric pain and vomiting may occur following each food intake. Thus, patients should be instructed on good food practices such as eating slowly, stopping eating once satiated, and avoiding simultaneous consumption of food and beverages to prevent gastrointestinal symptoms. Furthermore, patients should be advised to consume small meals rich in protein and fiber more frequently, chew their food well, eat slowly, and drink plenty of fluids. Patients should also be instructed to monitor the urinary output (5).

CONCLUSION

The number of bariatric surgeries is increasing daily worldwide and in Turkey. With the advancement of technology, the number of complications has decreased. However, patients are still at risk of developing some complications. The presence of chronic diseases in obese patients increases the incidence of complications. Nurses, who are essential multidisciplinary team members, should have sufficient knowledge to recognize the early signs and symptoms of bariatric surgery complications. Early identification of possible complications will reduce the duration of hospital stay and contribute to better patient outcomes.

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Understanding Compassion Fear in Nursing: A Literature Review

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ABSTRACT

Compassion, traditionally an integral part of nursing, is now often conflated with the growing evidence that nurses experience fear of giving and receiving compassion. While compassion has long been recognised as one of the cornerstones of nursing care, recent literature points to a growing phenomenon in which nurses experience fear in giving and receiving compassion. Socio-demographic characteristics, psychological factors, and childhood trauma experiences are considered as factors influencing fear of compassion. The negative correlations between fear of compassion and mental health and physiological responses that this fear has a far-reaching impact on nursing professionals. Furthermore, the association of fear of compassion with professional commitment, burnout, empathy, and patient care satisfaction emphasises its complexity as a personal and professional challenge. Understanding compassion and compassion fear is essential for fostering an empathetic healthcare environment and promoting a holistic, patient-centred approach to healthcare, aligning with the core values of nursing.
The review emphasises the need to acknowledge compassion and compassion fear as a nursing problem. It calls for further research to explore interventions, assess the impact of compassion fear on patient outcomes, and develop strategies to enhance compassionate care within the nursing profession.
Keywords: Compassion, compassion fear, nursing profession

INTRODUCTION

This literature review examines the fear of compassion and compassion as a nuanced aspect of nursing. While compassion has long been recognised as one of the cornerstones of nursing care, recent literature points to a growing phenomenon in which nurses experience fear in giving and receiving compassion. With this review, we aimed to explore the various dimensions of fear of compassion, shedding light on its prevalence, contributing factors, and potential implications for nursing professionals and the quality of patient care. The historical importance of compassion in nursing will be outlined, highlighting its roots in empathy, kindness, and understanding. The dichotomy between "compassion" as a positive force and as a concept that can interfere with an attitude of professionalism will be examined, providing a context for evolving perceptions within the nursing community. For this purpose, Turkish and English studies, including descriptive studies, randomised controlled trials, and reviews, were reviewed using the keywords compassion, mercy, fear of compassion, nursing, and nursing care.

Compassion and Nursing

Compassion originates from the word "compati" meaning "to suffer" (1,2). Looking at the history of Western literature, Aristotle and Plato rejected compassion, stating that another individual's pain would overwhelm us. They even associated compassion with losing autonomy and domination (3). On the other hand, Nietzsche defines compassion as an egoistic motive and states that the individual's need to feel pain for another individual is a search for a solution to eliminate his unhappiness(4). However, Eastern philosophies such as Buddhism have long accepted the usefulness of compassion

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and self-compassion (5,6)Today, although it is expressed with different concepts in various philosophical views and beliefs, compassion, which is compounded from the feeling of love, mercy, and cooperation, is defined as a positive feeling and behaviour. Compassion is also defined as "a sense of kindness" (TLA) in the Turkish Language Association dictionary. (7)

Some authors state that compassion may stem from the caring motivation of living beings to care (8). In that context, compassion is an indispensable component of nursing, whose essence is care. Compassion and care go hand in hand from the beginning of the profession (9). Since the day Nightingale grounded "compassionate care," this concept has been one of the components of the nursing profession and has been mentioned in nursing characteristics (10,11,12). In Florence Nightingale's view, good nurses are good people who have cultivated good qualities, including compassion, in their characters (13). Travelbee also stated that sympathy and compassion should be included in the nursing profession and attitudes. According to Travelbee, the purpose of nursing care is "to help the individual, family, or community prevent or cope with illness and suffering" (14). Today, 'compassion' is involved in the Nursing Pledge (15, 16), and the publications have highlighted its importance in the nursing care process (17). The concept of compassion is frequently emphasised in the articles of nine codes of ethics published by ANA (2015) and ethical rules published by ICN (2020) (18,19). Compassion was described as the sense that motivates a person to reduce the suffering of others by raising awareness of their suffering (17,20).

Although it is impossible to understand individuals' unique suffering experiences, the responsibilities of the nurse include trying to understand the suffering of the individual and showing compassion. Compassionate care can be offered with a small smile and touch, but it is still slightly complicated (21, 22). As Blomberg et al. stated, compassionate care incorporating awareness of the individual's suffering includes wisdom, humanity, love, and empathy (23). The sense of compassion encourages nurses to provide quality care (24) and enhances the quality of care by helping to provide individual and proper care (10,22). Moreover, nurses' coping skills have improved through training aiming to increase their compassion levels (23). On the patient side, due to compassionate care, it has been determined that patients' hope for recovery and feelings of responsibility and satisfaction have increased (23,24,25).

Despite all these positive emphases in nursing philosophy and the results, some authors described nurses' feelings, such as suffering with the patient and showing compassion, as unprofessional; some assessed compassion as a barrier for nurses to make professional decisions (26). Some authors emphasised that it has gradually decreased among students and newly recruited nurses (27,28). According to Daştan et al. (2023), nurses who show compassion do not feel professional, leading to less professional self-esteem (29). Since it is very challenging personally during the care provision, maybe these approaches (showing compassion as an unprofessional attitude) prevent nurses from showing compassion to the patients. Recently, the United Kingdom has devised new strategies to elevate the standards of compassionate care upon realising that the level of compassionate care was low in the care services delivered (30). This confusion can be associated with the fact that compassion is a subjective experience with different cultural meanings and the change in how to show it. It has not been discussed sufficiently matching professionalism values until now (21, 22).

Fear of Compassion

Compassion fear has emerged as a multifaceted concept encompassing various aspects of expressing and receiving compassion directed towards oneself and others. This apprehension or resistance towards compassion involves three distinct dimensions: the fear of expressing compassion for others, the fear of responding to compassion from others, and the fear of self-compassion. Initially conceptualised by Rockliff in 2008, compassion fear is characterised by the perception of compassion as weakness or indulgence, and it includes concerns about potential misuse by others if expressed towards them (31, 32, 33). In addition, it also refers to the resistance of the individual against being compassionate for self and others (34). Individuals who have a fear of compassion are afraid of showing compassion and are deprived of compassion. Fear of compassion also appears when individuals refrain from doing it, do not see themselves as sufficient, or think they do not deserve it (35,36). The three dimensions of compassion fear were explained as follows:

Fear of Expressing Compassion for Others: This fear refers to individuals' resistance to the compassion they show towards others (37). They experience this fear concerning sensitivity to the thoughts and feelings of others (38).

Fear of Responding to Compassion from Others: This is a fear of compassion that includes the compassion we receive from another individual and experience and appears as resistance to this compassion (38).

Fear of Self-Compassion: Fear of self-compassion does not mean that individuals lack self-compassion. This fear describes the resistance of individuals to show self-compassion (39).

There is an intersectionality of compassion and compassion fear with personality traits, attachment styles, and past trauma, seeking to identify commonalities and divergences among nursing professionals. Contributing factors, including gender, professional roles, and personal experiences, were examined to provide insight into the various contexts in which compassion fear may manifest. Studies examining the socio-demographic landscape reveal diverse findings regarding gender differences in compassion fear. Some emphasised that men have less fear of compassion than women (40, 41), whereas others have indicated that the fear of compassion does not change by gender (20). Additionally, variables such as the number of children, marital status, and professional roles are identified as potential predictors (20). Psychological factors, including

personality traits and attachment styles, play a crucial role, with higher levels of self-criticism and insecure attachment associated with difficulties in expressing and receiving compassion. Less judgmental individuals exhibit higher levels of self-compassion, and children with secure attachment are more forgiving and compassionate (42). Secure attachment during childhood is linked to a reduced fear of compassion fear (40).

Trauma and abuse during childhood emerge as significant contributors to compassion fear, wherein individuals who have experienced such adversities tend to exhibit higher levels of reluctance in expressing compassion to themselves and others (43, 44). Individuals who did not receive enough love and attention from their parents and were even neglected and abused by their parents during childhood experience fear of compassion towards5themselves (35). Negative correlations with depression, anxiety, stress, and self-criticism mark the associations between compassion and mental health. Moreover, compassion fear is inversely related to self-confidence and is associated with indicators of alexithymia, low empathy, and happiness levels (28, 35, 36, 39, 45). A meta-analysis also the fear of compassion prevented the feeling of compassion, which protects from psychopathology (46).

Beyond the psychological realm, compassion fear extends to physiological reactions, potentially leading to elevated stress levels in affected individuals (47). This fear is also implicated in health-related issues, such as eating disorders, irregular eating habits, and heightened levels of shyness (43,48).

In their study, Basran et al. (2019) reported that the fear of compassion for others and the fear of compassion from others differed, and the fear of compassion for others might be associated with prosocial and antisocial personality dimensions (49). Additionally, in individuals with borderline personality disorder, fear of compassion was found to be a guide in estimating oxytocin levels (50).

Fear of Compassion and Nursing Care

Compassion and fear of compassion not only affect health outcomes but also change patients' experience and the professional satisfaction of nurses. Contributing factors, including gender, professional roles, and personal experiences, are examined to provide insight into the various contexts in which fear of compassion may manifest in nursing (51).

It is important for professionals who work closely with individuals to understand how compassion affects a sense of responsibility and professional values. Compassion influences nurses' own well-being and professional practises, and compassionate care (52) enhances the quality of patient care (53). Studies report that compassionate care also increases patient satisfaction (54, 55). On the other hand, considering being a partner in someone else's pain, which forms the basis of compassion as unprofessional and seeing compassion as an obstacle to making professional decisions, is a problem encountered in the nursing literature (26). Another problem is the association between fear of compassion and alexithymia, described as being mute with emotions or having difficulty expressing emotions verbally. It has been reported that nurses' alexithymia levels are moderate and high, and these conditions affect problem areas such as communication and burnout (56,57).

A study found that nurses' compassion levels were positively correlated with their caregiving behaviours (58). Nurses who provide compassionate care are willing to understand the suffering of individuals and help them when they feel compassion for them. However, when they are afraid of this compassion, their reluctance to understand suffering and help may increase (59). In a study conducted by Khanjani et al. (2021) with nursing students, they reported that fear of compassion was positively correlated with burnout (59). It was determined that the fear of compassion also affected the level of empathy, and when the fear of compassion increased, the level of empathy lowered (60).

It is stated that self-compassion can be a protective factor for psychological well-being (61) and play a buffer role by alleviating the effect of stress (62). If nurses show compassion for themselves, they can provide compassionate care to their patients (63). It was suggested that the fear of compassion of healthcare professionals who receive compassion training decreases (64), and the compassionate mind model-based training can alleviate students' fear of compassion (55).

CONCLUSION

This study contributes to the field by shedding light on a nuanced and evolving aspect of nursing care—compassion fear. While the literature recognises compassion as a positive force, this study delves into the emerging phenomenon in which nurses experience the fear of expressing and receiving compassion. By systematically reviewing Turkish and English studies, this research explores the dimensions of compassion fear, its prevalence, and the factors contributing to its manifestation within nursing. This study comprehensively explains the potential challenges posed by compassion fear, its impact on professional commitment, burnout, empathy, and the overall quality of patient care. The intersectionality of compassion fear with personality traits, attachment styles, and past trauma was explored, providing valuable insights for developing interventions and strategies to address this complex issue within the nursing community.

The fear of compassion, one of the main barriers to compassionate care, should be addressed as a nursing problem. When the negative effects of the fear of compassion on professional commitment, burnout, empathy, quality of care, and patient care satisfaction are assessed together, the fear of compassion and compassion are important issues for the nursing profession. While addressing this issue, it should be considered that professional nursing roles and definitions may be a factor that prevents us from showing compassion. Moreover, because there are not enough studies examining the relationship between the fear of compassion, which is a new concept, and nursing care, it is recommended to identify

and prevent problems by increasing the number of studies examining the effects of fear of compassion on patient care quality.

Acknowledging compassion fear's potential challenges is crucial for fostering a supportive and empathetic healthcare environment. Recommendations for future research include exploring interventions to mitigate compassion fear, assessing its impact on patient outcomes, and developing strategies to enhance compassionate care despite compassion fear. Understanding compassion fear in nursing is essential for promoting a holistic and patient-centred approach to healthcare.

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AIM AND SCOPE

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Each manuscript is reviewed by at least two referees under double-blind peer review process. Plagiarism, duplication, fraud authorship/denied authorship, research/data fabrication, salami slicing/salami publication, breaching of copyrights, prevailing conflict of interest are unethical behaviors.

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- The confidentiality of the information provided by the research participants and the confidentiality of the respondents should be ensured. The research should be designed to protect the autonomy and dignity of the participants.

- Research participants should participate in the research voluntarily, not under any coercion.
- Any possible harm to participants must be avoided. The research should be planned in such a way that the participants are not at risk.
- The independence of research must be clear; and any conflict of interest or must be disclosed.
- In experimental studies with human subjects, written informed consent of the participants who decide to participate in the research must be obtained. In the case of children and those under wardship or with confirmed insanity, legal custodian's assent must be obtained.
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An approval of research protocols by the Ethics Committee in accordance with international standards mentioned above is required for experimental, clinical, and drug studies and for some case reports. If required, ethics committee reports or an equivalent official document will be requested from the authors. For manuscripts concerning experimental research on humans, a statement should be included that shows that written informed consent of patients and volunteers was obtained following a detailed explanation of the procedures that they may undergo. For studies carried out on animals, the measures taken to prevent pain and suffering of the animals should be stated clearly. Information on patient consent, the name of the ethics committee, and the ethics committee approval number should also be stated in the Materials and Methods section of the manuscript. It is the authors' responsibility to carefully protect the patients' anonymity. For photographs that may reveal the identity of the patients, signed releases of the patient or of their legal representative should be enclosed.

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Besides conflict of interest, all financial support received to carry out research must be declared while submitting the paper

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The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other persons. The anonymity of the referees must be ensured. In particular situations, the editor may share the review of one reviewer with other reviewers to clarify a particular point.

PEER REVIEW

Peer Review Policies

Only those manuscripts approved by its every individual author and that were not published before in or sent to another journal, are accepted for evaluation.

Submitted manuscripts that pass preliminary control are scanned for plagiarism using iThenticate software. After plagiarism check, the eligible ones are evaluated by editor-in-chief for their originality, methodology, the importance of the subject covered and compliance with the journal scope.

The editor hands over the papers matching the formal rules to at least two national/international referees for double-blind peer review evaluation and gives green light for publication upon modification by the authors in accordance with the referees' claims.

Responsibility for the Editor and Reviewers

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Editor-in-Chief does not allow any conflicts of interest between the authors, editors and reviewers. Only he has the full authority to assign a reviewer and is responsible for final decision for publication of the manuscripts in the Journal.

Reviewers must have no conflict of interest with respect to the research, the authors and/or the research funders. Their judgments must be objective.

Reviewers must ensure that all the information related to submitted manuscripts is kept as confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse himself from the review process.

The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other persons. The anonymity of the referees must be ensured. In particular situations, the editor may share the review of one reviewer with other reviewers to clarify a particular point.

Peer Review Process
Only those manuscripts approved by its every individual author and that were not published before in or sent to another journal, are accepted for evaluation.

Submitted manuscripts that pass preliminary control are scanned for plagiarism using iThenticate software. After plagiarism check, the eligible ones are evaluated by Editor-in-Chief for their originality, methodology, the importance of the subject covered and compliance with the journal scope.

Editor-in-Chief evaluates manuscripts for their scientific content without regard to ethnic origin, gender, citizenship, religious belief or political philosophy of the authors and ensures a fair double-blind peer review of the selected manuscripts.

The selected manuscripts are sent to at least two national/international referees for evaluation and publication decision is given by Editor-in-Chief upon modification by the authors in accordance with the referees' claims.

Editor-in-Chief does not allow any conflicts of interest between the authors, editors and reviewers and is responsible for final decision for publication of the manuscripts in the Journal.

Reviewers' judgments must be objective. Reviewers' comments on the following aspects are expected while conducting the review.

- Does the manuscript contain new and significant information?
- Does the abstract clearly and accurately describe the content of the manuscript?
- Is the problem significant and concisely stated?
- Are the methods described comprehensively?
- Are the interpretations and consclusions justified by the results?
- Is adequate references made to other Works in the field?
- Is the language acceptable?

Reviewers must ensure that all the information related to submitted manuscripts is kept as confidential and must report to the editor if they are aware of copyright infringement and plagiarism on the author's side.

A reviewer who feels unqualified to review the topic of a manuscript or knows that its prompt review will be impossible should notify the editor and excuse himself from the review process.

The editor informs the reviewers that the manuscripts are confidential information and that this is a privileged interaction. The reviewers and editorial board cannot discuss the manuscripts with other persons. The anonymity of the referees is important.

Manuscript Organization and Submission
Manuscript is to be submitted online via https://dergipark.org.tr/en/pub/curare.

The manuscripts should be prepared in accordance with ICMJE-Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals Author(s) are required to prepare manuscripts in accordance with the CONSORT guidelines for randomized research studies, STROBE guidelines for observational original research studies, STARD guidelines for studies on diagnostic accuracy, PRISMA guidelines for systematic reviews and meta-analysis, ARRIVE guidelines for experimental animal studies, and TREND guidelines for non-randomized public behavior.

Publication language of the journal is English.

Manuscripts submitted to the journal will first go through a technical evaluation process where the editorial office staff will ensure that the manuscript has been prepared and submitted in accordance with the journal's guidelines. Submissions that do not conform to the journal's guidelines will be returned to the submitting author with technical correction requests.

Due to double-blind peer review, the main manuscript document must not include any author information.

Authors are required to submit the following together with the main manuscript document: Copyright Agreement Form, Author Form and Title Page.

Title page: A separate title page should be submitted with all submissions and this page should include:

- The full title of the manuscript as well as a short title (running head) of no more than 50 characters,
- Name(s), affiliations, highest academic degree(s) and ORCID ID(s) of the author(s),
- Grant information and detailed information on the other sources of support,
- Name, address, telephone (including the mobile phone number) and fax numbers, and email address of the corresponding author,
- Acknowledgment of the individuals who contributed to the preparation of the manuscript but who do not fulfill the authorship criteria.

Abstract: An English abstract should be submitted with all submissions except for Letters to the Editor. The abstract of Research Articles should be structured with subheadings (Objective, Materials and Methods, Results, and Conclusion). Abstracts of Case Reports and Reviews should be unstructured. Please check Table 1 below for word count specifications.

Keywords: Each submission must be accompanied by a minimum of 3 to a maximum of 6 keywords for subject indexing at the end of the abstract. The keywords should be listed in full without abbreviations. The keywords should be selected from the National Library of Medicine, Medical Subject Headings database (http://www.nlm.nih.gov/mesh/MBrowser.html).

Manuscript Submission Guide
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- The category of the manuscript
- Confirming that “the paper is not under consideration for publication in another journal”.
- Including disclosure of any commercial or financial involvement.
- Confirming that the references cited in the text and listed in the references section are in line with NLM.
- Confirming that last control for fluent English was done.
- Confirming that the statistical design of the research article is reviewed.
- Confirming that journal policies detailed on web page of the journal have been reviewed.
- Acknowledgement of the study “in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration in materials and methods section.
- Statement that informed consent was obtained after the procedure(s) had been fully explained in the materials and methods section. Indicating whether the institutional and national guide for the care and use of laboratory animals was followed as in “Guide for the Care and Use of Laboratory Animals”.
- Copyright Agreement Form.
- Author Form
- Title page

Main Manuscript Document:
- The title of the manuscript
- Abstract in English (250 words). (Case report’s abstract limit is 200 words)
- Key words: 3-6 words both in Turkish and in English
- Main article sections (Please see Manuscript Types section for word limits)
- References
- All tables
- The title, description or footnotes of all illustrations (figures)

Files to be sended separately:
- Copyright Agreement form
- Title page
- Author Form
- Main Manuscript Document
- All illustrations (figures) (including title, description, footnotes)

Manuscript Types

Research Articles: This is the most important type of article since it provides new information based on original research. The main text of original articles should be structured with Introduction, Material and Method, Results, Discussion, and Conclusion subheadings. Please check Table 1 for the limitations for Original Articles.

Statistical analysis to support conclusions is usually necessary. Statistical analyses must be conducted in accordance with international statistical reporting standards (Altman DG, Gore SM, Gardner MJ, Pocock SJ. Statistical guidelines for contributors to medical journals. Br Med J 1983: 7; 1489-93). Information on statistical analyses should be provided with a separate subheading under the Materials and Methods section and the statistical software that was used during the process must be specified.

Units should be prepared in accordance with the International System of Units (SI).

Editorial Comments: Editorial comments aim to provide a brief critical commentary by reviewers with expertise or with high reputation in the topic of the research article published in the journal. Authors are selected and invited by the journal to provide such comments. Abstract, Keywords, and Tables, Figures, Images, and other media are not included.

Review: Reviews prepared by authors who have extensive knowledge on a particular field and whose scientific background has been translated into a high volume of publications with a high citation potential are welcomed. These authors may even be invited by the journal. Reviews should describe, discuss, and evaluate the current level of knowledge of a topic in clinical practice and should guide future studies. The main text should contain Introduction, Clinical and Research Consequences, and Conclusion sections. Please check Table 1 for the limitations for Review Articles.

Case Reports: There is limited space for case reports in the journal and reports on rare cases or conditions that constitute challenges in diagnosis and treatment, those offering new therapies or revealing knowledge not included in the literature, and interesting and educative case reports are accepted for publication. The text should include Introduction, Case Presentation, Discussion, and Conclusion subheadings. Please check Table 1 for the limitations for Case Reports.

Letters to the Editor: This type of manuscript discusses important parts, overlooked aspects, or lacking parts of a previously published article. Articles on subjects within the scope of the journal that might attract the readers' attention, particularly educative cases, may also be submitted in the form of a "Letter to the Editor." Readers can also present their comments on the published manuscripts in the form of a "Letter to the Editor." Abstract, Keywords, and Tables, Figures, Images, and other media should not be included. The text should be unstructured. The manuscript that is being commented on must be properly cited within this manuscript.

Table 1. Limitations for each manuscript type

Type of manuscript	Word limit	Abstract word limit	Reference limit	Table limit	Figure limit
Research Article	4000	250 (Structured)	35	6	5 or total of 10 images
Review	5000	250	50	6	10 or total of 15 images
Case Report	1000	200	15	No tables	4 or total of 8 images
Letter to the Editor	400	No abstract	5	No tables	No media

Tables

Tables should be included in the main document, presented after the reference list, and they should be numbered consecutively in the order they are referred to within the main text. A descriptive title must be placed above the tables. Abbreviations used in the tables should be defined below the tables by footnotes (even if they are defined within the main text). Tables should be created using the "insert table" command of the word processing software and they should be arranged clearly to provide easy reading. Data presented in the tables should not be a repetition of the data presented within the main text but should be supporting the main text.

Figures and Figure Legends

Figures, graphics, and photographs should be submitted as separate files (in TIFF or JPEG format) through the submission system. The files should not be embedded in a Word document or the main document. When there are figure subunits, the subunits should not be merged to form a single image. Each subunit should be submitted separately through the submission system. Images should not be labeled (a, b, c, etc.) to indicate figure subunits. Thick and thin arrows, arrowheads, stars, asterisks, and

similar marks can be used on the images to support figure legends. Like the rest of the submission, the figures too should be blind. Any information within the images that may indicate an individual or institution should be blinded. The minimum resolution of each submitted figure should be 300 DPI. To prevent delays in the evaluation process, all submitted figures should be clear in resolution and large in size (minimum dimensions: 100 × 100 mm). Figure legends should be listed at the end of the main document.

All acronyms and abbreviations used in the manuscript should be defined at first use, both in the abstract and in the main text. The abbreviation should be provided in parentheses following the definition.

When a drug, product, hardware, or software program is mentioned within the main text, product information, including the name of the product, the producer of the product, and city and the country of the company (including the state if in USA), should be provided in parentheses in the following format: "Discovery St PET/CT scanner (General Electric, Milwaukee, WI, USA)"

All references, tables, and figures should be referred to within the main text, and they should be numbered consecutively in the order they are referred to within the main text.

Revisions

When submitting a revised version of a paper, the author must submit a detailed "Response to the reviewers" that states point by point how each issue raised by the reviewers has been covered and where it can be found (each reviewer's comment, followed by the author's reply and line numbers where the changes have been made) as well as an annotated copy of the main document.

Accepted manuscripts are copy-edited for grammar, punctuation, and format. Once the publication process of a manuscript is completed, it is published online on the journal's webpage as an ahead-of-print publication before it is included in its scheduled issue. A PDF proof of the accepted manuscript is sent to the corresponding author and their publication approval is requested within 2 days of their receipt of the proof.

References

The journal uses the NLM reference system. While citing publications, preference should be given to the latest, most up-to-date publications. If an ahead-of-print publication is cited, the DOI number should be provided. Authors are responsible for the accuracy of references. Journal titles should be abbreviated in accordance with the journal abbreviations in Index Medicus/ MEDLINE/PubMed. When there are six or fewer authors, all authors should be listed. If there are seven or more authors, the first six authors should be listed followed by "et al." In the main text of the manuscript, references should be cited using Arabic numbers in parentheses. The reference styles for different types of publications are presented in the following examples.

Journal Article: Blasco V, Colavolpe JC, Antonini F, Zieleskiewicz L, Nafati C, Albanèse J, et al. Long-termoutcome in kidneyrecipientsfromdonorstreatedwithhydroxyethylstarch 130/0.4 andhydroxyethylstarch 200/0.6. Br J Anaesth 2015;115(5):797-8.

Book Section: Suh KN, Keystone JS. Malaria and babesiosis. Gorbach SL, Barlett JG, Blacklow NR, editors. Infectious Diseases. Philadelphia: Lippincott Williams; 2004.p.2290-308.

Books with a Single Author: Sweetman SC. Martindale the Complete Drug Reference. 34th ed. London: Pharmaceutical Press; 2005.

Editor(s) as Author: Huizing EH, de Groot JAM, editors. Functional reconstructive nasal surgery. Stuttgart-New York: Thieme; 2003.

Conference Proceedings: Bengisson S. Sothemin BG. Enforcement of data protection, privacy and security in medical informatics. In: Lun KC, Degoulet P, Piemme TE, Rienhoff O, editors. MEDINFO 92. Proceedings of the 7th World Congress on Medical Informatics; 1992 Sept 6-10; Geneva, Switzerland. Amsterdam: North-Holland; 1992. pp.1561-5.

Scientific or Technical Report: Cusick M, Chew EY, Hoogwerf B, Agrón E, Wu L, Lindley A, et al. Early Treatment Diabetic Retinopathy Study Research Group. Risk factors for renal replacement therapy in the Early Treatment Diabetic Retinopathy Study (ETDRS), Early Treatment Diabetic Retinopathy Study KidneyInt: 2004. Report No: 26.

Thesis: Yılmaz B. Ankara Üniversitesindeki Öğrencilerin Beslenme Durumları, Fiziksel Aktivitelerive Beden Kitle İndeksleri Kan Lipidleri Arasındaki Ilişkiler. H.Ü. SağlıkBilimleriEnstitüsü, DoktoraTezi. 2007.

Manuscripts Accepted for Publication, Not Published Yet: Slots J. The microflora of black stain on human primary teeth. Scand J Dent Res. 1974.

Epub Ahead of Print Articles: Cai L, Yeh BM, Westphalen AC, Roberts JP, Wang ZJ. Adult living donor liver imaging. DiagnIntervRadiol. 2016 Feb 24. doi: 10.5152/dir.2016.15323. [Epub ahead of print].

Manuscripts Published in Electronic Format: Morse SS. Factors in the emergence of infectious diseases. Emerg Infect Dis (serial online) 1995 Jan-Mar (cited 1996 June 5): 1(1): (24 screens). Available from: URL: http://www.cdc.gov/ncidodlElD/cid.htm.

SUBMISSION CHECKLIST

Please make sure you have the followings available:

- Acknowledgement of the study "in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration in the materials and methods section.
- Statement that informed consent was obtained after the procedure(s) had been fully explained in the materials and methods section. Indicating whether the institutional and national guide for the care and use of laboratory animals was followed as in "Guide for the Care and Use of Laboratory Animals".
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    - The title of the manuscript.
    - Abstract (250 words). (Case report's abstract limit is 200 words)
    - Keywords: 3-6 words
    - Main article sections
    - References
    - All tables
    - The title, description or footnotes of all illustrations (figures)

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