E-ISSN 2980-1133

CURARE

JOURNAL OF NURSING

ISSUE 3 • YEAR 2023

İSTANBUL UNIVERSITY PRESS

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PUBLISHER

Istanbul University Press
Istanbul University Central Campus,
34452 Beyazit, Fatih / Istanbul, Turkiye
Phone: +90 (212) 440 00 00

The publication language of the journal is English.

This is a scholarly, international, peer-reviewed and open-access journal published triannually in February, June and October.

Publication Type: Periodical

EDITORIAL MANAGEMENT BOARD

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İSTANBUL UNIVERSITY PRESS

CURARE - Journal of Nursing
E-ISSN 2980-1133
Issue 3 / October 2023

CONTENTS

RESEARCH ARTICLES

REVIEW ARTICLES

RESEARCH ARTICLE
DOI: 10.26650/CURARE.2023.1284683
CURARE - Journal of Nursing 2023;3:1-7

The Effects of the Physical Environment on Operating Room Nurses

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Citation: Eren E, Ozbas A. The effects of the physical environment on operating room nurses. CURARE - Journal of Nursing 2023;3:1-7. https://doi.org/10.26650/CURARE.2023.1284683

ABSTRACT

Objective: This descriptive research has been performed to determine the effects of the physical environment on operating room nurses.
Materials and Methods: The research population consists of 246 operating room nurses working at two hospitals of the Ministry of Health, one university hospital, and five hospitals belonging to a special health group. The sample size was not calculated due to the aim of reaching the entire population. The research has been completed with 233 operating room nurses. The study collected the data using a two-part survey and analyzed the data using descriptive statistics and correlation and regression analyses.
Results: According to the results, the nurses' ages range between 20-52 years (median=30); 91.8% are female, 54.1% are married, 38.6% are licensed, and 88.4% are operating room staff nurses. The time spent working in the operating departments ranges between 1-29 years (median=4), with postgraduate work experience ranging from 1-30 years (median=9) and 60.1% working daytime shifts. The research shows statistically significant differences regarding demographic comparisons, working duration, working position, shift schedule, gender, and the mean values for the subdimensions of the Operating Room Physical Environment Survey.
Conclusion: The study has determined the subdimensions of architectural functionality, environmental safety, suitability for resting, color compatibility, and temperature and humidity control in the operating room to have positive effects on the nurses' effective use of the operating room.
Keywords: Operating room, operating room nurse, physical environment

INTRODUCTION

Operating rooms are a physical and functional environment where surgical procedures are carried out; they provide the highest level of comfort for the patient and the surgical team during surgery (1). Operating rooms' architectural design as well as the functional components of their surgical and technical equipment involve factors such as heating, lighting, ventilation, and sound that enable surgical procedures to be carried out safely and constitute the physical components of operating rooms (2). Progress in the field of surgery and innovations in technology enable positive results based on surgery and help surgical interventions be preferred more. The success of surgery is related to surgical knowledge, techniques, and skills, as well as to the quality of the care provided, with yet another factor affecting the success of surgery being the adequacy of the environment in which surgical interventions are performed (3).

The operating room environment is very important in terms of creating a suitable working area for healthcare workers and patients, as well as the instruments and devices to be used, and in terms of ensuring traffic control throughout the area (4,5). Having operating rooms be in a suitable condition in terms of architectural design, thermal conditions (temperature and humidity), ventilation, lighting, radiation safety, and fire and electrical safety is of great importance for the health professionals who work in these units (6). Operating rooms have critical importance for the treatment of diseases and should have a very different and unique structure compared to normal living environments. Providing a healthy environment

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Submitted: 17.04.2023 • **Revision Requested:** 05.06.2023 • **Last Revision Received:** 16.06.2023 • **Accepted:** 21.06.2023 • **Published Online:** 00.00.0000

in operating rooms not only affects surgical success but also contributes to the increased comfort of the surgical team (7). The literature states that environmental conditions such as lighting and ventilation are important factors that affect the productivity of those who work in operating rooms and that an appropriate physical design and arrangement of equipment will also positively affect the performance of the surgical team (8).

The design of operating rooms should be in a way that does not threaten patient safety and protects the staff from the risks of surgery (9). A safe healthy working environment is very important in terms of positively supporting people's work efficiency and the health and safety of employees (10). The ability of nurses to continue their work in an environment with optimum conditions brings with it an increase in work efficiency and the quality of the care provided. Experiencing negativities in this regard can also lead to a decrease in job satisfaction by reducing the quality of the care provided (11, 12). Having nurses work in a healthy environment contributes to an increase in their work efficiency and the provision of optimal care. Any negativities experienced in this process can lead to a decrease in nurses' job satisfaction by reducing the quality of the care they provide (13). For this reason, the current research has been carried out to examine the effects operating rooms have on nurses in terms of the physical environment.

Table 1: Socio-demographic and work-life characteristics of operating room nurses (N=233)

Characteristics	Number (n)	Percentage (%)
Age		
20-25	58	24.9
26-30	60	25.8
31-35	58	24.9
36-40	29	12.4
41-45	20	8.6
>45	8	3.4
Gender		
Female	214	91.8
Male	19	8.2
BMI (kg/m²)		
<18.5	18	7.7
18.5-24.9	161	69.1
25-29.9	43	18.5
30-39.9	11	4.7
>40	0	0.0
Marital status		
Married	126	54.1
Single	107	45.9
Education level		
High school	48	20.6
Associate degree	81	34.8
Undergraduate	90	38.6
Postgraduate	14	6.0
Working Position		
OR staff nurse	206	88.4
OR head nurse	20	8.6
OR training nurse	4	1.7
OR team leader	3	1.3
Working duration (years)		
≤9	118	50.6
>9	115	49.4
Working duration in the operating room (years)		
≤4	133	57.1
>4	100	42.9
Shift schedule		
Day	140	60.1
Night	3	1.3
Day/ Night	90	38.6

OR: Operating Room; BMI: Body Mass Indeks

MATERIALS AND METHODS

The research has been planned as a descriptive study to examine the effects the physical environment of an operating room has on nurses. This study develops a model by considering the variables of effective use of the operating room, architectural functionality in the operating room, lighting efficiency, environmental safety, suitability for resting, noise control, color compatibility, and temperature and humidity control with the aim of examining the effect that the variables of the physical environment have on operating room nurses' effective use of the operating room.

Data Collection Tools

The research was conducted between December 2010-March 2011 with 233 operating room nurses who agreed to participate in the research and who work in eight hospitals in Istanbul, including two training and research hospitals affiliated with the Ministry of Health, a university medical faculty hospital, and five hospitals belonging to a private health group. The data were collected by the researcher via the survey method. The data collection form was prepared by the researcher with the support of the literature and consists of two parts.

Sociodemographic Questionnaire Form

This part of the data collection form consists of 11 questions about nurses' individual characteristics and the characteristics of their professional life.

Table 2: ORPES Sub-dimensions and overall mean scores (N=233)

	Mean	SD
Effective use of the operating room	4.43	0.52
Architectural functionality in the Operating room	4.33	0.62
Lighting efficiency	4.40	0.60
Environmental safety	4.43	0.54
Convenience to rest	4.59	0.57
Noise control	3.81	1.04
Color compatibility	4.21	0.82
Temperature and humidity control	4.42	0.70
Total	**4.33**	**0.48**

SD: Standard Deviation

Table3: Findings related to the physical environment effect of the operating room nurses (N=233)

ORPES																							
Variables	**Effective use of the operating room**			**Architectural functionality in the operating room**			**Lighting efficiency**			**Environmental safety**			**Convenience to rest**			**Noise control**			**Color compatibility**			**Temperature and humidity control**		
	Mean±SD	t	p	Mean±SD	t	p	Mean±SD	t	p	Mean±SD	t	p	Mean±SD	t	p	Mean±SD	t	p	Mean±SD	t	p	Mean±SD	t	p
Gender																							
Female	4.43±0.52	0.126	0.900	4.32±0.63	0.389	0.698	4.39±0.59	0.293	0.770	4.4±0.55	0.641	0.522	4.58±0.58	0.890	0.374	3.77±1.04	2.009	0.046	4.21±0.80	0.410	0.682	4.41±0.71	0.531	0.682
Male	4.45±0.43			4.38±0.55			4.44±0.71			4.50±0.49			4.70±0.46			4.26±0.99			4.13±1.09			4.50±0.58		
Working Position																							
OR nurse	4.41±0.52	2.157	0.032	4.30±0.64	1.622	0.106	4.41±0.58	1.075	0.284	4.40±0.55	2.468	0.014	4.58±0.58	0.505	0.614	3.79±1.05	0.829	0.408	4.16±0.84	2.239	0.026	4.38±0.71	2.129	0.034
OR manager nurse	4.63±0.43			4.51±0.43			4.28±0.77			4.67±0.45			4.64±0.51			3.96±0.92			4.54±0.63			4.69±0.48		
Working duration																							
≤9yıl	4.45±0.46	0.380	0.705	4.36±0.59	0.814	0.417	4.45±0.57	1.273	0.204	4.44±0.51	0.277	0.782	4.58±0.51	0.353	0.724	3.78±1.02	0.341	0.733	4.28±0.78	1.304	0.193	4.52±0.56	2.297	0.022
>9yıl	4.42±0.58			4.29±0.65			4.35±0.63			4.42±0.58			4.60±0.64			3.83±1.07			4.13±0.87			4.31±0.80		
Shift schedule																							
Day	4.52±0.47	3.067	0.002	4.43±0.58	3.273	0.001	4.42±0.64	0.525	0.600	4.53±0.50	3.568	0.001	4.62±0.58	0.866	0.388	3.89±1.06	1.431	0.154	4.34±0.80	3.196	0.002	4.47±0.72	1.086	0.279
Day/ Night	4.31±0.56			4.16±0.65			4.37±0.55			4.27±0.57			4.55±0.57			3.69±1.00			3.99±0.82			4.37±0.64		

OR: Operating room

Table 4: The effect of the ORPES sub-dimensions on the effective use of the operating room sub-dimension

		Dependent variable: Effective use of the operating room		
Independent variables		β	t	Significance (p)
			3.490	0.001
Architectural functionality in the operating room		0.231	3.899	**<0.001***
Lighting efficiency		0.042	0.915	0.361
Environmental safety		0.201	3.483	**<0.001***
Convenience to rest		0.188	3.941	**<0.001***
Noise control		-0.015	-0.328	0.744
Color compatibility		0.294	5.736	**<0.001***
Temperature and humidity control		0.102	2.010	**0.046****
	Model F	58.901		
	R^2	0.648		
	(p)	<0.001		

Operating Room Physical Environment Survey

The researcher-created Operating Room Physical Environment Survey (ORPES) consists of 43 statements about the physical design, environmental conditions, technical equipment, and layout of the operating rooms to determine the factors of the physical environment in operating rooms. The survey was created by the researchers with the support of the literature (2-6) to determine the physical environmental factors that should be in an ideal operating room. Factor analysis was performed for reliability and Cronbach's alpha value was determined as 0.963. The answers to the statements on the survey are ranked according to a 5-point Likert-type scale, with the highest possible score given to each statement being a 5 and the lowest being a 1. As a result of the factor analysis, the most appropriate factor structure that was reached has eight factors (i.e., effective use of the operating room, architectural functionality in the operating room, lighting efficiency, environmental safety, suitability for resting, noise control, color compatibility, and temperature and humidity control) that explain 74% of the total variance.

Data Analysis

Factor analysis was used to determine whether the statements on the survey are loaded onto the relevant factors, with descriptive statistics being used for the frequency, percentages means, and standard deviations of the variables, and correlation analysis is used to determine the relationships between dependent and independent variables. Multiple regression analysis was used to test the developed model. The results have been evaluated at a 95% confidence interval and a significance level of $p < 0.05$.

Limitations of the Study

The research is limited to the population of the study, as it was carried out with the data obtained from the individuals in the study population.

Ethical Considerations

To carry out the research, an ethical compliance decision was received from on September 15, 2010, by providing information about the relevant procedures (Decision No. B.30.2. ACÜ.0.00.00.9000/679). Institutional work permits were obtained from the Healthcare Group Nursing Services Directorate, the Provincial Health Directorate, and a medical faculty of a university.

RESULTS

The distribution of sociodemographic and work-life characteristics of operating room nurses are given in Table 1. The operating room nurses' median age was determined to be 30, with most of them being female and married. Most of the nurses included in the sample were determined to have an undergraduate degree and to work in the operating room as a staff nurse on the day shift.

Mean scores for ORPES and its sub-dimensions are given in Table 2. When examining the means from the subdimensions of ORPES, the operating room nurses were observed to have scored highest on the suitability for the resting subdimension and lowest on the noise control subdimension.

Findings related to the physical environment effect of the operating room nurses are given in Table 3. It was determined that the mean score of the female nurses from the noise control sub-dimension was statistically significantly lower than the mean score of the male nurses ($p<0.05$). When the ORPES sub-dimension means are examined according to the working position; it was found that the mean score of the OR nurses in the sub-dimensions of effective use of the operating room, environmental safety, color compatibility, and temperature and humidity control was statistically significantly lower than the mean score of the nurses working in managerial positions ($p<0.05$). It was found that the mean score of the nurses with a total working duration of over 9 years in the temperature and humidity control sub-dimension was statistically significantly lower than the mean score of the nurses with a working duration of 9 years or less ($p<0.05$). And it was found that the mean score of the nurses working in the day/night shift in the sub-dimensions of the effective use of the operating room, architectural functionality in the operating room, environmental safety, and color compatibility was found to be statistically significantly lower than the mean score of the nurses who work constantly during the daytime ($p<0.05$).

The findings regarding the effect of the ORPES subdimensions on the effective use of the operating room subdimension are given in Table 4. The operating room physical environment survey model, which investigates the effects of the subdimensions of architectural functionality in the operating room, lighting efficiency, environmental safety, suitability for resting, noise control, color compatibility, and temperature and humidity control in the operating room, was found to be statistically significant ($F = 58.901$; $p < 0.01$), with the explanatory power of the model also turning out to be significant ($R^2 = 0.648$).

DISCUSSION

Operating rooms are areas upon which the patient is highly dependent and where intense stress is experienced, fast, and correct decision-making is vital, teamwork is carried out, and advanced surgical techniques are used in light of high technology and new information. The success of a surgery is directly proportional to surgical knowledge, techniques, skills, and quality of care. Another important factor in the success of a surgery is the adequacy of the environment in which the surgery is performed. Using this information, the findings obtained from this research that has been carried out to examine the effect the physical environment has on operating room nurses' effective use of the operating room will now be discussed in line with the literature.

The professional work experience of the nurses participating in the study being 9 years with the work experience of nurses in the operating room only being 4 years can be explained by how newly graduated nurses are assigned to other units before the operating room due to the specialized nature of an operating room. In addition, given that the median age of the nurses is 30 years old, they are expected to have a median work experience of 9 years. Most of the nurses being married suggest that they generally prefer to work during the day. The predominance of female nurses in this study can be explained by the labor turnover rate in specialized units such as operating rooms being lower than in other units and males not being approved to work as nurses until 2009. The findings from Sayın and Eğri also parallel the ones in this study (14).

The design and layout of the work environment have a very significant effect on increasing productivity and preventing physical injuries and the work environment should be designed according to how individuals intend to use it (13). Blegen et al.'s (15) study reported a lack of physical resources to be effective in the occurrence of undesirable events in the work environment, while Incesesli's (16) study found 57.5% of nurses to have been exposed to trauma due to negative occurrences in the physical environment, with this percentage being 34.5% in Karayemişoğlu's (17) study. The high mean for the subdimension of effective use of the operating room in the current study supports the literature and suggests that nurses' efficiency will be supported by providing operating rooms with an appropriate layout, comfortable movement, and sufficient space. Operating rooms should be built separately from other departments on hospital buildings' top or bottom floors. The reason for this is to avoid the possibility of interdepartmental contamination by separating these rooms from general hospital traffic and ensuring that they are close to surgical wards and intensive care units (18,19). Güner and Kıreker (20) observed 76.2% of the operating rooms in their study to be located on the same floor as surgical services and 57.1% on the same floor as intensive care units. This study found a high mean score for the architectural functionality subdimension regarding operating rooms and determined the location of the operating room in the hospital and its distance to other medical units to positively affect nurses' effectiveness. This result suggests easy access to other units to be beneficial for ensuring time management and preventing physical fatigue. Regarding operating room lighting, general and local lighting should be adequate and complement one another in terms of color characteristics (21). Karayemişoğlu's (17) study found 16.7% of nurses to have been negatively affected by inappropriate lighting. In parallel with Karayemişoğlu's findings, the current study has found a high mean score for the lighting effectiveness subdimension, which suggests that inappropriate lighting in operating rooms can affect nurses' effectiveness because of negative occurrences such as pain, itchiness, and increased risk of visual errors.

While environmental factors constitute 20% of occupational accidents, factors such as non-ergonomic conditions and wet/slippery floors are considered among the reasons for occupational accidents caused by the environment and pose significant risks (11). This study found a high mean score for the environmental safety subdimension. In line with this result, creating a safe and positive working environment can be said to be able to reduce occupational accidents and allow health workers to provide higher-quality care. A lack of restrooms and eating areas in operating rooms is one significant factor that affects the health of working individuals. Göktepe's (22) study found 56.3% of nurses to be concerned about being provided with a suitable environment for resting and dressing. They stated that this would positively affect their productivity. This current study also found a high mean score for the subdimension of suitability for resting, and the nurses to agree that they can work more effectively with conditions that are suitable for resting; this result also parallels Göktepe's study.

When comparing the ORPES subdimension means by gender, male nurses were found to be more affected by noise in the operating room than female nurses. Özkoç's (23) study determined female nurses to score the variable "noise in the work environment negatively affects my health and productivity" at a higher level than male nurses, which is found to be incompatible with the current findings. The results from the current study suggest that male nurses are more sensitive about noise and feel a greater negative effect from noise on their work stress. When comparing the ORPES subdimension mean scores with respect to work position, the nurses who work in managerial positions were determined to and to exhibit a more positive attitude and have statistically significantly higher means for the subdimensions of the effective use of the

operating room, environmental safety, color compatibility, and temperature and humidity control than the mean scores from the operating room nurses. This significance can be associated with the fact that nurses working in managerial positions have a wider range of duties, authorities, and responsibilities; are more knowledgeable about the operating room layout and operation procedures than those working as operating room nurses, and to be competent regarding the requirements. When comparing the ORPES subdimension mean scores according to the nurses' overall work experience, a statistically significant difference has been found between the mean score for the temperature and humidity control subdimension mean of nurses with more than 9 years of work experience and the same mean score of nurses with 9 years or less of work experience. In addition, nurses with less work experience were more often found in the operating room and to be more affected by negative occurrences regarding the temperature and humidity control applications. This significance can be explained by nurses with more than 9 years of work experience having had time to adapt to the special temperature and humidity of operating rooms and to be less affected by imbalances due to their experience in the profession. Studies indicate working in shifts or on a shift system negatively affects the physiological and psychological health of individuals; this in turn negatively affects the safety of both employees and patients. In addition, a significant relationship exists between nighttime insomnia, decreased attention span, and decreased performance regarding cognitive functions (24-26). When comparing the subdimension mean scores for the physical environment of the operating room in terms of work style, the mean scores for the subdimensions of the effective use of the operating room, architectural functionality in the operating room, environmental safety, and color suitability of nurses who work in shifts are found to be statistically significantly lower than the means of nurses who consistently work during the daytime. These findings agree with the literature. This result can also be associated with the fact that nurses working in the shift system are less affected by the problems experienced in the operating room environment due to the negative effects of shift work.

CONCLUSION

This study has examined the effects of the physical environment of the operating room on nurses and shown the physical environment of the operating room to have quite an effect on nurses' effectiveness at work. Male nurses were determined to be more affected by noise in the operating room and operating room nurses who work in managerial positions to pay more attention to processes such as the effective use of the operating room, ensuring environmental safety, color, and temperature and humidity control in the operating room. Nurses who work constantly on the day shift were determined to mostly care about the effective use of the operating room, providing architectural functionality in the operating room, environmental safety, and color compatibility. As a result, the study has determined the subdimensions of architectural functionality, environmental safety, suitability for resting, color compatibility, and temperature and humidity control in the operating room to have positive effects on the nurses' effective use of the operating room. Establishing safe working environments in operating rooms, providing appropriate physical conditions, realizing effective patient and employee traffic, regular placement of devices and instruments, and providing the necessary space and conditions for health workers to work efficiently are akin to links on a chain: If one link in this system is disrupted, negative events can be experienced in the work environment and the safety of those under the care of healthcare workers can be placed at risk. For this reason, continuously evaluating the working environment in operating rooms and identifying the conditions that adversely affect the safety of patients and employees will increase the work effectiveness and satisfaction of health workers and positively impact the quality of patient care.

Ethics Committee Approval: This study was approved by the ethics committee of Non-invasive Clinic Ethical Committee of Istanbul University Cerrahpaşa (date: 15.10.2010; no:679).

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

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

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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RESEARCH ARTICLE
DOI: 10.26650/CURARE.2023.1348106
CURARE - Journal of Nursing 2023;3:9-16

Moral Distress and Intention to Leave Job with the Attitudes Towards Futile Treatments in Nurses: A Cross-Sectional Study

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Citation: Sert Kasim D, Oflaz F. Moral distress and intention to leave job with the attitudes towards futile treatments in nurses: a cross-sectional study. CURARE - Journal of Nursing 2023;3:9-16. https://doi.org/10.26650/CURARE.2023.1348106

ABSTRACT

Objective: This study aimed to evaluate the relationship between attitudes toward futile treatments, moral distress, and intention to leave the job of nurses.
Materials And Methods: This study has a descriptive and correlational design and was carried out with 425 nurses in April-May 2021 in Istanbul. The data were collected using a Personal Information Form, The Nurses' Attitudes Towards Futile Treatment Scale, the Moral Distress Scale, and the Intention to Leave Scale. Data analysis includes the Kruskal Wallis test, independent samples t-test, ANOVA, and regression analyses.
Results: More than half of nurses (51.4%) had never heard of the "futile treatment" concept. The Nurses' Attitudes Towards Futile Treatment scores had a positive correlation with Moral Distress scores ($r=0.295$, $p<0.001$) and a negative correlation with Intention to Leave scores ($r=-0.356$, $p<0.001$). Also, Moral Distress Scores negatively correlated with Intention to Leave scores ($r=-0.260$, $p<0.001$).
Conclusion: The moral distress seemed related to practicing futile treatments. Considering these results, it's thought that the protocols that hospitals will prepare for futile practices will be an essential step in preventing ethical dilemmas and moral distress experienced by nurses.
Keywords: Attitude, ethics, nurse, futile treatment, moral distress, intention to leave

INTRODUCTION

The treatments that do not contribute to the recovery of patients or improve their quality of life are called "futile treatments" in the literature. The most widely accepted definition of "futile treatment," published by five major intensive care associations, is the treatment that does not have the physiologically expected effect on the patient (1,2). Although there is still no consensus on the definition of the concept of futile treatment and determining criteria, the concept of "medical futility" was introduced to the medical ethics literature in 1990 and has become a growing area of interest today (3).

The futility of the treatments applied to the patients is a decision that the team should take with a holistic view. The absence of a framework for that kind of treatment can lead to ethical dilemmas among healthcare professionals. Also, the fact that nurses do not have a voice in patients' treatment decisions and that they must apply treatments they disagree with can cause psychological problems such as depression, burnout, and moral distress (2, 4, 5).

Moral distress is a consequence of knowing the right thing to do while being in a nearly impossible situation (6, 7). For nurses, applying futile treatments is one of the reasons for moral distress during end-of-life care (8, 9). Other causes are a lack of staff and resources, disrespectful behaviors, limited involvement with the plan of care, conflict with colleagues, and negative attitudes of managers (9, 10).

Moral distress can cause physical (headaches, flutter, and vomiting), psychological issues (anxiety, depression, guilt, regret, despair, and low self-esteem), and problems in close relationships, especially with family members (11, 12). If not appropriately managed, moral distress leads to decreased job

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Submitted: 22.08.2023 • **Revision Requested:** 11.09.2023 • **Last Revision Received:** 20.09.2023 • **Accepted:** 27.09.2023 • **Published Online:** 00.00.0000

satisfaction, increased nurse turnover rates, and increased intent to change the working area or leave the profession (3, 9, 13, 14).

Cavaliere et al. (15) found that 10% of nurses and Hamric et al. (16) found that 20% were considering leaving the job. Moral distress might be the hidden cause of these high rates. Also, the moral distress caused by futile treatments in nurses negatively affects the psychosocial integrity of nurses and, therefore, the quality of care they provide to the patient. Although the lack of knowledge and framework about ethical subjects causes problems in nurses, more studies on this subject need to be done. Investigating this issue, revealing its negative consequences, and raising awareness to make the necessary arrangements are essential. Consequently, this study explored the nurses' attitudes towards futile treatments and the relationship with moral distress, intention to leave the job, and other personal factors. It is thought that the study's results will emphasize the importance of the problems experienced by nurses during the application of futile treatments and shed light on future studies to be conducted to eliminate these problems.

MATERIALS AND METHODS

Study Design

This study has a descriptive and correlational design.

Study Procedure and Sample

The study was conducted via an online survey in April-May 2021 in Istanbul. Based on Laurs et al.'s (17) study, in which they investigated the relationship between intention to leave the job and moral distress, GPower 3.1.9.6 software was used with an effect size of 0.154, a first-type error of 0.05 and a power of 0.80 and it was calculated 328 participants as the sample size. Of 478 nurses who accessed the online survey, 425 nurses who fulfilled the scales completely were the sample of this study. The nurses were invited to complete the survey using the 'Koç Qualtrics' system, with the instructions and informed consent form on the survey link. Multiple logins to the system are blocked.

Data Collection Tools

The data were collected using a Personal Information Form, The Nurses' Attitudes Towards Futile Treatment Scale, the Moral Distress Scale, and the Intention to Leave Scale.

Personal Information Form: The form consists of 22 questions, including the socio-demographics and professional characteristics of the participants, such as age, gender, educational and marital status, working experience as a nurse, units where they worked, and their opinions about end-of-life care and futile treatments.

Table 1: The comparisons of nurses' socio-demographics with scale scores

	n	%*	Attitudes Towards Futile Treatment (Mean ±SD)	Moral Distress (Mean ±SD)	Intention to Leave S (Mean ±SD)
Gender					
Male	109	25.6	41.59±8.67	17.95±38.51	18.24±4.05
Female	316	74.4	37.40±8.16	47.17±64.98	16.55±4.92
t p			4.191 **<0.001**	4.970 **<0.001**	-3.132 **0.002**
Age					
21-25	124	29.0	40.22±7.50[b]	49.70±65.47	16.49±4.45[b]
26-30	183	42.8	39.91±8.79[b]	34.42±60.73	17.92±4.48[b]
31-40	91	21.3	40.67±9.71	34.93±54.12	16.54±5.21[b]
41+	29	6.7	45.52±9.02[a]	50.60±51.82	12.93±4.49[a]
F p			16.47 **0.011**	10.48 0.106	20.44 **0.002**
Marital Status					
Married	237	55.8	40.09±8.65	38.31±55.35	17.31±4.42
Single	188	44.2	41.07±8.82	40.77±66.32	16.62±5.12
F p			-1.097 0.273	-.367 0.714	1.317 0.189
Educational Status					
Health Voc.Sch.	79	18.6	36.55±6.37[a]	10.73±31.76[a]	18.64±3.23[a]
AS	37	8.7	38.17±12.02[c]	39.31±73.46	17.20±6.14
BSc	204	48.0	42.26±8.45[b,c]	53.68±65.17[b]	15.96±4.72[b]
MSc	105	24.7	41.39±8.42[b]	39.25±57.79[b]	17.35±5.04
F p			9.46 **<0.001**	8.80 **<0.001**	**0.001**

** Missing answers were not displayed in n and % counts.*
t: Independent Samples t-test**, H:** Kruskal Wallis Test, **F:** One Way ANOVA
AS: Associate in science, **BSc**: Bachelor of Science, **MSc**: Master of Science
a,b: There are statistically significant differences between the a and b groups.
c: There are statistically significant differences between c groups.

The Nurses' Attitudes Towards Futile Treatment Scale (NATFTS): The scale was developed by Yıldırım et al. (4), consists of 18 items, 4 sub-dimensions, and uses a 5-point Likert-type scale: "I definitely agree" (1 point), "I agree" (2 points), "I am undecided" (3 point), "I disagree" (4 points), "I definitely disagree" (5 points). The Scale's sub-dimensions are Beliefs (1-7), Decision-Making (8-11), Ethical Principles and Law (12-14), and Dilemma and Responsibilities (15-18).

Cronbach's Alpha value was 0.72 in the original version of the scale. Possible scores on the scale range from 18-90, with lower scores indicating that futile treatment should not be applied, while high scores argue that futile treatment can be applied under strict rules. Cronbach's Alpha value was 0.81 in this study.

Moral Distress Scale (MDS): The Moral Distress Scale, developed by Hamric et al. (16), and adapted to Turkish by Karagözoğlu et al. (18), consisting of 21 expressions covering the frequency and level of discomfort, was designed to measure the frequency and level of moral distress in nurses. Cronbach's Alpha value was 0.88 in the Turkish validity and reliability study.

On the 5-point Likert-type, the level of participation in frequency expressions was scored to mean "0 = never", "4 = too often," and the level of involvement in discomfort level expressions was scored to mean "0 = never", "4 = too much". Possible scores on the scale range from 0-336. Higher scores indicate higher moral distress. Cronbach's Alpha value was 0.92 in this study.

Intention to Leave Scale (ILS): The intention to Leave Scale was developed by Wayne et al. (19) as 5 items. The reliability study of the Turkish version was conducted by Avcı and Küçükusta (20). The measurement levels were expressed as "Strongly Disagree" (1 point), "Disagree" (2 points), "Neither Agree nor Disagree" (3 points), "Agree" (4 points), and "Definitely Agree" (5 points). The score range is 0-30. Higher scores indicate a higher intention to leave the job. In the Turkish validity and reliability study, Cronbach's alpha value was 0.72, and it was 0.80 in this study.

Statistical Analysis

Descriptive data were evaluated by frequencies, means, standard deviation, and percentile. Shapiro Wilk was used for the normality test. Comparisons among the scale scores

Table 2: Comparisons of nurses' professional characteristics with scale scores

	n	%*	Attitudes Towards Futile Treatment (Mean ±SD)	Moral Distress (Mean ±SD)	Intention to Leave (Mean ±SD)
Task					
Staff Nurses	356	83.8	40.27±8.44	40.51±61.00	17.04±5.12
Charge Nurses	48	11.3	40.72±10.54	26.60±57.85	17.06±4.64
Other**	21	4.9	45.46±7.61	61.80±49.91	15.20±6.46
F p			6.325 **0.042**	8.761 **0.013**	0.609 0.738
Professional Experience					
0-1 years	51	12.2	41.72±7.66[a]	42.77±62.41[b,c]	16.55±4.04[b]
2-3 years	128	30.7	40.01±7.22	25.64±54.11[c]	18.40±3.97
4-5 years	75	18.02	38.38±8.93	14.48±43.78[a]	20.08±3.34[a]
6-10 years	74	17.7	36.70±10.20 [b]	30.41±62.78	18.70±4.04
11+ years	88	21.1	40.59±10.26	36.48±48.69[b]	16.08±5.03[b]
H p			13.92 **0.008**	20.99 **<0.001**	20.38 **<0.001**
Units Where Nurses Worked					
Emergency	**33**	**7.9**	**40.13 ± 8.18**	**39.51± 53.79**	**17.33±3.59**
Oncology/Hematology/ BMT/Palliative	**89**	**21.2**	**35.93 ± 5.81[d]**	**13.25 ± 40.89[a]**	**19.74±3.41[b.e.c]**
Outpatient Services	**30**	**7.1**	**45.84 ±11.94[b.e]**	**62.61 ± 66.05[b.e]**	**12.88 ±4.39[a]**
Inpatient Service	**87**	**20.7**	**41.97 ±8.76[b.e]**	**54.32 ±66.27[b.e]**	**15.39 ±4.04[d]**
Intensive Care	**156**	**37.1**	**40.65 ± 8.42[e]**	**44.58 ± 66.37[b]**	**17.00 ± 4.96[b.c]**
H p			**49.808 <0.001**	**55.937 <0.001**	**54.467 <0.001**
Experience In the End-Of-Life Patient Care Services					
Yes	321	75.5	40.15 ±8.93	39.72±63.64	17.48±4.78
No	104	24.5	41.73±7.96	38.46±49.27	15.44±4.36
t p			1.50 0.132	-0.1 0.87	-3.35 **0.001**

** Missing answers were not displayed in n and % counts.*

*****At the time of data collection people who were not working, retired, and working in administrative units or academic staff were classified in the other group.***

t: Independent Samples t-test. **H:** Kruskal Wallis Test. **F:** One Way ANOVA

a.b: There are statistically significant differences between the a and b groups.

c: There are statistically significant differences between c groups.

d.e: There are statistically significant differences between the d and e groups.

and descriptive data were evaluated by applying the Kruskal Wallis test, Independent Samples t-test, and The one-way analysis of variance (ANOVA) on SPSS (Statistical Package for Social Sciences) 25.0 for Windows. The Pearson correlation coefficient was used for the relationship between scale scores, and regression analysis was performed wen researching the relationship between scales. For significance, $p < 0.05$ and 95% CI were assumed in the data analysis.

Ethical Considerations

The study was reviewed and approved by the Ethics Committee of Koç University (Approval Date: 29.01.2021, Approval Number: 2021.034.IRB3.015). The participants were informed in the consent form on the first page of the online questionnaire that they could leave the study at any time, that their data would not be shared with anyone other than the researcher, and that their privacy would be protected.

RESULTS

74.4% of nurses (n=316) were female and 25.6% (n=109) were male. The age range was 21-59 (mean 29.17 years). 18.6% of the nurses (n=79) had a vocational high school diploma, 8.7% (n=37) had an associate degree, 48.0% (n=204) had a bachelor's degree, and 24.7% (n=105) had MSc and above. Their professional experience ranged from 1-37 years (mean five years) (Table 1).

Of the nurses, 37.1% were working in intensive care units, 20.7% in inpatient services (surgical, pediatric, internal medicine, obstetrics, geriatrics, psychiatry, and COVID-19), 21.2% in oncology/hematology/bone marrow transplantation (BMT)/palliative care, 7.9% in emergency departments, and 7.1% in outpatient services. 75.5% of nurses have worked in an end-of-life service for at least one month, and 24.5% have never worked in an end-of-life service during their professional life (Table 2).

Nurses' experiences with end-of-life care, death, and futile treatments

Table 3 shows the experiences of nurses related to end-of-life care and death. Most of the nurses had experienced death in their patients, and they had cared for a dying patient. Regarding the continuation of life-supporting treatments in end-of-life patients. 62.8% stated that life-supporting therapies should not be continued.

In addition, 76.9% of nurses stated that they had never participated in the decision-making to terminate treatment while they were providing end-of-life care. Most nurses stated there is no procedure for the decision-making for end-of-life treatments where they work, and most noted the need for guidelines on continuing end-of-life treatments. Almost half of the nurses indicated that they had never heard of the concept of futile treatment before.

Socio-demographics of nurses and Moral distress, Futile Treatment Attitude, and Intention to leave

There was a statistically significant difference between gender and the Nurses' Attitudes Towards Futile Treatment Scale overall score ($p<0.001$). Intention to Leave Scale score ($p=0.002$) and Moral Distress Scale score ($p<0.001$). Nurses' Attitudes Towards Futile Treatment Scale score of female nurses

Table 3: Nurses' experiences with end-of-life care, death, and futile treatment

Encountering death during professional experience	n	%
Yes	404	95.1
No	21	4.9
Caring for a dying patient during his professional experience		
Yes	403	94.8
No	22	5.2
Consideration about the continuation of life-supporting treatments in terminal (end-of-life) patients		
Yes	150	37.2
No	253	62.8
Participation in decision-making to terminate treatment during end-of-life care		
Yes	93	23.1
No	310	76.9
Having a protocol or a code of conduct used for the decision-making process for end-of-life treatments in the institution where they work at		
Yes. we have	22	5.5
No. we haven't	381	94.5
The need for guidelines on decisions not to start or end the treatments at end-of-life care		
Yes	311	77.2
No	92	22.8
Being familiar with the concept of "Futile Care"		
Have heard	196	48.6
Haven't heard	207	51.4

** Missing answers were not displayed in n and % counts.*

was higher than men. It was observed that female nurses had higher Moral Distress Scale scores but lower Intention to Leave Scale scores than males (Table 1).

Older nurses have had higher nurses' attitudes towards futile treatment scale scores and lower intention to leave scale scores. Marital status did not seem related to any scale scores ($p>0.05$). According to educational status, health vocational high school graduates had lower nurses' attitudes towards futile treatment scale and moral distress scale scores and higher Intention to Leave Scale scores. The intention to leave their jobs as health vocational high school graduates was higher than that of bachelor's degree nurses. In addition, high school graduate nurses have had lower moral distress compared to other groups (Table 1).

Professional characteristics of nurses and Moral distress, Futile Treatment Attitude, and Intention to leave

Staff nurses had lower nurses' attitudes towards futile treatment scale scores ($p=0.042$) and higher moral distress scores than charge nurses ($p=0.013$). Nurses with 0-1 years of experience had higher scores on the nurses' attitudes towards futile treatment scale than nurses with 6-10 years of experience. In addition, this group had higher moral distress scale scores than other groups. In addition, this group had higher moral distress scale scores than other groups. Intention to leave scale scores of nurses with 4-5 years of experience were statistically significantly higher than those of nurses with 0-1 and 11+ years of experience.

The Intention to leave scale scores of outpatient care nurses were lower than those of palliative care, intensive care, and oncology/hematology/BMT nurses. The Intention to leave scale scores of oncology/hematology/BMT nurses were higher than those of intensive care nurses, and the Intention to Leave Scale scores of palliative care and oncology/hematology/BMT nurses were higher than those of inpatient ward nurses (Table 2).

Oncology/hematology/BMT nurses experience lower moral distress than outpatient, inpatient, and intensive care nurses. In addition, it was observed that palliative care nurses experienced less moral distress than outpatient and inpatient nurses. There was a statistically significant difference in the Intention to Leave Scale score and the being worked in the end-of-life patient care services. Nurses working in end-of-life care services tend to quit their jobs more than those who do not work.

Correlations among the scores of the scales

Nurses who believe that futile treatments should be applied under strict rules are less likely to leave their jobs ($r=-0.356$, $p<0.001$) but have higher moral distress scores ($r=0.295$, $p<0.001$). A low-level negative relationship was found between the moral distress scale and the intention to leave scale scores ($r=-0.260$, $p<0.001$). As moral distress increases, the intention to leave decreases.

In the regression analysis, gender, age, year of experience, working in oncology/hematology/BMT and outpatient services, and intention to leave variables were related to the nurses' attitude towards futile treatment scale score. overall, the regression model described the 20.4% change in nurses' attitude towards futile treatment scale scores ($p<0.001$) (Table 4).

DISCUSSION

More than half of the participants in this study stated that they had not heard about futile treatment before the study. They also stated that life-sustaining treatment should not be continued in patients at the end of life who have no chance of recovery. Similarly, Özden et al. (21) and Altınayak et al. (22) indicated that Intensive Care and Neonatal Intensive Care Unit staff were not aware of the concept of futile treatment. In addition, Özden et al. (21) and Orkun et al. (23) found that nurses did not consider the use of futile treatments to be appropriate or correct.

Table 4: Regression analysis of socio-demographic characteristics, professional characteristics, intention to leave scale, and moral distress scale scores with nurses' attitudes towards futile treatment scale score

	B	Beta	t	P	GA		VIF
					Min	Max	
			NAFTS (R2=0.204; F= 7.738; p<0.001)				
Parameter	31.901		5.131	**<0.001**	19.656	44.147	
Gender	-3.84	-0.18	-3.24	**0.001**	-6.17	-1.51	1.02
Age	0.50	0.31	1.99	**0.047**	0.00	1.04	7.73
Professional Experience	-.049	-0.40	-2.47	**0.014**	-0.08	-0.01	8.10
Health Vocational School	-1.91	-0.09	-1.34	0.18	-4.72	0.88	1.43
Associate in Science	-2.50	-0.07	-1.18	0.23	-6.67	1.66	1.31
Bachelor's in Science	3.37	0.18	3.16	**0.002**	1.27	5.47	1.04
Oncology/Hematology/BMT	-3.68	-0.19	-3.06	**0.002**	-6.05	-1.31	1.18
Outpatient Service	6.93	0.16	2.74	**0.007**	1.95	11.91	1.11
Inpatient Service	2.88	0.12	1.87	0.06	-0.15	5.92	1.29
Emergency Service	1.35	0.04	0.68	0.49	-2.55	5.27	1.26
Intention to Leave Scale Score (ILS)	-0.72	-0.34	-5.23	**<0.001**	-0.99	-0.45	1.25

In some other studies, nurses considered some treatments to be futile because patients have no chance of responding to the treatment, treatments can provide little benefit to the quality of life, do not contribute to the prognosis of the disease, and prolong the duration of pain and suffering. In addition, futile treatments due to serious complications such as pressure ulcers, catheter-related infections, and ventilator-associated pneumonia result in additional costs. Therefore, nurses may argue that futile treatment practices should not be continued for these reasons (24, 25, 26).

In this study, most nurses had never been involved in the decision-making process for withholding/terminating treatment. This finding was similar to previous studies (21, 23, 27). In addition, more than half of the nurses needed a protocol for this process in their institution. In his study, Stewart (28) emphasized the importance of working with the ethics committee and legal decision-makers, when necessary, as well as a multidisciplinary team approach in the decision-making process regarding interventions.

According to this study, female nurses were more likely than male nurses to agree that futile treatment should be framed by strict rules and to experience higher levels of moral distress than male nurses; however, male nurses had higher levels of intention to leave the job. Some previous studies also showed higher scores in women and suggested that women were more likely to agree that futile treatments should be within a legal framework (29, 30). On the contrary, Dyo et al. (31) suggested that men are more likely to quit their jobs because they experience higher moral distress. Therefore, this relationship should be clarified by advanced research methods in the future.

In the regression analysis, gender, age, year of experience, working in oncology/hematology/BMT and outpatient services, and intention to leave score were related to the nurses' attitudes towards futile treatment scores, and moral distress did not show a direct effect on the nurses' attitudes towards futile treatment scores. Female nurses and older nurses were more likely than males and younger nurses to argue that futile treatment should be applied according to strict rules than men and younger ones. On the contrary, Rostami et al. (32) find no statistically significant differences in the perception of futile treatment according to socio-demographic characteristics such as gender, age, and marital status. It has been suggested that professional experience and growing older may contribute to nurses' perceptions of futile treatments and their results. However, these findings have a dichotomy; according to the experience year variable comparisons, the junior nurses seem to have higher scores on Nurses' attitudes towards futile treatment than 6-10 years. Banner stated that (33), new nurses who just started need rules when working. Therefore, when they are faced with an ethical dilemma, they advocate doing their practice according to the rules. On the other hand, nurses with 6-10 years of experience have achieved mastery in their profession. In a qualitative study conducted by Chapman et al. (34), they found that gaining mastery in the nursing profession is a facilitating factor in coping with and adapting to stressors in work life. These explanations may identify our findings.

The intention to leave score of outpatient nurses was lower than that of in palliative care, intensive care, and oncology/hematology/BMT nurses. The Intention to leave score of oncology/hematology/BMT nurses was higher than that of intensive care nurses, palliative care nurses, and other inpatient service nurses. Nurses who work with end-of-life patients are thought to be more likely to leave their jobs because the stress they experience is higher.

Contrary to this result, Lambden et al. (2) found that nurses who classified the treatment as futile were more likely to quit their jobs. Asayesh et al. (35) found that as intensive care nurses' attitudes towards futile treatment scores increased, their moral distress increased. Some authors emphasized that nurses do not have a voice in the end-of-life care decision-making process and applying futile treatments increases moral distress (36). Contrary to what was expected at the beginning of this study, there was a negative low relationship between the Moral Distress score and the Intention to Leave score. In our study, as the level of moral distress increases, the intention to leave is decreased in our study. Similarly, Kayar and Erdem (37) observed that the discomfort of moral distress has a positive effect on job commitment. The result is that moral distress is considered to be a binding factor. However, Whitehead et al. (38) suggested that moral distress was higher in those considering quitting their jobs.

CONCLUSION

More than half of the nurses stated that they had never heard of the concept of futile treatment, and most of the nurses stated that there were no protocols or standards on the subject in the institution where they worked and that they had never been involved in the decision to withhold/terminate treatment before.

Women and less experienced nurses were more likely than men to advocate that futile treatment should be governed by strict rules. Nurses working in Oncology/Hematology/BMT services did not seem to need strict rules for futile treatment.

RECOMMENDATIONS

Nurses need to be educated about ethics, futile care practices, and their consequences in undergraduate education and in-service training. It is suggested that future studies should be conducted in face-to-face contact with the participants and that the research variables should be examined in depth. As an unmentioned concept, futile treatments and their impact on the care environment should be evaluated in more depth.

Limitations

As the study was conducted using self-administered scales via a digital survey, generalization of the results must be done cautiously.

Acknowledgements

The authors would like to thank the nurses who participated in this research.

Ethics Committee Approval: This study was approved by the ethics committee of the Ethics Review Committee of the Koç University (Approval Date: 28 January 2021, Approval Number: 2021.034.IRB3.015).

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

Author Contributions: Conception/Design of Study- D.S.K., F.O.; Data Acquisition- D.S.K.; Data Analysis/Interpretation- D.S.K., F.O.; Drafting Manuscript- D.S.K.; Critical Revision of Manuscript- F.O.; Final Approval and Accountability- D.S.K., F.O.

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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RESEARCH ARTICLE
DOI: 10.26650/CURARE.2023.1360513
CURARE - Journal of Nursing 2023;3:17-22

Evaluation of Caregiver Burden in Patients with Alzheimer's Disease

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Citation: Dilek F, Unal A, Sahin D. Evaluation of caregiver burden in patients with alzheimer's disease. CURARE - Journal of Nursing 2023;3:17-22. https://doi.org/10.26650/CURARE.2023.1360513

ABSTRACT

Objective: This descriptive study was carried out to evaluate the caregiver burden of disease in patients with Alzheimer's disease (pwAD).
Materials and Methods: The research was carried out with 30 Alzheimer patients and caregivers followed in the neurology outpatient clinic of a university hospital between July 2021 and September 2021. Alzheimer patient's research data were collected with Patient information form, Neuropsychiatric Inventory, Clinical Dementia Rating Scale, The Physical Self-Maintenance Scale and Activities of Daily Living Scale. Caregivers applied the Caregiver information form, Beck Depression Scale, Beck Anxiety Scale, and Caregiver Burden Scale. Data analyses were done with the SPSS 18.0 computer program.
Results: The mean age of Alzheimer's patients was 76.54±7.79 years, 50% were women and the mean year of diagnosis was 2.38±1.98. The mean age of caregivers was 56.50±17.89, 83.3% were women, 83.3% were married and 66.3% were housewives. It was found that the burden of caregiving increased as the patients' behavioral problems, forgetfulness levels, disease stage and dependency level in daily living activities increased ($p < 0.01$).
Conclusion: The burden of care in Alzheimer's disease is positively related to the dependence of the patient on the caregiver and higher care burden increases the level of anxiety and depression in caregivers. Therefore, caregivers of AD patients need education and social support to ease the burden of care.
Keywords: Alzheimer, caregiver burden, caregivers, patient, care

INTRODUCTION

Dementia has emerged as a significant health issue due to the world's aging population and rising average life expectancy. The most widespread type of dementia is Alzheimer's Disease (AD) which comprises 50-70% of dementia patients. AD is defined as a progressive neurodegenerative disease that causes cognitive dysfunction, impairment in activities of daily living, and behavioral and psychological disorders (1,2). Over the age of 65, AD prevalence is 6–10%, and over the age of 85, it is 30–47%. After the age of 60, the prevalence doubles the size every five years (3). According to the data of the Ministry of Health; there were approximately 500 thousand patients diagnosed with Alzheimer's disease in our country as of 2018 (4). The early stage of AD is characterized by memory problems. As the disease progresses, destruction occurs in all cognitive areas. In the last stage, patients often die due to infections and systemic diseases (1,3).

Caregiving is defined as providing care for the physical and emotional needs of a family member at home. Caregivers provide care to individuals who frequently or daily require some level of continuing support with activities of daily living. Assistance with food, personal care, and transportation, as well as support for therapy and medical procedures, may be part of this task (5,6). Caregiver difficulties can be expressed as caregivers' difficulty in giving care to someone in need of care, feeling tense and under pressure. Caregiving difficulty is a multidimensional situation that causes physical, psychological, social, and economic problems in the caregiver (6).

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Submitted: 14.08.2023 • **Revision Requested:** 17.09.2023 • **Last Revision Received:** 19.09.2023 • **Accepted:** 20.09.2023 • **Published Online:** 00.00.0000

Clinical observations have reported that most of the people with AD (pwAD) stay with their spouses and children at home (7). Family members serve as the primary informal or unpaid carers for those receiving long-term care in their homes. The devastating process of AD continues for about 8-10 years. As the stage of the disease progresses, the patient's need for care and dependence on the caregiver increases. Familial / social relationships and working life are all negatively affected in individuals who care for pwAD. In addition to having an impact on daily activities, caregivers may also be more vulnerable to adverse health effects like stress, depression, and trouble maintaining a healthy lifestyle. (8,9). Valimaki et al. (2022) reported that depressive symptoms were present in AD caregivers and one-third of the caregivers experienced increasing depressive symptoms for five years. Hellis et al. (2022) found that AD caregivers experienced a lower quality of life due to increased anxiety levels, increased caregiver burden, financial distress, and lack of support. The present study aimed to evaluate the caregiver burden in caregivers of pwAD.

MATERIALS AND METHODS

Study Design

The research is a descriptive study that was carried out to evaluate caregiver burden in pwAD.

Sampling and Participants

The study was conducted with patients diagnosed with AD and their relatives/caregivers who applied to the neurology outpatient clinic in a research hospital. Patients diagnosed with Alzheimer's to be included in the study were determined retrospectively by scanning their files for the last 2 years. Then, in July 2021 and September 2021, the patients and their caregivers were called to the neurology outpatient clinic, and the data were collected by face-to-face interview method. The study was carried out with 30 caregivers and 30 patients who agreed to participate in the study and could speak Turkish.

Measures

The data were collected in two separate forms: prepared for pwAD and prepared for the caregiver.

Data Collection Tools for pwAD

Patient Information Form: Created by the researchers the form included questions about socio-demographic and clinical characteristics (1,10,11).

Neuropsychiatric Inventory-Questionnaire (NPI-Q): The caregiver answers questions about twelve behavioral domains (delusions, hallucinations, aggression, depression/ dysphoria, anxiety, elation, apathy, disinhibition, irritability/ lability, abnormal motor behavior, nocturnal/sleeping behavior, appetite, and eating changes) of the pwAD. The Neuropsychiatric Inventory Questionnaire (NPI-Q), which has been cross-validated with the conventional NPI, was created to provide a quick evaluation of neuropsychiatric symptomatology in common clinical practice settings (12). The NPI-Q is a validated informant-based interview that evaluates neuropsychiatric symptoms over the past month and is based on the NPI (13). The NPI-Q contains both additions. The NPI-Q is an intended survey that informants complete regarding the patients they care about. There is a survey question for each of the 12 NPI-Q domains, reflecting the key symptoms of that domain. Each domain query receives an initial "Yes" (present) or "No" response (absent). If the answer is "Yes," the informant then rates the severity of the symptoms that have been present over the past month on a 3-point scale and the impact of the symptom presentations on them (i.e., caregiver distress) on a 5-point scale. The NPI-Q offers ratings for each symptom's severity and distress, as well as overall severity and distress scores that represent the total of each domain's scores. More severe symptoms are indicated by higher ratings. The NPI-Q version was employed in the research (14).

Clinical Dementia Rating Scale – CDR: The scale used possible phases of cognition and function to determine. According to the results of the interview and exam, six separate categories (memory, orientation, judgment and problem-solving, home and hobbies, community affairs, and personal care) are evaluated over 5 points. Only impairment resulting from cognitive impairment is scored, and each domain is rated using one of five categories of impairment. Ratings of 0, 0.5, 1, 2, and 3 for each domain correspond to very mild, mild, moderate, and severe impairment, respectively. The global CDR score was computed with the system recommended by Morris (1997). Summarizing the results from all six areas results in box scores that range from 0 (no inadequacy) to 18. (maximal inadequacy). Global CDR ratings for dementia range from 0 (cognitively normal), 0.5 (very mild), 1 (mild), 2 (moderate), and 3 (severe). The widely used algorithm is accessible at http://alzheimer.wustl.edu/, the Knight ADRC website (14,16).

The Physical Self-Maintenance Scale (PSMS): The scale is based on the information provided by carers/caregivers in patients. Reliability has been reported in the 0.90 range. It is a scale that includes 6 items related to basic daily living activities (toilet, self-care, nutrition, physical ambulation, dressing, bathing). For each item, independence is scored as 1 and other parameters as 0 (14, 17).

Activities of Daily Living Scale (ADCS-ADL): It consists of 23 questions questioning the activities performed by the individual in the last month and to what extent the patient does these activities on individual own. It is performed with a score between 0-78 points, low scores indicate addiction (6). In our country, the internal consistency coefficient of the scale for Alzheimer's patients was reported as 0.93 by İnce et al. (18).

Data Collection Tools for Caregivers

Caregiver information form: Created by the researchers the form included sociodemographic characteristics, degree of kinship with the patient, and duration of cohabitation (1,10,11).

Tablo 1: Descriptive characteristics of Alzheimer's patients and their caregivers.

Variables		Alzheimer patient		Caregiver	
		n	%	n	%
Age Mean ± SD(Min.,Max.)		76.54±7.79 (57- 89)		56.50±17.89 (20- 83)	
Gender	Female	15	50	25	83.3
	Male	15	50	5	16.7
Marital status	Married	18	60	25	83.3
	Single	12	40	5	16.7
Education Status	Middle school and under	28	93.3	20	66.7
	High school and above	2	6.7	10	33.3
Professional status	Working	1	3.3	6	20
	Housewife	12	40	19	63.3
	Retired	17	56.7	5	16.7
Place of life (1/3)	Village- small- town	14	46.7	10	33.3
	Province- town	16	53.3	20	66.7
Live together	Wife	11	36.7	12	40
	Wife and children	15	50	18	60
	alone/ children	4	13.3	0	0
Children	Two and under ≤ 2	13	43.3	21	70
	Three and above ≥ 3	17	56.7	9	30
İncome	Medium-bad moderate / low	20	66.7	25	83.3
	Good / high	10	33.3	5	16.7
Chronic Disease	Yes	20	66.7	15	50.0
	No	10	33,3	15	50.0
Alzheimer's patient's diagnosis year Mean ± SD(Min.-Mak.)		2.38±1.98 (1- 8)		-	-
The proximity of the caregiver with the patient	Children (son-daughter)	-	-	12	40.0
	Wife	-	-	12	40.0
	Other (bride, groom, grandchild)	-	-	6	20.0
The duration of living together with Alzheimer's patient and caregivers Mean ± SD(Min.-Max.)		21.90±22.09 (0- 62)			

Beck Depression Scale: It evaluates depressive symptoms in the last week with 21 questions. As the score increases, the degree of depression increases (19). Its validity and reliability in our country were performed by Teğin (1987) and Hisli (1988). The cut-off points for the scale were determined as 17 points and the internal consistency coefficient was reported as 0.80 (20).

Beck Anxiety Scale: It evaluates anxiety symptoms in the last week with 21 questions. Higher scores indicate a higher degree of anxiety (15). The validity and reliability study for the Turkish population was conducted by Ulusoy et al (1996). The internal consistency coefficient of the scale was reported as 0.93 (21).

Caregiver Burden Scale: The scale developed by Zarit et al. in 1980 was adapted to Turkish society by İnci and Erdem in 2006. The internal consistency coefficient of the scale was reported as 0.95. The scale consists of 22 statements. It evaluates the impact of caregiving on an individual's life. The scale is likert type and scored from 0 to 4 (rarely, sometimes, often, and always). A minimum of 0 and a maximum of 88 points are obtained from the scale. As the scale score increases, the burden of caregivers increases (22).

Table 2: The relationship between caregiver burden of care and Beck depression scale and Beck anxiety scores.

		Caregiver Burden Scale
Beck Depression Scale	r	0.732
	p	0.000
Beck Anxiety Scale	r	0.535
	p	0.002

r: Spearman's rank correlation test *p<.001

Ethical consideration

Approval was obtained for the study by the Ethics Committee of Tekirdağ Namık Kemal University Faculty of Medicine with reference number 13/04/2021(2021.102.04.20) The study's participants were told about it, and their written agreement was obtained, attesting to their voluntary participation.

Statistical Analysis

Data analyses were performed with the SPSS 18.0 program. Mean, standard deviation, percentage, and minimum-maximum expressions were used to express the variables. The distribution of the data was analyzed with the Kolmogorov-Smirnov test of normality of distribution. Nonparametric tests (Mann Whitney U test or Kruskal Wallis test) were used in the analysis of the study due to the variables were not distributed normally. The evaluation of the relationships between the variables was used in Spearman's Correlation analysis because of data abnormal

Table 3: The relationship between caregiver burden scale with Alzheimer patients' neuropsychiatric inventory, physical self-maintenance scale clinical dementia rating scale, and activities of daily living scale.

		Caregiver Burden Scale
Neuropsychiatric inventory (NPI-Q)	r	0.611
	p	0.000
Physical self-maintenance scale (PSMS)	r	-0.706
	p	0.000
Clinical dementia rating scale (CDR)	r	0.578
	p	0.001
Activities of daily living scale (ADCS-ADL)	r	-0.495
	p	0.005

r: Spearman's rank correlation test *p<0.01

distributions. P value less than 0.05 was considered significant.

RESULTS

A total of 30 AD patients and caregivers were included in the study. The descriptive characteristics of the patients and caregivers are presented in Table 1. Caregivers were mostly female and married. Although all patients had social health security, 66.2% defined their monthly income as moderate or low. The mean year of diagnosis of Alzheimer's was 2.38±1.98 years and 66.7% of them had at least one concomitant chronic disease. 40% of the caregivers were the patient's child. The duration of living together with Alzheimer's patients and caregivers was found 21.90 years.

In this study, the relationship between the descriptive characteristics of the caregiver and the caregiver burden scale, Beck anxiety, and Beck depression scale was examined. There was no significant relationship between age, education level, employment status, where the caregiver lives, presence of chronic illness, degree of closeness to the patient, and duration of living with the patient (p>0.05). However, the burden of care scale scores was found to be higher in single caregivers than married ones, and depression scale scores were higher in women than men (p <0.05). The relationship between the caregiver burden scale Beck depression scale and Beck anxiety scores in the study are given in Table 2. A positive and highly significant correlation was found between the caregiving burden scores and the depression scores (r= 0.732 p <0.01). A positive and moderately significant relationship was found between the caregiving burden scores and the anxiety scores (r= 0.535 p <0.01).

The relationship between the caregiver burden scale with Alzheimer patients' neuropsychiatric inventory, physical self-maintenance scale, activities of daily living scale, and clinical dementia rating scale score is given in Table 3. A positive and moderately significant correlation was found between the caregiver burden scale and the neuropsychiatric inventory scale scores (r= 0.611 p<0.01). As the neuropsychiatric characteristics (delusions, hallucinations, agitation, depression, elevation, apathy, disinhibition, irritability, abnormal motor behavior, sleep changes, appetite changes) of the patient increased, the caregiver burden scale score increased. A negative and moderately significant relationship was found between the caregiver burden scale and the physical self-maintenance scale scores (r=-0.706 p <0.01). It was observed that as the physical self-maintenance increased, the caregiver burden also increased. A positive and moderately significant relationship was found between the caregiver burden scale and the clinical dementia rating scale (r= 0.578 p <0.01). A negative and moderately significant correlation was found between the caregiver burden scale and the activities of daily living scale (r=- 0.495 p <0.01). It was determined that as the individual's ability to do daily life activities (eating, dressing, shopping, etc.) increased, the caregiver burden decreased in caregiver.

DISCUSSION

In this study, we aimed to evaluate the sociodemographic and clinical features related to caregiver burden in pwAD. The results of socio-demographic features were like previous reported studies (8,23,24). The majority of pwAD were living with their family, the majority of the caregivers were women, and income levels were moderate or low. 40% of the caregivers were children, 40% were spouses, and 20% were daughter-in-law, groom, or grandchild. The reason can be associated with the fact that older adults' care is seen as a woman's duty in Turkish society (24). In the studies of Pudelewicz et al. (2019) 49% of the caregivers and 49.3% of the caregivers in the studies of Kalınkara and Kalaycı (2017) were stated as sons or daughters. A reason may be that in traditional societies, children are brought up as a guarantee of care for their parents (1,26).

In this study, we examined the relationship between the descriptive characteristics of the caregiver and the caregiver burden scale, Beck anxiety, and Beck depression scale. There was no significant relationship between age, education level, employment status, place of life, with whom the caregiver lived, chronic illness, degree of closeness to the patient, and the duration of living with the patient. However, the care burden was determined higher in singles caring for Alzheimer's patients than in married people and depression levels were higher in women than men. Altay et al. (2018) reported that caregivers who are not employed have a higher burden of care than those who are employed (26). Sallim et al. (2015) reported that 34% of caregivers of Alzheimer's patients had anxiety and 43% had depression. Most of the studies mentioned that depression and anxiety were higher in female caregivers and their spouses (27). According to our results supported by previous studies in the literature, we thought that the reason for the high level of depression in women may be related to the burden of multiple responsibilities on women in our society (such as homework, childcare, etc.). The reason why the burden of care is higher for singles may be that the responsibility is not shared with the spouse. In other words, it can be thought that the burden of the caregiver increases when different responsibilities are included in daily functions or as the time spent by the individual decreases and social communication decreases.

Depression and anxiety are among the main difficulties faced by caregivers of pwAD. Low life satisfaction, depression and anxiety levels of caregivers affect caregiver burden (28). In this study, we found a positive correlation between caregiver burden and the levels of depression and anxiety. Depression and anxiety were higher in caregivers with higher caregiver burden. This result, which is also supported in the literature, can be expected as a natural result of the increase in the burden of care (6,12). For example, in one study, anxiety and depression symptoms were found in less than half of the caregivers of Alzheimer's patients (30); in another study conducted with caregivers of elderly patients, it was reported that there was a moderate relationship between anxiety and care burden (31). In the study conducted by Akyar and Akdemir (2009), 74% of AD caregivers were diagnosed with depression after they started to give care. In line with these results, the point we want to emphasize is that the increase in the level of anxiety and depression can create a vicious circle, affect the level of quick and correct decision-making, negatively affect the caregiver's ability to cope with problems, and self-efficacy levels, and increase the burden of caregiving. Community-based organizations are typically poorly integrated into the medical visit and the healthcare system, although they can provide support and knowledge. The co-management programs are staffed by advanced practice nurses who are trained to understand the issues faced by people with dementia and their families are required to provide dementia care.

Our analysis also revealed that the burden of caregiving was higher in the caregivers of pwAD with higher disease stage, worse neuropsychiatric symptoms, and more dependent on the caregiver. When functionality is impaired, the patient's to perform daily activities increases (14,32). The emergence of behavioral problems increases caregiver burden more than cognitive disorders (32). Caregivers reported that they experienced the greatest difficulty when behavioral problems arose. Because these behaviors are defined as difficult and shameful behaviors to be managed by the caregiver and negatively affect the emotional bond between the patient and the caregiver (33). In addition, the control of behavioral changes affects the daily life of the caregiver negatively (not leaving him alone at home, worrying about exhibiting inappropriate behavior in public, hallucinations of the sick individual, etc.). We think that the caregiver's feeling/necessity of keeping the Alzheimer's patient under constant control and trying to explain that the problems in his/her environment are caused by the disease increase the caregiver burden and the level of anxiety and depression in the individual.

Limitation: The study was carried out in a single center. The results of the study cannot be generalized to Alzheimer's disease and caregivers but can provide an idea about the subject.

CONCLUSION AND RECOMMENDATIONS

The burden of care was found higher in singles than in married people and as caregiver burden increased, depression and anxiety levels increased. Depression level was determined to be higher in women than men. Alzheimer's patients were determined that the caregiver burden increased as the stage of demands, forgetfulness, neuropsychiatric disorder, and dependence on the caregiver in activities of daily living increased. Recommend because of findings.

- Alzheimer's disease awareness increase will arrange the organization of training programs,
- Performing the necessary screening tests by healthcare professionals in individuals who apply to a healthcare institution with a complaint of forgetfulness,
- Providing patient and family counseling to reduce the burden of care,
- Caregivers to directed to social support by health workers (care fees, free care centers, etc.) and recommend increasing the number of day care homes.

Acknowledgments: We are grateful to all patients and families for their participation in this study.

Ethics Committee Approval: Ethics Committee Approval: This study was approved by the ethics committee of the Ethics Committee of Tekirdağ Namık Kemal University Faculty of Medicine with reference number 13/04/2021(2021.102.04.20)

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

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

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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İSTANBUL UNIVERSITY PRESS

RESEARCH ARTICLE
DOI: 10.26650/CURARE.2023.1361787
CURARE - Journal of Nursing 2023;3:23-30

Challenges and Affecting Factors for Nurses in the Integration of Home Health Service and Palliative Care*

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Citation: Atakoglu Yilmaz R, Turen S, Istangir D. Challenges and affecting factors for nurses in the integration of home health service and palliative care. CURARE - Journal of Nursing 2023;3:23-30. https://doi.org/10.26650/CURARE.2023.1361787

ABSTRACT

Objective: This study aimed to determine the difficulties experienced by nurses working in the integration process of home health service and palliative care, and the affecting factors.
Material and methods: This is a descriptive study, and data were collected using the "Palliative Care Difficulties Scale (PCDS)," and the "Palliative Care Self-Reported Practices Scale (PCPS)." The study was conducted using an online questionnaire through Google Survey.
Results: While 91.8% (n=141) of the participants reported that the integration of home health service and palliative care was necessary, 42.6% of them reported that they had problems with decision-making during the practices in the unit where they worked. The participants' mean PCDS score was 42.3±10.3, and the mean PCPS score was 73.8±10.2. A statistically significant relationship was found between the educational status of the nurses, receiving education about the unit they work in, having problems with making decisions during practice, experiencing conflicts about home health service/ palliative care areas, and receiving consultancy services related to ethical dilemmas experienced and palliative care difficulties ($p<0.05$). A weak and significant negative correlation was found between the sub-dimension of PCPS, "care provided at the time of death", and "communication", which is both PCDS total and PCDS sub-dimension.
Conclusion: Although a weak but significant correlation was detected in some sub-dimensions, no significant correlation between the total PCDS score and the total PCPS score was found.
Keywords: Home health service, palliative care, integration, nurse

INTRODUCTION

Home care is the personalized health and social service that individuals with serious illnesses receive in their own living space in order to protect, develop, and improve their health (1, 2). With the advancement of technology, the usability of medical devices at home has improved, resulting in the greater utility of home health services (HHS) that provide cost-effective and certified long-term care services. (3-6). HHS include examination, follow-up, treatment, medical care, and rehabilitation services, together with psychosocial counseling services. In this context, while providing personalized care to the individual, the continuity of care is also ensured (1, 2).

The rapid increase in the elderly population in our country and the increase in the need for qualified care for patients with life-threatening, incurable, or chronic diseases have led to the emergence of palliative care (PC) as a multidisciplinary approach. According to the definition of the World Health Organization (WHO), PC is an approach that prevents adult/ pediatric patients and their families from facing physical, social, psychological, and spiritual problems related to life-threatening diseases and aims to improve their quality of life (7-10). The developments in the field of health have increased expectations for the prolongation of life expectancy, which has led to discussions on the issue of qualified death. Thus, towards the end of the twentieth century, as a result of developments in hospice care (end-of-life care) and PC, the integration of PC into the public health system was realized (11).

The vast majority of patients receiving home health care, receive services within the scope of PC. Therefore, these

*This study was presented as an oral presentation at the "*The Fourth Internaitonal Clinical Nursing Research Congress*" on 8-11 December 2022.

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Submitted: 17.08.2023 • **Revision Requested:** 21.09.2023 • **Last Revision Received:** 24.09.2023 • **Accepted:** 28.09.2023 • **Published Online:** 00.00.0000

two services are intertwined with each other. Patients want to spend the last period of their lives in safety in their own living spaces and want a better and more dignified death. This can be achieved through the coordination of HHS. Both the limited number of PC centers and the demands of patients and their relatives to receive HHS have enabled PC to be included in the scope of HHS. However, this integration in healthcare has caused some difficulties (9, 12-14). To the best of our knowledge, there are not enough studies in the literature addressing these challenges. In this study, it was planned to determine the difficulties experienced by nurses working in HHS and PC during the integration process and the affecting factors.

MATERIAL AND METHODS

This descriptive study was conducted between June and November 2021. The research was conducted in accordance with the Helsinki Declaration and conformed to research and publication ethics. The study was approved by the University Institutional Review Board (IRB date and number: 06.03.2020/2020.08). The minimum sample size in the population was determined by power analysis using the program G*Power (v3.1.9.7). In order for an analysis significance level of 0.05 (α) and an 80% statistical test power (1-β), effect size was calculated as 0.30. The minimum sample size according to standard deviation (SD) was determined to be 64. A total of 141 nurses working in HHS and PC in Istanbul were included in the study. The study was conducted using an online questionnaire through Google Survey. The data for the study were collected with the *"Data Collection Form"*, the *"Palliative Care Difficulties Scale"* and the *"Self-Reported Palliative Care Practices Scale"*. Participants were informed about the purpose of the research, its content, and where the obtained data would be used; they were included in the study in line with the principles of willingness and voluntariness. The survey link and an invitation to participate in the study were distributed through their social networks to HHS and PC nurses working in the public sector in Istanbul. Participants who accepted the research were able to see the survey questions.

Table 1: Socio-demographic and descriptive characteristics of nurses

	n	%
Age, year (yr) 20-35 yr	74	52.5
≤ 36	67	47.5
Professional experiences, yr ≥ 5 yr	89	63.1
≤ 6 yr	52	36.9
Gender Female	124	87.9
Male	17	12.1
Marital status Maried	90	63.8
Single	51	36.2
Education level Vacotional high school of health	10	7.1
Associate degree	15	10.6
College	98	69.5
Master or PhD	18	12.8
Working status Day shift	63	44.7
Night shift	9	6.4
Day and night shift	69	48.9
Work place Home health service	55	39.0
Palliative care	86	61.0
Training specific to unit worked Yes	97	68.8
No	44	31.2
Having certificate related to unit worked Yes	61	43.3
No	80	56.7
	Mean ±SD (min.-max.)	
Palliative Care Difficulties Scale Score		
Communication in multidisciplinary teams	8.4 (15 – 3) 8.1 ±	
Communication with patient and family	9.0 (15 – 4) 2.6 ±	
Expert support	7.9 (14 – 3) 2.9 ±	
Alleviating symptoms	8.4 (15 – 3) 3.1 ±	
Community coordination	8.6 (15 – 3) 3.1 ±	
Total	42.3 (68 – 18) 10.3 ±	
Palliative Care Self-Reported Practices Scale Score Dying-phase care		
Patient- and family-centered care	11.3 (15 – 3) 2.7 ±	
Pain	13.1 (15 – 6) 1.7 ±	
Delirium	12.6 (15 – 6) 2.1 ±	
Dyspnea	11.9 (15 – 5) 2.4 ±	
Communication	12.7 (15 – 3) 2.1 ±	
Total	12.2 (15 – 3) 2.2 ±	
	73.8 (90 – 36) 10.2 ±	

Data Collection Form: The form included 19 questions on the socio-demographic and other descriptive characteristics of nurses (age, gender, marital status, education level, length of professional work, unit of work, etc.) (7, 10, 12, 15-16).

Palliative Care Difficulties Scale (PCDS): The scale is a special scale developed by Nakazawa et al. (2010) to conceptualize the difficulties of PC (15) and adapted into Turkish by Kudubes et al. (2019) (16). It consists of 15 items describing PC difficulties

Table 2: Nurses' perspectives on home health and palliative care integration

	N	%
Do you have problems with decision making during the application in the unit you work in?		
Yes	60	42.6
No	81	57.4
Problems with decision making*		
Not having enough knowledge about the field	9	6.4
Lack of self-confidence	6	4.3
Doctor	26	18.4
Other team members	10	7.1
Institution	23	16.3
Patient/patient relative	29	20.6
Legislation/law/regulation	34	24.1
What do you think about the integration of home health service and palliative care?		
Necessary	128	91.8
Not necessary	13	9.2
Necessary, because*		
It reduces preventable hospitalizations and admissions to the emergency department.	107	75.9
It is economically advantageous and reduces the cost.	84	59.6
Early integration improves patients' quality of life and improves their mood.	87	61.7
It ensures the continuity of medical control.	72	51.1
It reduces the burden on the caregiver.	70	49.6
It reduces the level of anxiety by ensuring that the patient receives care in her/his own safe environment.	103	73.0
It increases the compliance of the patient and family with care.	98	69.5
It reduces the risk of infection.	98	69.5
Increases decision making ability in symptom management.	45	31.9
It allows the spiritual (spiritual support) needs of the patient/patient relative to be met.	79	56
Not necessary, because*		
There is no problem in the supply of materials.	33	23.4
There is no transportation problem.	24	17.0
Access to the healthcare team is easy.	40	28.4
The health institution allows the health team to provide care in a safe environment.	39	27.7
Multidisciplinary care opportunities are more.	49	34.8
It increases the welfare level of the patient's relative.	18	12.8
Do you have conflicts about home health service/palliative care areas?		
Yes	61	43.3
No	80	56.7
With whom do you often have conflicts?*		
Doctor	31	22.0
Other health personnel (nurse, midwife, care technician, etc.)	18	12.8
Other helpful staff (secretary, driver, staff)	8	5.7
Patients and their relatives	37	26.2
Manager/institution	21	14.9
What do you think are the problems experienced in the integration of home health service and palliative care?*		
Procedures that patient relatives deal with during discharge (reports, caregiver burden, etc.)	56	39.7
Coordination problems between home health service and palliative care	72	51.1
Home health personnel do not receive a special unit fee difference in performance payments	58	41.1
Failure to maintain palliative care treatments and practices in home health services	69	48.9
Lack of information of home health service personnel about patients requiring palliative care	57	40.4
Low motivation of home health service personnel in providing care to patients requiring palliative care	47	33.3
Home health personnel do not feel safe in the area of service delivery (at the patient's home)	61	43.3
Problems in the supply of household medical devices (home type ventilator, oxygen concentrator, air mattress, etc.)	77	54.6
Have you received consultancy services regarding ethical dilemmas experienced?		
Yes	14	9.9
No	127	90.1
Do you need consultancy?		
Yes	93	66.0
No	34	24.1

Table 3: Factors Affecting Nurses' Palliative Care Difficulties

	Palliative Care Difficulties Scale											
	Communication in multidisciplinary teams	p	Communication with patient and family	p	Expert support	p	Alleviating symptoms	p	Community coordination	p	Total	p
Age, year (yr) 20-35 yr ≤ 36	7.90±3.01 8.94±3.10	**0.04**	8.92±2.50 9.09±2.69	0.69	7.74±2.81 8.16±2.97	0.38	8.73±3.18 7.95±3.03	0.14	8.74±3.10 8.37±3.08	0.47	42.04±9.71 42.52±10.92	0.78
Professional experiences ≥ 5 yr ≤ 6 yr	8.29 2.80± 8.58±3.53	0.62	8.95±2.57 9.08±2.63	0.78	7.88±2.96 8.06±2.79	0.72	8.28±3.01 8.50±3.33	0.69	8.56±3.31 8.58±2.70	0.97	41.97±10.22 42.79±10.43	0.64
Gender Female Male	8.47±3.10 7.82±3.00	0.41	9.16±2.63 7.82±1.91	**0.01**	8.03±2.91 7.29±2.66	0.32	8.43±3.12 7.88±3.24	0.50	8.74±3.08 7.29±2.87	0.06	42.84±10.37 38.12±8.67	0.07
Marital status Maried Single	8.14±3.05 8.84±3.12	0.19	9.08±2.63 8.86±2.52	0.63	8.14±2.85 7.59±2.94	0.27	8.29±3.21 8.49±2.99	0.70	8.61±3.08 8.49±3.13	0.82	42.27±11.06 42.27±8.79	0.99
Education level Vacotional high school of health Associate degree College Master or PhD	7.90±3.48 7.93±3.30 8.23±2.91 9.94±3.39	0.53	9.30±3.13 7.87±2.64 9.06±2.55 9.44±2.38	0.31	10.20±2.70 6.40±3.31 7.87±2.75 8.39±2.70	**0.01**	8.80±3.55 6.47±2.80 8.25±3.02 10.28±2.80	**0.005**	9.90±2.47 6.47±3.23 8.50±3.07 9.94±2.39	**0.005**	46.10±11.75 35.13±11.80 41.92±9.52 48.00±8.61	**0.002**
Work place Home health service Palliative care	8.54±2.92 8.30±3.20	0.65	8.87±2.76 9.08±2.48	0.65	8.27±3.16 7.73±2.70	0.29	8.20±3.29 8.46±3.03	0.62	8.78±3.41 8.43±2.87	0.52	42.67±11.78 42.01±9.23	0.72
Training specific to unit worked Yes No	8.31±3.11 8.59±3.05	0.61	8.78±2.52 9.48±2.69	0.15	7.63±2.78 8.64±3.03	0.06	7.92±3.12 9.34±2.94	**0.01**	8.31±3.03 9.14±3.16	0.14	40.95±10.50 45.18±9.18	**0.02**
Having certificate related to unit worked Yes No	8.34±2.89 8.44±3.24	0.85	8.59±2.19 9.31±2.82	0.09	7.69±2.28 8.14±3.27	0.34	7.90±2.96 8.71±3.22	0.12	8.13±2.65 8.90±3.35	0.13	40.66±8.19 43.50±11.50	0.08
Having problems with decision making during implementation Yes No	9.07±3.27 7.90±2.86	**0.02**	9.53±2.57 8.60±2.54	**0.03**	8.83±3.11 7.28±2.53	**0.02**	9.03±3.47 7.86±2.76	**0.03**	9.18±2.97 8.11±3.11	**0.04**	45.65±10.53 39.76±9.37	**0.01**
Home health and palliative care integration Not necessary Necessary	8.44±3.15 8.00±2.45	0.55	8.98±2.63 9.15±2.15	0.79	7.86±2.91 8.77±2.55	0.24	8.41±3.08 7.85±3.62	0.53	8.61±3.12 8.15±2.82	0.61	42.30±10.25 41.92±10.87	0.89
Conflict about home health/ palliative care Yes No	8.95±3.12 7.97±3.01	0.06	9.46±2.75 8.65±2.41	0.07	8.56±2.87 7.47±2.83	**0.02**	9.21±3.24 7.71±2.89	**0.005**	9.26±2.99 8.04±3.07	**0.01**	45.44±10.77 39.85±9.22	**0.002**
Receiving consultancy services regarding ethical dilemmas Yes No	7.21±3.64 8.53±3.00	0.21	8.28±2.95 9.08±2.54	0.34	6.21±3.28 8.13±2.79	**0.01**	6.28±3.62 8.59±2.99	**0.03**	6.50±2.56 8.79±3.06	**0.006**	34.50±13.40 43.13±9.55	**0.03**

Student's t test and ANOVA

(min.15-max.75 points). The increase in the score indicates that the difficulties experienced by palliative caregivers are increasing. The Cronbach's alpha value for the total of the scale is 0.81, and the scale sub-dimension values range from 0.64 to 0.92. The total Cronbach's alpha value of the scale for this study was 0.77, and the scale sub-dimension values were found to range between 0.72 and 0.74.

The Palliative Care Self-Reported Practices Scale (PCPS): Nakazawa et al. (2010) developed a self-report scale to assess how nurses implement PC recommendations in the clinic (15). Its validity and reliability in Turkey were determined by Kudubes et al. (2019) (16). The scale consists of 18 items and 6 sub-dimensions (min.18-max.90 points). Increasing scale scores indicate an increase in palliative care practices. The Cronbach's

Table 4: Factors Affecting Nurses' Palliative Care Practices

	Palliative Care Self-Reported Practices Scale													
	Dying-phase care	p	Patient- and family-centered care	p	Pain	p	Delirium	p	Dyspnea	p	Communication	p	Total	p
Age, year (yr)														
20-35 yr	11.36±2.46	0.86	13.00±1.74	0.39	12.46±2.18	0.43	11.49±2.61	**0.02**	12.46±2.29	0.19	11.92±2.34	0.10	72.69±10.38	0.15
≤ 36	11.28±2.94		13.25±1.75		12.73±1.96		12.40±2.15		12.92±1.96		12.52±2.02		75.12±9.93	
Professional experiences														
≥ 5 yr ≤ 6 yr	11.37±2.33	0.81	12.98±1.85	0.20	12.48±2.11	0.43	11.38±2.57	**0.000**	12.53±2.25	0.27	12.04±2.35	0.26	72.79±10.35	0.10
	11.25±3.24		13.36±1.53		12.77±2.01		12.85±1.88		12.94±1.94		12.48±1.93		75.65±9.78	
Gender Female	11.40±2.59	0.46	13.18±1.70	0.30	12.60±2.11	0.80	12.00±2.47	0.30	12.70±2.07	0.80	2.29±2.17	0.28	74.18±10.01	0.34
Male	10.76±3.36		12.64±2.00		12.47±1.87		11.35±2.12		12.53±2.67		11.59±2.50		71.35±11.59	
Marital status														
Maried	11.29±2.72	0.82	13.23±1.80	0.29	12.84±1.95	0.06	12.23±2.25	0.06	12.87±2.00	0.17	12.22±2.19	0.90	74.69±9.67	0.21
Single	11.39±2.66		12.92±1.63		12.14±2.22		11.37±2.67		12.35±2.36		12.18±2.28		72.35±11.03	
Education level														
Vacotional high school of health	10.50±3.75		13.10±1.37		12.00±2.62		12.50±1.96		11.70±1.70		10.30±2.11		70.10±9.72	
Associate degree	11.33±2.56		13.20±1.37		12.67±2.02		12.13±1.30		13.60±1.55		12.60±1.64		75.53±8.17	
College	11.57±2.41	0.29	13.15±1.83	0.94	12.69±2.15	0.69	11.62±2.66	0.10	12.58±2.29	0.14	12.24±2.28	**0.02**	73.87±10.89	0.61
Master or PhD	10.44±3.62		12.89±1.79		12.28±1.32		13.05±1.70		13.00±1.71		12.72±1.87		74.39±8.04	
Work place														
Home health service	10.49±2.73	**0.004**	12.87±1.69	0.17	12.27±2.04	0.14	12.00±2.10	0.75	12.58±1.89	0.64	11.87±2.02	0.14	72.09±9.45	0.09
Palliative care	11.86±2.53		13.28±1.77		12.79±2.08		11.87±2.64		12.74±2.30		12.42±2.31		74.96±10.57	
Training specific to unit worked														
Yes No	11.25±2.79	0.60	13.13±1.85	0.88	12.68±2.11	0.42	11.93±2.34	0.96	12.65±2.22	0.79	12.23±2.33	0.85	73.87±10.40	0.97
	11.50±2.48		13.09±1.51		12.39±2.00		11.91±2.67		12.75±1.99		12.16±1.95		73.79±9.89	
Having certificate related to unit worked														
Yes No	11.69±2.33	0.15	13.46±1.52	**0.03**	12.90±1.85	0.11	12.23±2.04	0.17	12.90±1.79	0.26	12.43±2.15	0.30	75.61±8.72	0.06
	11.05±2.92		12.86±1.86		12.35±2.21		11.69±2.69		12.51±2.38		12.04±2.26		72.50±11.07	
Having problems with decision making during implementation														
Yes No	11.33±2.55	0.97	13.47±1.48	**0.03**	12.60±1.98	0.95	12.02±2.37	0.69	12.63±1.91	0.81	12.28±2.08	0.72	74.33±8.73	0.61
	11.32±2.80		12.86±1.88		12.58±2.15		11.85±2.49		12.72±2.31		12.15±2.31		73.48±11.22	
Home health and palliative care integration														
Not necessary	11.33±2.73	0.97	13.14±1.69	0.74	12.52±2.03	0.33	11.83±2.43	0.18	12.63±2.13	0.44	12.17±2.23	0.57	7.63±10.04	0.51
Necessary	11.31±2.32		12.92±2.25		13.23±2.49		12.77±2.38		13.15±2.30		12.54±2.07		75.92±12.00	
Conflict about home health/ palliative care														
Yes No	11.10±2.68	0.38	13.31±1.52	0.24	12.70±1.75	0.54	12.44±2.25	**0.02**	12.69±1.78	0.96	12.36±2.10	0.47	74.61±8.00	0.41
	11.50±2.70		12.97±1.89		12.50±2.29		11.53±2.53		12.67±2.40		12.09±2.29		73.26±11.63	
Receiving consultancy services regarding ethical dilemmas														
Yes No	10.50±2.95	0.28	13.07±2.79	0.94	12.14±2.66	0.50	12.43±2.56	0.41	13.14±2.44	0.39	12.07±2.70	0.84	73.36±14.27	0.89
	11.42±2.66		13.13±1.60		12.64±2.01		11.87±2.43		12.63±2.11		12.22±2.16		73.90±9.73	

Student's t test and ANOVA

alpha value for the total of the scale is 0.91, and the scale sub-dimensions range from 0.58 to 0.87. The total Cronbach's alpha value of the scale for this study was 0.79, and the scale sub-dimension values were found to vary between 0.75 and 0.85.

Statistical analysis

The data obtained from the study were evaluated using the Statistical Package for Social Science (SPSS) 20.0 package program. Descriptive statistics (frequencies, percentages, measures of central tendency, and distribution) were used in the analysis of the data. Continuous variables were expressed as mean±SD, and categorical variables were expressed as percentages. The conformity of the data to the normal distribution was determined by the Kolmogorov-Smirnov test. Data were evaluated with the Student's t test, one-way variance (ANOVA), and Pearson correlation analysis. While interpreting the results, the level of significance was determined as 0.05 and it was stated that there was a significant difference in the

Table 5: Relationship Between Nurses' Palliative Care Difficulties and Palliative Care Practices

			Palliative Care Self-Reported Practices Scale						
			Dying-phase care	Patient- and family-centered care	Pain	Delirium	Dyspnea	Communication	Total
Palliative Care Difficulties Scale	Communication in multidisciplinary teams	r	-0.166	-0.040	-0.033	-0.028	0.005	0.057	-0.051
		p	**0.04**	0.64	0.69	0.74	0.95	0.50	0.55
	Communication with patient and family	r	-0.153	-0.019	-0.020	-0.162	-0.054	0.040	-0.089
		p	0.07	0.82	0.81	0.06	0.52	0.63	0.29
	Expert support	r	-0.125	-0.051	-0.098	-0.022	-0.072	-0.117	-0.107
		p	0.13	0.54	0.24	0.79	0.39	0.16	0.20
	Alleviating symptoms	r	-0.137	-0.016	-0.040	-0.020	-0.066	-0.075	-0.082
		p	0.10	0.85	0.64	0.81	0.43	0.37	0.33
	Community coordination	r	-0.074	-0.035	-0.073	-0.094	-0.013	-0.111	-0.114
		p	0.38	0.67	0.39	0.26	0.12	0.18	0.17
	Total	r	-0.188	-0.047	-0.077	-0.090	-0.091	-0.062	-0.127
		p	**0.02**	0.58	0.36	0.29	0.28	0.46	0.13

r: Correlation coefficient, Pearson correlation analysis

case of p<0.05.

RESULTS

A total of 141 nurses participated in the study. The mean age of the participants was 35.1±8.8 years and their professional experience was 8.4±10.4 years. The majority of the participants in the study were female (87.9%), married (67.8%), with a college degree (69.5%), and PC workers (61.0%) (Table 1).

Of all the nurses, 91.8% stated that the integration of HHS and PC is necessary, and 42.6% of them reported that they had problems with decision-making during the applications in the unit they worked in. In addition, 56.7% of the nurses reported that they had conflicts related to HHS/PC. While only 9.9% of the nurses received counseling regarding ethical dilemmas, 66.0% of those who did not receive counseling reported that they needed counseling (Table 2).

The total mean score of the participants' PCPS was 73.8±10.2 (Table 1). Nurses aged ≥36, female, without training in the field they work in, having difficulties making decisions during practice, having conflicts about HHS/PC fields, and not receiving counseling regarding the ethical dilemma they experienced had a statistically significant level in the PCPS total and subdimensions. A significant relationship was found (p<0.05). In addition, a significant difference was found between nurses who graduated from associate degrees, health vocational high schools, and graduate degrees in the communication coordination sub-dimension and PCPS total scores (respectively; p=0.005, p=0.02); In the sub-dimension of reducing symptoms, a significant difference was determined between the nurses who graduated from associate degrees and graduate degrees (p=0.005) (Table 3).

The total mean score of the participants' PCDS was 42.3±10.3 (Table 1). There is a statistically significant relationship between the subdimensions of nurses 36 years and older, with 6 years or more of professional experience, working in PC, having a certificate related to the unit they work in, having difficulties making decisions during the application, and not having conflicts about HHS/PC areas (p<0.05). In addition, the communication sub-dimension score was found to be significantly lower in nurses who graduated from health vocational high school (p=0.02) (Table 4).

While the participants reported that the most common PC practice was "patient and family-centered care" (9.0±2.6), the "communication with the patient and family" sub-dimension got the highest score when the difficulties they experienced were questioned. When the relationship between nurses' PC difficulties and PC practices was evaluated, it was found that there was a negative, significant, and weak correlation between the PCDS sub-dimension, communication, and the PCDS total score, and the PCPS sub-dimension, the care score presented at the death stage (respectively; r=-0.166, p=0.004; r=-0.188, p=0. 02). However, no significant correlation between the total PCDS score and the total PCPS score was found (Table 5).

DISCUSSION

In this study, the difficulties experienced by nurses working in HHS and PC during the integration process and the factors affecting this were examined. HHS and PC integration is important in reducing preventable hospitalizations, lowering healthcare costs, and improving patients' quality of life. Therefore, addressing the challenges experienced by nurses as healthcare practitioners plays a key role.

In a study by Pikes et al. (2009) it was reported that the coordination of the caregivers with the health institution increases the quality of care and decreases health expenditures and hospitalizations (17). The lack of coordination between HHS and PC leads to patient victimization, which increases the use of unnecessary ambulances and emergency services (7, 10). Included in the study, the majority of the nurses who were

recruited were of the opinion that the integration of HHS and PC is necessary.

It was found that there was a statistically significant relationship between the total score of the PCDS and nurses who had no training in the field in which they worked, had difficulty making decisions during practice, had conflicts regarding the HHS/PC fields, and had not received counseling for the ethical dilemmas they experienced. Danielsen et al. (2018), in a qualitative study determining the experiences and difficulties of HHS nurses and general practitioners in home PC, emphasized that optimum PC at home and the prevention of rehospitalization depend on close cooperation between the patient, family, home care nurse, and general practitioner, and on having 24/7 effective communication. The study's findings show that it is nearly impossible to provide good PC at home without the engagement of a family member. Again, in the same study, it is emphasized that nurses should have sufficient knowledge, skills, and experience in order for PC at home to be effective (18). Another important point is the training of healthcare professionals. However, there is no such education in our country.

End-of-life decisions, cultural and economic factors that are effective in telling the truth, and the psychosocial support of health workers are known to be common difficulties in PC. In the healthcare team providing HHS, difficulties such as the qualification and educational status of the nurses, the independent decision-making status of the nurses, the difficulties experienced at work, and the need for counseling services in ethical dilemmas are among the important factors that pave the way for ethical dilemmas (9, 12-14). In this study, 56.7% of the nurses reported having conflicts related to HHS/PC. While the PC practices of the nurses were determined to be high, the level of experience with PC difficulties was found to be moderate. In addition, nurses who had conflicts related to HHS/PC and did not receive counseling about ethical dilemmas had significantly higher PCDS scores. When the difficulties experienced by the nurses were questioned, the "communication with the patient and family" sub-dimension got the highest score. Studies have emphasized that difficult situations (conflicts in the field) and ethical dilemmas (decision-making during practice) are sources of fatigue and stress for PC professionals, and therefore severe anxiety is experienced (19-20). Also, studies have shown that regular supportive mentoring can reduce and prevent anxiety and stress (18-21). It may be beneficial to evaluate the problems faced by healthcare professionals during home visits through interactive mobile communication devices, to discuss the issue with the hospital ethics committee, and to receive consulting services from an ethics expert.

Limitation

A limitation of this study is that this was a survey, and as such was prone to selection bias. In addition, it should be taken into consideration that the data obtained based on nurses' statements may be subjective and prone to reporting errors. Finally, the generalizability of the results is limited by the characteristics of the study sample.

CONCLUSIONS

In this study, while the palliative care practices of nurses were determined to be high, the level of experiencing PC difficulties was found to be moderate. Although a weak but significant correlation was detected in some sub-dimensions, no significant correlation between the total PCDS score and the total PCPS score was found. It was determined that the most applied PC practice was "patient and family-centered care" and that the most common difficulty faced by nurses was "communication with the patient and family". When the results of the study are evaluated, it is recommended that nurses be subjected to mandatory training programs/certification, systematic communication/coordination networks be established, and the healthcare team receive ethical consulting services.

Ethics Committee Approval: This study was approved by the ethics committee of the Istanbul Kültür University (06.03.2023 – 2020.08)

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

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

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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RESEARCH ARTICLE
DOI: 10.26650/CURARE.2023.1350535
CURARE - Journal of Nursing 2023;3:31-40

Determining the Practices and Attitudes of Nurses Working in Intensive Care Units Towards Complementary and Alternative Treatment Methods

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Citation: Akcan S, Dincer Hekim B. Determining the practices and attitudes of nurses working in intensive care units towards complementary and alternative treatment methods. CURARE - Journal of Nursing 2023;3:31-40. https://doi.org/10.26650/CURARE.2023.1350535

ABSTRACT

Objective: This study was conducted to examine intensive care nurses' attitudes about complementary and alternative treatment methods and the treatment methods they applied.
Materials and Methods: This research was carried out with 252 nurses working in the intensive care unit of a city hospital. Data were collected via questionnaires between February and June 2022, using the "Nurse Introductory Information Form" and " Integrative Complementary and Alternative Treatment Attitude Scale " (ITATTS).
Results: The mean age of the nurses was 25.48±1.99, and 79.8% of them were women. 77% of the nurses stated that they used Complementary and Alternative Therapy (CAM) methods. They preferred massage with 66.7% as the method they knew the most, massage with 45.2% as the method they used, and massage with 42.9% as the method they wanted to apply. The total mean score of the nurses in ITATTS was 25.53±5.97, 16.71±4.13 for the CAM sub-dimension, 8.82±3.441 for the Holistic Health sub-dimension, and the alpha value of the scale was 0.66. The total mean score from the CAM confidence scale is 6.40±1.76.
Conclusion: The study determined that the attitudes and behaviors of intensive care nurses regarding CAM methods and practices were inadequate and that they needed to raise more awareness on the subject. The group with the highest attitude of intensive care nurses toward CAM was those whose graduation year was between 2010-2016, and the group with the lowest was those with chronic diseases.
Keywords: Complementary and alternative therapy, Intensive care nurse, attitude

INTRODUCTION

According to the records of the World Health Organization (WHO), modern medicine is "used to prevent, diagnose, cure or treat physical and mental diseases, as well as to maintain good health, based on theories, beliefs, and experiences specific to different cultures, explainable or unexplainable"(1). After falling ill, people look for solutions to treat their illness and to maintain the well-being of their general condition. As a solution, they prefer modern medicine or treatment that includes Complementary and Alternative Medicine (CAM) or both. It has recently been seen that individuals who are sick tend to use CAM applications more than in previous times to treat their diseases, and healthy individuals to protect their health and improve their well-being (2).

CAM usage rates are increasing in other countries, including Turkey, compared to previous years (3). There are certain attitudes that influence and are used to understand the use of complementary and alternative therapy. These include whether people's lifestyle is in harmony with CAM and they are not satisfied with modern medicine, whether the drugs taken in the treatment of the disease have side effects, and whether communication with the treating physician is limited and communication is poor. These attitudes caused the individual to use CAM (2). In Turkey, the "Acupuncture Treatment

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Submitted: 26.08.2023 • **Revision Requested:** 19.09.2023 • **Last Revision Received:** 05.10.2023 • **Accepted:** 06.10.2023 • **Published Online:** 00.00.0000

Regulation" was issued in 1991, which was accepted as the first regulation on CAM. This regulation was revised in 2002. The Ministry of Health issued a regulation to eliminate the uncertainties experienced in Complementary and Alternative Treatment practices, stating that the application process should be carried out by experts without indications (3).

Intensive care clinics in hospitals are highly stressful areas due to the complexity of advanced technology devices and unexpected changes in the current health status of patients. For this reason, stressful working environments are risky for nurses working in intensive care, both physiologically and psychologically. Nurses who spend longer time with patients are more frequently and quickly affected by adverse conditions. Intensive care nurses face many problems such as intense working conditions, fatigue caused by insomnia, unclear duties, authorities and responsibilities, and being in the care of patients who are suffering and dying. In addition, intensive care affects the nurse's job satisfaction and burnout level (4).

In studies conducted in our country, it has been stated that nurses do not have sufficient knowledge about their field (4). This study was carried out to evaluate the use of CAM applications by intensive care nurses and their attitudes and behaviors towards CAM applications, since the studies in the literature are few and the subject is not known enough.

MATERIALS AND METHODS

This study is a cross-sectional descriptive study aiming to examine the attitudes of intensive care nurses about complementary and alternative treatment methods and the treatment methods they apply. The study was conducted between February - June 2022 with nurses working in intensive care units in a city hospital in Istanbul.

Table 1: Distribution of Nurses' Socio-Demographical Characteristics

		n	%
Gender	Female	201	79.8
	Male	51	20.2
Age	21-26	185	73.4
	27+	67	26.6
	Min:21 Max: 43 25.48±1.99		
Marital status	Married	52	20.6
	Single	200	79.4
Year graduated	2010 -2016	23	9.1
	2017+	229	90.9
Educational status	Undergraduate	236	93.7
	Postgraduate	16	6.3
Working time as a nurse	2 years and below	147	58.3
	3 - 5 years	45	17.9
	Over 5 years	60	23.8
Uptime on the unit	1 years and below	84	33.3
	1 - 2 years	84	33.3
	Over 2 years	84	33.3
Smoking status	Yes	85	33.7
	No	157	62.3
	I quit	10	4.0
Alcohol use status	Yes	50	19.8
	No	193	76.6
	I quit	9	3.6
Regular exercise status	Once a week	41	16.3
	2-3 times a week	27	10.7
	I don't	184	73.0
Chronic disease	Have	20	7.9
	None	232	92.1

Table 2: Mean Scores and Alpha Values of the Integrative Complementary and Alternative Treatment Attitude Scale and its Sub-Dimensions (N=252)

	Min	Max.	Mean ± SD
Total	12.00	48.00	25.53±5.97
Complementary and Alternative Medicine Sub-Dimension	7.00	31.00	16.71±4.13
Holistic Health Sub-Dimension	5.00	30.00	8.82±3.44
CAM Confidence Scale	1	10	6.40±1.76

Table 3: Complementary and Alternative Treatment Methods Known and Used by Nurses for Himself or Family

	n	%		
CAM methods that the person uses for themselves or their family	194		77.0	
	Methods They Know		**The Methods They Applied**	
	n	**%**	**n**	**%**
Massage	168	66.7	114	45.2
Cup Treatment	149	59.1	70	27.8
Prayer	148	58.7	110	43.7
Herbal teas	136	54	88	34.9
Painting Music Art	116	46	50	19.8
Meditation	98	38.9	33	13.1
Hydrotherapy Spa	95	37.7	45	17.9
Acupuncture	94	37.3	8	3.2
Yoga	93	36.9	21	8.3
Vitamins	86	34.1	50	19.8
Aromatherapy	79	31.3	25	9.9
Ozone Therapy	79	31.3	21	8.3
Plants	74	29.4	43	17.1
Hypnosis	71	28.2	1	0.4
Reflexology	57	22.6	18	7.1
Bioenergy	36	14.3	8	3.2
Acupressure	30	11.9	5	2
Reiki	30	11.9	4	1.6
Therapeutic Touch	29	11.5	4	1.6
Treatment with Colors	27	10.7	9	3.6
Special Diets	18	7.1	5	2
Feng Shui	16	6.3	0	0
Osteopathy	13	5.2	3	1.2
TaiChi	12	4.8	0	0
Homeopathy	9	3.6	1	0.4
Ayurveda	6	2.4	1	0.4
I have no idea	6	2.4	5	2
Chiropractic	5	2	0	0
Shark Cartilage	2	0.8	0	0

* Participants marked more than one option.

Research Questions;

1. What are the CAM methods used by nurses working in intensive care?

2. What are the CAM usage status, attitudes, and behaviors of nurses working in intensive care?

Population and Sample of the Research

The scope of the research was determined as the nurses working in the intensive care units of a city hospital in Istanbul (n=335). Since there was no study that could be referenced in the study, the effect size standardized by Cohen was used. For the effect size F test of the study, the minimum total number of samples was determined as 252 by taking 0.05 alpha value, 0.25 effect size, and 95% theoretical power. When T and F tests were evaluated together, it was decided that a minimum of 252 people should be included.

The criteria for inclusion in the research were:

- Being 18 years or older;
- Working in intensive care;
- Being able to communicate verbally; and
- Volunteering to participate in the research.

Research Variables

Dependent Variables: Integrative Complementary and Alternative Treatment Attitude Scale total and subscale mean scores

Independent Variables: Socio-demographic characteristics of intensive care nurses, lifestyles, health status, methods used in case of illness, known and applied CAM methods

Data Collection Tools of the Research

The data of the study were collected by using the " Nurse Introductory Information Form " and the "Integrative Complementary and Alternative Treatment Attitude Scale" (ITATTS).

Nurse Introductory Information Form

The form was prepared by scanning the literature and includes the socio-demographic status of the intensive care nurses included in the study and the independent variables that will affect their attitudes towards CAM (2, 5). The form consists of 23 questions in total that ask about gender, age, years spent as a nurse, marital status, years spent in the intensive care unit, having a chronic disease, alcohol and smoking status, etc. In addition, the CAM confidence scale question in the Introductory Information Form was scored between 0-10 points and it was normally distributed.

Integrative Complementary and Alternative Treatment Attitude Scale (ITATTS)

The Turkish validity and reliability of the scale performed by Hyland et al. was done by Erci in 2003. The scale, which aims to measure people's attitudes towards CAM, is a 6-point Likert type consisting of 11 items: strongly agree=1, strongly disagree=6, with two sub-dimensions. The holistic health sub-dimension (items 1, 3, 5, 7, and 10) measures the patient's perception of individuality in self-care. The complementary alternative medicine sub-dimension (items 2, 4, 6, 8, 9, and 11) measures the patient's use of CAM. Items 2, 4, 6, and 9 in the scale are evaluated by reversing them. The highest score to be obtained from the scale is 66, the lowest score is 11, and a low score indicates a positive attitude, while a high score indicates a negative attitude. While the Cronbach's Alpha value was found to be 0.72 in Erci's study, it was found to be 0.66 in this study.

Data Analysis

The data obtained in the research were analyzed using the SPSS (Statistical Package for Social Sciences) for Windows 25.0 program. Descriptive statistical methods (number, percentage, mean, standard deviation) were used while evaluating the data. In addition to the tests of whether the data is normally distributed or not, with a histogram, Q-Q graph, and box-plot graphics, as well as skewness and kurtosis, the data can be evaluated with dispersion measures such as the coefficient of variation. In order to ensure normality, the values should be observed close to the 45-degree line in the scatter diagram of the data and should be positioned by centering the median line of the box in the box line graph. The normal distribution was checked with conformity tests of normality and kurtosis skewness values.

Ethical Permission

In order to conduct the research, the necessary permissions were obtained from the Ethics Committee of Istanbul Sabahattin Zaim University, Document Date and Number: 27.05.2021-E.7153, and from the Provincial Health Directorate, numbered E-15916306-604.01.02, dated 25.02.2022. The nurses in the study were informed about the purpose of the study and their consent was obtained by explaining that participation was voluntary and that the confidentiality of their personal information would be protected. In addition, permission was received via e-mail from Behice Erci for the scale to be used in the study.

RESULTS

When the data on the socio-demographic characteristics of the nurses were examined, it was calculated that 79.8% were women, 73.4% were between the ages of 21-26 and the average age of the participants was 25.48±1.99. 79.4% of the participants were single, 90.9% had graduated before 2017 and 93.7% were undergraduate graduates. An examination of the distribution of information regarding their professional experience showed that 58.3% of them had 2 years or less than and 33.3% of them had more than 3 years of professional experience. 62.3% of the participants stated that they did not smoke and 76.6% did not use alcohol. 73% of them stated that they did not do sports regularly and only 7.9% of them had a chronic disease (Table 1).

According to the results of the total and sub-dimensions taken from the nurses' ITATTS, the mean total score taken from the scale was 25.53±5.97. The mean score for the complementary and alternative medicine sub-dimension of the scale was 16.71±4.13, the mean score for the holistic health sub-dimension was 8.82±3.44, and the mean CAM confidence scale score was found to be 6.40±1.76 (Table 2).

The CAM methods known to the participants were: massage (66.7%), cupping therapy (59.1%), prayer (58.7%), herbal teas (54%), painting music and art (46%), meditation (38.9%), hydrotherapy spa (37.7%), acupuncture (37.3%), yoga (36.9%),

Table 4: Comparison of Nurses' Introductory Information and Mean Measurements of Complementary and Alternative Treatment Attitude Scale and its Sub-Dimensions

		Attitude Scale Towards Holistic Complementary and Alternative Medicine		
		Total	**Complementary and Alternative Medicine Sub-Dimension**	**Holistic Health Sub-Dimension**
Gender		**Mean±SD**	**Mean±SD**	**Mean±SD**
	Female	25.12±5.81	16.41±4.05	8.71±3.18
	Male	27.14±6.36	17.88±4.26	9.25±4.32
t test		**-2.166**	**-2.289**	-0.566
p value		**0.031***	**0.023***	0.571
Age	21-26	26.16±6.1	17.06±4.19	9.1±3.64
	27 years and older	23.79±5.26	15.73±3.8	8.06±2.67
t test		**2.824**	**2.284**	**-2.113**
p value		**0.005***	**0.023***	**0.035***
Marital status	Married	23.13±5.26	15.58±3.97	7.56±2.22
	Single	26.16±6	17.01±4.13	9.15±3.62
t test		**-3.314**	**-2.240**	**-3.229**
p value		**0.001***	**0.026***	**0.001***
Year graduated	2010-2016	21.65±4.45	14.52±3.80	7.13±1.55 / 7.00
	2017 and over	25.92±5.97	16.93±4.10	8.99±3.53 /8.00
t test		**3.334**	**-2.700**	**-4.675**
p value		**0.000***	**0.000***	**0.013***
Educational status	Undergraduate	25.71±5.94	16.82±4.13	8.89±3.46
	Postgraduate	22.94±5.93	15.13±3.86	7.81±2.95
U test		1.804	1.592	-1.442
p value		0.072	0.113	0.149
Working time as a nurse	2 years and below	26.2±5.76	17.08±4.08	9.12±3.41
	3 - 5 years	25.98±7.1	16.93±4.58	9.04±4.35
	Over 5 years	23.55±5.18	15.63±3.76	7.92±2.51
t test		**4.484**	2.739	5.827
p value		**0.012***	0.067	0.054
		1>3		
Uptime on the unit	1 years and below	26.33±6.13	17.32±4.18	9.01±3.63
	1 - 2 years	25.23±5.7	16.08±3.72	9.14±3.78
	Over 2 years	25.04±6.06	16.73±4.41	8.31±2.82
H test		1.159	1.903	2.306
p value		0.316	0.151	0.316
Smoking status	Yes	25.31±6.64	16.31±4.37	9.0±4.09
	No + I quit	25.65±5.61	16.92±4	8.73±3.06
U test		-0.428	-1.110	-0.023
p value		0.669	0.268	0.982
Alcohol use status	Yes	26.52±6.24	17.44±4.02	9.08±4.39
	No + I quit	25.29±5.89	16.53±4.14	8.76±3.17
U test		1.309	1.399	-0.124
p value		0.192	0.163	0.901
Regular exercise status	Once a week	25.32±6.72	16.39±4.24	8.93±4.59
	2-3 times a week	27.33±6.04	17.56±3.98	9.78±3.84
	I don't	25.32±5.77	16.66±4.13	8.66±3.06
H test		1.381	0.702	3.325
p value		0.253	0.496	0.190
Chronic disease	There is	22.95±5.8	14.8±4.5	8.15±2.78
	None	25.75±5.94	16.88±4.06	8.88±3.49
t test		**-0.028**	**-2.173**	-0.871
p value		**0.044***	**0.031***	0.384

*p<0.05 U: Mann Whitney U test H: Kruskal Wallis-H Testi t: Independent t-test Post-hoc test (Bonferroni correction)

Table 5: Comparison of Nurses' Level of Confidence in Complementary and Alternative Treatment According to Socio-Demographical Characteristics

		CAM Confidence Scale
Gender		**Mean ± SD**
	Female	6.46±1.69
	Male	6.16±1.99
U test		1.091
p value		0.276
Age	21-26	6.32±1.79
	27 years and older	6.6±1.68
U test		-1.088
p value		0.378
Marital status	Married	6.9±1.55
	Single	6.27±1.79
t test		**2.355**
p value		**0.019***
Year graduated	2010-2016	6.87±1.66
	2017 and over	6.35±1.77
U test		1.355
p value		0.177
Educational status	Undergraduate	6.32±1.73
	Postgraduate	7.5±1.86
t test		**-2.623**
p value		**0.009***
Working time as a nurse	2 years and below	6.31±1.85
	3 - 5 years	6.47±1.5
	Over 5 years	6.57±1.72
H test		0.509
p value		0.602
Uptime on the unit	1 years and below	6.19±1.91
	1 - 2 years	6.42±1.58
	Over 2 years	6.58±1.77
H test		1.056
p value		0.349
Smoking status	Yes	6.13±1.77
	No + I quit	6.53±1.74
U test		-1.729
p value		0.085
Alcohol use status	Yes	6.16±1.56
	No + I quit	6.46±1.8
U test		-1.064
p value		0.288
Regular exercise status	Once a week	6.73±1.86
	2-3 times a week	6.3±1.73
	I don't	6.34±1.74
H test		0.893
p value		0.411
Chronic disease	Have	6.55±2.48
	None	6.38±1.69
U test		0.405
p value		0.686

*p<0.05 U: Mann Whitney U test H: Kruskal Wallis-H Testi t: Independent t-test Post-hoc test (Bonferroni correction)

vitamins (34.1%), ozone therapy (31.3%), aromatherapy (31.3%), herbs (29.4%), hypnosis (28.2%), reflexology (22.6%), bioenergy (14.3%), acupressure (11.9%), reiki (11.9%), therapeutic touch (11.5%), color therapy (10.7%), special diets (7.1%), feng shui (6.3%), tai-chi (5%, 4.8%), homeopathy (3.6%), ayurveda (2.4%), chiropractic (2%) and shark cartilage (0.8%). 2.4% stated that

Table 6: The Effect of Complementary and Alternative Treatment Confidence Level on Attitudes towards Holistic Complementary and Alternative Medicine

	Unstandardized coefficients		t	p value	F	p value	R2	DW
	Beta	Std. Error						
Fixed	34.754	1.289	26.953	0.000	55.004	0.000	0.177	1.520
Assurance	-1.442	0.194	-7.416	0.000				

they had no knowledge. The CAM methods previously applied by the participants were: massage (45.2%), cupping cup treatment (27.8%), prayer (43.7%), herbal teas (34.9%), painting music and art (19.8%), meditation (13.1%), hydrotherapy spa (17%). acupuncture (3.2%), yoga (8.3%), vitamins (19.8%), ozone therapy (8.3%), aromatherapy (9.9%), herbs (17.1%), hypnosis (0.4%), reflexology (7%), bioenergy (3.2%), acupressure (2%), reiki (1.6%), therapeutic touch (1.6%), color therapy (3.6%), special diets (2%), osteopathy (1.2%), homeopathy seems to apply (0.4%), ayurveda (0.4%) (Table 3).

It was determined that the nurses' attitudes towards CAM were positive. It was found that among the intensive care nurses, women aged 27 and older, who were married, had graduated between 2010 and 2016, had been working as nurses for 5 years or more, and those with chronic diseases had positive attitudes towards CAM. It was observed that the scores obtained from the scale and its sub-dimensions did not show a statistically significant difference according to the individual's education, working time in the unit, smoking, alcohol use and exercise habits. In other words, it was determined that they did not have an attitude towards CAM (Table 4).

It was determined that the level of confidence in CAM showed a statistically significant difference according to the marital and educational status of the participant. It was determined that individuals who were married had a higher level of trust, and individuals who had a master's degree had higher levels of trust.

It was determined that there was no statistically significant difference in the level of confidence in CAM according to the participants' gender, age, graduation year, working time, working time in the unit, smoking, alcohol use, exercise habits, and chronic disease (Table 5).

The effect of the level of confidence in CAM on Attitudes towards Holistic Complementary and Alternative Medicine is shown in Table 4. Simple regression analysis was performed for the analysis. The established model was statistically significant ($F=55.004$; $p<0.05$). According to the results, as the confidence level of individuals increases, their attitude scores decrease; That is, as the level of trust increases, positive attitudes increase. One unit increase in individuals' confidence level reduces the scale scores by -1.442 units. In other words, one unit increase in individuals' confidence level now increases their attitude towards Holistic Complementary and Alternative Medicine by 1.442 units. In addition, DW = 1.520, which indicates autocorrelation in the established model, was calculated and it was concluded that there was no autocorrelation (Table 6).

DISCUSSION

Complementary and Alternative Medicine is a broad field, is outside the framework of the existing health system, and covers all health treatment methods (6). Today's individuals use CAM methods for the treatment and protection of diseases, where they have a curative and beneficial effect on their health, reduce and treat symptoms that may occur as a result of medical treatment (2, 7). This section discusses the findings obtained as a result of the study regarding the education and knowledge level of intensive care nurses about CAM methods, their use of CAM, their views on CAM methods, and ITATTS.

In the study of Chang et al. (8), 41.2% of health workers stated that they had sufficient knowledge about CAM methods. In the study of Lafçı and Kaşıkçı (9), it was determined that the methods that nurses have the most knowledge about are herbs, massage, diet and acupuncture. In the study conducted by Uraz (10) with surgical nurses, the nurses stated that the most known CAM methods were heat therapy, spiritual therapy, cold compresses, massage, herbal therapy, art therapy, aromatherapy, spiritual therapy, vacuum therapy, leech therapy, cupping and yoga. In the study of Bal et al. (11), it was stated that 79.4% of the nurses knew spa treatments, 75.4% acupuncture, 81% massage and 77.8% herbs. In the study of Yayan and Dağ (7), 37.5% of pediatric nurses knew music therapy, 36.6% knew acupuncture, 49.1% knew herbal treatments, and 33.9% knew massage and meditation methods. In the study of Koçdaş (12), it was stated that 100% of the nurses had knowledge about hypnosis, 98.5% about massage, 98.5% about acupuncture and 95.5% about yoga. In the study conducted by Tracy et al. (13) in the USA, it was found that 82.4% of the nurses had knowledge about massage, 78.7% about therapeutic touch and 82.9% about spiritual therapy. The most frequently mentioned CAM methods in the study of Buchan et al. (14) were cod liver oil, cranberry juice and massage. According to the research conducted by Balouchi et al. (15), the average knowledge of nurses about CAM treatments was 62.2%. An examination of the study shows that the rate of knowing various CAM methods of nurses is high. In our study, it was thought that the reason why nurses' knowledge about CAM methods varied compared to other studies could be due to cultural differences between countries and cities, that some CAM methods are not generally used in our country and that they are not sufficiently included in the education system.

In the study conducted by Görücü (16), 74.7% of the participants stated that they used CAM methods for themselves and their families. In the study conducted by Yayan and Dağ

(7), 48.2% of pediatric nurses stated that they used CAM for individual and family members, while 40.2% stated that they benefited from CAM applications. The result reached in our study is in parallel with the result of Görücü's research. It was observed that most of the nurses preferred CAM methods for themselves and their families.

In the study of Görücü (16), the methods used by nurses for themselves were acupuncture, herbs, prayer, special diets, herbal teas and vitamins. In the study of Lafçı and Kaşıkçı (9), nurses stated that they mostly used herbal treatment (85.4%) and massage (21.9%). In the study of Koçdaş (12), 49.3% of the nurses stated that they used CAM methods, while the CAM methods they used the most were phytotherapy (29.9%), massage (26.9%), hydrotherapy (11.9%) and acupuncture (7.5%). In the study of Bahall and Legall (17), in which the use of CAM by nurses was investigated, 92.4% of the participant nurses stated that they used CAM methods. In a study conducted by Toprak et al. (18), 64% of nurses stated that they used CAM methods in their daily life, while the most frequently used method was hot/cold compress, reiki, herbal products, acupuncture, massage and relaxation exercises. In a study conducted by Xue et al. (19) with nurses in Hong Kong, 80% of the participating nurses stated that they used at least one of the CAM methods, 50.3% used herbal therapy, 54% used massage, 27.8% used aromatherapy and 32.6% of them used reflexology. In the study of Jong et al. (20), 59.7% of the nurses stated that they used massage, 24.8% mind-body therapies, and 51.3% used diet treatments in their own self-care. Buchan et al. (14) found that 41% of nurses used CAM methods. In the study conducted by Samuels et al. (21) with nurses, 87.3% stated that they used CAM methods, 48.6% used herbal medicine, 67.1% used massage, 40.5% used touch therapies, 42.2% used meditation and 39% were found to use prayer methods. In the study of Kahraman and Kırkan (6) with pediatric nurses, it was determined that 26.9% of nurses practiced massage, 16% meditation, and 16% prayer. In our study, it was thought that the reason why nurses' use of CAM methods was different from other studies might be due to cultural differences between countries and cities and that some CAM methods are not generally used in our country.

In the study conducted by Aktaş (2) with nursing students, the students' Attitude Scale towards Integrative Complementary and Alternative Medicine mean score was 31.38±4.40, the mean Complementary and Alternative Medicine subscale score was 20.42±3.14 and the Integrative Health subscale score was 8.54±3.06. In the study of Şahin et al. (22), the mean score of the Attitudes towards Complementary and Alternative Medicine Scale was determined as 28.46±5.04. In the studies of Baltacı and Koç (23), the total scale score average was found to be 28.43±5.05. In the study of Çınar et al. (24), the total scale score average of nursing students was determined as 25.41 ± 5.25. In Özşaker's (25) study with senior nursing students, the mean score of the Attitude Scale towards Integrative Complementary and Alternative Medicine was determined as 30.87±4.83, the mean score of the Complementary and Alternative Medicine sub-dimension was 21.38±3.60, and the mean score of the Integrative Health sub-dimension was 9.49±3.35. In the experimental study conducted by Toygar (26) with nursing students, the mean score of the Attitude Scale towards Holistic Complementary and Alternative Medicine before education was given to the students about CAM was 32.9±4.58, and it was 26.8±4.18 after the education. In the study conducted by Demirbağ et al. (27) with midwives, the mean score of the Attitude Scale towards Integrative Complementary and Alternative Medicine was determined as 52.5±1.3, the mean score of the Complementary and Alternative Medicine sub-dimension was 21.5±1.5, and the mean score of the Integrative Health sub-dimension was 23.2±1.1. In the study of Erci (28), the mean score of the Attitude Scale towards Integrative Complementary and Alternative Medicine was found to be 58.0±4.1. In the studies of Baltacı and Koç (23), Toygar (26), Hyland et al. (29), Aktaş (2), Şahin et al. (22), and Çınar et al. (24), it was determined that participants' attitudes towards holistic complementary and alternative medicine were positive. While it was similar, it was seen that the attitude of midwives was not positive in the study of Demirbağ et al. (27). In our study, the mean scores of the scale and its sub-dimensions were found to be compatible with the results of other researchers, except for the study of Demirbağ et al. and Erci. Except for the study of Demirbağ et al., the attitude was positive in our study as well as in all other studies found.

In the studies found, it is seen that there are different results between the demographic characteristics of the participants and their attitudes regarding the use of CAM methods. In the study of Aktaş (2), Erci (28), Özşaker (25), and Çınar et al. (24), no statistically significant difference was observed in terms of using complementary and alternative medicine methods according to gender, while Kavurmacı et al. (30), Toygar (26), Şahin et al. (22), Baltacı and Koç (23), and Radi et al. (31) showed a statistically significant difference according to gender. In this study, it was determined that the scores obtained from the Attitude Scale towards Integrated Complementary and Alternative Medicine and the Complementary and Alternative Medicine sub-dimension showed a statistically significant difference according to the gender of the individual. In the studies in the literature, there is a statistically higher difference between genders. In the study of Demirbağ et al. (27) with midwives, a statistically significant difference was observed in the Attitude Scale towards Integrated Complementary and Alternative Medicine and Complementary and Alternative Medicine sub-dimension at the education level, while this difference was not observed in the holistic health sub-dimension. In this study, however, no statistically significant difference was observed in education level. In the study of Demirbağ et al. (27), a statistically significant difference was observed in the Attitude Scale towards Integrated Complementary and Alternative Medicine and the Complementary and Alternative Medicine sub-dimension in marital status, but this difference was not observed in the Holistic Health sub-dimension. In this study, it was determined that the scores obtained from the Attitudes towards Holistic Complementary and Alternative Medicine Scale, Complementary and Alternative Medicine and Holistic Health sub-dimensions

showed a statistically significant difference according to the marital status of the individual. In the study of Demirbağ et al. (27), a statistically significant difference was observed in the Attitude Scale towards Integrated Complementary and Alternative Medicine and in the Complementary and Alternative Medicine sub-dimension, while this difference was not observed in the Holistic Health sub-dimension during the study period. In this study, it was determined that while there was a significant difference in the Attitudes towards Integrative and Alternative Medicine Scale, the scores obtained from the Complementary and Alternative Medicine and Integrative Health sub-dimensions did not show a statistically significant difference according to the duration of the study. In the study of Demirbağ et al. (27), there was a statistically significant difference in the Attitude Scale towards Integrative and Alternative Medicine, Complementary and Alternative Medicine and Integrative Health sub-dimensions of chronic disease state, whereas in this study, there was a statistically significant difference in the Attitude Scale towards Integrative and Alternative Medicine and Complementary and Alternative Medicine sub-dimension showed a statistically significant difference according to the chronic disease of the individual.

CONCLUSION AND RECOMMENDATIONS

In line with the data of the research; It was determined that the attitudes and behaviors of intensive care nurses regarding CAM methods and practices were inadequate and that they needed to raise more awareness on the subject. The group with the highest attitude of intensive care nurses towards CAM was those whose graduation year was between 2010 and 2016, and the group with the lowest was those with chronic diseases. In line with these results, it is thought that it is necessary to increase the awareness of intensive care nurses by organizing in-service training programs and to provide training services to health workers in outpatient clinics related to CAM methods. In addition, it is recommended that CAM methods, which have been scientifically tested and based on evidence, be included in patient care and treatment practices by nurses in support of modern treatment, and institutional procedures should be established for this. The limitation of the study is that it was conducted only with intensive care nurses working in a hospital

Ethics Committee Approval: This study was approved by the Ethics Committee of Istanbul Sabahattin Zaim University, Document Date and Number: 27.05.2021-E.7153, and from the Provincial Health Directorate, numbered E-15916306-604.01.02, dated 25.02.2022.

Informed Consent: Written consent was obtained from the participants.

Peer Review: Externally peer-reviewed.

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

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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REVIEW ARTICLES
DOI: 10.26650/CURARE.2023.1293930
CURARE - Journal of Nursing 2023;3:41-51

Psychosocial Intervention Programs in Natural Disaster Affected Individuals: A Systematic Review

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Citation: Comez Ikican T, Mor E. Psychosocial intervention programs in natural disaster affected individuals: a systematic review. CURARE - Journal of Nursing 2023;3:41-51. https://doi.org/10.26650/CURARE.2023.1293930

ABSTRACT

The aim of this study is to systematically analyze the psychosocial intervention programs applied to individuals affected by disasters.
This study was conducted through a systematic review of the databases including "Web of Science Core Collection, Pubmed, Science Direct, Ovid, Scopus, CINAHL, Embase, Cochrane, Google Scholar, and Tubitak-ULAKBIM." Relevant articles between January 1999 and April 2023 were retrospectively analyzed.
There are 27 national and international studies related to the subject. Two researchers evaluated this study using the Joanna Briggs Institute's control list . A review profile was presented in the context of the "PRISMA-Preferred Reporting Items for Systematic Reviews and Meta-Analyses" schema.
As a result of this systematic review, it was observed that psychosocial intervention programs carried out after a disaster are highly effective.
Keywords: Disaster, psychosocial intervention, systematic review

INTRODUCTION

Disaster is defined as "great catastrophe, trouble, and destruction" (1). The COVID-19 pandemic, the 2022 earthquake in Indonesia, the 2022 floods in Pakistan, the 2023 tornadoes and storms in the US, the 2023 floods in Brazil, the 2023 New Zealand floods and Cyclone Gabrielle, and the 2023 earthquake in Turkey-Syria are some recent disasters that have significantly impacted human life in the last few years. These are only a few of the thousands of disasters that occur annually and tend to increase (2,3) in recent years. The frequency of disasters has started to increase with the changing ecological conditions and environmental factors (4,5). According to where they originate, disasters fall into three major categories: technical, environmental deterioration, and natural. Natural disasters also include five types of disasters: "geophysical" (earthquakes, eruptions, and tsunamis), "hydrological," "meteorological," "climatological," and "biological hazards" (6).

Natural disasters are generally characterized by high mortality. This may cause major traumas for affected people (7). Victims who suffer trauma from disasters may experience additional stress as a result of their displacement and sheltering, in addition to the loss of lives (8). A natural disaster's first three days are known as the 'crucial period' which is crucial for finding survivors without food or aid (9). Besides core needs like food and aid disaster victims also have specific needs that need to be attended to. Jordan (2015) created a hierarchy of needs triangle for survivors (Figure 1) to identify disaster survivors' core needs based on his disaster relief and Maslow's (1943)

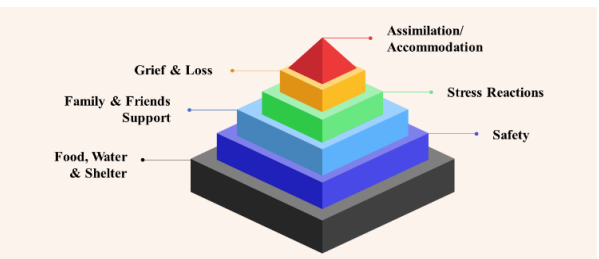

Figure 1: Hierarchy of Needs Triangle for Survivors to Identify Disaster Survivors

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Submitted: 08.05.2023 • **Revision Requested:** 13.06.2023 • **Last Revision Received:** 08.08.2023 • **Accepted:** 14.08.2023 • **Published Online:** 00.00.0000

hierarchy of needs. Basic needs (or deficiencies) are at the bottom of the pyramid, while complex needs (higher recovery and growth) are at the top (8).

The cost of the disasters is generally measured by social and economic damage, but the victims are also affected by emotional suffering and pain, and psychological effects outweigh the physical effects in most people. The "psychological footprint" of a disaster is larger than the "medical footprint" (10,11). Even though many people in the hazard field will escape physically unharmed, they will still suffer from stress reactions, distress, fear, and bereavement. Persons who are physically injured will also experience a psychological overlay of "injury-related distress" and an elevated risk for Posttraumatic-Stress Disorder (PTSD) (12,13). Along with PTSD, people might experience different types of psychological instabilities (Figure 2), such as anxiety, acute stress disorder, traumatic grief, adjustment disorders, and depression (14)

All health professionals must play an "active role" in the process of coping with negative life experiences that may occur in individuals after a disaster (15). In this context, especially nurses are very effective in post-disaster care due to their high number and accessibility. Nurses play an active role in the whole process of the disaster (before, during, and after). They have the roles of informing, risk identification, and protective activities before the disaster, and assessment, diagnosis, planning, and caregiving roles during and after the disaster. Nurses are always present in disaster situations and play a vital role in their response (16-18). With their special knowledge and skills, they minimize the factors that negatively affect the health of the victims and the factors that threaten their lives (19,20). When we look at the studies conducted around the world, it is seen that the presence of nurses in case of disaster can reduce the death rate (21,22).

In addition, nurses support the psychosocial empowerment of disaster-affected individuals with post-disaster psychosocial intervention programs (23). Nurses focus on mainly seven subjects: Raising public awareness of mental health, developing human resources to improve response opportunities for "Mental Health and Psychosocial Support-MHPSS," support for "MHPSS" providers, support for collective activities, one-to-one support for individuals in need, living conditions and income support and facilitating collaborations between "MHPSS" activities provided to affected communities (24). In this context, nurses can ensure that individuals affected by disasters protect and maintain their mental health through psychological first aid, psychoeducational programs, and therapies in which they are experts.

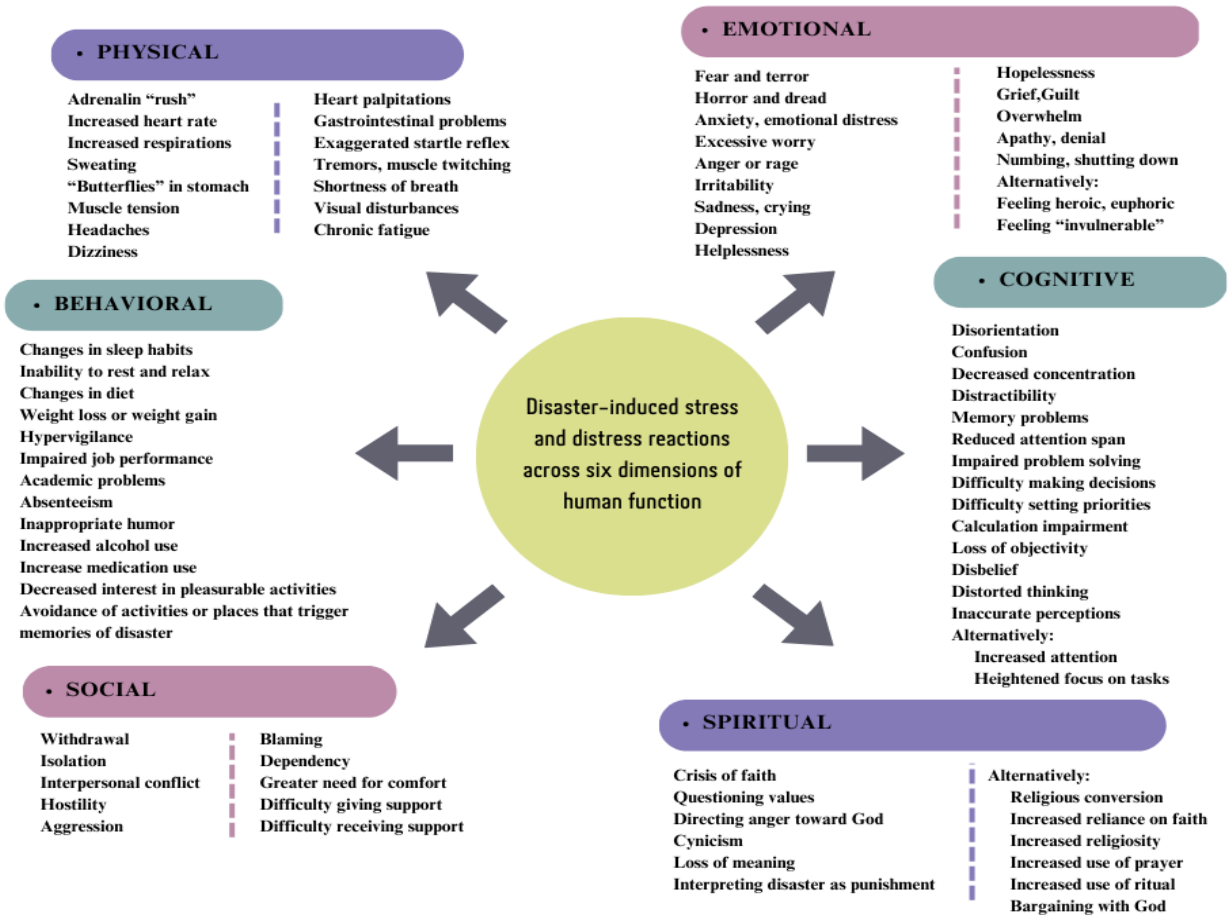

Figure 2: Psychosocial Problems in Natural Disaster Affected Individuals

MATERIAL AND METHODS

Study Aim

This systematic analysis was conducted to evaluate the psychosocial intervention programs for individuals affected by disasters. Accordingly, the included studies' aims, years, findings, and results were analyzed.

Study Design

The research was conducted over the Istanbul University internet access network in April 2023. The searches were collected with a combination of Turkish and English keywords such as "nurses", "nursing", "psychosocial intervention", "psychoeducation", "therapy", "psychological first aid", "motivational interviewing", "EMDR", "psychological well-being", "group studies", "disaster", "catastrophe", "natural disaster", "man-made disaster", "hazards", "earthquake", "floods", "tsunamis", "landslides", "volcanic eruptions", "fires", "wildfire", "droughts", "cyclone", "hurricane", "tornado".

Searches were conducted in "Web of Science Core Collection, Pubmed, Science Direct, Ovid, Scopus, CINAHL, Embase, Cochrane, Google Scholar, and Tubitak-ULAKBIM." In all databases, keywords were searched by making various combinations (such as "nurses" and "psychosocial intervention" and "natural disaster", "nursing" and "psychoeducation" and "earthquake" etc.).

Inclusion criteria in the study,

- The sample group was affected by the disaster,
- Between the years January 1999 – April 2023 and national or international publications,
- Original, qualitative, and quantitative research,
- The full text of articles to be accessible,
- Turkish or English to be the language of publication.

Exclusion criteria in the study,

- **Reason 1:** Thesis studies and oral or poster papers presented at congresses were not included in the scope of the study.
- **Reason 2:** Studies with a lack of a summary were not included in the review.

As a result of these inclusion criteria, 4710 publications were reached. Abstracts or full texts were read and assessed to identify whether they met the research inclusion criteria. The study also has exclusion criteria. Finally, a total of 27 publications were retrieved. The detailed flowchart of the study is shown in "PRISMA" **Figure 3.**

The Preferred reporting items for "PRISMA", a valid and reliable guide for systematic reviews, were used to summarize the data. Then also, studies were evaluated with a data summarization form developed based on "PRISMA". Two independent researchers reviewed the studies to ensure consistency among the researchers. Scoring was 1 point (appropriate) and 0 (unsuitable). The lowest score was 7, and the highest score was 11. Kappa analysis was then performed to determine consistency between each investigator. The Kappa value was found to be as high as 0.85.

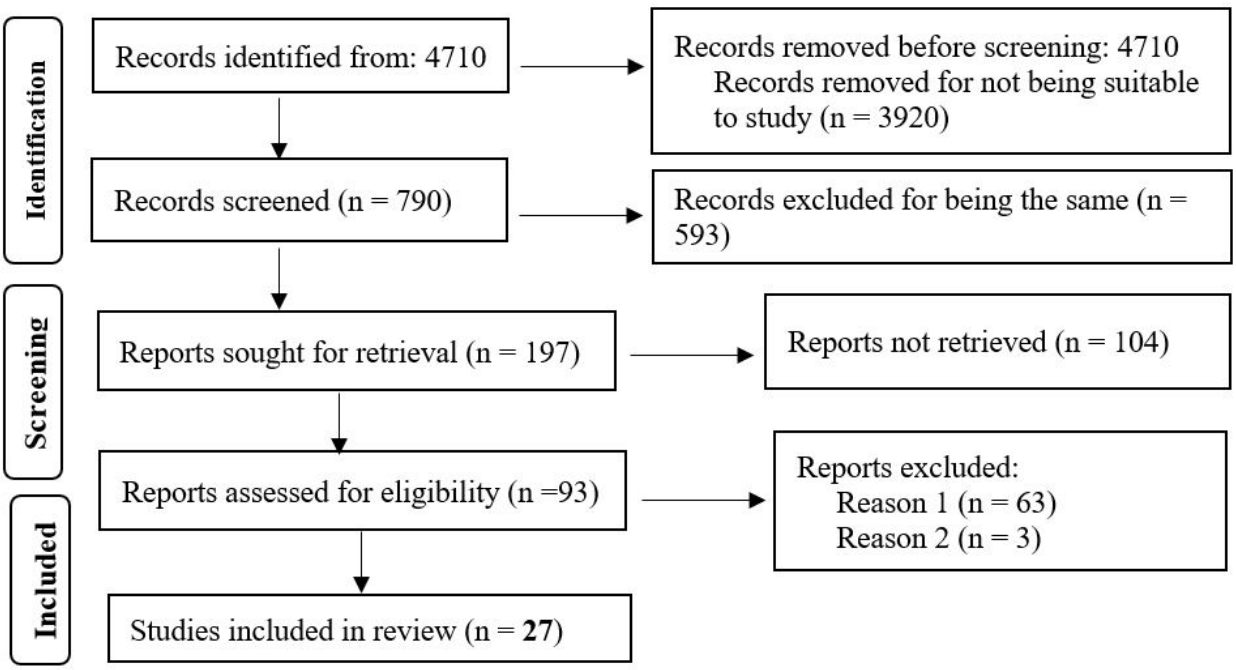

Figure 3: Flow Diagram

Data summarization form items

- Title of the study,
- Summary of the study,
- Method of the study (Design of the study, Sample size, the sample group in which the study was conducted, Data collection tools used, Statistical analyses used),
- Findings of the study,
- Discussion of the study,
- Limitations of the study,
- Conclusion of the study.

Ethical Consideration

This study was not conducted on any individual or animal. Document analysis was used as the data collection method. Therefore, ethics committee approval is not required.

RESULTS

This systematic review includes data from 27 studies published between January 1999 and April 2023. The characteristics of the studies (Author/s, Study year, Country, Psychosocial intervention, and Disaster features) are given in Table 1, and a review of the studies (Aims, Sample, Methods, and Results) are given in Table 2. The findings are examined under three main headings: Characteristics of the studies, Characteristics of psychosocial intervention programs, and Characteristics and effects of disasters.

Characteristics of the Studies

When the studies included in the systematic review are examined according to the years they were made, it is seen that the studies were carried out between 2002-2022, since there are no publications published in 2023 yet. In addition, 19 of the studies included in the review were conducted between 2002-2019, and 8 studies between 2020-2022 (Table 1).

When the countries where the studies were conducted were examined, it was found that they were in a wide variety of geographies. When the countries are examined in general, it is seen that there are countries where various disasters are experienced very frequently. In this context, it was determined that 3 of the earthquake-related studies were conducted in Turkey, 5 in China, 2 in Nepal, 1 in Iran, 1 in Italy, and 1 in Iceland. Hurricane studies were mostly conducted in the United States, tsunami studies were conducted in Japan and Israel, and one in Thailand. In addition, it was observed that there was a study on fire disasters in India (Table 1).

When the sample group in which the studies were conducted was examined, it was seen that the studies were conducted with children, adolescents, and adults. It was determined that the sample group of 9 of the studies consisted of adolescents, 4 of the studies consisted of children and 14 of the studies consisted of adults. It was observed that all individuals included in the studies were directly affected by any type of disaster (earthquake, tornado, hurricane, tsunami, and fire) (Table 2).

Psychosocial Intervention Programs

When the psychosocial intervention programs used in the studies included in the systematic review were examined, it was determined that very different types of programs were used. First of all, “CBT” was used in four of the studies, the “Brief Intervention Program” in three of them, the “BBN Program” in three of them, and the use of “EMDR” in three of them. In addition, two studies used “Art-based Psychosocial Training, two studies used “Grief and Trauma Intervention”, and two studies used the “NET Program” as psychosocial intervention. Also, all these programs, “Stress Intervention Program”, “Psychoeducation”, “Emotion Regulation Program”, “Problem-Solving Skills Enhancement Program” and “Adaptation to Life and Resilience Program” were used (Table 1).

When the durations of the psychosocial intervention programs were examined, it was determined that the longest intervention was 11 sessions, and the shortest intervention program was implemented once (Table 2).

Characteristics and Effects of Disasters

When we examined the characteristics of the disasters in the studies included in the systematic review; it was seen that earthquake and hurricane disasters were frequently experienced. Thirteen studies were carried out following an earthquake, one study was carried out on earthquake and tsunami, nine studies were carried out following hurricanes, one study was carried out on fire, one study was carried out on typhoons, and two studies were carried out on tsunamis. The disasters in the study are serious disasters that cause significant loss of life and property. Also, these disasters had a serious impact on the country so international calls for help post-disaster (Table 1).

DISCUSSION

In this systematic review, post-disaster psychosocial intervention programs and their effects were evaluated. Studies on the subject have focused on psychosocial intervention programs after natural disasters such as earthquakes, tsunamis, hurricanes, and fires. A common conceptual language could not be used regarding the use of intervention programs after different disasters, at different time intervals after the disaster, and implemented different data collection tools.

It was observed that the psychosocial intervention programs implemented within the scope of the review were often carried out after the earthquake. The fact that earthquakes, which are among the most common natural disasters in the world, are thought to be a reason for this. In addition, it is thought to be a subject that has been studied more because of the psychosocial effects and trauma on individuals and society, as well as the

Table 1: Characteristics of the Studies

	Author/s	Study Year	Psychosocial Intervention	Disaster Features	Country
1	Chemtob et al.	2002	EMDR	Hurricane Iniki	Hawaii
2	Hardin et al.	2002	Catastrophic Stress Intervention	Hurricane Hugo	United States
3	Chemtob et al.	2002	Individual and Group Therapy	Hurricane Iniki	United States
4	Başoğlu et al.	2005	Single-Session Behavioral Treatment	Earthquake	Turkey
5	Konuk et al.	2006	EMDR	Earthquake	Turkey
6	Başoğlu et al.	2007	Behavioral Treatment	Earthquake	Turkey
7	Shooshtary et al.	2008	Cognitive Behavioral Therapy	Earthquake	Iran
8	Salloum e tal.	2008	Grief And Trauma Intervention	Hurricane Katrina	United States
9	Zhang et al.	2011	Cognitive-behavior therapy Acupoint stimulation	Earthquake	China
10	Salloum et al.	2012	Grief and Trauma Intervention	Hurricane Katrina and Gustav	United States
11	Zang et al.	2013	Narrative Exposure Therapy (NET)	Earthquake	China
12	Zang et al.	2014	Narrative Exposure Therapy (NET)	Earthquake	China
13	Thordardottir et al.	2014	Yoga practice	Earthquake	Iceland
14	Chen et al.	2014	Cognitive Behavioral Therapy	Earthquake	China
15	Ruggiero et al.	2015	Structured interview and program Bounce Back Now (BBN)	Tornado	United States
16	Ruggiero et al.	2015	Semi-structured baseline telephone interviews Bounce Back Now (BBN) ASH (Adult self-help) intervention	Joplin tornado	United States
17	Pityaratstian et al.	2015	Group Cognitive Behavioural Therapy	Tsunami	Thailand
18	Xiaolu et al.	2017	Brief Intervention Program	Earthquake	China
19	Saltini et al.	2018	EMDR	Earthquake	Italy
20	O'Donnell et al.	2020	The Skills for Life Adjustment and Resilience (SOLAR) Program	Australian Bushfire	India
21	Gavron	2020	Art-based psychosocial intervention	Tsunami	Japan and Israel
22	Fukuchi	2020	Psychoeducation	Earthquake and Tsunami	Japan
23	Sangraula et al.	2020	Group Problem Management	Earthquake	Nepal
24	Gilmore et al.	2021	Web-Based Intervention Bounce Back Now (BBN)	Tornado	United States
25	Gavron et al.	2022	Arts-based psychosocial training	Yolanda Typhoon	Israel
26	Powell et al.	2022	Brief Intervention Program	Hurricane Harvey and Maria	United States
27	Ramaiya et al.	2022	School-Based Emotion Regulation Prevention Intervention	Earthquake	Nepal

physical effects of the earthquake. In addition to all these, witnessing the earthquake and its aftermath through visual, written, or social media, although not primarily affected by the earthquake, causes secondary trauma in individuals. As a result, those directly or indirectly affected by the earthquake experience psychiatric problems and the need for psychosocial intervention.

In the studies reviewed, it was observed that the psychosocial interventions applied were mostly directed toward cognitive processes. In this context, when the studies are examined in detail, it has been concluded that the most commonly used intervention programs are "CBT," "Brief Intervention Program," "BBN Program," and "EMDR". When the literature is examined, it is seen that intervention programs for trauma due to disasters are generally cognitive-based (25-27). CBT is a therapy method with high reliability and validity that aims to intervene in the behaviors of trauma victims and to strengthen them cognitively against the problems they experience.

In the results of intervention programs, it was observed that the goals of the programs were achieved, and the psychiatric symptoms such as depression, dissociation, etc. that developed due to trauma decreased or disappeared. This result has also been proven by follow-up studies. However, although the results were as desired in a few studies, clear results could not be given about the continuity of the intervention program because follow-up was not performed (28,29). In this context, it is thought that it is very important to follow up on trauma studies. Because various psychosocial problems developing due to disaster may occur at different times after the disaster.

Considering the sample group of the studies examined, it was seen that they were carried out with adolescents and children as well as adults. Although disasters affect all members of society, they mostly affect children and adolescents, who are among the vulnerable groups (30-32). Children may not be able to make sense of the disaster and losses. Similarly,

Table 2: Review of the Studies

	Author/s & Year	Aim	Sample	Method	Results
1	Chemtob et al. (2002)	This study aimed to determine the effectiveness of the "Psychosocial Interventions Program" for affected elementary school children in the disaster.	176 persons (group therapy) 73 persons (individual therapy) 6 - 12 years old	This randomized controlled study was carried out two years after the disaster. The program consists of 4 seasons.	The program is provided to reduce children's stress and trauma-related symptoms.
2	Hardin et al. (2002)	The study aimed to determine the effectiveness of "Long Term Psychosocial Nursing Interventions" for adolescents affected by the disaster.	545 adolescents (experimental group) 550 adolescents (control group) 13-18 years old.	The study was longitudinal and quasi-experimental. The study determined the mental distress of adolescents every six months over the 3 years. The interventions were carried out three years after the hurricane and consisted of nine protocols	The study results, that adolescents in the intervention group were decreased mental distress for the first two years.
3	Chemtob et al. (2002)	This controlled study aimed to evaluate the effectiveness of a "Brief intervention" for disaster-related PTSD in affected children.	32 children (experimental group) 6 - 12 years old	This study was implemented using two groups; - The first group was assessed at pre-treatment, provided treatment, and re-assessed at post-treatment. - The second group consisted of wait-listed participants. The second group was assessed at baseline, and then following treatment, the first group was re-assessed at provided treatment. In addition, both groups were re-evaluated six months after the treatment.	As a result of the program, it was observed that there was a small decrease in the children's PTSD symptoms. In addition, these results lasted for 6 months.
4	Başoğlu et al. (2005)	The study aimed to determine the effectiveness of "Single-Session Behavioral Treatment for affected people in the earthquake.	31 persons (experimental group) 28 persons (waiting list control group) 16-65 years old	The experimental group received a single one-hour session of modified BT and was followed up at weeks 6, 12, and 24. The control group was given the same treatment six weeks after the trial. Interviews consisted of 3 stages. The first stage was 10 minutes, the second stage was 30 minutes, and the final stage was 20 minutes.	This study results that "Brief behavioral treatment" was a suitable and cost-effective intervention for disaster survivors.
5	Konuk et al. (2006)	The aim of the study is to determine the effects of "EMDR Therapy" on exposed people to the earthquake	41 participants (experimental group) 19-74 years old.	EMDR application of 5 sessions, 90 minutes each, was carried out with 41 victims of disasters diagnosed with PTSD. The application was carried out 17 months after the earthquake. Participants were divided into the early-treated and late-treated, and these groups were compared.	After the EMDR application, there was a decrease in PTSD symptoms. It was observed that the decrease in PTSD symptoms continued in the 6-month follow-up after the application.
6	Başoğlu et al. (2007)	This study aimed to determine the effect of a "Single-session Behavioral Treatment" on people who exposure to "simulated tremors in an earthquake simulator and self-exposure instructions" in reducing PTSD.	16 persons (experimental group - behavioral treatment) 15 persons (repeated assessment group) 18 - 65 years old	31 earthquake survivors with PTSD applied a single session of behavioral treatment (n=16) or repeated assessments (n=15) after a 4-6 year post-earthquake.	The single-session behavioral treatment is effective in reducing fear and PTSD symptoms in earthquake survivors.

7	Shooshtary et al. (2008)"	This study aimed to determine "Cognitive Behavioral Therapy (CBT)" effectiveness in adolescents exposed to earthquake.	135 adolescents (case group) 33 adolescents (comparison group) 11 - 20 years old	Four months after the earthquake, adolescents were evaluated with the Impact of Event Scale-Revised (IES-R). 2 therapists conducted CBT in the case group, and both groups were evaluated again with IES-R.	Cognitive behavioral therapy is effective in reducing post-traumatic stress symptoms
8	Salloum, A., & Overstreet, S. (2008)	This study aimed to determine the effectiveness of a "Community-based Grief" and "Trauma Intervention" for children who were affected by the disaster.	28 children (group intervention) 28 children (individual intervention) 7 - 12 years old	İnterventions consisted of 10 sessions of grief and trauma-focused programs and a parent meeting. Measures of scales at pre-intervention, post-intervention, and 3 weeks post-intervention. Interventions were conducted 4 months after the hurricane.	There were no differences in outcomes between children who participated in group and individual intervention. Each intervention is effective for decreasing childhood grief and trauma post-disaster.
9	Zhang et al. (2011)	This study aimed to determine the effect of "Acupuncture Point Stimulation" and "CBT" on PTSD after an earthquake.	24 cases treated by the CBT 67 cases treated by CBT and acupoint stimulation 4 - 89 years old	In the control group, using CBT alone and treated for 30 min each time every other day for 1 week. In the case group, both CBT and acupoint stimulation were used. Stimulate left Laogong (PC 8) with a stimulator for 30 min a time every other day for 1 week.	Acupoint stimulation is more effective than CBT used alone in PTSD patients.
10	Salloum et al. (2012)	This study aimed to determine the effect of the "Grief and Trauma Intervention Program" on post-disaster coping skills and trauma narrative processing in children.	37 children (trauma narrative processing) 33 children (coping skills) 6 - 12 years old	Three years post-hurricane, 11 sessions of program and parent meetings were held. The scales were applied before and after the implementation. Follow-up was also performed at 3 and 12 months.	Children in both groups demonstrated significant improvements in distress-related symptoms and social support. Also, they were maintained up to 12 months post-intervention.
11	Zang et al. (2013)	This study aimed to determine the effect of "Narrative Exposure Therapy (NET)" on PTSD after an earthquake.	11 persons (experimental group) 11 persons (waiting list control group) 37 - 75 years old	19–23 months after the earthquake, 4 therapy sessions of 60–90 minutes each were held. The scales were applied after the implementation. Follow-up was also performed at 2 months.	NET is effective on PTSD symptoms post-earthquake. PTSD symptoms showed significant reductions.
12	Zang et al. (2014)	This study aimed to revise "Narrative Exposure Therapy (NET)" to be adaptable for treating PTSD post-natural disaster.	10 persons (experimental group - NET) 10 persons (experimental group NET-R) 10 persons (waiting list control group) 28 - 80 years old	The NET group received 4 or more therapy of 60–90 minutes each, and twice weekly for two weeks and the NET-R group received 3 or more therapy of 60–120 min. each. Therapies started 30-34 months after the earthquake. The scales were applied after the implementations. Follow-up was also performed at 3 months.	Revised NET (NET)-R is a feasible and effective therapy for post-earthquake.
13	Thordardottir et al. (2014)	This study aimed to determine the effect of "Yoga Practice" on perceived stress and stress-related symptoms after an earthquake.	31 persons (experimental group) 35 persons (waiting list control group) 20 - 67 years old	Yoga practice was conducted twice a week for six weeks. The scales were applied before and after the implementation.	Participants in groups showed significant improvements in stress and stress-related symptoms from pre- to post-intervention.
14	Chen et al. (2014)	This study aimed to determine the effectiveness of "Short-term CBT", "General Supportive Intervention (GSI)", and "Non-treatment" in children who lost their parents in the earthquake.	10 persons (CBT group) 10 persons (GSI group) 12 persons (non-treatment group) Average age 14	The short-term CBT program was 6 sessions. The GSI consisted of general supports like listening, reflection, and empathy, and lasted 6 weeks. These programs were conducted two years after the earthquake	Short-term CBT was more effective than the GSI, and non-treatment group in enhancing resilience and reducing PTSD symptoms.

15	Ruggiero et al. (2015)	The randomized controlled aimed to determine the efficacy of a "Web-based Intervention Program" for families affected by the disaster.	2000 adolescents and their only one parent 12 - 17 years old	The structured program with the affected adolescents and one of their parents lasted 4-12 months. After the first meeting with the participants, they were directed to the website. Then they were randomly assigned to one of the three programs. The programs; - "Web intervention for disaster-affected youth" - "Web intervention for disaster-affected families" - "Only assessment with web comparison."	It was observed that the intervention program was effective and its effectiveness continued in the follow-up studies.
16	Ruggiero et al. (2015)	The aim of the study is to determine the effects of "BBN" and, "ASH (Adult Self Help modules)" for affected adolescents and their parents in tornadoes.	364 persons (BBN group) 366 persons (BBN+ASH group) 257 persons (control group) 12-17 years old	Data collection via baseline and follow-up semi-structured telephone interviews. Then children were assigned randomly to three groups: (1) BBN group ("which featured modules for adolescents and parents targeting adolescents' mental health symptoms"); (2) BBN + ASH plus ("modules targeting parents' mental health symptoms"); (3) assessment only.	Study results that the program was feasible and effective in mental health for adolescents. Also, technology-based solutions have tremendous potential value reduced the mental health burden of post-disasters.
17	Pityaratstian et al. (2015)	This randomized controlled trial aimed to determine the effectiveness of the "Modified "Version of CBT" for children and adolescents who were affected disaster.	18 persons (experimental group) 18 persons (waiting list control group) 10 - 15 years old	CBT was implemented in 3-day, 2-hour-daily, and, group format. Also, followed by 1-month post-treatment self-monitoring and daily homework.	The intervention was found effective when implemented together with post-treatment self-monitoring and homework.
18	Xiaolu et al. (2017)	This study aimed to determine the effect of "Structured Brief Intervention (BI)" on people who used alcohol after an earthquake.	118 persons (experimental group - BI and general health education) 121 persons (experimental group - only general health education) 18 and above	BI group (n = 118) received a structured BI (15–30 min.) and general health education. The control group (n = 121) only received general health education. Follow-up interviews were conducted at 12 weeks (3 months) post-intervention.	The study results demonstrated that BI is effective for problem alcohol users who experienced earthquake.
19	Saltini et al. (2018)	The aim of the study is to determine the effects of "The Effects of Eye Movement Desensitization and Reprocessing (EMDR)" on exposed people the earthquake.	529 persons (EMDR group) 81 persons (drop out) Average age 45	The study was performed retrospectively to evaluate the acute and post-traumatic effects of EMDR. Also, as a result of the study, the effects of early treatment and late treatment were evaluated.	Study results suggest that EMDR is an effective treatment for reducing psychological distress after a natural disaster.
20	O'Donnell et al. (2020)	This study aimed to determine the effectiveness of "Brief and Scalable Psychosocial Intervention" for victims' adjustment after disaster and trauma.	15 persons bushfire survivors 39 - 74 years old	The "Skills for Life Adjustment and Resilience (SOLAR)" program was 6 sessions, and each session runs for 50 min (only the first session was 80 min.). SOLAR, a single-group study was conducted. Assessments were conducted at pre-post intervention, and at 3-month follow-up. These programs were conducted one year after the disaster.	This study reduced psychological symptoms and impairment among disaster survivors.

21	Gavron, T. (2020)	The aim of the study is to determine the effects of "Art-based Psychosocial Intervention" for teachers affected by the tsunami.	9 teachers (experimental group) There is no age information	After the implementation, six main themes emerged. These are; "mutual playfulness and joy, rejuvenation and regaining control, containment of a multiplicity of feelings, encouragement of verbal sharing, mutual closeness and support, and the need to support cultural expression."	As a result of the study, it was observed that "Art-based Psychosocial Intervention" practices realized by taking into account the social characteristics of a particular culture are effective.
22	Fukuchi, N. (2020)	The study aimed to determine the effectiveness of the "Psychoeducation "Program" implicated for children after the earthquake and tsunami.	11 children (experimental group) 10-18 years old	A 2-hour psychoeducation program was conducted with the children one week after the disaster. Psychoeducation was carried out with a slide show followed by a group discussion. The program was implemented with child psychiatrists and specialist nurses.	The results of this study showed that psychoeducation provided immediately after the disaster would reduce the trauma effects that may develop in children.
23	Sangraula et al. (2020)	This study aimed to determine the feasibility and acceptability "Problem Management Plus (PM+) Program" for women and men in an earthquake-affected.	61 persons (problem Management Plus Group -PM+) 60 persons (enhanced usual care -EUC) 30 -70+ years old	The study was designed randomized controlled trial, comparing PM+ and EUC. Participants in the PM+ were offered five sessions and the EUC received brief psycho-education. The programs took 8-8.5 weeks to complete. Sessions lasted 2.5-3 hours on average. This study was conducted 3-4-years later the earthquake.	The PM+ program was observed acceptable and beneficial to participants in the end. Also, primary clinical outcomes were much more effective than expected.
24	Gilmore et al. (2021)	The study aimed to determine the secondary data analysis of a "Bounce Back Now (BBN)", for adolescents affected by the disaster.	361 persons (experimental group - BBN) 10 persons (experimental group BBN +ASH) 254 persons (control group) 12- 17 years old	Participants were randomly assigned to, "BBN","BBN + ASH" and, control group. The interviews lasted approximately 25 minutes. Participants carried out follow-up interviews in both 4 and 12 months. This program was implemented 8.8 months after the hurricane.	It was observed that the PTSD symptoms of the participants decreased after the "BBN" application.
25	Gavron et al. (2022)	The study aimed to determine the effectiveness of "Arts-based Psychosocial Training" after the typhoon.	11 groups 30 - 50 years old	The implementations lasted four days a week and eight days in total between July 2014 - May 2015. 11 groups participated in the applications. All interviews were conducted by ten educational and healthcare professionals.	It has been found that the practice effectively copes with collective traumas and increases resilience.
26	Powell et al. (2022)	The study aimed to determine the effectiveness of "Brief Group Intervention", "Resilience and Coping for the Healthcare Community (RCHC)" and its expanded version, (RCHC+) for health and social care providers affected by the disaster.	394 persons (experimental group – RCHC) 368 persons (experimental group – RCHC+) 18 and above	Participants received either RCHC or RCHC+. The researchers have implemented two follow-up time points at post-intervention (12 weeks post-baseline) and follow-up (18 weeks post-baseline).	At the end of the program, it was observed that the psychological stress of the participants decreased.
27	Ramaiya et al. (2022)	This study aimed to determine the effectiveness of "School-Based Emotion Regulation Prevention Intervention (READY-Nepal)" after the earthquake in children.	42 persons (experimental group) 60 persons (waiting list control group) 13 - 17 years old	A mixed-method, non-randomized controlled trial was conducted with students in affected post-earthquake districts. The program was 8 sessions, and each session runs for 50 min. This program was conducted 14 months after the earthquake.	At the end of the program, it was observed that anger management increased and awareness skills improved in children. However, there were no significant differences in outcomes at the four-week follow-up.

adolescents may experience confusion about meaning. At the same time, material and moral losses in their lives, while they are in their difficult life processes, are among the main reasons for psychological problems after the disaster. For all these reasons, it is thought to work with children and adolescents more frequently in the post-disaster period.

Limitations

This systematic review is limited to studies scanned with the identified keywords. The psychosocial interventions, disasters, and their types, data collection methods, samples, and research types applied in the studies examined are different from each other. For all these reasons, it is thought that it is necessary to work with children and adolescents more frequently in the post-disaster period.

CONCLUSION

Disasters are events that seriously affect individuals and societies in physical, social, and psychological terms and cause negative consequences. The psychological symptoms that emerge in a short time after the disaster are among the basic problems that require rapid and effective intervention. Otherwise, it negatively affects the whole life of individuals and can become a problem that is difficult to solve. In this context, this systematic review of psychosocial intervention programs after disasters provides detailed data on the characteristics of the programs, methodology, and results of the studies. The importance and necessity of psychosocial intervention programs after disasters have been revealed with the striking results of the studies. In summary, after meeting the basic needs of individuals after disasters, psychosocial needs should be identified and qualified programs should be implemented.

Ethics Committee Approval: This study was not conducted on any individual or animal. Document analysis was used as the data collection method. Therefore, ethics committee approval is not required.

Peer Review: Externally peer-reviewed.

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

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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REVIEW ARTICLES
DOI: 10.26650/CURARE.2023.1295198
CURARE - Journal of Nursing 2023;3:53-59

The Effectiveness of Non-Pharmacological Methods in the Management of Wound Dressing Pain: A Systematic Review

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Citation: Onal Alkan A, Uslu Y. The effectiveness of non-pharmacological methods in the management of wound dressing pain: a systematic review. CURARE - Journal of Nursing 2023;3:53-59. https://doi.org/10.26650/CURARE.2023.1295198

ABSTRACT

Wound dressing changes can be painful experiences for patients. This study aims to systematically analyze the research conducted on the non-pharmacological methods used for the management of dressing pain.
The study includes research published in the CINAHL, EBSCO, Medline, Pubmed, Cochrane, Ovid, Science Direct, Scopus, Web of Science, and Wiley Online Library databases between 2010-2022 and used non-pharmacological wound pain, dressing change pain, complementary therapies in wound pain, and wound dressing pain management as keywords to arrive at a total of 863 studies. Of these, the article evaluates the 25 studies that met the inclusion criteria.
At 80.77%, burn wounds were the most studied wound type in the included research. Of the studies, 60% were performed on adult patients, and 69.23% were randomized controlled clinical trials. The most commonly used methods were distraction (20%), virtual reality (20%), and music therapy (20%).
Using non-pharmacological methods can help reduce pain and pain-related anxiety during dressing changes. Clinics should develop protocols for the implementation of non-pharmacological methods and take into consideration patients' experiences and preferences regarding non-pharmacological methods.
Keywords: Wound pain, pain management, dressing change pain, non-pharmacological methods

INTRODUCTION

A wound may be defined as any disruption of the integrity of skin, mucous membrane, or organ tissue (1). The aim of wound care is the correction of impaired functional or anatomical structure as soon as possible, as well as the prevention and reduction of pain and edema. Dressing changes can be painful experiences for patients (2).

Dressing pain develops as a result of reasons such as not being gentle with the tissues during dressing, not performing the procedure carefully, and not using appropriate dressing material. The literature has determined the conditions that trigger pain during dressing change to be contact of the wound with air during dressing removal, cold dressing solutions, removal of dressing that has adhered to the wound, maceration of the wound and surrounding tissue, use of inappropriate wound care materials, and debridement (3,4). Practitioners have reported dressing change to be the most painful aspect of the dressing procedure. This is particularly problematic where the dressing sticks to the wound or removal of the dressing tears the skin (5). Effectively relieving pain and providing patients with a less painful or painless wound-healing environment should be the primary goal in wound treatment (6).

Combining nursing with non-pharmacological methods can help relieve the pain caused by treatment procedures with fewer risks and side effects (7). Non-pharmacological pain management is a comprehensive method of pain relief (8). Using these methods together with pharmacological methods increases the effectiveness of treatment and applying them on their own can impact pain management by enabling the body's natural morphine and endorphin release. Compared to pharmacological methods, non-pharmacological methods have fewer side effects (9). Upon detecting comprehensive pain, the nurse should select

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Submitted: 10.05.2023 • **Revision Requested:** 06.06.2023 • **Last Revision Received:** 12.06.2023 • **Accepted:** 12.06.2023 • **Published Online:** 00.00.0000

the appropriate non-pharmacological methods specific to the patient, apply these methods together, teach the patient, and evaluate the results. The most commonly used methods for pain management are relaxation techniques, distraction, music, daydreaming, information, massage, positioning, restriction of movement, transcutaneous electrical nerve stimulation, therapeutic touch, hot-cold intervention, the use of menthol on the skin, and vibration (10). This study aims to systematically analyze the studies conducted on the non-pharmacological methods used for the management of wound dressing pain.

MATERIALS AND METHODS

Design

This study was designed according to the systematic review method.

Research and Study Selection

This research includes studies published in the CINAHL, EBSCO, Medline, PubMed, Cochrane, Ovid, Science Direct, Scopus, Web of Science, and Wiley Online Library databases between 2010-2022 and used non-pharmacological wound pain, dressing change pain, complementary therapies in wound pain, and wound dressing pain management as the keywords used to search for articles.

Inclusion and Exclusion Criteria

This research included studies whose full text are available in English and Turkish and that used randomized controlled and non-randomized controlled experimental and quasi-experimental methods. According to the search criteria, 863 studies were reached, with 414 articles being examined after excluding duplications. Of the studies, those that were off-topic (*n* = 198); that involved dressing materials (*n* = 152); that were review articles (*n* = 16), case reports (*n* = 15), or meta-analyses (*n* = 14); that used a pharmacological method (*n* = 11); that involved practice experience (*n* = 5); that had partial texts (*n* = 3); that involved negative pressure therapy (*n* = 3); that were in-vitro studies (*n* = 2); that were not published in English (*n* = 2); or that were a book chapter (*n* = 1), perspective article (*n* = 1), or case series (*n* = 1) were excluded from the systematic review (Figure 1).

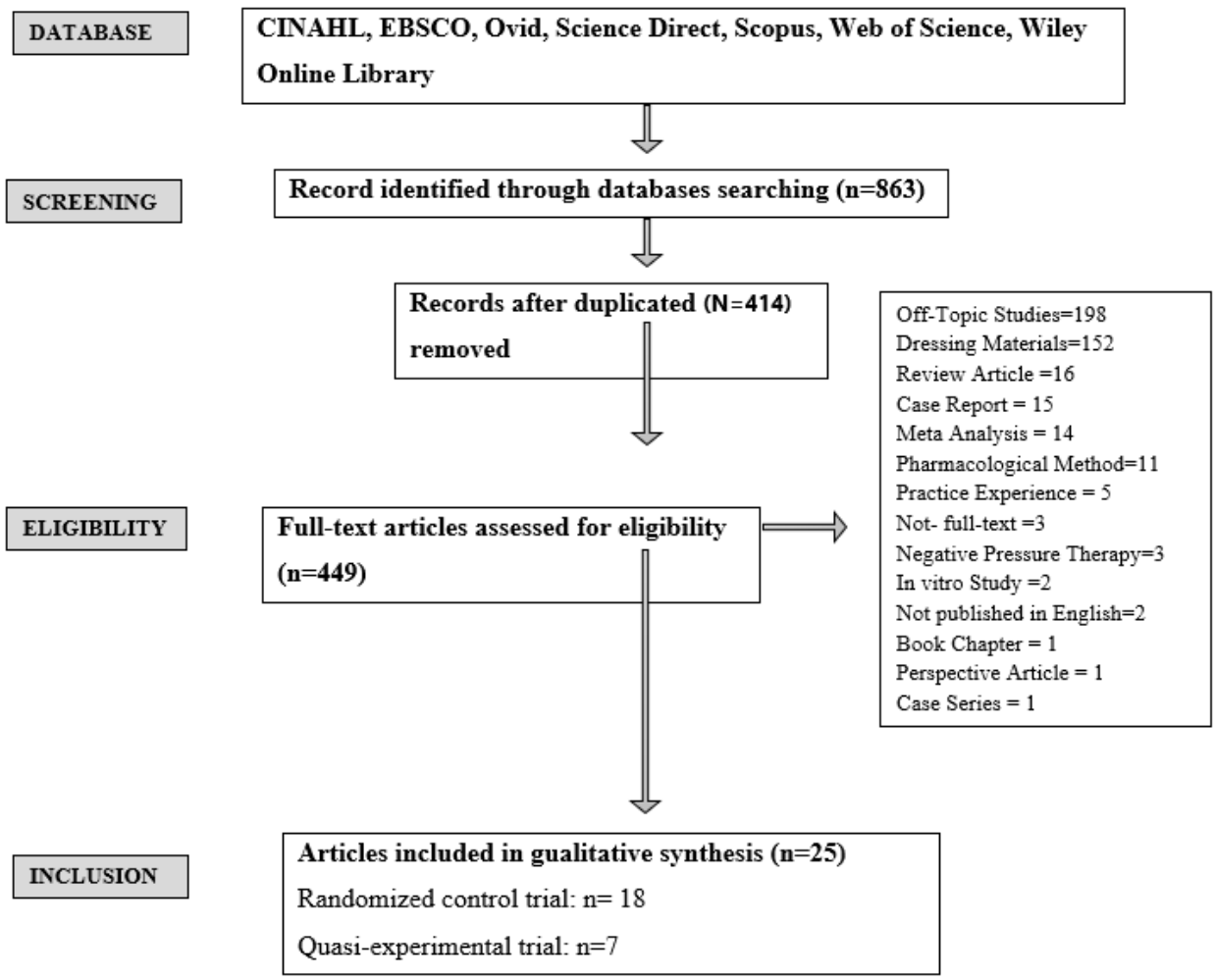

Figure 1: Systematic review of PRISMA flowchart

Data Analysis

A standardized data summarization form was developed for researchers to evaluate the studies. Each study was evaluated and summarized by two independent researchers. The summaries were then compared, and a consensus was established between the two researchers. The research data were evaluated within the scope of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) checklist (11, 12).

RESULTS

A total of 863 studies were accessed, and the 25 studies that met the inclusion criteria were examined. Of the remaining studies, 40% had been performed on children and 60% on adult patients. Of the 25 studies, 80% had examined burn wounds as the most studied type. All of the studies used an experimental design, and 72% were randomized controlled clinical trials. The most commonly used methods were distraction (20%), virtual reality (20%), and music therapy (20%). Table 1 summarizes the years, country of research, design and sample, wound types, non-pharmacological methods, data collection tools, and results of the studies.

DISCUSSION

This systematic review has examined the effect of non-pharmacological methods on dressing pain and analyzed a total of 25 related studies. This section discusses in detail the nonpharmacological methods used in research.

Virtual reality (VR) distraction is a technology that allows the user to be immersed and interact with a computer-generated environment (13). VR provides a significant cognitive distraction to users, and the head-mount display blocks the patient's external view of the immediate medical environment, such as the equipment, health care personnel, and their wounds, thereby increasing the level of immersion and contributing to distracting the patient from perceiving pain (14). Recently, VR has also been found to change the way people interpret incoming pain signals and to reduces the amount of pain-related brain activity (13, 15). VR can therefore reduce both the emotional and sensory components of pain (15). Yun Hua et al. (6) evaluated pain and anxiety during dressing changes in pediatric patients with chronic wounds and found VR distraction to reduce pain and anxiety during dressing changes and to shorten dressing change time compared to standard distraction methods. Ding et al. (16) found immersive VR distraction to be an effective method for reducing pain during postoperative dressing changes. Small et al. (17) suggested that the dressing in burn wounds reduces pain, but a comprehensive evaluation of patient capacity and ergonomics was recommended.

Miller et al.'s (18) study using multi-modal distraction and handheld video games as a preparation or distraction tool in an outpatient burn clinic provided children with superior pain reduction across three dressing changes compared to standard practices. This device has the potential to improve clinical efficiency by shortening treatment times. Distraction is applicable by games and without the need for special education and with few facilities needed for children according to their age and interest (19). Why distraction continues to be endorsed as a coping strategy for pain is no wonder, although some of the evidence discussed is equivocal regarding its efficacy (20). Hang Zhang et al. (21) found the satisfaction scores of the parents of the children working with the wound therapist to show better results compared to the control group. Xiang et al. (22) applied distraction differently in their research, and their results showed a smartphone VR game to be effective at reducing self-reported pain during pediatric burn dressing changes. Chu et al. (23) showed distraction therapy provided by a qualified play specialist in acute pediatric burns to be able to reduce the experienced pain. Moosavi et al. (24) demonstrated their medically guided play to effectively reduce pediatric procedure pain through children's cooperation during dressing changes. Ozsoy et al. (25) found allowing children to watch videos with a VR headset to reduce their pain and fear levels.

Child life therapy (CLT) techniques or devices have been shown to reduce the pain and anxiety children experience during procedures. Examples of the techniques used include music, bubbles, games, electronic devices, and virtual reality. In addition, the role of a child life therapist includes providing pre-procedural psychological support, education for the parent and child, and procedural support during dressing changes (26, 27). The results from Hyland et al.'s (27) research showed that guided imagery can be effective in reducing dressing change-induced anxiety and pain among burn patients.

Another non-medical treatment is guided imagery. This method is based on the relationship between mind and body. The effects of this method have been described to reduce the pain and distress caused by various diseases such as different cancers and musculoskeletal complications (28, 29). Asgharipur et al. (28) showed that guided imagery can be effective in reducing the anxiety and pain related to dressing changes in burn patients.

Spirituality was first introduced into human life to define the psychological aspect used to indicate the responsibility of the clergy. Spiritual care is very important in coping with physical and spiritual problems, especially individuals' emotional needs (30). When considering the performed studies, Keivan et al. (31, 32) and Nasiri et al. (31, 32) found similar results regarding the recommendation of spiritual care practices to alleviate pain in burn patients and to increase pain control and satisfaction.

Reflexology is another method used in pain management. Reflexology is a systematic intervention in which applying some pressure to any particular points on the feet and hands impact the health of the related parts of the body. Davodabady et al. (33) interpreted reflexology in an intervention group with burn injury to reduce pain and anxiety more compared to the control group.

Breathing and relaxation exercises are alternative techniques that help get rid of the pain in the body systematically. Several types of breathing exercises exist, such as rhythmic

Table 1: Characteristics of Studies in a Systematic Review of Nanopharmacological Management in Wound Dressing Pain (n=25)

Research	Design	Sample	Wound type	Non-pharmacological method	Data collection tools	Result
Miller et al. 2010 (18)	RCT	Pediatric patients (N=80)	Burn	Multi-modal Distraction	Visual Analogue Scale, FLACC Faces Pain Scale, Physiological Measure	The use of multi-modal distraction as both a procedural preparation and distraction tool by showing reduced pain scores in children accessing this method compared to standard distraction, and video game distraction.
Kahar et al. 2011 (42)	Quasi-experimental	Adult patients (N=30)	Burn	Music Therapy	Physiological Measure Numeric Pain Score, Pain Behavioral Tool	Patients who underwent burn dressing changes while listening to music reported fewer pain scores as compared to patients who did not have music to listen
Fakhar et al. 2013 (45)	RCT	Adult patients (N=100)	Burn	Jaw Relaxation	Burn Specific Pain Anxiety Scale	Jaw relaxation caused less pain anxiety before, during and after dressing in patients with burns.
Park et al. 2013 (35)	Quasi-experimental	Adult patients (N=66)	Burn	Relaxation Breathing	Visual Analogue Scale	Relaxation breathing appears to be a promising technique for pain and anxiety relief during burn care.
Hyland et al. 2015 (27)	RCT	Pediatric patients (N=100)	Burn	Child Life Therapy	Children's Fear Scale Children's Hospital of Eastern Ontario Pain Scale, Wong-Baker Faces Pain Scale, Visual Analogue Scale	Child Life Therapy can be effective in the reduction of dressing change-induced anxiety and pain among burn patients.
Small et al. 2015 (17)	RCT	Adult patients (N=25)	Burn	Virtual Restorative Environment Therapy	Numerical Rating Scale	The patient group to whom the virtual restorative system was applied was not capable of using the intervention. Therefore, the study did not give a clear result about dressing pain.
Hua Yun et al. 2015 (6)	RCT	Pediatric patients (N=65)	Chronic Wound	Virtual Reality	Wong-Baker Faces Pain Rating Scale	Demonstrates that the use of Virtual Reality distraction can significantly reduce dressing change time and pain during dressing changes in children with chronic wounds compared to standard distraction methods
Hsu et al. 2016 (9)	RCT	Adult patients (N=70)	Burn	Music Therapy	Numerical Rating Scale	Music therapy significantly reduced pain and anxiety during and after burn dressing changes
Kaheni et al. 2016 (19)	RCT	Pediatric patients (N=80)	Burn	Distraction	FLACC	Distraction technique was determined to be an effective method in reducing pain intensity in children.
Asgharipur et al. 2017 (28)	Quasi-experimental	Adult patients (N=40)	Burn	Guided Imagery	Beck Anxiety Inventory McGill Pain Questionnaire	Guided imagery can be effective in the reduction of dressing change-induced anxiety and pain among burn patients.
Bozorg-Nejad et al. 2018 (36)	Quasi-experimental	Adult patients (N=60)	Burn	Rhythmic Breathing	Pain Observation Scale	Rhythmic breathing was an effective method of pain reduction of dressing change in patients with burn injuries.
Ding et al. 2019 (16)	RCT	Adult patients (N=182)	Surgical Wound	Virtual Reality	Visual Analogue Scale	Immersive Virtual Reality was effective as a pain distraction tool in combination with standard pharmacological analgesia during dressing changes in patients that had undergone haemorrhoidectomy.
Hoseinzadeh-Karimkoshteh et al. 2019 (34)	RCT	Adult patients (N=30)	Burn	Regular Smooth Breathing	Visual Analogue Scale	Regular smooth breathing can help alleviate the pain induced by the dressing of burn patients.
Keivan et al. 2019 (31)	Quasi-experimental	Adult patients (N=68)	Burn	Spiritual Care	Visual Analogue Scale Numerical Rating Scale	Religious and spiritual care can help decrease the pain intensity caused by the dressing change and can increase the satisfaction of these patients with pain control.
Moosavi et al. 2019 (24)	RCT	Pediatric patients (N=82)	Burn	Medical-Directed Play	FLACC	The medical-directed play effectively reduces pediatric procedural pain through children's cooperation during dressing changes.

Table 1: Continue

Research	Design	Sample	Wound type	Non-pharmacological method	Data collection tools	Result
Xiang et al. 2019 (22)	RCT	Pediatric patients (N=90)	Burn	Smartphone Active and Passive Virtual Reality	Visual Analogue Scale FLACC	The Smartphone Virtual Reality game was effective in reducing self-reported pain during pediatric burn dressing changes.
Li-Yuan et al. 2020 (41)	Quasi-experimental	Adult patients (N=159)	Surgical Wound	Five Elements of Music Therapy	Visual Analogue Scale	Moxibustion combined with five elements of music therapy is effective to relieve the postoperative pain of patients undergoing a surgical operation for mixed hemorrhoids with damp-heat syndrome.
Nasiri et al. 2020 (32)	RCT	Adult patients (N=70)	Burn	Spiritual Care	Visual Analogue Scale	Chanting the name of God was found to be effective in reducing pain and anxiety associated with burn dressing.
Zhang et al. 2020 (43)	RCT	Adult patients (N=180)	Burn	Music Therapy	Visual Analogue Scale	The combination of self-selected music and tramadol is more effective than self-selected music or tramadol alone and can also effectively improve their overall satisfaction
Zhang et al. 2020 (21)	RCT	Pediatric patients (N=52)	Burn	Distraction	Behavioral Pain Scale	It was determined that Distraction method was curative effect to reduce pain during dressing change in children.
Akgul et al. 2021 (38)	RCT	Pediatric patients (N=108)	Burn	Inhalation Aromatherapy	FLACC	Inhalation of aromatherapy with lavender oil which is applied before burn dressing in children with burns affects the reduction of pain levels and stabilization of respiratory rate, heart rate, and mean arterial pressure.
Chu et al. 2021 (23)	Quasi-experimental	Pediatric patients (N=50)	Burn	Distraction	Visual Analogue Scale	In acute pediatric burns, distraction therapy provided by a qualified play specialist can reduce pain experienced and also has a more global effect on discomfort reported throughout the burns consultation.
Davodabady et al. 2021 (33)	RCT	Adult patients (N=66)	Burn	Reflexology	Visual Analogue Scale	Reflexology was an appropriate and safe intervention for patients with burns, which can reduce the level of pain and anxiety.
Ferraz et al. 2022 (44)	RCT	Adult patients (N=70)	Surgical Wound	Music Therapy	Numerical Rating Scale	The results of this demonstrate that the self-selected music is an effective adjunctive method for relieving pain during the first postoperative dressing change for tibial surgery.
Ozsoy et al. 2022 (25)	RCT	Pediatric patients (N=96)	Surgical Wound	Cartoon Distraction	Wong-Baker Faces Pain Rating Scale The Children's Fear Scale	The virtual reality distraction method was more effective than the cartoon distraction method as means of reducing fear and pain in children who had undergone abdominal surgery.

RCT: Randomized control trial; FLACC: Face, Legs, Activity, Cry, Consolability, Faces Pain Scales

breathing, abdominal breathing, breath holding, regular smooth breathing, and breathing in various positions (34). When looking at the performed studies, Park et al. (35) used the same method and stated it to be useful for helping burn patients manage their pain and concerns while changing dressings. Bozorg-Nejad et al.'s (36) study was designed as a quasi-experimental clinical study. Their results showed pain intensity after rhythmic breathing to decrease more in the test group. Hoseinzadeh-Karimkoshteh et al. (34) determined regular and smooth breathing to reduce the pain caused by dressing burn injuries.

Aromatherapy is a treatment method in which oil obtained from the various parts of plants is used for therapeutic purposes. Aromatherapy has a wide range of implementations, can be applied easily, and is a remarkable complementary intervention (37). Some analgesic components in aromatherapy oils have been stated to affect the release of substances such as dopamine, endorphins, noradrenaline, and serotonin in the brain stem, and to resultantly have analgesic properties (38, 39). Akgul et al.'s (38) study found pain levels and vital signs to decrease after dressing with aromatherapy.

Music therapy affects many physical, psychological, and mental areas and is also a viable method (40). Music therapy provides relaxation by affecting the immune and endocrine systems and has positive effects such as reducing the use of painkillers. Li-Yuan et al.'s (41) study showed five-element music therapy combined with proximity to be effective at relieving postoperative pain for patients who'd undergone surgery. Kahar et al. (42) reported similar results, and their

patients reported lower pain scores when changing their burn dressings while listening to music. Zhang et al. (43) showed their music-plus-tramadol group to have better results in terms of pain and anxiety management regarding dressing changes. Hsu et al. (9, 44) and Ferraz et al. (44) both concluded music therapy to reduce the amount of pain medication used.

Jaw relaxation exercises used as a treatment method are very effective for pain. This method is widely used, especially to manage stress-induced conditions and anxiety caused by pain. Relaxation reduces pain and anxiety by improving confidence and self-control and reducing negative emotions. Although jaw relaxation has been used in many pain relief techniques, limited studies are found regarding burn pain (45, 46). Fahhar et al.'s study showed jaw relaxation exercise to have positive effects on reducing burn pain anxiety, and learning and practicing this method to be simple, with burn patients being recommended to practice this method (45).

Limitations of the Study

As this systematic review was conducted by two researchers, bias may have developed in setting the criteria and research methodology and in analyzing the findings. To have the systematic review be conducted by more researchers is thought to be better. Because the threat of inadequacy is always present in a systematic review and because the researcher attempted to access the literature within the possibilities that were available, other studies with results that would be valid for the research may not have been reached.

CONCLUSION

Non-pharmacological methods applied before starting dressing seem to be effective at reducing dressing pain. Clinics should develop protocols for the implementation of non-pharmacological methods. In addition, in-service training programs covering non-pharmacological methods should be planned, and knowledge, and opportunities should be provided on how to relieve the pain of patients in different groups. Patients' experiences and preferences regarding non-pharmacological methods should also be taken into consideration.

The focus of future studies should be on identifying the type and nature of pain in patients while using designs that take into account symptom control and on examining the pain outcomes of non-pharmacological methods that provide patients with demonstrable evidence-based benefits.

Peer Review: Externally peer-reviewed.

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

Conflict of Interest: Authors declared no conflict of interest.

Financial Disclosure: Authors declared no financial support.

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- 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
Before beginning the online submission process please make sure you have the followings available:

- 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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- Author Form
- Main Manuscript Document
  - Important: Please avoid mentioning the the author (s) names in the manuscript.
  - The title of the manuscript.
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  - Keywords: 3-6 words
  - Main article sections
  - References
  - All tables
  - The title, description or footnotes of all illustrations (figures)

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