ISSN:2687-6078

SAKARYA ÜNİVERSİTESİ HOLİSTİK SAĞLIK DERGİSİ

SAKARYA UNİVERSITY JOURNAL OF HOLISTIC HEALTH

Cilt/Volume-7 Sayı/Issue-3

VOLUME: 7 ISSUE: 3
E-ISSN: 2687-6078

DECEMBER 2024
https://dergipark.org.tr/tr/pub/sauhsd

SAKARYA ÜNİVERSİTESİ HOLİSTİK SAĞLIK DERGİSİ
SAKARYA UNIVERSITY JOURNAL OF HOLISTIC HEALTH

SAKARYA
UNIVERSITY

The Owner on Behalf of Sakarya University

Editor in Chief

Assistant Editor

Editorial Board

Sevil Albayrak
Department of Preventative Health Care, Nursing
Cyprus Science University
Turkish Republic of Northern Cyprus

Hicran Yıldız
Department Internal Diseases Nursing
Bursa Uludag University
Bursa - Türkiye

Mahmut Akbolat
Department of Health Management
Sakarya University
Sakarya - Türkiye

Sena Dilek Aksoy
Department of Obstetrics and Gynaecology
Kocaeli University
Kocaeli - Türkiye

Selda Çelik
Department of Endocrinology, Health Sciences
Nursing, Internal Diseases Nursing
University of Health Sciences
Ankara - Türkiye

Gamze Göke Arslan
Department of Medicine,
Nursing and Health Sciences Nursing
Karamanoğlu Mehmetbey University
Karaman - Türkiye

İbrahim Dönmez
Department of Cardiology
Bolu Abant Izzet Baysal University
Bolu - Türkiye

Siti Khuzaiyah
Midwifery, Preventative Health Care
Universitas Muhammadiyah Pekajangan Pekalongan
Central Java, Indonesia

Metin Yıldız
Department of Statistics, Public Health
Sakarya University
Sakarya - Türkiye

Deniz Akyıldız
Department of Neonatology, Obstetrics and
Gynaecology
Kahramanmaraş Sütçü İmam University
Kahramanmaraş - Türkiye

Osman Kayapınar
Health Sciences
Düzce University
Düzce-Türkiye

Meltem Kürtüncü
Department of Pediatric Health and Illnesses Nursing
Zonguldak Bülent Ecevit University
Zonguldak - Türkiye

Yurdanur Dikmen
Nurse Education
Kocaeli Health and Technology University
Kocaeli-Türkiye

Ethics Editor

Nursan Çınar
Department of Nursing
Sakarya University
Sakarya-Türkiye

Statistics Editor

Secretariat

Turkish Spelling and Language Editor

English Spelling and Language Editor

Layout Editor

Mehmet Emin Çolak
Scientific Journals Coordinatorship
Sakarya University
Sakarya-Türkiye
mehmetcolak@sakarya.edu.tr

Yakup Beriş
Scientific Journals Coordinatorship
Sakarya University
Sakarya-Türkiye
yakupberis@sakarya.edu.tr

Indexing

DOAJ

EBSCO
Central & Eastern
European Academic
Source

Contents

Research Article

Case Report

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 166-176, 2024
DOI: https://doi.org/10.54803/sauhsd.1474065

Research Article

Determination of Eating Attitude and Life Satisfaction in Patients with Type 2 Diabetes Mellitus: A Cross-Sectional Study

Güldane Yaşdal[1], Arzu Yıldırım[2*]

[1]Emergency Sevice, Sakarya University Training and Research Hospital, Sakarya, Türkiye, guldaneyasdal@gmail.com

[2] Yalova University, Faculty of Health Sciences, Department of Psychiatric Nursing, Yalova, Türkiye, yildirimarzu25@hotmail.com

[*] Corresponding Author

Received: 26.04.2024
Accepted: 30.11.2024
Available Online: 30.12.2024

Abstract

Objective: Type 2 diabetes mellitus is a severe, chronic metabolic disease. Since mental or behavioral problems accompanying physical diseases negatively affect the patient's adaptation, well-being, mortality and morbidity, it is essential to evaluate these problems. The aim of the study was to determine eating attitudes and life satisfaction in patients with type 2 diabetes mellitus.

Methods: This cross-sectional study consisted of 130 patients who were hospitalized at the internal medicine and wound care services in Sakarya Training and Research Hospital and who met the inclusion and exclusion criteria. The data were collected by face-to-face interviews using the Patient Descriptive Questionnaire, Eating Attitude Test-40 and Satisfaction with Life Scale.

Results: The prevalence of probable eating disorder among the patients was 46.9% (n¬=61) and their perception of life satisfaction was above moderate. Additionally, it was determined that there was a significant difference between the mean of the Satisfaction with Life Scale score according to income and perception of health status, and between the mean of the Satisfaction with Life Scale score and possible eating disorder according to the place of residence ($p<0.001$).

Conclusion: In this study, approximately half of the patients with type 2 diabetes mellitus are at risk for eating disorders and their perception of life satisfaction was above moderate. Healthcare professionals must provide individual-centered.

Keywords: Type 2 Diabetes Mellitus, Life Satisfaction, Eating Attitude, Holistic Health

1. Introduction

Diabetes Mellitus (DM) is one of the most rapidly increasing, severe and costly public health concerns of the current century; its prevalence among adults worldwide has growen more than three-fold in the last 20 years (1, 2). In the last edition of the 10 th Diabetes Atlas, the International Diabetes Federation (IDF) reported a likelihood of the presence of 537 million adult patients with diabetes by the year 2021, 80% of whom were likely to live in moderate- and low-income countries; this number was expected to reach 783 million by 2045 (3). The prevalence of diabetes in Türkiye is 11.1%among adults aged 20-79 years, making it the country with the highest rate of diabetes in Europe (4).

Chronic medical conditions like diabetes are likely to affect many aspects of the individual's quality of life. Diabetes patients are often at risk of reduced satisfaction with life, poor mental health and increased prevalence of other physical illnesses (5). Life satisfaction is one of the leading indicators of well-being and is essential in efficiently monitoring health status (6). Eating disorders (ED) are commonly seen in efficiently patients with high-risk medical complication including impaired metabolic control and are thought to significantly affect the physical and mental health of individuals with diabetes, resulting in increased mortality. Eating disorders have been studied less in type 2 diabetes than in type 1 diabetes

Cite as: Yaşdal G, Yıldırım A. Determination of Eating Attitude and Life Satisfaction in Patients with Type 2 Diabetes Mellitus: A Cross-Sectional Study. *Sakarya University Journal of Holistic Health*. 2024;7(3): 166-176. https://doi.org/10.54803/sauhsd.1474065

(7). Therefore, an assessment of eating disorders among patients with diabetes is of clinical importance (6). Treatment of ED and other mental illnesses can potentially heal physical health, well-being, and functionality in general (7). Moreover, it is essential to understand a patient holistically while evaluating behavioral-emotional reactions accompanying an illness, although variations may exist according to the patient and the illness (8). In this sense, a patient-centric approach with integrated care can assist patients in developing efficient health behavior and sustain it (9). While a number of studies have reported ED, eating attitude and life satisfaction in patients with T_2DM, there are no studies evaluating probable ED along with life satisfaction in these patients.

The current study aimed to evaluate the risk factors that may be associated with eating attitude and life satisfaction in T_2DM patients.

2. Methods

2.1. Study Design and participants

The research was conducted in a cross-sectional design. The population of the research consisted of 188 patients diagnosed with T_2DM who were hospitalized in the internal medicine and wound care services of the Sakarya Training and Research Hospital between December 2018 and May 2019. No sample selection was made in the study. The study sample consisted of 130 T_2DM patients (n=100 in the internal medicine ward; n=30 in the wound care ward) who met the following inclusion and exclusion criteria. A post hoc power analysis to determine the adequacy of the sample size indicated that the confidence interval was 95%, influence quantity was 0.500 and power was 0.80 (significance level of 0.05). These values suggest that the sample size was adequate (10).

The inclusion criteria were 18 years or older and a diagnosis of T_2DM, without any limits for diagnosis time. The exclusion criteria included physical (hearing, sight, speaking impairments), neurological or mental handicaps at a level that can affect the implementation of the forms.

2.2. Data collection tools

2.2.1. Patient descriptive questionnaire

The patient descriptive questionnaire consisted of 13 questions regarding the socio-demographic characteristics of the patients and their illnesses such as age, sex, economic status, education level, and duration of diabetes diagnosis.

2.2.2. Eating Attitude Test-40 (EAT-40)

The test was developed by Garner and Garfinkel in 1979 to evaluate the eating behaviors and attitudes of patients with anorexia nervosa as well as possible disorders in eating behaviors among normal individuals (11). The validity and reliability studies for the Turkish population was conducted by Erol and Savaşır in 1989 (12). The total score of EAT-40 ranges from 0 to 120, and the minimum score indicating an eating disorder is 30 (11). The Cronbach's alpha value of the scale was reported as 0.70 [13]; and was found to be 0.77 in the current study.

2.2.3. Satisfaction with Life Scale (SWLS)

This scale was developed by Diener et al. (14) to determine an individual’s satisfaction from his life and was adapted into Turkish by Köker (15). The scale consists of five Likert-style items with 7 grades (1: strongly disagree, 7: strongly agree). The lowest score of the scale is 5, while the highest score is 35. A high score is accepted as an indicator of high life satisfaction. Cronbach’s alpha coefficient was reported as 0.85 for the overall scale (15) and was determined to be 0.85 in the current study.

2.2.4. Body Mass Index (BMI)

The BMI was calculated with the formula weight (kg)/ height (m^2). Based on the classification recommended by the World Health Organization, individuals with a BMI under 18.5 were classified as low weight, 18.5-24.9 as normal, 25-29.9 as overweight, and 30 and over as obese (16).

The heights and weights of the patients were also measured.

Measurement of height: The patients were made to stand up right on a smooth surface with their heads, shoulders, hips and heels touching a smooth wall. The measurements were carried out with a tape measure and recorded in centimeters (cm).

Measurement of weight: The patients were asked to take off excess clothing and the weight was measured on bare feet using a standard weighing machine on hard ground. The weight was recorded in kilograms (kg).

2.3. Data collection

The data were collected by the first author from patients hospitalized in the internal medicine and wound care services at the Ministry of Health-Sakarya University Training and Research Hospital by face-to-face interview in 20 to 30 minutes.

2.4. Statistical analysis

The normality distribution of the data was carried out according to Kurtosis and Skewness coefficients. In the analysis of the data, numbers, percentages, minimum and maximum values as well as means and standard deviations were calculated when the data showed a normal distribution. Parametric tests (t test and Variance analysis) were determined since the data were compatible with normal distribution. Bonferonni and Tamhane T2 advanced analysis was carried out, to determine the source of a difference. The relationship between categorical variables was determined with the Chi-square test. The level of significance was regarded as $p<0.05$. The data were analyzed using SPSS, edition 23.0.

2.5. Ethical approval

Ethical approval (01.11.2018/09/07) was obtained from the University Clinical Research Ethics Committee. The principles of the Helsinki Declaration were considered while carrying out this research.

3. Results

Individual and disease-related descriptive characteristics of the patients are shown in Table 1.

Table 1. Distribution of Descriptive Characteristics of T_2DM Patients (n=130)

Descriptive Characteristics		
	n	**%**
Sex		
Female	63	48.5
Male	67	51.5
Age		
38-50	14	10.8
51-63	33	25.4
64 and over	83	63.8
Marital status		
Married	89	68.5
Single	41	31.5
Educational status		
Uneducated*	33	25.38
Educated	97	74.62
Employment status		
Employed	31	23.8
Unemployed	99	76.2

Perception of income		
Poor	14	10.7
Moderate	99	76.2
Good	17	13.1
Place of residence		
Village	41	31.5
District	61	46.9
City	28	21.6
Living with		
Alone	8	6.2
Family	79	60.7
Children	43	33.1
Duration of diabetes diagnosis (year)		
10 years and below	54	41.5
Over 10 years	76	58.5
Additional disease		
Yes	99	76.2
No	31	23.8
Type of treatment		
Oral	15	11.5
Insulin	88	67.7
Oral+insulin	27	20.8
Hobbies		
Yes	122	93.8
No	8	6.2
Perception of health status**		
Poor	64	49.3
Good	66	50.7
BMI		
Normal (18-24.9)	32	24.6
Overweight (25-29.9)	54	41.5
Obese (30 and over)	44	33.9

*Illiterate and literate; **The answer moderate was not given.

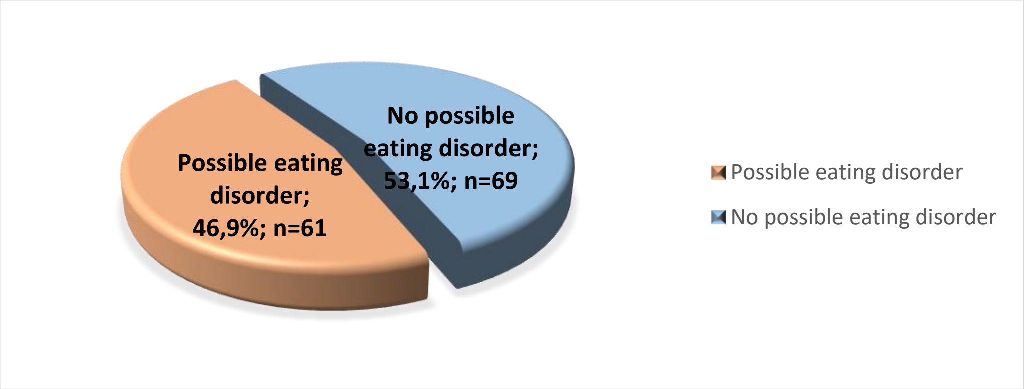
The mean SWLS score of the patients was 24.76±5.74 while the EAT-40 score was 30.14±6.29 (Table 2).

Table 2. Distribution of Mean Scores of SWLS And EAT-40 of T_2DM Patients

Scales	Range	Minimum and Maximum scores were taken	Mean ± SD
SWLS	5-35	7-35	24.76±5.74
EAT-40	0-120	20-53	30.14±6.29

SWLS: Satisfaction with Life Scale, EAT-40: Eating Attitude Test-40, SD: Standard Deviation

The prevalence of probable ED among the patients (EAT-40 score ≥30) was determined as 46.9% (n=61) (Graphic 1).



Graphic 1. The Prevalence of Probable Eating Disorders of Patients

A significant relationship was identified between probable ED (EAT-40≥30) and the location of their place of residence (village versus city) ($p<0.05$). However, no statistically significant relationship was found between the incidence of probable ED (EAT-40≥30) and gender, age, marital status, education, employment, income status, duration of diabetes diagnosis, presence of additional disease, type of treatment, health status, BMI and presence of hobbies ($p>0.05$) (Table 3).

Table 3. Comparison of EAT-40≥30 Conditions According to Descriptive Characteristics of T2DM Patients

Descriptive Characteristics	EAT-40<30		EAT-40≥30		Test and significance
	n	**%**	**n**	**%**	
Sex					
Female	33	47.8	30	49.2	$\chi^2=0.024$
Male	36	52.2	31	50.8	$p=0.877$
Age					
38-50	10	14.5	4	6.6	$\chi^2=2.663$ $p=0.264$
51-63	15	21.7	18	29.5	
64 and over	44	63.8	39	63.9	
Marital status					
Single	23	33.3	18	29.5	$\chi^2=0.219$
Married	46	66.7	43	70.5	$p=0.639$
Educational status					
Uneducated	13	18.8	20	32.8	$\chi^2=3.325$
Educated	56	81.2	41	67.2	$p=0.068$
Employment status					
Employed	14	20.3	17	27.9	$\chi^2=1.024$
Unemployed	55	79.7	44	72.1	$p=0.312$
Perception of income					
Poor	9	13.0	5	8.2	$\chi^2=0.966$ $p=0.617$
Moderate	52	75.4	47	77.0	
Good	8	11.6	9	14.8	
Place of residence					
Village	19	27.5	22	36.1	**$\chi^2=7.961$** **$p=0.019$***
District	40	58.0	21	34.4	
City	10	14.5	18	29.5	
Duration of diabetes diagnosis (year)					
10 years and below	30	43.5	24	39.3	$\chi^2=0.228$
Over 10 years	39	56.5	37	60.7	$p=0.633$
Additional disease					
Yes	48	69.6	51	83.6	$\chi^2=3.515$
No	21	30.4	10	16.4	$p=0.061$
Type of treatment					
Oral	9	13.0	6	9.8	$\chi^2=2.178$ $p=0.337$
Insulin	49	71.1	39	63.9	
Oral+insulin	11	15.9	16	26.3	
Perception of health status					
Poor/Very poor	38	55.1	26	42.6	$\chi^2=2.008$
Good/Very good	31	44.9	35	57.4	$p=0.157$
BMI					
Normal (18-24.9)	19	27.5	13	21.3	$\chi^2=2.646$ $p=0.266$
Overweight (25-29.9)	31	44.9	23	37.7	
Obese (30 and over)	19	27.6	25	41.0	
Hobbies					
Yes	62	89.9	60	98.4	$\chi^2=4.056$
No	7	10.1	1	1.6	$p=0.066$

EAT-40: Eating Attitude Test-40, χ^2: Chi-square test, *$p<0.05$.

It was determined that there was a significant difference between the SWLS mean score according to the perception of income ($p<0.001$). Further statistical analysis (Bonferonni posthoc) suggested that individuals with high- or moderate-income level had a higher mean SWLS score than those with low level income. A significant difference between the mean SWLS score and the place of residence was also identified. A Bonferonni posthoc analysis indicated that individuals living in cities had a higher mean SWLS score than those living in villages. Additionally, individuals with a better health status had a significantly higher mean SWLS score than patients with poor health status ($p<0.001$) (Table 4).

Table 4. Comparison of Mean SWLS Scores According to Descriptive Characteristics of T_2DM Patients

Descriptive characteristics	SWLS		Test and significance
	n	Mean±SD	
Sex			
Female	63	24.37±5.59	t=-0.762
Male	67	25.13±5.89	p=0.447
Age			
38-50	14	23.79±7.44	F=0.247 p=0.782
51-63	33	24.70±5.52	
64 and over	83	24.95±5.56	
Marital status			
Single	41	24.49±6.55	t=-0.368
Married	89	24.89±5.36	p=0.714
Educational status			
Uneducated	33	24.52±5.5	t=-0.284
Educated	97	24.85±5.85	p=0.777
Employment status			
Employed	31	24.87±6.64	t=0.121
Unemployed	99	24.73±5.47	p=0.904
Perception of income			
Poor	14	18±5.79	**F=14.269** **p<0.001**
Moderate	99	25.27±5.26	
Good	17	27.35±4.5	
Place of residence			
Village	41	23.05±6.16	**F=3.296** **p=0.040***
District	61	25.13±5.53	
City	28	26.46±5.07	
Duration of diabetes diagnosis (year)			
10 years and below	54	25.48±6.28	t=1.207
Over 10 years	76	24.25±5.31	p=0.230
Additional disease			
Yes	99	24.82±5.85	t=0.200
No	31	24.58±5.46	p=0.842
Type of treatment			
Oral	15	25.6±4.27	F=0.294 p=0.746
Insulin	88	24.8±5.93	
Oral+insulin	27	24.19±5.95	
Perception of health status			
Poor	64	23.34±5.67	**t=-2.848**
Good	66	26.14±5.51	**p=0.005****
BMI			
Normal (18-24.9)	32	24.91±6.52	F=0.383 p=0.682
Overweight (25-29.9)	54	25.17±5.31	
Obese (30 and over)	44	24.16±5.73	
Hobbies			
Yes	122	24.86±5.73	t=0.768 p=0.444
No	8	23.25±6.09	

SWLS: Satisfaction with Life Scale, SD: Standard Deviation, *p<0.05. **p<0.01.

4. Discussion

In this study, the mean EAT-40 score of T2DM patients was determined as 30.14±6.29, and the prevalence of probable ED (EAT-40≥30) was determined as 46.9%. The overall prevalence of ED in Türkiye was previously reported as 42.7% and 39.3% in two separate studies, respectively (17,18). A cross-sectional study based on self-report carried out with 2977 T_1DM and T_2DM patients indicated that the prevalence of subjective ED reported by the patients was high (19). Moreover, a study from Saudi Arabia with 350 T_2DM patients indicated the presence of inappropriate eating attitudes, food choice, food restrictions, food classification and a detrimental effect on health (20). Data from the current study supports these findings. A study comparing eating disorders among patients with DM and hypertension in Türkiye reported that the mean EAT-40 score among T_2DM patients was 20.7±11.4 and the prevalence of probable ED was 19.7% (21). In another study conducted in Turkey using the EAT-26 scale in diabetic patients, the scale score was determined as 18.22± 12.01. (22). A study conducted with 320 T_2DM patients in Spain using EAT-26 indicated that, 14% of the patients suffered from ED while 12.2% of the patients had Binge Eating Disorder (BED) (23). A Brazilian study carried out with T_2DM patients aged between 40 and 65 years using the Structured Clinical Interview for DSM-IV Disorders and Binge Eating Scale, indicated that 20% of the patients had ED, and the apparent eating disorder was BED (24). The probable ED scores in these reported studies are lower than the current study's finding. It can be thought that patients' perception of the disease, their region, social and economic level, and the place they live in may be effective in these different results.

Mental disorders like depression, non-satisfaction with life and negative emotions accompanying the illness in T_2DM patients are likely to be debilitating (25). Considering the highest and the lowest scores obtained from the scales used in the current study, it can be said that the patients had a moderate level of life satisfaction. A study with 793 T_2DM patients attending the Centre of National Diabetes, Endocrinology and Genetics in Jordan, reported that the mean SWLS score was 26.1±5.2. The score ranged from 5 to 35 with about half the patients scoring 27 and over and the other, half scoring between 23-29. Thus, these patients had a moderate-high level of life satisfaction (26). A study carried out with 79 T_1DM and T_2DM patients in India indicated that, 57% of the patients had a moderate level of satisfaction with life; only 15% thought that they got what they expected from life, while 47% felt lonely even when they were engaged in carrying out various activities (27). Data from these studies corroborate the findings of the current study. A study conducted with 210 T_2DM patients in an endocrinology clinic in Türkiye reported a, mean SWLS score of 18.42±9.03 (28). A study carried out with 210 women with T_2DM in Poland, reported that the mean SWLS score was 20.78±5.31 (29). 64% of the patients with DM in Pakistan were found to be dissatisfied with their lives (30). Furthermore, 23.5% of DM patients in Nigeria were reported to lack satisfaction from life (31). Another study carried out in Iran showed that women with diabetes had a lower mean SWLS score (13.4±3.21) compared to women without diabetes (32). Studies have also reported that the majority of patients are partially satisfied with their lives (33) or have low life satisfaction (34). In a study conducted in Türkiye found that the patient's life satisfaction scale scores were lower (15.22± 5.12) than the result of the current study (22). The level of life satisfaction reported in these studies is lower than the findings of the current study; this may be due to personal and demographic, environmental and societal characteristics such as health perception, mental well-being, economic status and social relationship among the study populations.

We observed that a perception of the income level and health status as poor and living in a village were all accompanied by reduced life satisfaction. In a study conducted with 496 DM patients in Pakistan, it was reported that 64% of the patients were dissatisfied with life due to their illnesses; patients with moderate and low level of income had a higher level of dissatisfaction with life (30). However satisfaction with life among T_2DM patients in Poland was not affected by the place of residence (25). In a cross-sectional study with 456 DM patients in Spain where health, social, demographic, and clinical markers were studied, it was indicated that young age, being female, being unemployed and poor glycemic control were determining factors in the deterioration of quality of life. Note, the patients who were married had fewer worries about illnesses; additionally, the quality of life associated with health got worse in parallel with poor glycemic control and increased disease complications (35). In a nother study, it was stated that patients with low education levels and long disease duration had low life satisfaction. In this case, it was reported that the life satisfaction of people with T2DM was related to their ability to maintain their mental health (36). Individual, socio-cultural, regional, geographical and time factors may impact these different results.

5. Conclusion and Recommendations

Approximately half of the T_2DM patients evaluated in the current study had probable eating disorders and their perception of satisfaction with life was above moderate. Poor income and health status were the factors that could reduce satisfaction with life. Living in a rural setting increased the incidence of probable eating disorders and reduced satisfaction with life. Considering all these results, the following can be suggested:

Barriers to the knowledge, and attitude of patients as well as implementations related to the monitoring of diabetes and healthy lifestyle behavior need to be monitored and addressed.

An individual diet and exercise schedule for each patient (keeping in mind individual, socio-cultural, and economic idiosyncrasies) need to be planned and patients need to be educated in order to incorporate these changes into their lifestyle.

Individual-centered psychosocial care needs to be provided by engaging the patients themselves in the process of healing both physical and mental health.

Conditions that are likely to affect eating disorders such as satisfaction with life, mental status and satisfaction with health care services should not be ignored.

Limitations

The study was conducted in a hospital setting, which can be considered as a limitation of the study. In addition, the cross-sectional nature of the study means that variables for determining eating attitude and life satisfaction could not be controlled properly. This can be stated as an additional limitation.

References

1. Yıldırım A, Hacıhasanoğlu AB, Bozdemir N, Aşılar RH. Diyabet öz yönetiminde çok disiplinli ekip yaklaşımı. Turkish Journal of Family Medicine & Primary Care 2020;14(3): 479-91.
2. Hwalla N, Jaafar Z, Sawaya S. Dietary management of type 2 diabetes in the MENA region: A review of the evidence. Nutrients 2021;13(4):1060.
3. International Diabetes Federation. Diabetes in Europe-2021. Diabetes now affects one in 10 adults worldwide [Internet]. https://www.idf.org/news/240:diabetes-now-affects-one-in-10-adults worldwide.html%E2%80%99. Accessed July 27, 2022.
4. International Diabetes Federation. Diabetes in Europe- 2021 [Internet]. https://www.mepinterestgroupdiabetes.eu/wp-content/uploads/2021/11/IDF-Atlas-Factsheet 2021_EUR.pdf. Accessed July 27, 2022.
5. Agrawal U. Study of life satisfaction and happiness among male patients of diabetes: insulin vs non insulin. Mediterranean Journal of Social Sciences 2018;6(5):494-501.
6. Young-Hyman DL, Davis CL. Disordered eating behavior in individuals with diabetes. Diabetes Care 2010;33(3):683-689.
7. Colton P, Rodin G, Bergenstal R, Parkin C. Eating disorders and diabetes: Introduction and overview. Diabetes Spectr 2009;22(3):138-142.
8. Çam O, Babacan Gümüş A, Yıldırım S. Fiziksel hastalıklara verilen psikososyal tepkiler. Çam O, Engin E (Eds.). Ruh Sağlığı ve Hastalıkları Psikiyatri Hemşireliği Bakım Sanatı. İstanbul:İstanbul Kitabevleri Ltd. Şti. 2021;601-638.
9. Wattanakorn K, Deenan A, Puapan S, Schneider JK. Effects of an eating behaviour modification program on thai people with diabetes and obesity: A randomised clinical trial. Pacific Rim Int J Nurs Res 2013;17(4):356-370.
10. Çapık C. İstatistiksel güç analizi ve hemşirelik araştırmalarında kullanımı: Temel bilgiler. Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi 2014;17(4):268-274.
11. Garner DM, Garfinkrl PE. The Eating Attitudes Test: An Index of the Symptoms of Anorexia Nervosa. Psychological Medicine 1979;9(2):273-279.
12. Savaşır I, Erol N. Yeme Tutumu Testi: Anoreksiya Nevroza Belirtileri İndeksi. Turk J Psychol 1989;7:19-25.
13. Aydemir Ö, Köroğlu E. Psikiyatride kullanılan klinik ölçekler. Ankara: Hekimler Yayın Birliği 2007; 121-325.
14. Diener E, Emmons RA, Larsen RJ, Griffin S. The Satisfaction with Life Scale. Journal of Personality Assessment 1985:49(1):71-75.
15. Köker S. Normal ve sorunlu ergenlerin yaşam doyumu düzeyinin karşılaştırılması (Yüksek Lisans Tezi). Ankara Üniversitesi/Sosyal Bilimler Fakültesi. Ankara, 1991.
16. WHO. Obesity:preventing and managing the global epidemic. World Health Organ Tech Rep Ser, Geneva 2000:894:1-253.
17. Akça D, Şentürk S. Effect of attitudes of individuals with the type 2 diabetes upon quality of life. Int J. of Health Serv. Res. and Policy 2020;5(2):99-110.
18. Yılmaz M, Çetinkalp S. The association of eating attitudes between metabolic control and quality of life in patients with type 1 and type 2 diabetes mellitus. British Journal of Medicine and Medical Research 2016;13(9):1-8.

19. Santana D, Mitchison D, Gonzalez-Chica D, et al. Associations between self-reported diabetes mellitus, disordered eating behaviours, weight/shape overvaluation and health-related quality of life. Journal of Eating Disorders 2019;7(35):1-9.

20. Sami W, Ansari T, Butt NS, Ab Hamid MR. Effect of diet on type 2 diabetes mellitus: A review. Int J Health Sci (Qassim) 2017;11(2) 65-71.

21. Durat G, Yıldız C, Erol A. Comparison of Eating Pathology in Patients Diagnosed with Diabetes and Hypertension 2016;2(1):7-12.

22. Güraksu E. Diyabet hastalarında yaşam doyumu ve yeme tutumu arasındaki ilişkinin incelenmesi. Y lisans tezi. T.C. İstanbul Gelişim Üniversitesi Lisansüstü Eğitim Enstitüsü Psikoloji Ana Bilim Dalı, Klinik Psikoloji Bilim Dalı. İstanbul, 2021.

23. Nicolau J, Simo R, Sanchis P, et al. Eating disorders are frequent among type 2 diabetic patients and are associated with worse metabolic and psychological outcomes: Results from across-sectional study in primary and secondary care settings. Acta Diabetologica 2015;52:1037-1044.

24. Papelbaum M, de Oliveira Moreira R, Coutinho WF, et al. Does binge-eating matter for glycemic control in type 2 diabetes patients? Journal of Eating Disorders 2019;7(30):1-6.

25. Rosiek A, Kornatowski T, Frackowiak-Maciejewska N, et al. Health behaviors of patients diagnosed with type 2 diabetes mellitus and their influence on the patients' satisfaction with life. Therapeutics and Clinical Risk Management 2016;12:1783-1792.

26. Hamdan-Mansour AM,, Nawafa'h DNA,, Hanouneh SI, Omari HD. Psychosocial correlates of life satisfaction among patients diagnosed with type-II diabetes mellitus. Int J Diabetes Dev Ctries 2016;36(1):65-69.

27. Mohana-Priya B, Anju. A study on life satisfaction level among persons with diabetes. IOSR JHSS, 2017;2279-0837:51-55.

28. Tuncay FÖ, Avcı D. Association between self-care management and life satisfaction in patients with diabetes mellitus. European Journal of Integrative Medicine 2020;(35)101099:1-6.

29. Gacek M, Wojtowicz A. Life satisfaction and other determinants of eating behaviours among women aged 40-65 years with type 2 diabetes from the Krakow population. Menopause Review/Przeglad Menopauzalny 2019;18(2):74-81.

30. Jalil A, Usman A, Akram S, et al. Life satisfaction, disease management attitudes and nutritional status of diabetes mellitus patients in azad Kashmir,Pakistan: A hospital based cross-sectional study. Diabetes Mellitus 2020;23(1):46-55.

31. Esonwanne OF, Godwin O, Onyebueke G, et al. Life satisfaction, self esteem and mental health in a sample of diabetic out-patients attending a Nigerian tertiary health institution. The Journal of Medical Research 2017;3(2):60-65.

32. Rabori RM, Dehsheakhi MA, Nouhi E, Nematollahi M. Comparison of the relationship between sexual function, marital adjustment, and life satisfaction in diabetic and non-diabetic women. International Journey of Community Based Nursing-Midwifery 2020;8(4):324-332.

33. Ma X, Bai W, Yu F, et al. The effect of neighborhood social cohesion on life satisfaction in type 2 diabetes mellitus patients: The chain mediating role of depressive symptoms and sleep quality. Front. Public Health 2023; 11:1257268. doi: 10.3389/fpubh.2023.1257268.

34. Sun Y, Yu Y, Zhang H, et al. Joint exposure to positive affect, life satisfaction, depressive symptoms, and neuroticism and incident type 2 diabetes. The Journal of Clinical Endocrinology & Metabolism, 2022, 107, e3186–e3193.

35. Rodriguez- Almagro J, Garcia-Manzanares A, Lucendo AJ, Hemandez-Martinez A. Health-related quality of life diabetes mellitus and its social,demographic and clinical determinants: A nationwide cross-sectional survey. J Clin Nurs 2018;27(21-22):4212-4223.

36. Lee LY, Hsieh CJ, Lin YT. Life satisfaction and emotional distress in people living with type 2 diabetes mellitus: The mediating effect of cognitive function.J Clin Nurs 2021 ;30(17-18):2673-2682. doi: 10.1111/jocn.15740.

Article Information Form

Author(s) Notes: The author(s) would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author(s) Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by the author.

Supporting/Supporting Organizations: No grants were received from any public, private or non-profit organizations for this research.

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the bibliography.

Plagiarism Statement: This article has been scanned by iThenticate.

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 177-186, 2024
DOI: https://doi.org/10.54803/sauhsd.1489266

Research Article

Post-traumatic Stress Disorder Levels in Medical Students who Experienced Türkiye Kahramanmaraş 2023 Earthquake

Elif Nur Yıldırım Öztürk[1]*, Vedat Karataş[2]

[1] Ankara University, Faculty of Medicine, Department of Public Health, Ankara, Türkiye, elifnyildirim@hotmail.com

[2] Hatay Mustafa Kemal University, Tayfur Ata Sökmen Faculty of Medicine, Hatay, Türkiye, vvedatkkaratas@gmail.com

*Corresponding Author

Received: 25.05.2024
Accepted: 26.12.2024
Available Online: 30.12.2024

Abstract

Objective: Earthquakes have significant effects on both physical and mental health. One of the mental health effects is post-traumatic stress disorder (PTSD). This study aimed to determine the level of PTSD and the variables associated with this level in a group of medical students who experienced the February 6, 2023 earthquake in Türkiye, centered on Kahramanmaraş.

Methods: The study was cross-sectional. Data from 40 medical students were evaluated. A 15-question data collection form and a 20-item scale for determining the level of post-earthquake trauma were used for the study. The scale provides scores ranging from 20 to 100, and an increase in the score indicates an increase in the level of trauma. In this study, the Pearson correlation coefficient and Cohen's d were calculated as effect sizes. Ethics committee approval and institutional approval were obtained for this study.

Results: Twenty-three of the students were male. Of the students, 31 had experienced loss of a loved one and 36 had experienced damage to residential building. The mean score of the students on the scale was 63.5±14.1. Gender (0.639), maternal education level (0.256), pre-earthquake income status (0.211), professional psychological support (0.785), loss of a loved one (0.166), damage to residential building (0.209), loss of property (0.544), and post-earthquake migration (0.399) were identified as variables associated with PTSD.

Conclusion: Most students were negatively affected by the recent earthquake and experienced medium PTSD. It is important to provide community and risk group based mental health support after the earthquake.

Keywords: Earthquake, Post-traumatic Stress Disorder, PTSD, Medical Students, Türkiye

1. Introduction

Natural disasters, particularly earthquakes, can have significant health consequences for individuals, families, and communities. The main health effects include death, injuries, disabilities, psychological trauma, respiratory problems due to dust, infectious diseases, and displacement or migration (1-4).
Disaster survivors who have experienced natural disasters, which have increased in number and frequency in recent years, may face post-traumatic stress disorder (PTSD), anxiety, depression, and substance abuse (5). PTSD is a common psychological reaction among post-earthquake survivors (5,6). PTSD is a condition characterized by unwanted and recurrent thoughts, avoidance behavior, negative changes in emotions and thoughts, and hyperarousal that may develop after a traumatic event. PTSD is highly disruptive to individuals and may lead to loss of functionality. PTSD may occur one month after the event or develop months or even years later (7,8). The prevalence rate of PTSD among earthquake survivors is 23.7% in a systematic review-meta-analysis study that included 46 studies worldwide (6). The prevalence of PTSD among university students was 34% after the 2009 Haiti earthquake and 14.1% after the 2008 Wenchuan earthquake (9,10). In a study conducted after two devastating earthquakes in

Cite as: Yıldırım Öztürk EN, Karataş V. Post-traumatic Stress Disorder Levels in Medical Students who Experienced Türkiye Kahramanmaraş 2023 Earthquake. *Sakarya University Journal of Holistic Health*. 2024; 7(3): 177-186. https://doi.org/10.54803/sauhsd.1489266

the Marmara region on 17 August and 12 November 1999, the prevalence of PTSD in adults was 23% (11). After the Kahramanmaraş earthquake of 6 February 2023, the prevalence of probable PTSD was 61.6% in a study of university students (12).

On February 6, 2023, Kahramanmaraş in Türkiye was hit by two devastating earthquakes at 04:17 and 13:24, respectively, with magnitudes of 7.7 and 7.6 on the Richter scale, affecting 11 provinces. More than 9 million people were affected, and over 50 thousand people lost their lives in the earthquake (13). Studies suggest that this earthquake may lead to various mental health issues, particularly PTSD (14,15). There may be an association between PTSD and individuals' sociodemographic characteristics and their experiences during and after the earthquake. This study aimed to assess the levels of PTSD among medical students who experienced the 2023 Türkiye earthquake in Kahramanmaraş and temporarily relocated to the Ankara University Faculty of Medicine for temporary education from affected provinces, as well as to identify the variables associated with these levels.

2. Methods

This cross-sectional study was conducted at the Ankara University Faculty of Medicine. Data were collected from June 20, 2023, to July 20, 2023. Students from 11 provinces affected by the earthquake in Kahramanmaraş, Türkiye, on 6 February 2023 who are temporarily studying at Ankara University Faculty of Medicine were included in the study (52 people in total). These students are 4th, 5th and 6th grade students. Forty-three medical students participated in the study, and the data of 40 students were evaluated after excluding 3 students who did not experience the earthquake. The data of the study were obtained online through a link sent to each student's phone number. Participation in the study was voluntary.

A 15-question data collection form and a 20-item Determination of Post-Earthquake Trauma Level (DPETL) scale were used in the study. The 15-question data collection form asked students about their sociodemographic characteristics and their experiences related to the earthquake and post-earthquake process. The 20-item DPETL scale was developed by Tanhan and Kayri in 2013 and consists of 5 subscales. The subscales of the scale are as follows: Behavioral problems (items 1-4) (Subscale 1), Excitement limitation (items 5-9) (Subscale 2), Affective (items 10-13) (Subscale 3), Cognitive structuring (items 14-17) (Subscale 4), and Sleep problems (items 18-20) (Subscale 5). The Cronbach's alpha reliability coefficient of the scale is 87%, and the explained variance is 54.3%. The scale is a five-point Likert type. The Likert-type statements are "strongly disagree", "slightly agree", "moderately agree", "strongly agree" and "completely agree". Scale items 11 and 12 are reverse-scored. The minimum score is 20 and maximum score is 100. There is no specific cut-off point for the scale, and the increase in scores indicates that the level of individuals affected by the earthquake has increased (16). In this study, the Cronbach's alpha of the scale was calculated to be 89%.

2.1. Statistical analysis

The study was analyzed using SPSS (SPSS for Windows, Version 16.0. Chicago, SPSS Inc.) and G*Power version 3.1.9.7 (17). Mean±standard deviation, median (min-max), number, and percentage were used to summarize the data. Because the group studied in the study was limited and small, analyzes that yielded results based on the p-value, which is affected by sample size, were avoided and effect sizes were calculated using G-Power version 3.1.9.7. The Pearson correlation coefficient (r) and Cohen's d were presented as effect sizes. Pooled standard deviation values were calculated from 'https://www.psychometrica.de/effect_size.html' and entered into the program. The Pearson correlation coefficient was scored as 0.00-0.25 no association/limited association, 0.26-0.50 weak association, 0.51-0.75 moderate association, and 0.76-1.00 strong association. Coefficients with a positive (+) sign indicate that the variables increase or decrease together, whereas coefficients with a negative (-) sign indicate that one of the variables increases when the other decreases or vice versa. For

Cohen's d, an effect size of 0.20 small, 0.50 medium, and 0.80 large in the t-test family; 0.10 small, 0.25 medium, and 0.40 large in the F-test family were accepted.

Ethical approval was obtained from the Ankara University Rectorate Ethics Committee (number: 56786525-050.04.04/950166 date: 06.06.2023), and institutional approval was obtained from the Ankara University Faculty of Medicine Dean's Office. Permission was obtained from the owners of the scale that was part of the data collection.

3. Results

3.1. Sociodemographic characteristics of medical students

The sociodemographic characteristics of 40 medical students included in the study are shown in Table 1. The mean age of the students was 24.1±1.4 (21-27) years, most of the students were in the 6th grade, 23 were male, and 17 were female. For post-earthquake period, 18 (45%) of the students reported that their income decreased compared with that in pre-earthquake period. Only 3 students received professional psychological support in post-earthquake period.

Table 1. Sociodemographic Characteristics of Medical Students (Türkiye, 2023)

Characteristics		n	%
Grade	4	8	20.0
	5	5	12.5
	6	27	67.5
Gender	Female	17	42.5
	Male	23	57.5
Maternal education level	Secondary school and below	18	45.0
	High school and above	22	55.0
Paternal education level	Secondary school and below	12	30.0
	High school and above	28	70.0
Pre-earthquake income status	Income less than expenses	6	15.0
	Income covers expenses	21	52.5
	Income more than expenses	13	32.5
Post-earthquake income status	Decrease compared with pre-earthquake	18	45.0
	Same as pre-earthquake	19	47.5
	Increase compared with pre-earthquake	3	7.5
Professional psychological support	Not receiving	37	92.5
	Receiving	3	7.5

3.2. Experiences of medical students related to earthquake and post-earthquake processes

The experiences of the students participating in the study related to earthquake and post-earthquake processes are shown in Table 2. 31 of the students experienced loss of a loved one, 36 of them suffered damage to residential building, 24 of them suffered loss of property, 19 of them migrated with their families in post-earthquake period, and 36 of them did not receive emotional/social/psychological support.

Table 2. Experiences of Medical Students Related to Earthquake and Post-earthquake Processes (Türkiye, 2023)

Characteristics		n	%
Loss of a loved one	No	9	22.5
	Yes, at least one person from family	7	17.5
	Yes, at least one person from friends	24	60.0
Damage to residential building	No	4	10.0
	Yes, less damage	26	65.0
	Yes, moderate damage	5	12.5
	Yes, much damage	5	12.5
Loss of property	No	16	40.0
	Yes	24	60.0
Post-earthquake migration	No	21	52.5
	Yes	19	47.5
Post-earthquake financial support	No	22	55.0
	Yes, insufficient	15	37.5
	Yes, sufficient	3	7.5
Post-earthquake emotional/social/psychological support	No	36	90.0
	Yes	4	10.0

3.3. Post-traumatic stress disorder levels in medical students

The mean score of the students on the DPETL scale was 63.5±14.1 and the median was 65 (28-91). 21 students (52.2%) scored above the group mean and 35 students (87.5%) scored between 43-80. The mean score for the behavioral problems subscale was 14.0±3.3, the mean score for the excitement limitations subscale was 16.7±5.3, the mean score for the affective subscale was 13.3±3.2, the mean score for the cognitive structuring subscale was 10.0±4.0, and the mean score for the sleep problems subscale was 9.5±2.9 (Table 3).

Table 3. Responses of Medical Students to the Determination of Post-earthquake Trauma Level (Türkiye, 2023)

	Items	Completely agree		Strongly agree		Moderately agree		Slightly agree		Strongly disagree		Subscales of the scale mean±ss median (min-max)
		n	%	n	%	n	%	n	%	n	%	
1	I have lost my appetite.	1	2.5	4	10.0	11	27.5	13	32.5	11	27.5	Subscale 1 14.0±3.3 14 (5-20)
2	I have become angrier/more frustrated.	4	10.0	6	15.0	14	35.0	7	17.5	9	22.5	
3	I have nightmares.	4	10.0	10	25.0	11	27.5	8	20.0	7	17.5	
4	I cannot go indoors for fear of an earthquake.	2	5.0	0	0.0	10	25.0	18	45.0	10	25.0	
5	I have lost my sense of confidence in the future.	7	17.5	6	15.0	11	27.5	10	25.0	6	15.0	Subscale 2 16.7±5.3 17 (5-25)
6	I feel that life has no meaning anymore.	3	7.5	8	20.0	7	17.5	12	30.0	10	25.0	
7	My will to live has diminished after what I experienced.	4	10.0	6	15.0	8	20.0	8	20.0	14	35.0	
8	After the earthquake, I regret what I have done in my life.	4	10.0	6	15.0	10	25.0	13	32.5	7	17.5	
9	I feel very helpless/powerless.	7	17.5	4	10.0	8	20.0	13	32.5	8	20.0	
10	I feel humiliated that I need help.	10	25.0	6	15.0	6	15.0	8	20.0	10	25.0	Subscale 3 13.3±3.2 13,5 (5-20)
11	After the earthquake, I have started to pay more attention to my behavior/relationships.	5	12.5	16	40.0	9	22.5	5	12.5	5	12.5	
12	I have become more aware of the value of my life.	9	22.5	14	35.0	11	27.5	4	10.0	2	5.0	

13	I have become very emotional/I have cried for no reason.	8	20.0	4	10.0	5	12.5	11	27.5	12	30.0	
14	I worry about my children/parents/acquaintances/friends.	17	42.5	12	30.0	7	17.5	3	7.5	1	2.5	Subscale 4 10.0±4.0 10 (4-20)
15	I feel anxious thinking that there will be an earthquake at any moment.	4	10.0	11	27.5	14	35.0	6	15.0	5	12.5	
16	I visualize images of earthquakes.	10	25.0	13	32.5	8	20.0	7	17.5	2	5.0	
17	I worry about the future.	9	22.5	11	27.5	9	22.5	6	15.0	5	12.5	
18	I wake up suddenly from my sleep.	3	7.5	5	12.5	14	35.0	12	30.0	6	15.0	Subscale 5 9.5±2.9 10 (3-15)
19	I have difficulty falling asleep.	6	15.0	8	20.0	14	35.0	8	20.0	4	10.0	
20	I sleep less.	6	15.0	4	10.0	11	27.5	10	25.0	9	22.5	

3.4. Variables associated with post-traumatic stress disorder levels

Gender (male-medium effect), maternal education level (secondary school and below-low effect), pre-earthquake income status (income less than expenses-medium effect), professional psychological support (not receiving-large effect), loss of a loved one (no-small effect), damage to residential building (much damage-medium effect), loss of property (no-medium effect), and post-earthquake migration (no-medium effect) were the variables that increased the score on the scale, that is, increased the risk of PTSD. No significant effect size was calculated between age (z test family, Pearson r=-0.126), grade, paternal education level, post-earthquake income status, receiving post-earthquake financial and emotional/social/psychological support and scale score. The effect sizes and variables associated with students' scale scores are shown in Table 4.

Table 4. Effect Sizes and Variables Associated with Medical Students' Scores on the Determination of Post-earthquake Trauma Level (Türkiye, 2023)

Grouping Variables		**Scale scores according to the grouping variable**		**Cohen's d effect size**	**The test family for the effect size**
		Mean	**SD**		
Grade	4	65.13	14.38	0.064	F
	5	64.00	8.15		
	6	62.85	15.14		
Gender	Female	58.47	12.78	0.639*	t
	Male	67.13	14.08		
Maternal education level	Secondary school and below	65.44	11.26	0.256*	t
	High school and above	61.82	16.07		
Paternal education level	Secondary school and below	63.75	9.99	0.030	t
	High school and above	63.32	15.65		
Pre-earthquake income status	Income less than expenses	68.33	23.14	0.211*	F
	Income covers expenses	64.43	11.44		
	Income more than expenses	59.62	13.11		
Post-earthquake income status	Decrease compared with pre-earthquake	63.00	18.43	0.030	F
	Same as pre-earthquake	63.74	10.05		
	Increase compared with pre-earthquake	64.33	7.37		
Professional psychological support	Not receiving	64.27	13.90	0.785*	t
	Receiving	53.33	14.57		
Loss of a loved one	No	67.56	18.48	0.166*	F
	Yes, at least one person from the family	64.00	12.58		
	Yes, at least one person from friends	61.75	12.86		
Damage to residential building	No	67.75	10.08	0.209*	F
	Yes, less damage	61.69	14.30		
	Yes, moderate damage	62.80	17.33		
	Yes, much damage	69.80	13.57		

Loss of property	No	67.94	10.17	0.544*	t
	Yes	60.46	15.63		
Post-earthquake migration	No	66.10	13.90	0.399*	t
	Yes	60.53	14.02		
Post-earthquake financial support	No	63.95	14.55	0.040	t
	Yes, insufficient	62.73	15.01		
	Yes, sufficient	63.33	7.02		
Post-earthquake emotional/social/psychological support	No	63.44	14.48	0.004	t
	Yes	63.50	11.09		

*It indicates a significant effect size related to the scale score.

4. Discussion

In this study, the mean score of medical students on the DPETL scale was 63.5 and the median score was 65. Since the majority of the students scored between 43-80 points, a medium level of effect can be said. In two different studies using the same scale, the mean scores obtained from the scale were 23.1 and 64.6 (18,19). Compared with the Van-2011 earthquake, the recent devastating earthquake had a greater effect on students in terms of trauma and stress. In studies conducted in Türkiye after the Kahramanmaraş 2023 earthquake, the prevalence of PTSD was found to be 51.4% and 54.1% (20,21). In a study of medical students following the Kahramanmaraş 2023 earthquake, the prevalence of PTSD was found to be 43.5% (22). In a systematic review and meta-analysis study, the prevalence of PTSD in earthquake survivors was 23.7%, 38.7% in a study conducted 12 years after the Iran Bam 2003 earthquake, 21.5% after the China Wenchuan 2008 earthquake, and 23.9% after the Mexico Puebla 2017 earthquake (6, 23-25). The prevalence of post-earthquake PTSD in students was found to be between 10% and 39.3% (10,26-30). The prevalence of post-earthquake PTSD reported in these studies is mostly high. Although the prevalence varies, earthquakes can cause trauma and stress to the people who experience them. It is understandable and expected that the two recent major earthquakes in Türkiye have negatively affected medical students and that some of these students may be at risk for PTSD.

In the present study, male gender, low maternal education level, low pre-earthquake income status, and not receiving professional psychological support were recorded as sociodemographic variables that increased the score obtained from the scale. In studies conducted after the Türkiye Kahramanmaraş 2023 earthquake, younger age, female gender, low income status, and having a mental illness before the earthquake were identified as related variables (19-22). In a systematic review and meta-analysis study by Dai et al., including 46 studies, female gender and low education level were recorded as sociodemographic variables associated with PTSD (6). In a study conducted 10 years after the China Wenchuan 2008 earthquake, low income status was found to be associated with PTSD (31). In a study conducted after the Mexico Puebla 2017 earthquake, female gender was associated with PTSD (25). In two different studies conducted with students 1 month and 8 years after the Türkiye Van 2011 earthquake, female gender was found to be associated with PTSD (30,29). In a study conducted with students after the China Wenchuan 2008 earthquake, male gender and not receiving psychological support were found to be associated with PTSD (10). In the literature, there are studies that do not determine a relationship between PTSD and gender, as well as studies that mostly find a relationship with female gender. In the current study, male gender was found related. This may be because the group studied was students. Low maternal education and low income status can put individuals in a disadvantaged and vulnerable position in many situations. Not receiving professional psychological support may lead to an inability to cope with problems and manage the current situation.

In our study, it was determined that earthquake-related characteristics such as no loss of a loved one, much damage to residential building, no loss of property and no post-earthquake migration caused an increase in the scale scores. In studies conducted after the Türkiye Kahramanmaraş 2023 earthquake, being injured, being trapped under rubble, injury and/or death of a loved one, witnessing buildings collapse, witnessing someone being seriously injured, destruction of the home, living in temporary housing, losing a large amount of property/money, and migrating to another city were found to be associated with PTSD (19-22). In a systematic review and meta-analysis by Dai et al. that examined PTSD in earthquake survivors, it was determined that damage to residential building increased the prevalence of PTSD (6). In a study conducted 10 years after the China Wenchuan 2008 earthquake, loss of a loved one was associated with PTSD (31). In a study conducted with students after the China Wenchuan 2008 earthquake, it was reported that loss of a loved one increased the prevalence of PTSD (10). In a study conducted with university students after the Türkiye Van 2011 earthquake, loss of a loved one and damage to residential building increased the prevalence of PTSD (30). In a study conducted with high school students 8 years after the Türkiye Van 2011 earthquake, loss of a loved one increased PTSD (29). Both in the literature and the current study, it is seen that similar earthquake-related characteristics are found to be effective on PTSD, in contrast to sociodemographic characteristics. In the current study, it was determined that situations opposite to the literature findings, such as no loss of a loved one (small effect) and no loss of property (medium effect) increased the risk of PTSD. Because the Türkiye Kahramanmaraş 2023 earthquake was a devastating earthquake that affected a large area and a large number of people, people who have already experienced loss of a loved one and loss of property may not experience PTSD or may experience it less than people who have not experienced these experiences by being affected by the atmosphere of this earthquake, thinking and feeling that they have already faced the worst possibilities. This may be related to the very small number of students in this study who did not experience loss of life or property. The presence of much damage to residential building may increase the probability of PTSD by increasing the perceived risk and bringing additional difficulties such as finding a new place to live. No post-earthquake migration may increase PTSD scale scores because staying in the same environment may require constant reminders of earthquake-related events and coping with new challenges.

5. Conclusion and Recommendations

The medical students scored between 28 and 91 on the DPETL scale, with a mean of 63.5 and a median of 65. The recent devastating earthquake caused students to experience trauma and stress. In our study, it was determined that variables that can be supported by existing studies in the literature, such as being male, low maternal education level, low pre-earthquake income status, not receiving professional psychological support, much damage to residential building, and no post-earthquake migration caused an increase in scale scores.

In Türkiye, which is a high-risk country in terms of earthquakes, it is important to raise earthquake awareness in the community and to make the structures and the community resilient to the destructive effects of earthquakes. In addition, it is necessary to provide both community-based and risk group-based mental health support after major earthquakes. To this end, legal arrangements should be made and multisectoral public health programmes prepared by multidisciplinary teams should be implemented.

Limitations

The study was conducted at a single center. Since this study was conducted with students who had come to the faculty for studying due to the earthquake, the sample was relatively small. These are the limitations of this study.

This study is one of the first conducted following a recent and devastating earthquake. PTSD and related variables in medical students in post-earthquake period is a rarely studied topic. A scale was used in this study. The effect sizes were calculated and presented in the analyzes. These are the highlights of the study.

References

1. Doocy S, Daniels A, Packer C, Dick A, Kirsch T. The human impact of earthquakes: A historical review of events 1980-2009 and systematic literature review. PLoS Currents. 2013; 5. doi: 10.1371/currents.dis.67bd14fe457f1db0b5433a8ee20fb833
2. Giorgadze T, Maisuradze I, Japaridze A, Utiashvili Z, Abesadze G. Disasters and their consequences for public health. Georgian Medical News. 2011; (194): 59-63. doi: 10.4067/S0717- 75182012000100007
3. Nola IA. Earthquakes and their environmental, medical and public health impacts. Salud Pública de México. 2018; 60: 16-22.
4. Tansey CM, Pringle J, Davé A, Boulanger R, Hunt M. Earthquakes to floods: A scoping review of health-related disaster research in low- and middle-income countries. PLoS Currents. 2018; 10: ecurrents.dis.57d98a902a326361d88d54521e68b016. doi: 10.1371/currents.dis.57d98a902a326361d88d54521e68b016
5. Saeed SA, Gargano SP. Natural disasters and mental health. International Review of Psychiatry. 2022; 34(1): 16-25. doi: 10.1080/09540261.2022.2037524
6. Dai W, Chen L, Lai Z, Li Y, Wang J, Liu A. The incidence of post-traumatic stress disorder among survivors after earthquakes: A systematic review and meta-analysis. BMC Psychiatry. 2016; 16: 188. doi: 10.1186/s12888-016-0891-9
7. Atwoli L, Stein DJ, Koenen KC, McLaughlin KA. Epidemiology of posttraumatic stress disorder: Prevalence, correlates, and consequences. Current Opinion in Psychiatry. 2015; 28(4): 307-311. doi: 10.1097/YCO.0000000000000167
8. Mitchell AM, Sakraida TJ, Kim Y. PTSD, acute stress disorder, and adjustment disorder. Focus. 2016; 14(4): 500-509. doi: 10.1176/appi.focus.140406
9. Burnett HJ Jr, Helm HW Jr. Relationship between posttraumatic stress disorder, resilience, and religious orientation and practices among university student earthquake survivors in Haiti. Int J Emerg Ment Health. 2013; 15(2): 97-104.
10. Fu Y, Chen Y, Wang J, Shi Z, Wang L, Zhang X, Zhang N, et al. Analysis of prevalence of PTSD and its influencing factors among college students after the Wenchuan earthquake. Child and Adolescent Psychiatry and Mental Health. 2013; 7: 1. doi: 10.1186/1753-2000-7-1
11. Başoglu M, Kilic C, Salcioglu E, Livanou M. Prevalence of posttraumatic stress disorder and comorbid depression in earthquake survivors in Turkey: An epidemiological study. J Trauma Stress. 2004; 17(2): 133-141. doi: 10.1023/B:JOTS.0000022619.31615.e8.
12. Tanrikulu AB, Kayaoglu K. Prevalence and determinants of probable posttraumatic stress disorder among university students eight months after the 2023 Kahramanmaras earthquake doublet. Dusunen Adam - The Journal of Psychiatry and Neurological Sciences. 2024; 37(2): 102-110. doi:10.14744/DAJPNS.2024.00245.
13. Centre for Research on the Epidemiology of Disasters (EM-DAT Public). The international database. Data. Retrieved from https://public.emdat.be/data. Accessed August 1, 2023.
14. Kurt G, Uygun E, Aker AT, Acarturk C. Addressing the mental health needs of those affected by the earthquakes in Turkey. The Lancet Psychiatry. 2023; 10(4): 247-248. doi: 10.1016/S2215-0366(23)00059-7
15. Iqbal A, Sheikh A. The devastating earthquake that struck Turkey and Syria: Post-traumatic stress disorder and mental health issues among the victims. International Journal of Health Planning and Management. 2023; 38(4): 1080-1083. doi: 10.1002/hpm.3644
16. Tanhan F, Kayri M. The validity and reliability study of the scale for determining the level of post-earthquake trauma (in Turkish: Deprem sonrası travma düzeyini belirleme ölçeğinin geçerlik ve güvenirlik çalışması). Educational Sciences: Theory & Practice. 2013; 13(2): 1013-1025.

17. Faul F, Erdfelder E, Buchner A, Lang A-G. Statistical power analyses using G*Power 3.1: Tests for correlation and regression analyses. Behavior Research Methods. 2009; 41: 1149-1160. doi: 10.3758/BRM.41.4.1149
18. Kardas F, Tanhan F. Investigating posttraumatic stress, posttraumatic growth, and hopelessness levels of university students exposed to the Van earthquake. YYU Journal of Education Faculty. 2018; 15(1): 1-36. doi: 10.23891/efdyyu.2018.60
19. Akçay S, Beydili Gürbüz E, Koca E. Trauma levels after the 2023 Kahramanmaraş earthquakes in Türkiye. Journal of Social Service Research. 2024; 50(4): 519–530. doi: 10.1080/01488376.2024.2339967
20. Ilhan B, Berikol GB, Eroglu O, Deniz T. Prevalence and associated risk factors of post-traumatic stress disorder among survivors of the 2023 Turkey earthquake. The American Journal of Emergency Medicine. 2023; 72: 39-43. doi: 10.1016/j.ajem.2023.07.026
21. Alpay EH, Redican E, Hyland P, Karatzias T, Shevlin M. Correlates of posttraumatic stress disorder in the aftermath of the february 2023 earthquake in Turkey. Journal of Loss and Trauma. 2024; 29(6): 605-622. doi: 10.1080/15325024.2024.2314306
22. Ozturk HI, Donmezler S. Chronotype influences on posttraumatic stress disorder induced by the twin earthquakes in Turkey: A cross-sectional study among medical students. Chronobiology International. 2024; 41(1): 10-16. doi: 10.1080/07420528.2023.2294052
23. Divsalar P, Dehesh T. Prevalence and predictors of post-traumatic stress disorder and depression among survivors over 12 years after the Bam earthquake. Neuropsychiatric Disease and Treatment. 2020; 16: 1207-1216. doi: 10.2147/NDT.S252730
24. Xu J, Song X. Posttraumatic stress disorder among survivors of the Wenchuan earthquake 1 year after: Prevalence and risk factors. Comprehensive Psychiatry. 2011; 52(4): 431-437. doi: 10.1016/j.comppsych.2010.08.006
25. Maya-Mondragón J, Sánchez-Román FR, Palma-Zarco A, Aguilar-Soto M, Borja-Aburto VH. Prevalence of post-traumatic stress disorder and depression after the September 19th, 2017 earthquake in Mexico. Archives of Medical Research. 2019; 50(8): 502-508. doi: 10.1016/j.arcmed.2019.11.008
26. Carter FA, Bell CJ, Ali AN, McKenzie J, Wilkinson TJ. The impact of major earthquakes on the psychological functioning of medical students: A Christchurch, New Zealand study. New Zealand Medical Journal. 2014; 127(1398): 54-66. doi: 10.1179/1757670514Y.0000000156
27. Trip H, Tabakakis K, Maskill V, Day A, Cope V, Denny W. Psychological health and resilience: the impact of significant earthquake events on tertiary level professional students. A Cross-Sectional Study. Contemporary Nurse. 2018; 54(3): 319-332. doi: 10.1080/10376178.2018.1503549
28. Sharma V, Levin BL, Rahill GJ, Baldwin JA, Luitel A, Marhefka SL. Post-earthquake self-reported depressive symptoms and post-traumatic stress disorder and their correlates among college youths in Kathmandu, Nepal. Psychiatric Quarterly. 2021; 92(4): 1595-1609. doi: 10.1007/s11126-021-09928-5
29. Kurt E, Gulbahce A. Investigation of post-traumatic stress disorder levels of students living in Van earthquake. Current Perspectives in Social Sciences (Atatürk Üniversitesi Sosyal Bilimler Enstitüsü Dergisi). 2019; 23(3): 957-972.
30. Omac Sonmez M, Nazik F, Pehlivan E. Prevalence of posttraumatic stress disorder among a sample of university students in Turkey after the Van earthquake. International Journal of Psychiatry and Psychological Researches. 2017; 9: 1-20.
31. Lu B, Zeng W, Li Z, Wen J. Risk factors of post-traumatic stress disorder 10 years after Wenchuan earthquake: A population-based case-control study. Epidemiology and Psychiatric Sciences. 2021; 30: e25. doi: 10.1017/S2045796021000123

Article Information Form

Authors Notes: The authors would like to thank to the editor and the anonymous reviewers for their comments and suggestions.

Authors Contributions: All authors were responsible for the conception, study design, participant selection, performing data collection, analysis of data, and writing manuscript. All authors read and approved the final version of the manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by the authors.

Supporting/Supporting Organizations: No grants were received from any public, private or nonprofit organizations for this research.

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the reference.

Plagiarism Statement: This article has been scanned by iThenticate.

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 187-198, 2024
DOI: https://doi.org/10.54803/sauhsd.1523181

Research Article

Investigation of Attitudes Towards Cancer Screening of Patients Applying to Hospital Outpatient Clinics

Hatice Demirdağ[1]*, Meftun Akgün[1], Bilge Macit[2], Şevval İrem Dalcalı[3], Şule Can[3]

[1]Üsküdar University, Health Science Faculty, Nursing Department, İstanbul, Turkey, hatice.demirdag@uskudar.edu.tr
meftun.akgun@uskudar.edu.tr

[2] Göztepe Süleyman City Hospital,
bilgemacitt044@gmail.com

[3] Memorial Hospital,
sevvalirem1690@gmail.com
cansssule05@gmail.com

*Corresponding Author

Received: 29.07.2024
Accepted: 30.11.2024
Available Online: 30.12.2024

Abstract

Objective: This study aimed to investigate the attitudes of individuals applying to hospital outpatient clinics toward cancer screening and the factors affecting them.

Methods: This study is a cross-sectional descriptive study. The study sample consisted of 348 individuals aged 30-70 years who applied to the outpatient clinics of two city hospitals located on the Anatolian and European sides of Istanbul. The data were collected by face-to-face interviews using Personal Information Form and Attitudes Towards Cancer Screenings Scale. Statistical analyses were performed using SPSS (IBM SPSS Statistics 27) package programme.

Results: It was determined that 72% of the individuals who participated in our study knew about cancer screening and 43.9% had had it before. The most common reasons for not having cancer screening were thinking that the person was healthy and lack of information. The mean score of the attitude towards cancer screening scale was 94.12± 17.64. It was determined that attitudes towards cancer screening differed according to age, history of cancer, family/neighborhood history of cancer, having information about cancer screening, having regular screening, and wanting to have screening ($p<0.05$).

Conclusion: The attitude of the individuals participating in the study towards cancer screening is above average. However, more than half of the individuals have never had cancer screening. Informing and raising awareness about cancer screening at both individual and social level may increase the frequency of participation in screening.

Keywords: Attitude, Cancer screening, Community, Early diagnosis

1.Introduction

Cancer, which is a global health problem, ranks among the leading causes of death in our country and the World. In our country, cancer is the second most common cause of death after circulatory system-related deaths (1). According to the data published by the International Agency for Research on Cancer (IARC) and the World Health Organization (WHO) in 2020, there are 19.3 million new cancer cases and approximately 10 million cancer-related deaths in the World (2). According to the Türkiye Cancer Statistics 2021 Report, it is seen that the incidence of cancer is 223.1 per 100,000, and 180,288 people were diagnosed with new cancer. According to the Turkish Statistical Institute (TUIK), the mortality rate from benign and malignant tumors was 14.0% in 2021 and 15.2% in 2022 (1). As can be understood from these data, cancer is a significant health problem with high mortality, which continues to increase in Türkiye as in the World (3). Today, 30-50% of cancers can be prevented by applying evidence-based prevention practices and avoiding risk factors. In some types of cancer, early diagnosis and treatment can improve the quality of life of patients and reduce morbidity and mortality (4). For early diagnosis of cancer, standard screening programs are implemented for some cancer types all over the World and in Türkiye. In Türkiye, community-based screening programs for colorectal, cervical, and breast, cancers

Cite as: Demirbağ H, Akgün M, Macit B, Dalcalı Şİ, Can Ş. Investigation of Attitudes Towards Cancer Screening of Patients Applying to Hospital Outpatient Clinics. *Sakarya University Journal of Holistic Health*. 2024;7(3): 187-198. doi: 10.54803/sauhsd.1523181

are carried out in Cancer Early Diagnosis, Screening, and Education Centers (KETEM) for defined risk groups. In our country, the cancer screening program includes counseling for monthly breast self-examination, mammography for women between the ages of 40 and 69 every 2 years, smear and HPV-DNA test for women between the ages of 30 and 65 every 5 years, fecal occult blood test for men and women between the ages of 50 and 70 every 2 years, and colonoscopy every 10 years for those between the ages of 50 and 70 (5).

Screening is an important preventive measure in cancer control. However, literature shows that participation in cancer screening is not at the desired level. It is seen that the biggest obstacle to inadequate participation in cancer screening is a lack of information (6-9). In a study, it was determined that the participants had inadequate knowledge about cancer screening, and most of them wanted to have cancer screening, but they did not have screening because they did not know what to do for which cancers (6). In another study, it was found that 27.5% of women regularly performed breast self-examination every month, 41.4% had clinical breast examination, 45.6% had mammography, 42.3% had smear tests, 17% had colorectal cancer screening and early diagnosis practices for cancers were inadequate (7). In other studies, it has been reported that knowledge and attitude levels create awareness in cancer screening, and participation in screening tests is higher as the level of knowledge increases (8). The literature shows that people with a positive opinion about screening tend to undergo screening more frequently (9, 10). Perceptions, beliefs, and attitudes are also very important in the development of behaviors affecting health (11). It is seen that studies investigating attitudes towards cancer screening in the community are limited. Most studies on attitudes toward screening have focused on specific cancers and screening tests, and attitudes toward general cancer screening have not been examined much. In this context, this study aimed to determine the attitudes of individuals applying to hospital outpatient clinics toward cancer screening and the related factors.

2.Methods

2.1. Study design: This research is a cross-sectional descriptive study.

2.2. Population and sample: The population of the study consists of individuals who applied to the outpatient clinics of two city hospitals on the Anatolian and European sides of Istanbul. The sample size was calculated as 326 in the G*Power 3.1.9.4 programme, based on a significance level of 0.05, a medium effect size of 0.401, and 95% power, using the mean scores of the Attitude Towards Cancer Screenings Scale in the study conducted by Yıldırım Öztürk and Uyar (2019) (12). Considering the losses that may occur during the study, the sample number was increased by 10%, and 348 patients were planned to be reached.

2.3. Inclusion criteria: Being between 30-70 years of age

2.4. Data collection: Verbal consent was obtained by the researcher by explaining the purpose of the study to the individuals before the study and informing them that participation in the study was voluntary; the information they provided would not be used outside the research and would not be shared with others.

2.5. Data collection tools: The data were collected through face-to-face interviews by the researchers using the "Personal Information Form" and "Attitude Scale towards Cancer Screenings."

Personal Information Form: The researchers prepared it in line with the literature. This form includes demographic, medical, and cancer screening information.

Attitude Scale Towards Cancer Screenings: This scale was developed by Yıldırım Öztürk et al. (2020). The scale consists of 24 items and is a 5-point Likert type. Items 9, 12, 14, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24 are reverse coded. There is no specific cut-off point for the scale. In the validity and reliability study, the Cronbach alpha coefficient of the scale was found to be 0.95 (12). In this study, the Cronbach alpha value of the scale was found to be 0.90.

2.6. Statistical analysis: Statistical analyses were performed using the SPSS package program. Frequency tables and descriptive statistics were used to interpret descriptive data. For measurements that were not suitable for normal distribution, the Mann-Whitney U test was used to compare two independent groups, and the Kruskal Wallis H test was used to compare three or more independent groups. Bonferroni correction was applied for variables showing significant differences for three or more groups.

2.7. Ethical statement: Uskudar University Non-Interventional Ethics approval was obtained for this study (Date: 30.12.2022, Number: 61351342/ DEC2022-72). The purpose of the study was explained to the individuals participating in the study, and consent was obtained.

3. Results

Three hundred eighty-five people who applied to the polyclinics of two city hospitals on the Anatolian and European sides of Istanbul participated in this study.

The mean age of the individuals participating in the study was 44.36±11.82 (years). It was determined that 73.8% of the individuals were female, 67.8% were married, 33.6% were primary school graduates, and 43.9% were not health workers and worked in a different job. The rate of those living in urban areas was 87.5%, 90.9% had social security, and 76.1% had no chronic disease (Table 1).

Table 1. Distribution of Identifying Characteristics of Individuals

Variables (N=385)	**n**	**%**
Ages [$\bar{x} \pm$ s.s.→44,36±11,82 (years)]		
≤34	93	24.2
35-44	127	33.0
45-54	78	20.3
≥55	87	22.5
Gender		
Female	284	73.8
Male	101	26.2
Marital status		
Single	76	19.7
Spouse deceased/divorced	48	12.5
Married	261	67.8
Education level		
Illiterate	13	3.4
Primary School	129	33.6
High School	86	22.3
Licence	106	27.5
Postgraduate	51	13.2
Occupation		
Not a health worker	169	43.9
Health worker	83	21.6
Not working	133	34.5
Place of residence		
Urban area	337	87.5
Rural areas	48	12.5
Social security		
There is	350	90.9
None	35	9.1
Chronic illness		
There is	92	23.9
None	293	76.1

It was determined that 94.8% of the individuals participating in the study did not have a history of cancer, 66.0% had a history of cancer in the family/environment, and 34.6% had cancer in one or second-degree relatives. It was determined that 36.4% of the individuals had knowledge about cancer screening tests, 50.9% received information from the nurse about cancer screening tests, 65.4% knew about breast cancer screening, 56.1% did not have cancer screening, 66.3% of those who had screening had mammography, It was determined that 54.4% had cancer screening on the recommendation of a physician in a branch other than a family physician, 51.3% did not have cancer screening because they thought they were healthy, and 69.4% of those who did not have screening thought about having screening (Table 2).

Table 2. Distribution of Individuals' Characteristics Regarding Cancer and Cancer Screenings

Variables (N=385)	**n**	**%**
History of cancer		
There is	20	5.2
None	365	94.8
Type of cancer¹		
Lung	2	10.0
Breast	5	25.0
Prostate	4	20.0
Other	9	45.0
Cancer people around		
1. degree relative	88	22.9
2. degree relatives	88	22.9
Wife	27	7.1
Distant relatives/acquaintances	51	13.2
Type of cancer in the family/neighbourhood		
Colerectal	36	14.2
Breast	51	20.1
Cervix	36	14.2
Apart from these species	131	51.6
Having knowledge about cancer screening tests		
There is	140	36.4
None	108	28.1
Partially available	137	35.5
The place to receive information about the cancer screening test*		
From the family doctor	135	35.1
From other branch physician	141	36.6
Nurse	196	50.9
Social media	119	30.9
From acquaintances/relatives in the neighbourhood	132	34.3
Other	9	2.3
Regular cancer screening		
Regular	37	9.6
Has been screened at least once	132	34.3
Never had it done	216	56.1
Cancer screening method performed*		
Mammography	112	66.3
Pap Smear/Hpv DNA	103	60.9
PSA	8	4.7
Colonoscopy	50	29.6
Fecal occult blood	30	17.8
Element in cancer screening		
Recommendation for a physician in a branch other than family doctor	92	54.4
Family doctor recommendation	58	34.3
Family history of cancer	1	0.6
Neighbourhood/relative recommendation	14	8.3
Nurse recommendation	2	1.2
Social media	2	1.2
Reasons for not having cancer screening*		
Not informed	44	17.6
Don't think it won't help	3	1.2
Because it is not easy and accessible	3	1.2

Because he's afraid of bad news.	25	10.0
Embarrassment of the health worker/examination	7	2.8
Because he thinks he's healthy	134	53.3
Because he couldn't find the time.	33	13.3
Intention to have screening		
Yes	150	69.4
No	66	30.6

* The response has been given multiple times, [1] Intra-group percentage taken.

The mean score of the attitude scale towards cancer screening was 94.13±17.64 (Table 3).

Table 3. Individuals' Attitude towards Cancer Screening Scale Score

Scale (N=385)	**Mean**	**s.d**	**Median**	**Min.**	**Max.**	**Cronbach-α**
Attitude towards Cancer Screening Scale Score	94.12	17.64	98.0	42.0	120.0	0.904

A statistically significant difference was found in the attitude scale scores toward cancer screening according to age classes (χ2=16,121; p=0,001). It was determined that the attitudes towards cancer screening scale scores of individuals aged ≥55 years were higher than those of individuals aged ≤34 and 35-44 years. There was no statistically significant difference in the attitude scale scores toward cancer screening according to gender, marital status, educational level, occupational status, place of residence, social security, and chronic disease status (p>0.05) (Table 4).

Table 4. Comparison of Attitudes Towards Cancer Screening According to Descriptive Characteristics of Individuals

Variables (N=385)	**n**	**Attitudes towards cancer screening**	**Test value**
		$\mathbf{x \pm s.d}$	
Ages			
≤34 (1)	93	89.41±16.73	χ^2=16.121 **p=0.001** **[1,2-4]**
35-44 (2)	127	93.02±16.77	
45-54 (3)	78	96.27±17.08	
≥55 (4)	87	98.86±19.11	
Gender			
Female	284	95.04±17.39	Z=-1.781 p=0.075
Male	101	91.53±18.16	
Marital status			
Single	76	89.92±18.49	χ^2=5.281 p=0.071
Spouse deceased/divorced	48	96.73±18.67	
Married	261	94.87±17.06	
Education level			
Primary School	142	94.29±18.68	χ^2=0.186 p=0.980
High School	86	93.56±19.35	
Undergraduate	106	94.67±14.24	
Postgraduate	51	93.47±18.51	
Profession			
Not a health worker	169	93.56±17.74	χ^2=1.058 p=0.589
Health worker	83	96.39±15.20	
Not working	133	93.42±18.91	
Place of residence			
Urban area	337	94.18±17.42	Z=-0.066 p=0.947
Rural areas	48	93.67±19.29	
Social security			
There is	350	94.42±17.73	Z=-1.194 p=0.232
None	35	91.14±16.72	
Chronic illness			
There is	92	95.83±18.01	Z=-1.181 p=0.237
None	293	93.59±17.52	

In cases where data does not conform to a normal distribution, the 'Mann-Whitney U' test (Z-table value) was used to compare measurement values between two independent groups; and the 'Kruskall-Wallis H' test (χ2-table value) was employed for comparing three or more independent groups.

Cancer disease status revealed a statistically significant difference in attitude scale scores towards cancer screening (Z=-2,929; p=0,003). It was determined that the attitude toward cancer screening scale scores of those with cancer disease were significantly higher than those without cancer disease. It was determined that there was a statistically significant difference in the attitude scale scores towards cancer screening according to the person(s) with cancer in the family/environment ($\chi2$=21,263; p=0,001). Those who had cancer in their first-degree relatives and spouses had significantly higher attitude scale scores towards cancer screening than those who had cancer in their second-degree relatives. There was a statistically significant difference between the attitudes towards cancer screening scale scores according to knowledge about cancer screening tests ($\chi2$=45.426; p<0.001). The attitude towards cancer screening scale scores of those who knew were significantly higher than those who did not and partially knew. Likewise, the attitude scale scores of those with a partial understanding of cancer screening were significantly higher than those without knowledge. According to the status of having regular cancer screening, a statistically significant difference was found in attitude scale scores towards cancer screening ($\chi2$=61,096; p<0,001). The attitudes towards cancer screening scale scores of those who had regular cancer screening were significantly higher than those who had regular cancer screening at least once and those who had never had cancer screening. Likewise, a significant difference was found between those who had at least once and those who had never had cancer screening. It was determined that the attitude scale scores of those who had at least one screening at least once were significantly higher than those who had never been screened. Cancer screening attitudes of individuals who do not undergo cancer screening differ according to the desire to undergo cancer screening (Z=-6,741; p<0,001). The attitudes towards cancer screening scale scores of those who wanted to be screened were significantly higher than those who did not want to be screened (Table 5).

Table 5. Comparison of Attitudes Towards Cancer Screening According to Cancer-Related Characteristics of Cancer

Variables (N=385)	**n**	**Attitudes towards cancer screening scale scores**	**Test value**
		$\bar{x} \pm \mathbf{s.d.}$	
History of cancer			
There is	20	105.45±11.94	Z=-2.929
None	365	93.50±17.70	**p=0.003**
Family/neighbourhood history of cancer			
There is	254	95.74±17.95	Z=-5.174
None	131	96.79±16.77	p=0.060
Cancer people around			
1st degree relative (1)	88	95.28±18.83	χ^2=21.263
2. degree relatives (2)	88	88.37±17.43	**p<0.001**
Wife (3)	27	104.29±15.30	**[2-1,3]**
Distant relatives/acquaintances (4)	51	89.83±14.85	
Type of cancer in the environment			
Colorectal			
Breast	36	96.08±16.34	χ^2=7.267
Cervix	51	94.71±17.68	p=0.064
Apart from these species	36	96.14±21.38	
	131	90.04±17.05	
Knowledge of cancer screening tests			
Yes (1)	140	99.95±17.17	χ^2=45.426
None (2)	108	85.15±15.30	**p<0.001**
Partially available (3)	137	95.42±7.13	**[1-2,3] [2-3]**
Regular cancer screening			
Regular (1)	37	111.54±13.35	χ^2=61.096
At least once (2)	132	96.91±17.13	**p<0.001**
Never had it done (3)	216	89.43±16.38	**[1-2,3] [2-3]**

Intention to have screening			
Yes	150	96.12±15.53	Z=-6.741
No	66	81.78±15.51	**p<0.001**

"In cases where data does not follow a normal distribution, statistical analyses employed the 'Mann-Whitney U' test (Z-table value) for comparing measurement values between two independent groups, and the 'Kruskall-Wallis H' test (χ2-table value) for comparing three or more independent groups.

4. Discussion

Cancer is an important health problem with increasing prevalence in developed and developing countries. Cancer screening is an important resource in controlling certain types of cancer and reducing morbidity and mortality. The institutions where this study was conducted are among the busiest hospitals on both sides of Istanbul, one of the most populous and most migrant cities in Türkiye. Of the individuals who participated in the study, 36.4% stated that they knew about cancer screening and 35.5% indicated that they had partial knowledge. Studies show that knowing about cancer screening is associated with attitudes towards cancer screening. Lack of knowledge about cancer screening is one of the most important factors that reduce participation in screening (13-15). Babaoğlu et al. (2021) reported that 86.0% of the participants were aware of cancer screening (16). Again, in two different studies conducted in Türkiye, it was observed that the level of knowledge about cancer screening was 72.7% and 76.2% (13,17). The reason for the high results in our study and other studies may be explained by the fact that the ages of the study population were within the cancer risk groups, and Türkiye is one of the most socioculturally developed cities. It was observed that the most common source of information about cancer screening was physicians and nurses. When other studies are examined, it is seen that the most common sources of information about cancer screening are physicians and nurses, similar to this study (17,18). However, in many sources, media, awareness campaigns, and health education booklets are the highest sources of information (18,19). At this point, physicians and nurses are important resources in informing society, and the importance of informing society about screening through the media emerges. The rate of regular screening among the individuals participating in the study is quite low; most of them have never had any cancer screening before. The rate of those who had regular cancer screening was 9.6%, and the rate of those who had at least once was 34.3%. In the study of Özsöyler et al. (2023), the rate of those who had regular cancer screening was 6.1%, and the rate of those who had cancer screening at least once was between 6-63% in the literature (14,15,17,20,21). It was found that the most frequently performed screenings were mammography and smear tests. It is thought that this result may be due to the higher number of female participants and the fact that they are more known due to social activities. When we look at the literature, it is seen that breast and cervical cancer screenings are performed more frequently in studies similar to our study. While the rate of those who had mammography in the national literature was 23-62%, this rate was found to be 66.3% in our study (16,17,22). When the international literature is analyzed, it is seen that the frequency of breast cancer screening is low (23-25). While the rate of cervical cancer screening was 60% in our study, it was found to be between 20-58% in the national literature (16,17,20,26). In a study based on self-report data collected from 55 countries between 2005 and 2018, the frequency of cervical cancer screening was found to be 43.6% (0.03-97.4) (27). This study's third most common screening was colorectal cancer screening (29.6%). A literature review shows that Türkiye's rate of participation in colorectal cancer screening is between 4.5-33.8% (15). It is known that the incidence of colorectal cancer decreases significantly in countries with long-term screening programs (28). However, it is observed that participation in colorectal cancer screening is low. Many factors, such as lack of knowledge about cancer screening programs (16,17), lack of awareness of the seriousness of the condition, and lack of belief in its necessity (7), fear (29), and negative attitude (6) may be effective in individuals not participating in cancer screening programs. In this study, similar to the literature, the most common reasons for avoiding screening were thinking that the person was healthy and lacking information and time, respectively. Increasing information and awareness activities at the social level may increase the effectiveness of cancer screening programs.

A positive attitude towards cancer screening increases the intention to undergo cancer screening (30). In this study, it was observed that individuals had positive attitudes towards cancer screening. There are many factors affecting attitudes towards cancer screening. In our study, age was found to be one of the factors affecting attitude. Attitude scores of participants over the age of fifty-five were higher than those of individuals aged 35 years and younger and 36 to 44 years. Similar to our study, age was found to be associated with attitude in the study of Farooqi et al. (2019) (21). The increase in attitude at an advanced age may be due to increased risk perception, more frequent health care services, and, therefore, recommendations by the physician. When we looked at the literature, some studies showed that factors such as educational status, marital status, and employment status also affected participation and attitude towards cancer screening (6,15,19,29). However, in our study, no difference was found between cancer attitudes according to gender, marital status, educational status, and employment. In our study, it was found that the attitude of patients who were previously diagnosed with cancer was high. Routine screening programs are recommended to cancer patients by physicians and nurses after treatment, and therefore individuals are informed about cancer screening. At the same time, their awareness of the seriousness of the disease may have increased. These factors are factors in favorable attitudes. In the study, it was observed that the attitudes of individuals with a history of cancer in their spouses and first-degree relatives were higher than those with cancer in their second-degree relatives. This can be explained by recognizing the disease and having information. It was observed that the attitude scores of those who had regular screening and those who had at least one screening were higher than those who had never been screened. This result suggests that attitude development studies through screening awareness programs and health education can increase participation in cancer screening. Similarly, our study observed that the screening attitudes of individuals who thought they had information about cancer screening were higher than those who did not have information. When the previous studies were analyzed, it was seen that knowledge was an important factor in increasing the attitude (13) and practice (29,30) regarding cancer screening. The attitude of those who had regular cancer screening was higher than those who had at least once, and the attitude of those who had at least once was higher than those who had never had cancer screening. At the same time, among individuals who did not undergo cancer screening, the attitude of those who wanted to undergo screening was higher than those who did not wish to undergo screening. All these results suggest that a positive attitude towards screening may increase participation in cancer screening programs. Today, it is known that incidence and mortality associated with cancers can be reduced with effectively implemented screening programs. In countries where colonoscopy and stool test screening programs have been implemented for a long time (Austria, Czech Republic, and Germany), it was observed that the incidence of colorectal cancer decreased significantly over time (28). When studies were conducted in Southern and Eastern Europe, where cervical cancer screening programs were implemented and monitored, it was observed that cervical cancer mortality decreased (31). In a worldwide meta-analysis of cohort studies measuring the effect of mammography screening programs on incidence-based breast cancer mortality, it was reported that breast cancer screening might significantly reduce mortality rates (32). Increasing the knowledge and attitude of society regarding cancer screening will contribute to a decrease in cancer incidence and mortality by increasing participation.

5. Conclusion and Recommendation

The attitude of the individuals participating in the study towards cancer screening is above average. However, more than half of the individuals have never undergone cancer screening. The most common reasons for not undergoing cancer screening are thinking that the person is healthy and lack of information. Informing and raising awareness about cancer screening at both individual and social levels may increase the frequency of participation in screening. In all healthcare settings, the role of nurses in developing awareness and consciousness about cancer screening programs is very important. In this study, half of the patients reported that they received information about cancer screening from nurses. Nurses informing individuals and society about the importance of cancer screening, the benefits of early diagnosis and screening methods, and providing counseling services regarding cancer screening individually will contribute to developing knowledge and attitudes at the social and individual levels.

The findings of this study emphasize the importance of increasing awareness and encouraging regular participation in cancer screening. The fact that a significant portion of individuals refrain from screenings due to a lack of knowledge or the belief that they are healthy highlights a critical area for healthcare professionals and public health policies to address. Implementing educational programs and awareness campaigns focused on the benefits of early detection could significantly improve participation rates. In this context, raising awareness about early diagnosis can contribute to timely cancer detection, ultimately enhancing treatment outcomes and survival rates.

Limitations

The study only includes patients who applied to the polyclinics of two hospitals in one of Türkiye's largest cities. Therefore, the results may not be generalizable to the general population or to hospitals in different geographic regions.

References

1. Turkish Statistical Institute (TUIK). Death and Cause of Death Statistics, 2022 2022 [Available from: https://data.tuik.gov.tr/Bulten/Index?p=Olum-ve-Olum-Nedeni-Istatistikleri-2022-49679. Access date: 05.01.2024
2. Ferlay J, Colombet M, Soerjomataram I, Parkin DM, Piñeros M, Znaor A, et al. Cancer statistics for the year 2020: An overview. International journal of cancer. 2021;149(4):778-89. https://doi.org/10.1002/ijc.33588
3. Yıldız MS, Önder Y, Çıtıl R, Okan İ. Colorectal Cancer Risk Factors and Colorectal Cancer Screening Awareness Levels in Adults Applying to Family Health Centres: Colorectal Cancer Screening Awareness Levels in Adults. Chronicles of Precision Medical Researchers. 2022;3(2):68-77. https://doi.org/10.5281/zenodo.6965919
4. World Health Organization (WHO). Cancer 2022 [Available from: https://www.who.int/en/news-room/fact-sheets/detail/cancer. Access date: 05.01.2024
5. T.C. Ministry of Health, Directorate of Public Health. Cancer Screenings [Available from: https://hsgm.saglik.gov.tr/tr/kanser-taramalari.html. Access date: 05.01.2024
6. Tekpinar H, Asik Z, Ozen M. Evaluation of the patients who apply to family medicine policlinic. Turkish Journal of Family Practice. 2018;22(1):28-36. Doı: 10.15511/tahd.18.00128
7. Gök Uğur H, Aksoy Derya Y, Yılmaz Yavuz A, ŞILBIR MF, Aylin Ö. Knowledge, attitudes and behaviours of women aged 30-70 years applying to family health centres towards national cancer screening: A provincial example in the Black Sea Region. Journal of Continuing Medical Education. 2019;28(5):340-348. https://doi.org/10.17942/sted.529150
8. Ogunsanya ME, Brown CM, Odedina FT, Barner JC, Adedipe TB, Corbell B. Knowledge of prostate cancer and screening among young multiethnic black men. American journal of men's health. 2017;11(4):1008-18. https://doi.org/10.1177/1557988316689497
9. Morlando M, Pelullo CP, Di Giuseppe G. Prostate cancer screening: Knowledge, attitudes and practices in a sample of men in Italy. A survey. PloS one. 2017;12(10):e0186332. https://doi.org/10.1371/journal.pone.0186332
10. Cullati S, Charvet-Bérard AI, Perneger TV. Cancer screening in a middle-aged general population: Factors associated with practices and attitudes. BMC Public Health. 2009;9:118. doi:10.1186/1471-2458-9-118
11. Karakoyunlu Şen S, Kılıç Öztürk Y. The relationship between health perception and awareness of cancer screening. Turkish Journal of Family Medicine. 2020;24(4):175-83. doi: 10.15511/tahd.20.00475
12. Öztürk ENY, Uyar M, Şahİn TK. Development of an attitude scale for cancer screening. Turkish Journal of Oncology. 2020;35(4). doi: 10.5505/tjo.2020.2341
13. Uysal N, Toprak FÜ. Women's health perceptions, attitudes towards cancer screening and determination of affecting factors. Journal of Adnan Menderes University Faculty of Health Sciences. 2022;6(1):65-76. https://doi.org/10.46237/amusbfd.926839
14. Huang J, Choi P, Pang TW, Chen X, Wang J, Ding H, et al. Factors associated with participation in colourectal cancer screening: A population-based study of 7200 individuals. European Journal of Cancer Care. 2021;30(2):e13369. https://doi.org/10.1111/ecc.13369

15. Aytepe UE, Dönmez E. Colorectal Cancer Screening Behaviours in Turkey, Factors Affecting and Reasons for Not Participating in Screening: A Systematic Review. Journal of Public Health Nursing. 2022;4(1):56-76. https://doi.org/10.54061/jphn.980767
16. Babaoğlu A, Büyüközmen E, Can F. Awareness of cancer screening tests in the community in Izmir and factors affecting individuals' participation in cancer screening tests. Western Black Sea Medical Journal. 2021;5(2):173-81. https://doi.org/10.29058/mjwbs.853692
17. Özsöyler M, Güzelöz Çapar ZG, Keser M. Knowledge and Attitudes about Cancer Screening Tests of Patients 35 Years of Age and Older Applying to Family Medicine Outpatient Clinic. Forbes Journal of Medicine. 2023;4(1). Doı: 10.4274/forbes.galenos.2022.44227
18. Al Yahyai T, Al Raisi M, Al Kindi R. Knowledge, attitudes, and practices regarding cervical cancer screening among Omani women attending primary healthcare centres in Oman: A cross-sectional survey. Asian Pacific Journal of Cancer Prevention: APJCP. 2021;22(3):775. doi: 10.31557/APJCP.2021.22.3.775
19. Alshammari SA, Alenazi HA, Alshammari HS. Knowledge, attitude and practice towards early screening of colourectal cancer in Riyadh. Journal of Family Medicine and Primary Care. 2020;9(5):2273-80. Doı: 10.4103/jfmpc.jfmpc_290_20
20. Şen SK, Öztürk YK. The relationship between health perception and awareness of cancer screening. Turkish Journal of Family Medicine. 2020;24(4):175-83. doi: 10.15511/tahd.20.00475
21. Farooqi WA, Alayed MI, Alkhuraisi FY, Alsinan ZA, Alghadeer HA, Aldajam MA. Knowledge, attitude, and perceived barriers regarding cancer screening in Saudi Arabia. International Journal of Surgery and Medicine. 2021;7(2):34-44. Doi:10.5455/ijsm.cancer-screening-Saudi-Arabia-2021
22. Özçelik EK, Seçginli S. Breast cancer screening behaviours in women with a family history of breast cancer. Journal of Continuing Medical Education. 2022;31(3):183-92. https://doi.org/10.17942/sted.897058
23. Ba DM, Ssentongo P, Agbese E, Yang Y, Cisse R, Diakite B, et al. Prevalence and determinants of breast cancer screening in four sub-Saharan African countries: A population-based study. BMJ open. 2020;10(10):e039464. doi:10.1136/bmjopen-2020-039464
24. OECD. Screening 2021 [Available from: https://stats.oecd.org/index.aspx?queryid=30159.
25. Khan E, Bin Khalid A, Anwar A, Safeer N. Knowledge Attitude and Practice Regarding Screening of Breast Cancer Among Women in Karachi, Pakistan. Online Turkish Journal of Health Sciences (OTJHS). 2019;4(3). https://doi.org/10.26453/otjhs.476021
26. Şeker N, Yasin YK, Özaydın E, Çapacı B, Okyay P. Knowledge of cancer screening programmes of nurses in tertiary health care institutions and their status of having screening tests. Duzce Medical Journal. 2017;19(1):14-8.
27. Lemp JM, De Neve J-W, Bussmann H, Chen S, Manne-Goehler J, Theilmann M, et al. Lifetime prevalence of cervical cancer screening in 55 low-and middle-income countries. Jama. 2020;324(15):1532-42. doi:10.1001/jama.2020.16244
28. Cardoso R, Guo F, Heisser T, Hackl M, Ihle P, De Schutter H, et al. Colourectal cancer incidence, mortality, and stage distribution in European countries in the colorectal cancer screening era: An international population-based study. The Lancet Oncology. 2021;22(7):1002-13. https://doi.org/10.1016/S1470-2045(21)00199-6

29. Özkan İ, Taylan S. Barriers to women's breast cancer screening behaviours in several countries: A meta-synthesis study. Health Care for Women International. 2021;42(7-9):1013-43. https://doi.org/10.1080/07399332.2020.1814777

30. Smith J, Dodd RH, Gainey KM, Naganathan V, Cvejic E, Jansen J, et al. Patient-reported factors associated with older adults' cancer screening decision-making: A systematic review. JAMA Network Open. 2021;4(11):e2133406-e. doi:10.1001/jamanetworkopen.2021.33406

31. Jansen EE, Zielonke N, Gini A, Anttila A, Segnan N, Vokó Z, et al. Effect of organised cervical cancer screening on cervical cancer mortality in Europe: A systematic review. European journal of cancer. 2020;127:207-23. https://doi.org/10.1016/j.ejca.2019.12.013

32. Dibden A, Offman J, Duffy SW, Gabe R. Worldwide review and meta-analysis of cohort studies measuring the effect of mammography screening programmes on incidence-based breast cancer mortality. Cancers. 2020;12(4):976. https://doi.org/10.3390/cancers12040976

Article Information Form

Author(s) Notes: The author(s) would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author(s) Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by the author.

Supporting/Supporting Organizations: This study was supported by TUBITAK 2209-A University Students Research Projects Support Programme with project number 1919B012221245.

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the bibliography.

Plagiarism Statement: This article has been scanned by iThenticate.

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 199-211, 2024
DOI: https://doi.org/10.54803/sauhsd.1531458

Research Article

Mobile Media Exposure and Use in Children with and without Neurodevelopmental Disorder: A Comparative Analysis

Aylin Kurt[1*], Fatma Dinç[1], Emine Güneş Şan[1]

[1] Bartin University, Faculty of Health Sciences, Department of Nursing, Bartin, Turkey,

aylinkurt67@gmail.com
fatmadinccocuk@hotmail.com
eminegunessan@hotmail.com

* Corresponding Author

Received: 10.08.2024
Accepted: 13.12.2024
Available Online: 30.12.2024

Abstract

Objective: It was aimed in the study to evaluate and compare the purpose, frequency, and scope of mobile media use in children with neurodevelopmental disorder and those without neurodevelopmental disorder.

Methods: This study planned with a comparative design was conducted with the participation of the mothers of 111 children with neurodevelopmental disorder and 237 children without neurodevelopmental disorder. The data were collected through a self-report questionnaire.

Results: Most of the children had their own personal mobile media devices (with neurodevelopmental disorder=96.4%, without neurodevelopmental disorder=90.7%), and the majority used their mobile media devices to watch videos (with neurodevelopmental disorder=100.0%, without neurodevelopmental disorder=77.6%). Children with neurodevelopmental disorder used mobile media devices at an earlier age, and their duration of use in the day was longer ($p<0.05$).

Conclusion: Education programs for mothers should be prepared in line with expert opinions which aim at reducing use of mobile media devices and screen exposure. Nurses should play a role in the development and evaluation of intervention programmes to prevent the negative consequences of mobile media use and screen exposure, especially in primary health care centres.

Keywords: Neurodevelopmental Disorder, Exposure, Media, Children

1. Introduction

In recent years, the use of mobile media has increased significantly due to the advancement of mechanical technology and the ease of access to new innovations. The use of touchscreen devices and online applications that offer intuitive content may lead to an increase in children's media use (1,2). Despite the apparent increase in mobile media use among children (2–5), the recommendations of the American Academy of Pediatrics (AAP) have significantly limited mobile media use among children. The AAP recommends that children aged 18-24 months should not use screens except for video calls. For children aged over 24 months, daily screen time should be limited to one hour or less (6). It recommends that parents limit screen time with their children between 2 and 5 years of age to 1 hour of screen time with high-quality programs, and that parents of children aged six years and older set consistent limits on the amount of time spent using media types (1). It also emphasizes making sure that children do not replace adequate physical activity, sleep, or other healthy behaviours (2–5).

An increase in the use of mobile media among children has the potential to impede their cognitive development (1,2). Furthermore, prolonged exposure to various media devices has the potential to negatively impact cognitive, social, and linguistic development, both in the immediate and long-term (1,2,7,8). The literature contains numerous studies that have demonstrated the adverse effects of excessive use of digital media among children. These include behavioural issues (5), obesity (3,9), sleep disturbances (10), and delayed cognitive development (11). Children with neurodevelopmental disorders may be at higher risk (1,2). Prolonged exposure to and use of mobile media can have a

Cite as: Kurt A, Dinç F, Güneş Şan E. Mobile Media Exposure and Use in Children with and without Neurodevelopmental Disorder: A Comparative Analysis. *Sakarya University Journal of Holistic Health*. 2024;7(3): 199-211. https://doi.org/10.54803/sauhsd.1531458

potentially detrimental impact, given that children with neurodevelopmental disorders are at significant risk for their developmental competencies (1). Consequently, an analysis of the introduction of media in these groups and an investigation of their behaviours that differ from those of children with typical development will provide crucial information for future research (12).

The use of versatile media by children with neurodevelopmental disorders carries a risk because it can replace formatively advantageous intelligence and contains numerous tangible benefits (13,14). The premature introduction of screen-based media to children with neurodevelopmental disorders may result in impaired communication, delayed language development, and impaired social interaction (11,12). A significant proportion of children diagnosed with attention deficit hyperactivity disorder are reported to use mobile media for between two and four hours per day (15). The mobile media devices that children with neurodevelopmental disorders habitually utilize are computers and smartphones. The mean daily duration of mobile media use among children with neurodevelopmental disorders is longer than two hours (16).

Currently, inquiries within this population are limited and findings are inconclusive. Most research on the use of mobile media and screen time has focused on children with obsessive-compulsive disorder and attention deficit hyperactivity disorder. However, it is important to note that these findings may not be generalizable to other age groups (10,12,17–19). A study of children with extreme introvertedness range clutter and obsessive-compulsive clutter revealed that they exhibited higher levels of web and video entertainment use and experienced greater difficulty disengaging from screen time compared to typically developing children (5). As the writing provides only a limited comparison of the use of mobile media between children who are developing normally and those who have extreme introvertedness range clutter and obsessive-compulsive clutter, it is essential to address this issue within the field. A comparison of the use of mobile media between children with typical development and those with neurodevelopmental disorders will yield more precise information. In this context, the aim of the present study was to evaluate and compare the purpose, frequency, and scope of mobile media use in children with neurodevelopmental disorder and children without neurodevelopmental disorders. The study's research questions are as follows, in line with its purpose:

1) What is the frequency of mobile media use in children aged between 0-8 years with neurodevelopmental disorders and those without neurodevelopmental disorders?

2) What is the purpose of mobile media use in children aged between 0-8 years with neurodevelopmental disorders and those without neurodevelopmental disorders?

2. Methods

2.1. Design and participants

A cross-sectional comparative plan was employed in the analysis. This strategy was selected to identify differences in the use of mobile media between children with neurodevelopmental disorders and typically developing children, and to conduct research in this area. Data were collected from mothers of children aged between 0 and 8 years who were hospitalized in the pediatric department of an obstetrics and pediatrics hospital in Bartın province in the Western Black Sea Region of Türkiye. The following inclusion criteria were established for the child: (1) age between 0-8 years, (2) diagnosis of neurodevelopmental disorder in accordance with DSM 5, (3) not having any vision or hearing problems and (4) exposure to mobile media devices (e.g., TV, smartphone, computer, tablet, gaming console, etc.). The following criteria were established for the mother: (1) primary caregiver of the child between 0-8 years of age, and (2) the mother's age must be over 18, (3) the mother must own at least one TV, smartphone, computer, tablet, game console and (4) willingness to participate in the study. Over the course of the data collection period (October 2022-July 2023), a total of 125 children with neurodevelopmental disorders and 301 children without neurodevelopmental disorders were identified as eligible for inclusion in the study. A total of 111 mothers of children with neurodevelopmental disorders (cooperation rate: 88.8%) and 237 mothers of children without neurodevelopmental disorders (interest rate: 78.7%) participated in the study. A purposive sampling strategy, which is one of the non-probability sampling strategies, was employed to select the test population. A post hoc power analysis of the obtained data was conducted using a Chi-Square Goodness of Fit Test with a 95% confidence level (1-α) and a 95% test power (1-β). This analysis yielded an effect size of d=0.489.

2.2. Measurement

The data were collected from mothers who agreed to participate in the study through a self-report-based 0-8 years mobile media information form prepared by the researchers in line with the literature (1,21,22). The shape was then divided into two distinct segments. The initial segment (questions 1-12) was employed to ascertain the participants' sociodemographic characteristics, including the child's age, the mother's and father's level of education, the mother's marital status, her employment status, her occupation, and her monthly income. The second segment, comprising questions 13-19, was employed to evaluate the child's access to media devices, frequency of use, and typical time spent on media devices, as well as mothers' activities while their child was exposed to media devices. In accordance with the objective of the study, various types of mobile media devices were classified into four categories: televisions, mobile devices (such as smartphones), computers, and video game consoles. Lastly, the mothers were queried about the type of content their children were exposed to and whether a paediatrician had informed them about the potential risks associated with the use of mobile media devices.

Eleven field specialists were counseled, including those engaged in child advancement, mental counseling and direction, paediatric nursing, and brain research nursing. The specialists were requested to evaluate the items on a four-point rating scale (1 = not pertinent, 2 = somewhat pertinent, 3 = quite significant, 4 = highly relevant). The Lawshe content validity index (CVI) was employed to assess the legitimacy of the 0-8 years mobile media information form (Lawshe, 1975). The item-level CVI values of the individual items ranged from 0.75 to 1.0, while the scale-level CVI value was 0.96. Based on these findings, the format of the 0-8 years mobile media information form was revised. The 0-8 years mobile media information form was pilot-tested with 20 mothers in a different institution than the study locations, and the resulting data were not included in the analysis.

2.3. Data collection

The researchers collected data from mothers who agreed to participate in the study at the relevant clinic during the specified observation period. The researchers and the mothers did not know each other and were not related in any way. Accordingly, it was emphasized that the assessment instruments be completed accurately and precisely. The purpose of the study was thoroughly explained to the participants. The entire questionnaire was completed in 10 to 15 minutes.

2.4. Data analysis

The data were analysed using the IBM SPSS Statistics 22.0 software package. A post hoc sample analysis was conducted using the G*Power version 3.1.9.7 software. The data were presented in a clear and concise manner, with numerical values, rates, percentages, and standard deviations. The results of the comparative analysis were presented in cross-tables. All questions were answered. In all comparative examinations, the Chi-square test was utilized. In order to identify the factors that caused the contrast, Fisher's Exact test was utilized (20). The information was assessed with 95% certainty, and a measurable importance level was decided to be $p < 0.05$.

2.5. Ethics

The study was approved by the Social Sciences and Humanities Ethics Committee of a university (Protocol No. 2022-SBB-0408, Date: 19.09.2022, Decision No. 22). Subsequently, authorization from the provincial health directorate was obtained for the study to be conducted at the relevant hospital. Following the provision of information to the mothers regarding the purpose and plan of the study, written consent was obtained from each participant. The 0-8 years mobile media information form was conducted in accordance with the principles of anonymity and confidentiality. No identifying data were collected. All participants were informed that their data would be kept confidential. All data were stored exclusively on a password-protected computer, accessible only to members of the research team. All procedures were conducted in accordance with the ethical standards and principles set forth in the Helsinki Declaration.

3. Results

The mean age of the children included in the study was 3.13±2.04 (0-8) years, and 52.9% were male. 40.2% of the mothers of the children included in the study were high school graduates. 71.3% of the children's parents were employed, and 46% had an income equal to their expenses. 31.9% of the children were diagnosed with a neurodevelopmental disorder. Accordingly, 0.2% had autism spectrum disorder, 0.6% had Down syndrome, 10.9% had cerebral palsy, 14.1% had epilepsy, and 2.6% had ADHD (Table 1).

All children included in the study had mobile media devices at home. 93.7% of the children with neurodevelopmental disorder and 90.3% of the children without neurodevelopmental disorder had mobile media use experience. Most of the children had their own personal mobile media devices (with neurodevelopmental disorder =96.4, without neurodevelopmental disorder=90.7%), and most of them used their mobile media devices to watch videos (with neurodevelopmental disorder=100.0, without neurodevelopmental disorder=77.6%) and always needed assistance while using their mobile media devices (with neurodevelopmental disorder=68.5%, without neurodevelopmental disorder=57.8%) (Table 2).

Table 1. Demographic Characteristics of Children (N=348)

Characteristics	**Mean±SD**	**Range**
Age (year)	3.13±2.04	0-8
	n	**%**
Gender		
Girl	164	47.1
Boy	184	52.9
Mother's educational status		
Primary school	59	17.0
High school	140	40.2
Bachelor's degree	104	29.9
Master's degree	30	8.6
Doctorate degree	15	4.3
Household employment status		
1 parent employed	248	71.3
2 parents employed	97	27.9
Both parents unemployed	3	0.9
Family income status		
Income lower than expenses	128	36.8
Income equal to expenses	160	46.0
Income higher than expenses	60	17.2
Presence of neurodevelopmental disorder diagnosis in the child		
Yes	111	31.9
No	237	68.1
Neurodevelopmental disorder		
Autism Spectrum Disorder	7	2.0
Down Syndrome	2	0.6
Cerebral Palsy	38	10.9
Epilepsy	49	14.1
Attention Deficit/Hyperactivity Disorder	9	2.6

There were significant differences regarding the variety of mobile media devices at home according to the children's having a diagnosis of with neurodevelopmental disorder (χ^2=14.937, p=0.001). The rate of having a laptop computer at home was significantly higher in without neurodevelopmental disorder children compared to with neurodevelopmental disorder children (with neurodevelopmental disorder=25.2%, without neurodevelopmental disorder=48.5%). The rate of having a tablet at home was significantly higher in neurodevelopmental disorder children compared to without neurodevelopmental disorder children (with neurodevelopmental disorder=53.2%, without neurodevelopmental disorder=32.1%). There were significant differences regarding having a personal mobile media device according to the children's having a diagnosis of with neurodevelopmental disorder or without neurodevelopmental disorder (χ^2=11.937, p<0.001). The rate of having a personal

TV at home was significantly higher in without neurodevelopmental disorder children compared to with neurodevelopmental disorder children (with neurodevelopmental disorder=16.8%, without neurodevelopmental disorder=34.4%). The rate of having a personal desktop computer was significantly higher in with neurodevelopmental disorder children compared to without neurodevelopmental disorder children (with neurodevelopmental disorder=3.7%, without neurodevelopmental disorder=0.0%) (Table 2).

Table 2. Distribution of Mobile Media Devices of Children and Their Usage Behaviors According to The Presence of Children's Neurodevelopmental Disorder

Characteristics	**With neurodevelopmental disorder (n=111)**		**Without neurodevelopmental disorder (n=237)**		**Difference**
	n	**%**	**n**	**%**	
Presence of mobile media devices at home					
Yes	111	100.0	237	100.0	-
No	0	0.0	0	0.0	
Mobile media devices at home					
TV set	110	99.1	230	97.0	χ^2=14.937 p=0.001
Desktop computer	12	10.8	43	18.1	
Laptop computer	28[a]	25.2	115[a]	48.5	
Internet access	95	85.6	190	80.2	
Smart phone	102	91.9	219	92.4	
Tablet	59[b]	53.2	76[b]	32.1	
E-book reader	8	7.2	7	3.0	
Game console (Xbox, PlayStation, Nintendo)	2	1.8	17	7.2	
Child's purpose for using mobile media use *					
Touching or swiping the screen to look at different pages	95	85.6	165	77.1	-
Watching videos	111	100.0	166	77.6	
Watching TV shows	39	35.1	56	26.2	
Playing Games	33	29.7	70	32.7	
Listening to music	42	37.8	65	30.4	
Presence of child's personal mobile media device					
Yes	103	96.4	193	90.7	-
No	4	3.6	22	9.3	
Child's personal mobile media devices *					
TV	18[c]	16.8	74[c]	34.4	χ^2=11.937 p<0.001
Desktop computer	0	0.0	8	3.7	
Laptop computer	0[d]	0.0	8[d]	3.7	
Smart phone	75	70.1	74	34.4	
Video iPod and the like	10	9.3	7	3.3	
Tablet	4	3.7	24	11.2	
E-book reader	0	0.0	3	1.4	
Game console (Xbox, PlayStation, Nintendo)	0	0.0	1	0.5	
Child's need for assistance while using mobile media device					
Always	76	68.5	137	57.8	-
Sometimes	33	29.7	84	35.4	
Never	2	1.8	16	6.8	

*χ^2=Chi-Square test, *More than one choice was marked. [a] [b] [c] [d] These values comprise the significant difference.*

Children with neurodevelopmental disorder started to watch TV programs at a younger age compared to the children without neurodevelopmental disorder (with neurodevelopmental disorder=2.44±1.39, without neurodevelopmental disorder=3.07±1.28, t=-3.944, p<0.001). Neurodevelopmental disorder children started to touch/swipe the screen of their tablets or smart phones in order to change and look at the pages at a younger age compared to without neurodevelopmental disorder children (with neurodevelopmental disorder=2.25±1.26, without neurodevelopmental disorder=3.52±1.22, t=-8.763, p<0.001). Children with neurodevelopmental disorder used applications on their mobile media devices in the last 24 hours for a longer duration compared to the children without neurodevelopmental disorder (with neurodevelopmental disorder=1.67±0.97, without neurodevelopmental disorder=1.25±0.65, t=3.289, p=0.001). Children with neurodevelopmental disorder watched TV programs on their mobile media devices in the last 24 hours for a longer time compared to the children without neurodevelopmental disorder (with neurodevelopmental disorder=1.22±0.45, without neurodevelopmental disorder=1.04±0.44, t=2.458, p=0.015) (Table 3).

Table 3. Distribution of Behaviours of The Children Related with The Activities They Do in Their Mobile Media Devices According to The Presence of Children's Neurodevelopmental Disorder

Children's behaviours regarding the activities they do in mobile media devices	**With neurodevelopmental disorder (n=111)**	**Without neurodevelopmental disorder (n=237)**	**Difference**
	Mean±SD	**Mean±SD**	
The age of doing the following activities for the first time (year)*			
Watching TV programs	2.44±1.39	3.07±1.28	t=-3.944, p<0.001
Making a phone call	1.99±1.41	2.05±2.00	t=-0.299, p=0.765
Touching/swiping in order to change the pages and to look at them in tablet or smart phone	2.25±1.26	3.52±1.22	t=-8.763, p<0.001
Playing video games	2.76±1.74	3.09±2.06	t=-1.365, p=0.174
Using mobile media applications	3.08±1.91	3.33±2.16	t=-1.007, p=0.315
Activity duration in mobile media device in the last 24 hours (hour)**			
Listening to music	1.07±0.26	1.03±0.17	t=1.104, p=0.273
Playing games on the video console	1.00±0.28	1.10±0.30	t=-1.797, p=0.083
Using applications in the mobile media device	1.67±0.97	1.25±0.65	t=3.289, p=0.001
Watching TV	1.34±0.74	1.34±0.93	t=-0.067, p=0.946
Watching TV programs on a mobile media device	1.22±0.45	1.04±0.44	t=2.458, p=0.015

*Mean age (SD), ** Mean hour (SD)

Most of the mothers of the children had fewer than five applications in their mobile media devices (with neurodevelopmental disorder=90.6%, without neurodevelopmental disorder=60.6%), and most of these applications were related with children (with neurodevelopmental disorder=92.0%, without neurodevelopmental disorder=44.0%). There were significant differences in the mothers' behaviors related with the children's use of mobile media devices (the number of those whose applications in their mobile media devices were related with children / using them while keeping the child busy /sleeping the child in public spaces) according to the presence of neurodevelopmental disorders (p<0.05). The number of the mothers of the children with neurodevelopmental disorder most of whose applications in their mobile devices were related with children was higher compared to the mothers of the children without neurodevelopmental disorder (with neurodevelopmental disorder=92.0%, without neurodevelopmental disorder=44.0%). The number of the mothers of the children without neurodevelopmental disorder less than half of whose applications in their mobile devices were related with children was significantly higher compared to the mothers of the children with neurodevelopmental disorder (with neurodevelopmental disorder=0.0%, without neurodevelopmental disorder=8.6%). The number of the mothers of the children without neurodevelopmental disorder only a few of whose applications in their mobile devices were related with children was significantly higher compared to the mothers of the children with neurodevelopmental disorder (with neurodevelopmental disorder=2.3%, without neurodevelopmental disorder=42.2%). The number of the mothers of the children with neurodevelopmental disorder who did not receive expert opinion (such as a doctor) regarding mobile media use in children was significantly higher compared to the mothers of the children without neurodevelopmental disorder (with neurodevelopmental disorder=100.0%, without neurodevelopmental disorder=92.8%). The number of the mothers of the children with neurodevelopmental disorder who gave mobile media devices to their children to keep the child busy while doing the chores was significantly higher compared to the mothers of the children without neurodevelopmental disorder (with neurodevelopmental disorder=82.0%, without neurodevelopmental disorder=60.8%). The number of the mothers of the children with neurodevelopmental disorder who gave mobile media devices to their children in order to keep the child calm in public spaces was significantly higher compared to the mothers of the children without neurodevelopmental disorder (with neurodevelopmental disorder=91.1%, without neurodevelopmental disorder=54.4%). The number of the mothers of the children with neurodevelopmental disorder who gave mobile media devices to children in order to put the child to sleep was significantly higher compared to the mothers of the children without neurodevelopmental disorder (with neurodevelopmental disorder=94.7%, without neurodevelopmental disorder=40.5%) (Table 4).

Table 4. Mothers' Behaviours Regarding Their Children's Mobile Media Device Use According of The Presence of Neurodevelopmental Disorders

	With neurodevelopmental disorder (n=111)		**Without neurodevelopmental disorder (n=237)**		**Difference**
	n	**%**	**n**	**%**	
The number of applications in the mobile media devices					
Fewer than 5	77	90.6	77	60.6	-
5-10	8	9.4	32	25.2	
11-20	0	0.0	9	7.1	
21-30	0	0.0	8	6.3	
More than 30	0	0.0	1	0.8	
Applications related to children in the mobile media devices					
Most of them	80[a]	92.0	51[a]	44.0	$\chi^2=16.841$ p<0.001
Nearly half of them	5	5.7	6	5.2	
Less than half of them	0[b]	0.0	10[b]	8.6	
Only a few of them	2[c]	2.3	49[c]	42.2	
Obtaining expert opinion about mobile media device use in children (such as a doctor)					
Yes	0[d]	0.0	17[d]	7.2	$\chi^2=8.371$ p=0.004
Mo	111[e]	100.0	220[e]	92.8	
Giving the child a mobile media device when outside in order to keep the child busy					
Yes	63	56.8	108	45.5	-
No	48	43.2	129	54.5	

Giving the child a mobile media device when doing chores in order to keep the child busy					
Yes	91^{f}	82.0	144^{f}	60.8	$\chi^2=9.548$
No	20^{g}	18.0	93^{g}	39.2	$p<0.001$
Giving the child a mobile media device in public spaces in order to keep the child calm					
Yes	90^{h}	91.1	106^{h}	54.4	$\chi^2=8.728$
No	$21^{ı}$	18.9	$101^{ı}$	42.6	$p<0.001$
Using a mobile media device in order to get the child to sleep					
Yes	94^{j}	94.7	96^{j}	40.5	$\chi^2=8.182$
No	17^{k}	15.3	141^{k}	59.5	$p<0.001$

χ^2=Chi-Square test, $^{a\ b\ c\ d\ e\ f\ g\ h\ ı\ j\ k}$ These values comprise the significant difference.

4. Discussion

The display compares the media exposure and utilization of children with and without neurodevelopmental disorder. It is acknowledged that such a comparison represents a significant contribution to the existing literature. The study revealed that children with neurodevelopmental disorder exhibited a longer duration of media exposure. In particular, the observation of television and mobile phone and tablet usage was found to be significantly higher in children with neurodevelopmental disorder. The proportion of mothers who had formed a definitive opinion on the use of mobile media was significantly lower than that of the general population, and no definitive opinions were formed by the mothers of children with neurodevelopmental disorder. The advent of mobile media due to the rapid advancement of technology and its pervasive and unregulated use in environments where children have access may pose challenges for children with neurodevelopmental disorder, as well as for all children. Children with neurodevelopmental disorder are particularly susceptible to the adverse effects of unregulated mobile media usage (1,12,17).

Most children with and without neurodevelopmental disorder had experience with a range of mobile media devices and owned their own personal devices. It has been documented that the prevalence of touchscreen devices, computers, online videos, smartphones, and tablets has been high in recent years among children aged 0-8 (14,23). It has been indicated that approximately three-quarters of children with ND utilize mobile media devices (1). In a further consideration, on average, seven screen devices were present in each domestic setting in developed countries (23).

In the context of the study, the prevalence of tablet usage in the home setting was higher among children with neurodevelopmental disorder compared to those without neurodevelopmental disorder. Children who experience a long-lasting infection and an inability can spend a significantly greater proportion of their leisure time using mobile media devices than their peers who demonstrate typical development (24). For children with neurodevelopmental disorder, the use of touchscreen devices (such as smartphones or tablets) requires less motor exertion, making it a more appealing activity (25). Furthermore, mothers of children with neurodevelopmental disorder may employ tablets to engage their children and soothe them while attending to essential care requirements (26).

Children with neurodevelopmental disorder have been observed to interact with mobile media devices at an increasingly early age. These devices include televisions, tablets, and smartphones, which they use to view content, navigate menus, and access information. In the present era, children are acquiring competencies such as touch screen utilization, device operation, and screen swiping at an exceedingly early age (27). In a study conducted by Coutinho et al.(1), 61% of children with neurodevelopmental disorder were reported to have started using a mobile media device before the age of two. In another study, 52% of children with neurodevelopmental disorder were found to begin using mobile media devices at an age of approximately 18 months (12). This suggests that the use of mobile media devices begins at younger ages in children with neurodevelopmental disorder.

Most mothers of children with neurodevelopmental disorder reported applications related to children on mobile media devices.. One method of preventing children from accessing inappropriate content is to use mobile media devices with children (co-viewing) and to monitor children's online activity (27,28). Given the neurocognitive limitations of children with neurodevelopmental disorder, there is a heightened need for parental monitoring to mitigate the adverse effects of excessive screen time (22).

A discrepancy was observed between the mothers of children without neurodevelopmental disorder and those with neurodevelopmental disorder. While 7.22% of the mothers of children without neurodevelopmental disorder received guidance on their children's use of mobile media gadgets, no such guidance was provided to the mothers of children with neurodevelopmental disorder. A study revealed that 13.4% of mothers of children with neurodevelopmental disorder received guidance from pediatricians regarding the use of mobile media devices devices (1). Wellbeing experts play a pivotal role in educating mothers about the introduction of mobile media in childhood and the benefits and risks associated with mobile media devices. Consequently, mothers can mitigate the adverse effects of screen time at an early age (29).

The mothers of children with neurodevelopmental disorder employed a range of media gadgets for various purposes, including engaging their children in activities while completing household tasks, soothing their children in open spaces, and helping them relax. A greater than one-third of the mothers of children with neurodevelopmental disorder employ mobile media devices to maintain their children's engagement (30). In a study conducted with mothers of children with neurodevelopmental disorder it was reported that mothers frequently used mobile media to distract their children while they were engaged in various activities (1). In the present era, mobile media devices, including televisions, smartphones, and tablets, are employed by mothers in a caregiving capacity to maintain their children's engagement and to provide them with a sense of calm (31). The mothers of children with neurodevelopmental disorder may provide their children with mobile media gadgets as a means of engaging, relaxing, and keeping them occupied (26). Furthermore, children with neurodevelopmental disorder may require more time and attention, which could result in exhaustion and stress for their mothers. As mobile media devices capture the attention of children with neurodevelopmental disorder, mothers may utilize these devices as a means of engaging and entertaining their children (1).

The children with neurodevelopmental disorder started to watch TV programs and use tablets or smart phones at a younger age compared to children without neurodevelopmental disorder. In a study conducted in Thailand, children with autism spectrum disorder were reported to be exposed to mobile media environment at a younger age compared to children without autism spectrum disorder diagnosis (6.44 vs. 12.41 months) and for a longer duration (32). In another study conducted in Spain, it was found that children with neurodevelopmental disorder started to watch TV at a younger age compared to those without neurodevelopmental disorder ($p<0.001$) (4). In a study conducted in the USA, use of mobile media before the age of two years was emphasized to be a significant risk factor for seeing symptoms like autism spectrum disorder. It is thought that screen exposure in children at a young age can be a significant factor for neurodevelopmental disorder in children (33). Another study showed that there was a significant relationship between the age of exposure to screen devices and autism spectrum disorders and that more than 81% of children started to be exposed to electronic screens at the age of ≤ 2 years (26).

The children with neurodevelopmental disorder were observed to utilize versatile media gadgets for longer periods of time than children without neurodevelopmental disorder. The results of the studies indicated that over 40% of children with neurodevelopmental disorder had a daily screen time exceeding four hours (34), while over 90% had a daily screen time exceeding one hour (12). Children with neurodevelopmental disorder spend approximately two times more time engaged with mobile media gadgets than those without neurodevelopmental disorder (35). It has been observed that the introduction of screens to children with neurodevelopmental disorder occurs at a later age compared to children without neurodevelopmental disorder. The reason for the longer screen introduction in these children may be attributed to their mothers' more frequent utilization of versatile media gadgets to keep them active while fulfilling their care needs and providing them with entertainment (26).

4.1. Strengths and limitations

One of its strengths is that it covers the period of 0-8 years when growth and development are quite rapid. A comparative introduction of the information pertaining to children with neurodevelopmental disorder and children without neurodevelopmental disorder may be a crucial aspect to consider. It should be noted that the consideration is subject to certain limitations. The relatively small number of children hospitalized at the clinic throughout the data collection period limited the scope for comparison within the study. It is recommended that larger-scale tests be incorporated into future studies. Furthermore, the test employed in this study reveals a discrepancy between individuals with and without neurodevelopmental disorders regarding sociodemographic characteristics, including age, gender, education, family structure, and income. This imbalance may limit the generalizability of the data. Thirdly, the study employed a methodology that relied on mothers' perspectives on children's use of mobile media, which could be a limitation because it did not rely on self-report.

5. Conclusion

Because of the aforementioned considerations, the children with neurodevelopmental disorder had been exposed to mobile media for an extended period and at an earlier age. The findings revealed that children with neurodevelopmental disorder frequently engaged with mobile media devices, namely TV, smartphones, and tablets. The proportion of mothers who had reached a definitive conclusion regarding the introduction of mobile media was significantly lower among the mothers of children with neurodevelopmental disorder compared to the mothers of children without neurodevelopmental disorder. The elevated prevalence of prolonged screen exposure in children with neurodevelopmental disorder further suggests that it may contribute to the progression of neurodevelopmental disorder symptoms. It is therefore recommended that education programmes for mothers on the use of mobile media devices and the reduction of screen time should be implemented in accordance with expert recommendations. It is also recommended that guidelines for parents’ use of mobile media in children with neurodevelopmental disorders be developed and updated.

It is of the utmost importance that all adults in a child's life, including guardians, educators, and healthcare professionals, can assess the potential risks associated with neurodevelopmental disorders. It is important to increase awareness of early mobile media habits, frequent use and effects of mobile media use in children with neurodevelopmental disorders. Further research is required to examine the factors related to screen time through mobile media in children with neurodevelopmental disorders. The findings of this study indicate that pediatric medical caretakers and social workers should play an active role in the development of education programs for mothers on the use of mobile media devices and reducing screen time. It is imperative that they play a role in the development and assessment of intervention programs designed to prevent the adverse effects of excessive screen time, particularly in primary healthcare facilities. Furthermore, it is recommended that larger-scale tests be incorporated into future studies.

References

1. Coutinho F, Saxena G, Shah A, Tilak S, Desai N, Udani V. Mobile media exposure and use in children aged zero to five years with diagnosed neurodevelopmental disability. Disabil Rehabil Assist Technol. 2022;17(6):645–51.

2. Dy ABC, Dy ABC, Santos SK. Measuring effects of screen time on the development of children in the Philippines: a cross-sectional study. BMC Public Health. 2023;23(1):1261.

3. Sisson S, Broyles S, … BB. Screen time, physical activity, and overweight in US youth: National Survey of Children's Health 2003. J Adolesc Heal. 2010;47(3):309–11.

4. Pons M, Caner M, Rubies J, MC. A comparative study of recreational screen time in neurodevelopmental disorders. Rev Neurol. 2022;74(9):291–7.

5. Nagata JM, Chu J, Ganson KT, Murray SB, Iyer P, Gabriel KP, et al. Contemporary screen time modalities and disruptive behavior disorders in children: a prospective cohort study. ournal Child Psychol Psychiatry. 2023 Jan;64(1):125–35.

6. Hill D, Ameenuddin N, Chassiakos YR, Cross C, Radesky J, Hutchinson J, et al. Media and young minds. Pediatrics. 2016;138(5):e20162591.

7. Ponti M. Screen time and preschool children: Promoting health and development in a digital world. Paediatr Child Health. 2023;28:184–92.

8. Harle B. Intensive early screen exposure as a causal factor for symptoms of autistic spectrum disorder: The case for «Virtual autism». Trends Neurosci Educ. 2019;17:100119.

9. Fang K, Mu M, Liu K, He Y. Screen time and childhood overweight/obesity: A systematic review and meta-analysis. Child Care Health Dev. 2019 Sep;45(5):744–53.

10. Mazurek M, Engelhardt C, Sohl K. Bedtime electronic media use and sleep in children with autism spectrum disorder. J Dev Behav Pediatr. 2016;37(7):525–31.

11. Alroqi H, Serratrice L, Cameron-Faulkner T. The association between screen media quantity, content, and context and language development. J Child Lang. 2022; 50(5):1155-1183.

12. Lin J, Magiati I, Chiong SHR, Singhal S, Riard N, Ng IHX. The relationship among screen use, sleep, and emotional/behavioral difficulties in preschool children with neurodevelopmental disorders. J Dev Behav Pediatr. 2019;40(7):519–29.

13. Hill MM, Gangi D, Miller M, Rafi SM, Ozonoff S. Screen time in 36-month-olds at increased likelihood for ASD and ADHD. Infant Behav Dev. 2020;61:101484.

14. Vaidyanathan S, Manohar H, Chandrasekaran V, Kandasamy P. Screen time exposure in preschool children with adhd: a cross-sectional exploratory study from south india. Indian J Psychol Med. 2021;43(2):125–9.

15. Görmez V, Örengül AC. Assessment of electronic media use in children and adolescents with attention deficit hyperactivity disorder. J Anatol Psych. 2017;18(5):495–502.

16. Uzun Ö, Yıldırım V, Uzun E. D. Habit of using social media and correlation of social media addiction, self esteem, perceived social support in adolescent with attention deficit hyperactivity disorder. Turkish J Fam Med Prim Care. 2016;10(3):142-147.

17. Chonchaiya W, Nuntnarumit P, Pruksananonda C. Comparison of television viewing between children with autism spectrum disorder and controls. Acta Paediatr Int J Paediatr. 2011;100(7):1033–7.

18. Engelhardt CR, Mazurek MO, Sohl K. Media use and sleep among boys with autism spectrum disorder, adhd, or typical development. Pediatrics. 2013;132(6):1081–9.

19. Sarfraz S, Shlaghya G, Narayana SH, Mushtaq U, Shaman Ameen B, Nie C. Early screen-time

exposure and its association with risk of developing autism spectrum disorder: a systematic review. Cureus. 2023;15(7):e42292.

20. Field A. Discovering statistics using IBM SPSS statistics. 5th ed. Vol. 58, Statistics. Thousand Oaks: CA: SAGE; 2013.

21. Goldfarb G, Krynski L. Exposure and use of mobile media devices by young children. Arch Argent Pediatr. 2016;114(2):e126–7.

22. Kılıç AO, Sari E, Yucel H, Oğuz MM, Polat E, Acoglu EA, et al. Exposure to and use of mobile devices in children aged 1–60 months. Eur J Pediatr. 2019;178(2):221–7.

23. Picherot G, Cheymol J, Assathiany R, Barthet-Derrien MS, Bidet-Emeriau M, Blocquaux S, et al. Children and screens: Groupe de Pédiatrie Générale (Société française de pédiatrie) guidelines for pediatricians and families. Arch Pediatr. 2018;25(2):170–4.

24. Ng KW, Augustine L, Inchley J. Comparisons in screen-time behaviours among adolescents with and without long-term illnesses or disabilities: Results from 2013/14 HBSC study. Int J Environ Res Public Health. 2018;15(10):2276.

25. Durgungoz FC, Durgungoz A. Exploring the use of touchscreen devices for children with special educational needs and disabilities: Digital vs traditional. Eur J Spec Educ Res. 2021;7(1):92–109.

26. Dehiol RK, Dawood LJ, Alrubaee RJ. Autism spectrum disorders and electronic screen devices exposure in Al- Nasiriya city 2019-2020. 2022;26(4):1308–16.

27. Slobodin O, Heffler KF, Davidovitch M. Screen media and autism spectrum disorder: A systematic literature review. J Dev Behav Pediatr. 2019;40(4):303–11.

28. Matthes J, Thomas MF, Stevic A, Schmuck D. Fighting over smartphones? Parents' excessive smartphone use, lack of control over children's use, and conflict. Comput Human Behav. 2021;116:106618.

29. Gentile DA, Reimer RA, Nathanson AI, Walsh DA, Eisenmann JC. Protective effects of parental monitoring of children's media use a prospective study. JAMA Pediatr. 2014;168(5):479–84.

30. Varghese AD, Mathew G, Xson C. Attention deficit hyperactivity disorder and use of mobile phones among children- need for concern? J Clin Diagnostic Res. 2023; 7(6): SC01-SC04

31. Jourdren M, Bucaille A, Ropars J. The impact of screen exposure on attention abilities in young children: a systematic review. Pediatr Neurol. 2023;142:76–88.

32. Chonchaiya W, Nuntnarumit P, Pruksananonda C, Chandhita Pruksananonda C. Comparison of television viewing between children with autism spectrum disorder and controls. Acta Paediatr. 2011;100(7):1033–7.

33. Heffler K, Sienko D, Subedi K. Association of early-life social and digital media experiences with development of autism spectrum disorder–like symptoms. JAMA Pediatr. 2020;174(7):690–6.

34. Takahashi N, Tsuchiya K, Okumura A. The association between screen time and genetic risks for neurodevelopmental disorders in children. Psychiatry Res. 2023; 327:115395.

35. Mazurek MO, Engelhardt CR. Video game use in boys with autism spectrum disorder, ADHD, or typical development. Pediatrics. 2013;132(2):260–6.

Article Information Form

Author(s) Notes: Authors would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author(s) Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by authors.

Supporting/Supporting Organizations: No grants were received from any public, private or non-profit organizations for this research.

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the bibliography.

Plagiarism Statement: This article has been scanned by iThenticate.

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 212-219, 2024
DOI: https://doi.org/10.54803/sauhsd.1508478

Research Article

Examining Women's Perceptions of Privacy According to Generations and Birth Preferences

Rukiye Demir

Canakkale Onsekiz Mart University, Faculty of Health Sciences, Department of Midwifery, Canakkale, Türkiye,
rukiye_kiymik@hotmail.com

Received: 01.07.2024
Accepted: 17.12.2024
Available Online: 30.12.2024

Abstract

Objective: The aim of this study is to examine women's perceptions of privacy according to generations and birth preferences.

Methods: The study was conducted cross-sectionally between April and July 2024 with women who applied to the gynecology outpatient clinic in a public hospital in Çanakkale province. The population of the study consisted of women who applied to gynecology outpatient clinics between these dates, and the sample consisted of 300 women (n= 100 for each generation) in BP (Baby Boomer), X and Y generations. The data of the study were collected by face-to-face interview method with "Personal Information Form and Gynecology and Obstetrics Bodily Privacy Scale (GOBPS)".

Results: In the study, it was determined that the total score of the BP generation women on the GOBPS was 4.76±0.70, the X generation was 4.28±0.74, the Y generation was 4.18±0.72, and the BP generation women had a higher perception of body privacy. In addition, the mean GOBPS total scores of women in BP, X and Y generations who had cesarean section were higher than those who had normal vaginal delivery, and this difference was found to be statistically significant ($p<0.05$).

Conclusion: It has been concluded that there are intergenerational differences in women's body privacy perceptions, women's body privacy perceptions decrease over time, women's perceptions of privacy differ between generations according to their birth style preferences, and women who have had a cesarean section have higher body privacy perceptions.

Keywords: Body Privacy, Birth, Mode of Birth, Birth Preference, Intergenerational Difference

1. Introduction

Individuals from different age groups, referred to as generations, tend to exhibit similar attitudes and behaviors due to experiencing similar historical events and having access to similar conditions and opportunities during their formative years (1). Additionally, differences can be observed among generations in terms of aspects related to women's births (such as birth preferences) and perceptions of privacy. Practices passed down from generation to generation can influence how women perceive, react to, and interpret events (2,3). Factors influencing intergenerational change include variations in social, economic, technological, political, and cultural contexts, with contextual changes often cited as the main reason for differences between generations. Therefore, the study of generations is crucial for understanding social structure and differentiatio (4-7).

Privacy is defined as not allowing access to an individual's physical and mental integrity, kept discreet or secret (1). Recently, with the emergence of gender-based approaches in health care delivery, the application of the principle of "privacy in health" is being discussed. Particularly during pregnancy, childbirth, and the postpartum period, women expect greater respect for their privacy and require

Cite as: Demir R. Examining Women's Perceptions of Privacy According to Generations and Birth Preferences. *Sakarya University Journal of Holistic Health*. 2024;7(3):212-219. https://doi.org/10.54803/sauhsd.1508478

healthcare services that protect their privacy rights (8-11). Thus, the coexistence of women from different generations with different characteristics in the same environment can lead to various challenges in understanding and communication. Therefore, healthcare professionals providing services to women should be well aware of generational characteristics, sensitive to intergenerational differences, and value women's perceptions of bodily privacy (12-15).

Women's preferences for childbirth method are influenced by multiple factors, such as marrying and conceiving at older ages compared to in the past, wanting fewer children, the emergence of the concept of precious babies, and infertility issues. Additionally, women's perceptions of bodily privacy can influence their childbirth choices, which may vary among different age groups and even across generations (16-19). It is important to identify these differences and characteristics among generations of women and examine how perceptions of bodily privacy and childbirth preferences vary across generations. Such insights can contribute to planning effective care and counseling services by healthcare professionals, enhancing the quality of healthcare services for women and improving women's health overall. Therefore, understanding factors influencing women's childbirth preferences, including the impact of privacy perceptions, is crucial for minimizing the negative outcomes associated with increasing cesarean rates and for promoting natural childbirth. This research aims to contribute to the literature by examining how women's perceptions of bodily privacy across different generations affect their childbirth preferences Although there are no studies in the literature that evaluate women's body privacy across generations, there are some studies that evaluate women's body privacy perceptions with the age variable. Indeed, in the study conducted by Topatan (2019) to evaluate the body privacy perceptions of women who applied to the gynecology and obstetrics clinic, it was determined that there was a significant relationship between women's body privacy perceptions and age, and that women's perceptions of privacy increased as they got older (12). In addition, when the literature was examined; Although there are studies indicating that women's birth methods are affected by their body privacy perceptions, and that women with a high perception of privacy have more cesarean deliveries; Yücel et al. (2021) found that 67.9% of women who gave birth naturally and 88.8% of those who gave birth by caesarean section had their bodily privacy protected during their births, and that women who gave birth by caesarean section had their privacy expectations met at a significant level compared to those who gave birth vaginally (18). With technological developments, the ways in which individuals in different generations perceive the world and events can also be effective, and it is thought that this causes a change in the privacy perceptions of women in different generations whose perceptions differ. Therefore, it is of great importance to identify the characteristics and differences between generations for women, to provide care for the differences between generations by being sensitive to women's privacy, and to take measures to protect women's bodily privacy. The aim of this study is to examine women's perceptions of privacy according to generations and birth preferences. As a result of this study, it will be possible to determine the effects of factors such as privacy perception that may affect women's ability to have a normal birth.

2. Methods

2.1. Study design and sample

The research was conducted as a cross-sectional study, consisted of women who applied to the gynecology outpatient clinic of a state hospital in Canakkale province, Türkiye, between April and July 2024. The sample size was calculated using power analysis based on Topatan's (2019) study on women attending the obstetrics and gynecology clinic to assess their perceptions of bodily privacy. Effect size of 0.19, α= 0.05, Power= 0.95 were used with G*Power 3.1.9.2, determining a minimum sample size of 270 individuals. Considering the possibility of data loss in the study, the sample size for each group was increased by approximately 10%, and it was planned to include 100 women (Generation BP: 100, Generation X: 100 and Generation Y: 100 people). The power of the study was found to be 80% in the post hoc power analysis with the relevant sample size. For this study, the age ranges representing each generation were chosen according to the literature: women born between 1946-1964 represented the BP generation, those born between 1965-1979 represented generation X, and those born between 1980-1999 represented generation Y. In consideration of potential health issues (serious illness, hearing or speech problems that may prevent participation in the study, etc.) and difficulties in responding to questions among older participants in the BP generation, the upper age limit for participation was set at 65 years. Therefore, women aged between 1957 and 1999, who had at least completed elementary school education, had children, and volunteered to participate, were included in the study. The inclusion criteria for the study were; having a birth date between 1957 and 1999, having a child, being at least a primary school graduate, and volunteering to participate in the study. The exclusion criteria for the study were not accepting to participate in the study, having communication barriers, having psychological health problems, or not answering any questions of the study.

2.2. Data collection tools

Personal Information Form: The Personal Information Form, developed after reviewing current literature, consists of 35 questions aimed at gathering socio-demographic and obstetric information from the participating women (8, 13, 20-22). A pilot study was conducted with ten women to assess the comprehensibility and feasibility of the form, and these women were not included in the research.

Gynecology and Obstetrics Bodily Privacy Scale (GOBPS): Developed by Değirmen and Şaylıgil (2014), the GOBPS comprises sub-dimensions including General Privacy, Ethical and Privacy, Rights and Privacy, and Clinical Privacy. It is a five-point Likert scale with 37 items. Responses to each item range from one to five, and mean scores are calculated for each item. Higher average scores indicate greater sensitivity towards privacy in the respective sub-dimension. The Cronbach's Alpha reliability coefficient for the GOBPS was determined as 0.84 in its original development, and in this study, it was found to be 0.82, indicating strong internal consistency.

2.3. Statistical analysis

Statistical analyses were conducted using the IBM SPSS Statistics 24 software package. Data were presented as mean, standard deviation, minimum, maximum etc. The Kolmogorov Smirnov test was used to examine whether the data showed normal distribution. Since the data did not show normal distribution, the Mann Whitney U test and Kruskal Wallis Variance analysis were used. A significance level of $p<0.05$ was considered statistically significant. The flow chart of the study was prepared in accordance with the STROBE Checklist (23).

2.4. Ethics committee approval

A research ethics approval has been obtained from the Graduate Education Institute Ethics Committee of Canakkale Onsekiz Mart University and institutional permission has been granted from Mehmet Akif Ersoy State Hospital for the study. This study was conducted by the principles of the Declaration of Helsinki. Verbal and written consent was obtained from the participants.

3. Results

The study found that 80% of women from the BP generation, 76% from generation X, and 51% from generation Y had completed primary or middle school education. It was determined that there was no statistically significant difference in marital status among generations, but there was a significant difference in educational attainment, with women from generation Y having a higher education level compared to the other generations ($p<0.05$) (Table 1).

The average age of women in the BP generation was 60.81±2.31 years, in generation X it was 46.52±3.42 years, and in generation Y it was 28.34±1.32 years. Additionally, the average age at marriage was 17.13±2.44 years for BP, 20.63±1.55 years for generation X, and 23.32±1.49 years for generation Y.

Furthermore, the average age at first pregnancy was 17.02±1.54 years for BP, 21.42±0.85 years for generation X, and 24.46±1.47 years for generation Y. The average number of pregnancies for women in the BP generation was 4.26±3.41, in generation X it was 2.56±2.16, and in generation Y it was 2.63±1.45. Similarly, the average number of births for BP women was 4.13±2.44, for generation X it was 2.76±1.56, and for generation Y it was 2.63±1.44. The study also revealed that 24% of women from the BP generation gave birth by cesarean section, compared to 37% in generation X and 45% in generation Y. (Table 1).

Table 1. Inter-Generational Distribution of Certain Socio-Demographic and Obstetric Characteristics of Women

Characteristics	BP Generation (n= 100) n (%)	X Generation (n= 100) n (%)	Y Generation (n= 100) n (%)
Education level			
Primary/Secondary school	80 (80.0)	76 (76.0)	51 (51.0)
High School	14 (14.0)	16 (16.0)	34 (34.0)
University	6 (6.0)	8 (8.0)	15 (15.0)
Marital status			
Married	83 (83.0)	84 (80.0)	82 (82.0)
Not married	17 (17.0)	16(16.0)	18 (18.0)
Last childbirth method			
Normal vaginal delivery	76 (76.0)	63 (63.0)	58 (55.0)
Cesarean delivery	24 (24.0)	37 (37.0)	45 (45.0)
	Min-max (median) Mean ± SD*	**Min-max (median) Mean ± SD***	**Min-max (median) Mean ± SD***
Age (years)	58-65 (60.2) 60.81±2.31	43-57 (46) 46.52±3.42	23-42 (28) 28.34±1.32
Age at marriage	14-25 (17) 17.13±2.44	15-28 (20) 20.63±1.55	17-32 (23) 23.32±1.49
Age at first pregnancy	15-27 (17) 17.02±1.54	17-27 (20) 20.42±0.85	18-29 (24) 24.46±1.47
Number of pregnancies	1-8 (4) 4.26±3.41	1-5 (2) 2.56±2.16	1- 4 (2) 2.63±1.45
Number of births	1-7 (4) 4.13±2.44	1-5 (2) 2.76±1.56	1-4 (2) 2.63±1.44

**Standard deviation*

In the study, it was determined that the total score average of GOBPS was 4.76±0.70 for women in the BP generation, 4.28±0.74 for generation X, and 4.18±0.72 for generation Y. It was found that privacy perceptions of BP women were higher compared to those in generation X and Y. Additionally, there was a statistically significant difference in the average scores from all subscales of GOBPS among the generations, predominantly driven by higher scores among BP women ($p<0.05$) (Table 2).

Table 2. Distribution of Inter-Generational Women's Scores on the GOBPS

Items	BP Generation Mean ± SD (Min-Max)	X Generation Mean ± SD (Min-Max)	Y Generation Mean ± SD (Min-Max)	p-value
General Privacy	4.59±0.77 (1-5)	4.28±0.85 (1-5)	3.68±0.82 (1-5)	**0.001****
Rights and Privacy	4.82±0.84 (1-5)	4.39±0.88 (1-5)	4.26±0.86 (1-5)	**0.021****
Ethics and Privacy	4.85±0.69 (1-5)	4.21±0.67 (1-5)	4.48±0.68 (1-4)	**0.001****
Clinical Privacy	4.78±0.51 (1-5)	4.27±0.59 (1-5)	4.33±0.55 (1-4)	**0.001****
Total Score	4.76±0.70 (1-5)	4.28±0.74 (1-5)	4.18±0.72 (1-5)	**0.001****

***Kruskal-wallis test*

When the relationship between the total GOBPS score averages of the women participating in the study and the delivery methods was examined, it was determined that the total GOBPS score average of women who had a cesarean section (4.76±2.84) was statistically significantly higher than that of women who had a normal vaginal delivery (4.32±1.15) (p<0.05) (Table 3).

Table 3. Distribution of Women's GOBPS Total Scores by Birth Preferences

GOBPS	Birth Preference		Test/ p-value
	Normal Vaginal (n= 197) Mean ± SD	Cesarean (n= 106) Mean ± SD	
Total Score	4.32±1.15	4.76±2.84	U: 3.729/ **0.001*****

****Mann Whitney U test*

4. Discussion

In this study, which was conducted to determine women's perceptions of body privacy across generations and the effects of body privacy perceptions on birth method preferences, it was determined that the rate of women in the BP generation giving birth by cesarean section was lower than other generations. Consistent with our findings, literature indicates an increasing trend in cesarean rates from the BP generation to generation Y, which raises concerns for maternal and infant health. Looking at cesarean section rates in Türkiye, the country has one of the highest rates among OECD countries. According to the Türkiye Health Statistics Report (2019) by the Ministry of Health, the primary cesarean section rate is 26.5%, with the total cesarean section rate at 54.4%. Factors contributing to high cesarean rates among generation Y women include the belief that cesarean births are safer and less painful, advancements in fetal assessment technologies, anesthesia techniques, and assisted reproductive technologies. Other reasons include the trend towards delaying first births to older ages, increasing rates of obesity and chronic diseases, rising incidences of repeat cesareans, reduced use of forceps and vacuum in normal vaginal births, and a preference for elective cesarean sections due to fear of childbirth and the popularity of the concept of on-demand cesarean sections. Additionally, the transfer of childbirth to hospitals may reduce privacy, contributing to increased fear of childbirth and higher cesarean section rates.

In the study, it was determined that the average GOBPS score of women from the BP generation is higher than those of the X and Y generations, indicating that the privacy perceptions of women in the BP group are higher than those of women in the X and Y groups. Although there are no studies discussing our finding that evaluate intergenerational differences in women's body privacy perceptions, there are some studies that evaluate women's body privacy perceptions and these perceptions with the age variable. In this context, Topatan (2019) conducted a study to evaluate the body privacy perceptions of women applying to the gynecology outpatient clinic, and it was observed that the average GOBPS score of women (4.19±0.55) is similar to the total score average of women from the Y generation (4.18±0.72) in our study, and a statistically significant positive relationship was determined between women's GOBPS total and sub-dimension scores and age. In addition, in the studies conducted by Değirmen and Şaylıgil (2014) and Akten and Özata (2017), no statistically significant difference was found between women's ages and GOBPS total score averages. The perception styles of different generations of individuals in perceiving the world and events are effective with technological developments, and the meanings attributed to technology usage purposes and frequencies, especially social networks and mobile communication technologies, are changing. It is important for health professionals to know the cultural structure of society and the characteristics of generations well, to prioritize women's body privacy perceptions, to be sensitive to intergenerational differences, to provide necessary care and counseling services to women based on these differences.

The study found that women who had a cesarean section had higher GOBPS total scores than women who had a vaginal birth. According to our findings, we can infer that women's birth preferences are influenced by their body privacy perceptions, indicating that women with higher privacy perceptions are more likely to opt for cesarean delivery. Reviewing the literature, Aslan and Okumuş (2017) conducted a study to determine the impact of birth expectations on the birth experience perceptions of primiparous women who had vaginal or cesarean deliveries. They found that women had a significantly high level of privacy perception, but there was no relationship between the mode of delivery and their privacy expectation levels. Additionally, Yücel et al. (2021) evaluated the privacy experiences and expectations of women during and after childbirth. They reported that 67.9% of women who had vaginal deliveries and 88.8% of those who had cesarean sections felt their body privacy was respected during childbirth, with significantly higher privacy expectation fulfillment among women who had cesarean deliveries compared to those who had vaginal births. Furthermore, deficiencies in preserving women's privacy have been noted in studies, particularly in state and university hospitals where doors of delivery rooms were not closed (61%), delivery tables faced towards the door entrance (40.7%), and insufficient attention was paid to women's body privacy during the transition from the delivery room to the delivery service (17.9%). Similar studies indicate that inadequate preservation of privacy leads to increased embarrassment among women during childbirth, hindered progress in childbirth, increased likelihood of cesarean delivery, and negatively influences women's birth preferences. The disregard for privacy rights adversely affects the quality of childbirth services and steers women away from choosing vaginal birth. Various strategies are being developed globally and, in our country, to increase the rate of normal births and reduce cesarean section rates. The "Mothery-Friendly Hospital Initiative" is one such program that aims to preserve and support privacy rights during childbirth, which is a crucial step in the transition to motherhood for women. Another criterion for becoming a Baby-Friendly Hospital is the establishment of single-room maternity units, which is an important practice for maintaining privacy. Health professionals involved in childbirth services, such as midwives, doctors, and nurses, should create an appropriate environment and demonstrate behaviors that respect women's privacy rights throughout the childbirth process, especially for women having vaginal deliveries. In addition, there is a need for national and international studies that will be the subject of discussion in the literature on the subject.

5. Conclusions and Recommendations

It has been concluded that there are intergenerational differences in women's body privacy perceptions, women's body privacy perceptions decrease over time, women's perceptions of privacy differ between generations according to their birth style preferences, and women who have had a cesarean section have higher body privacy perceptions. It is of great importance that healthcare professionals serving women understand the cultural dynamics of the society, the characteristics of different generations, and prioritize women's perception of body privacy. To reduce rising caesarean section rates and mitigate associated negative outcomes, it is important to prioritize understanding women's birth preferences and the factors that influence their decisions, such as their perceptions of body privacy. Health professionals should adapt care and counseling services to the specific characteristics of the communities and generations in which women live, taking into account intergenerational differences. This approach will contribute to improving health outcomes and improving women's health by increasing vaginal birth rates and minimizing the negative effects of increasing cesarean section rates.

References

1. Türk Dil Kurumu. Retrieved from https://sozluk.gov.tr/
2. Akman G, Gözüyeşil E. Doğum sonu dönemde geleneksel uygulamalara yönelik yapılan araştırmaların incelenmesi. Kadın Hastalıkları ve Anne Çocuk Sağlığı Dergisi. 2018;12:14-22.
3. Kay L, Downe S, Thomson G, Finlayson K. Engaging with birth stories in pregnancy: A hermeneutic phenomenological study of women's experiences across two generation. BMC Pregnancy and Childbirth. 2017;17:283.
4. Hacıvelioğlu D, Bolsoy N. Üç kuşak kadınların doğum deneyimleri ve doğum algılarının incelenmesi: Atı anadolu kırsalı örneği. ÜSBD. 2020;9(2):67–81.
5. Liu N, Farrugia MM, Vigod SN, Urquia ML, Ray JG. Intergenerational abortion tendency between mothers and teenage daughters: A population-based cohort study. CMAJ. 2018;190(4):95-102.
6. Townsend ML, Riepsamen A, Georgiou C, Flood VM, Caputi P, Wright IM, Davis WS, et al. Longitudinal intergenerational birth cohort designs: A systematic review of Australian and New Zealand studies. PLoS One. 2016;8;11(3):e0150491.
7. World Health Organization. (2018). Recommendations: Intrapartum care for a positive childbirth experience. Geneva: World Health Organization; Licence: CC BY-NC-SA 3.0 IGO.
8. Değirmen N, Şaylıgil O. Jinekoloji ve obstetride beden mahremiyeti: Kütahya Örneği Eskişehir Osmangazi Üniversitesi Sağlık Bilimleri Enstitüsü Tıp Tarihi ve Etik Anabilim Dalı Doktora Tezi, 2014.
9. Bekmezci H, Özkan H. Ebelik uygulamalarında mahremiyetin önemi. Sağlık Bilimleri ve Meslekleri Dergisi. 2015;2:113–24.
10. Orman H, Demirci N. Effects of confidentiality perception during delivery period on maternal satisfaction. JAREN. 2019;5(3):219-227.
11. Liu N, Vigod SN, Farrugia MM, Urquia ML, Ray JG. Intergenerational teen pregnancy: A population-based cohort study. BJOG. 2018;125(13):1766-1774.
12. Topatan S. Jinekoloji ve obstetri polikliniğine başvuran kadınlarda beden mahremiyeti. ACU Sağlık Bil Derg. 2020;11(3):471-477.
13. McCrindle M, (2012). The generations defined. Retrieved from https://mccrindle.com.au/insights/blog/the-generations-defined/
14. Tanskanen AO. Intergenerational relations before and after offspring arrive: A within-person investigation. Soc Sci Res. 2017;67:138-146.
15. Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü. (2018). Türkiye Nüfus ve Sağlık Araştırması 2018. Ankara: Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü.
16. Betran AP, Ye J, Moller AB, Zhang J, Gülmezoglu AM, Torloni MR. The increasing trend in caesarean section rates: global, regional and national estimates: 1990-2014. Plos One. 2016;2:1-12.
17. Aydın N, Yıldız H. Travmatik doğum deneyiminin etkileri ve nesiller arası aktarımı. Journal of Human Sciences. 2018;15(1):604-618.
18. Yücel Ummahan, Rüzgâr Ş, Ekşioğlu A, Hadımlı A. Kadınların doğum şekline göre mahremiyet ile ilgili deneyimleri ve beklentileri. Türkiye Klinikleri J Health Sci. 2021;6(1):26-36.
19. Avaner E. Mahremiyet nedir? Mahremiyetin sağlık hizmetleri penceresinden görünürlüğü nasıldır? What is privacy? How is the visibility of privacy from the health services window? Methods. 2018;5(3):110-116.
20. T.C. Sağlık Bakanlığı Sağlık Araştırmaları Genel Müdürlüğü. (2019). Sağlık İstatistiği Yıllığı 2018. Ankara.

21. Manno LD, Macdonald JA, Knight T. The intergenerational continuity of breastfeeding intention, initiation, and duration: A systematic review. Birth. 2015;42(1):5-15.
22. Aydın R. Doğumda mahremiyetin önemi ve ebelik. SABAD. 2019;1(2):120-129.
23. STROBE Checklist. Retrieved from http://www.strobe-statement.org.

Article Information Form

Author(s) Notes: The author would like to express her sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author(s) Contributions: The author contributed equally to the writing of this paper. The author read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by the author.

Supporting/Supporting Organizations: Supported by the Republic of Turkey Çanakkale Onsekiz Mart University Scientific Research Projects Coordination Unit (TSA-2022-4107).

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the bibliography.

Plagiarism Statement: This article has been scanned by iThenticate.

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 220-229, 2024
DOI: https://doi.org/10.54803/sauhsd.1574260

Research Article

The Effect of Physical Ergonomics Training on Sleep Quality and Musculoskeletal System Problems in Factory Workers

Sibel Kutlu Özkan[1*], Oğuzhan Bahadır Demir[2,3]

[1]Health Management, Faculty of Health Sciences, Sakarya University Applied Sciences, Sakarya ,Türkiye

[2]Physiotherapy and Rehabilitation Department, Faculty of Health Sciences, Sakarya University of Applied Sciences, Akyazi, Sakarya, Türkiye

[3]Physiotherapy and Rehabilitation Application and Research Center, Sakarya University of Applied Sciences, Sakarya, Türkiye

*Corresponding Author

Received: 26.10.2024
Accepted: 29.12.2024
Available Online: 30.12.2024

Abstract

Objective: This study aimed to assess the impact of physical ergonomics training on sleep quality and musculoskeletal issues among factory workers.

Methods: Twenty-five factory employees aged 18-60, without neurological or emotional issues, participated. Data collection at baseline included a demographic form, the Pittsburgh Sleep Quality Index (PSQI), and the Cornell Musculoskeletal Discomfort Questionnaire. Following physical ergonomics training, these assessments were repeated after four weeks. Continuous data were analyzed using SPSS 29.0, with distribution differences tested by Kruskal-Wallis and Shapiro-Wilk methods. The Wilcoxon method determined any significant changes in non-normally distributed variables between initial and final measures.

Results: A significant improvement in PSQI scores (p=0.002) indicated enhanced sleep quality post-intervention. In the Cornell Musculoskeletal Discomfort data, a statistically significant reduction in neck pain was noted following training, while reductions in shoulder, back, and lumbar pain levels were not statistically significant. Although average score changes in the hip, upper and lower legs, knees, and feet suggested a trend in improvement, these differences were not statistically significant.

Conclusion: The findings suggest that physical ergonomics training could improve sleep quality and potentially reduce musculoskeletal discomfort among factory workers, highlighting its value for workplace health interventions.

Keywords: Pain, Ergonomics, Sleep Quality, Musculoskeletal Disorders

1. Introduction

Work-related Musculoskeletal Disorders (MSDs) are among the most common occupational diseases globally and have been recognized as a significant issue since the 17th century (1). MSDs are conditions affecting the musculoskeletal system, associated with physical dysfunction and pain (2). Factory workers exhibit a high prevalence of musculoskeletal disorders due to prolonged sitting, static postures, repetitive tasks, computer usage, and adverse environmental conditions (3).

Ergonomics is an interdisciplinary science aiming to optimize work environments and equipment to match human physical and mental capabilities. Originating from the Greek words "ergo" (work) and "nomos" (natural laws or systems), ergonomics emphasizes harmonizing work with human needs (4). Its primary objective is to enhance workplace safety and productivity while preserving worker health and comfort.

Differences in human physical characteristics hinder the suitability of uniform equipment or work arrangements for all employees. Non-ergonomic conditions in work environments can lead to severe health issues such as musculoskeletal disorders. For instance, poorly designed chairs or improper

Cite as: Kutlu Özkan S, Demir OB. The Effect of Physical Ergonomics Training on Sleep Quality and Musculoskeletal System Problems in Factory Workers. *Sakarya University Journal of Holistic Health*. 2024;7(3): 220-229. https://doi.org/10.54803/sauhsd.1574260

seating arrangements may result in prolonged abnormal postures, exacerbating neck, shoulder, back, and arm pain. Similarly, repetitive strenuous motions and the continuous use of small tools may cause conditions like carpal tunnel syndrome, particularly in the hands and wrists (5).

Implementing ergonomic principles in work environments is crucial for preventing health issues and enhancing productivity. Adjusting workspaces, equipment, and environmental conditions to ergonomic standards can reduce occupational injury risks and optimize employee performance. For example, using adjustable desks and chairs, positioning screens at eye level, and ensuring adequate lighting safeguard employees' health and positively impact business performance.

Among workers, MSD prevalence is reported as 28.2%-58.1% for the lower back, 22.9%-49% for the neck, 37.8%-41.5% for the upper back, and 18.8%-50.2% for shoulders (6, 7, 8). MSDs can negatively affect subjective sleep quality and cause sleep disorders due to persistent pain. Poor sleep quality may exacerbate MSDs, creating a vicious cycle of sleep disturbances and pain (9). Sleep disorders can also impair employees' mental and physical health, leading to increased anxiety or depression, reduced daytime functionality and quality of life, elevated workplace accidents, and decreased job performance (10).

Raising awareness among workers about ergonomic adjustments, proper posture habits, physical limitations, environmental adaptations, and early detection of issues is essential for preventing ergonomic-related injuries. Considering ergonomic features during the procurement of medical equipment plays a critical role in employee health and work efficiency.

MSDs impose a significant health burden on employees, reducing quality of life and disrupting sleep patterns. However, understanding and applying ergonomic principles effectively can prevent and improve existing MSDs and sleep disturbances (11, 12). Ergonomic approaches not only reduce health risks but also enhance physical and mental performance, fostering overall satisfaction and productivity in the workplace.

A direct link exists between the physical demands of work and MSDs. Factors such as age, body weight, physical fitness level, occupational factors, and job requirements play significant roles in the pathophysiology of MSDs (13). While these work-related disorders and sleep quality declines are preventable with ergonomic training, postural corrections, regular exercise programs, and frequent breaks, this study aimed to determine the effects of physical ergonomics training on sleep quality and MSDs in factory workers and evaluate the training’s effectiveness.

2. Methods

This research was conducted using a single-group pretest/posttest quasi-experimental design.

2.1. Population and sample

The study was conducted with a sample group selected from individuals working in a construction materials factory. The study population consisted of 31 employees working in this factory. Participation in the study was based on voluntariness, and individuals aged between 18-60, cooperative, capable of communication, and without any neurological or emotional issues were included. Individuals with severe musculoskeletal disorders, cognitive or emotional problems, and those who engaged in regular exercise were excluded. From the population, 6 individuals who did not meet the inclusion criteria were excluded, and the study commenced with a total sample group of 25 individuals. A Post-Hoc Power analysis conducted after the study revealed an effect size of 0.83 and a power of 0.98. These results indicate that the sample size was sufficiently powered to detect statistically significant differences.

2.2. Data collection

Data were collected face-to-face from factory workers. Participants were informed by the researcher before inclusion, and those meeting the inclusion criteria participated. Participants completed survey forms within approximately 10 minutes through self-reporting. Evaluations were repeated four weeks after the Physical Ergonomics Training.

2.3. Data collection tools

Data were gathered using a "Demographic Information Form," "Pittsburgh Sleep Quality Index (PSQI)," and "Cornell Musculoskeletal Discomfort Questionnaire."

Demographic Information Form: A demographic information form consisting of a total of 6 questions was used to collect data on participants' age, gender, occupational group, height, weight, and congenital musculoskeletal system problems. This form was developed by the researchers in line with the study's objectives and scope, following a review of similar studies in the literature. The questions were meticulously designed to determine the participants' basic demographic and health characteristics, create subgroups for data analysis, and relate the results to relevant variables.

Pittsburgh Sleep Quality Index (PSQI): The Pittsburgh Sleep Quality Index (PSQI) was used to evaluate participants' sleep quality. PSQI is a self-report tool that measures various dimensions such as sleep duration, sleep quality, sleep latency, and sleep disturbances. The Pittsburgh Sleep Quality Index was developed by Buysse et al. in 1989 to assess the sleep quality of patients over a one-month period in clinical studies. The validity and reliability studies of the scale in our country were conducted by Ağargün et al. in 1996 (14).

PSQI consists of 24 questions in total. Of these, 19 are self-assessment questions, while the remaining 5 are to be answered by the participant's roommate or spouse, if applicable. The 19th question in the scale inquires whether the participant has a roommate or spouse, and the response to this question is not included in the scoring. For calculating the total PSQI score and component scores, only the first 18 questions answered by the participant are included.

In this study, the Cronbach's alpha value for the scale was calculated as 0.79. This value indicates a high level of internal consistency and confirms that the scale is a reliable measurement tool.

Cornell Musculoskeletal Discomfort Questionnaire: This questionnaire was used to evaluate the frequency and severity of musculoskeletal disorders in areas such as the lower back, upper back, and neck, as well as the impact of these disorders on daily life. The Turkish validity and reliability study of the scale was conducted by Erdinç et al. in 2011 (15). In this study, the Cronbach's alpha value for the scale was calculated as 0.56, indicating a moderate level of internal consistency.

The questionnaire assesses the frequency, severity, and work-impairing effects of musculoskeletal disorders in various body regions. Participants are asked to indicate how often they have experienced pain in the specified regions over the past week.

- Pain frequency is rated on a 5-point Likert scale (1: Never felt it, 5: Felt it many times every day).
- Pain severity is measured on a 3-point Likert scale (1: Mild pain, 3: Severe pain).
- Work impairment is scored on a 3-point Likert scale (1: Not at all limiting, 3: Very limiting).

For each region, a total score ranging from 0 to 90 is calculated. An increase in the score indicates that the pain is more frequent and severe, resulting in greater restrictions on the individual's work performance and daily functionality. Conversely, a decrease in the score suggests that the pain is less frequent and mild, improving the individual's functionality and reducing the impact on their work.

This scale serves as an effective tool for understanding the effects of musculoskeletal disorders on individuals and identifying intervention needs.

Physical ergonomics training: The training began with an introduction to the fundamental anatomy and mechanics of the spine, emphasizing the definition and importance of proper posture. The causes of lower back, upper back, and neck pain were explained in detail, and correct posture techniques were demonstrated to all participants individually. Within the scope of posture applications, participants were taught how to maintain proper posture during daily activities such as desk work, bending down, lifting objects from the ground, and reaching for high shelves.

Additionally, ergonomic recommendations were provided to support lower back and neck health, and a home exercise program was developed. This program included strengthening and stretching exercises designed to enhance the flexibility and strength of the neck and back muscles. It aimed to support participants' musculoskeletal health and help them maintain postural balance in their daily activities. The exercises were structured to be easily integrated into participants' daily lives, with goals of improving muscle endurance, reducing muscle tension, and preventing posture-related disorders.

Participants were instructed to perform the home program regularly three days a week for four weeks. During this period, participants were contacted by phone every Monday to remind them of the program and check whether they had completed the exercises from the previous week. This follow-up method was intended to improve participants' adherence to the program and maintain their motivation.

The training and home program aimed to support participants' postural health in daily life by combining theoretical knowledge with practical applications. Feedback collected throughout the process indicated that such individual follow-up and support methods played a significant role in enhancing the program's effectiveness.

2.4. Statistical analysis

Continuous data were analyzed using SPSS 29.0. The Kruskal-Wallis and Shapiro-Wilk tests evaluated normal distribution, and significant differences in non-normally distributed variables between initial and final measurements were assessed using the Wilcoxon method.

3. Results

The demographic information of the participants is presented in Table 1.

Table 1. Demographic Data of the Participants

	Subcategory	**Percentage (%)**
Gender	Male	84%
	Female	16%
Occupational Group	Blue-Collar Worker	72%
	White-Collar Worker	28%
Height	Shorter than 167 cm	12%
	167 - 172 cm	36%
	177 - 182 cm	16%
	182 – 187 cm	24%
Weight	Less than 65 kg	16%
	65 - 71 kg	32%
	71-77 kg	8%
	77-83	24%
	83-90 kg	12%
Age	Younger than 35 years	16%
	35 - 38 years	20%
	38-41 years	8%
	41-44 years	28%
	Older than 44 years	28%

Table 2 shows the comparison between the average scores of the initial and final measurements on the Pittsburgh Sleep Quality Index. Accordingly, the average score of the initial measurement was found to be 10.398, while the final measurement average was 8.080. The score obtained in the final measurement showed a statistically significant difference compared to the initial measurement score (Z=3.061; p=0.002).

Table 2. Pittsburgh Sleep Quality Index Data

	N	Average	SS	Minimum	Maksimum	Z	p
Pittsburgh.first	25	10,398	2,7786	5,0	15,0	3,061[b]	,002
Pittsburgh.final	25	8,0800	2,72596	5,00	15,50		

Table 3 presents the findings evaluating the impact of ergonomics training on upper extremity musculoskeletal problems. The data compare the levels of pain or discomfort in various body regions before and after the training based on average scores. A statistically significant reduction in neck pain was observed post-training compared to pre-training (Z = -2.941, p = 0.003), indicating a positive effect of the training on neck pain. While reductions in pain levels were also noted in the right and left shoulders and back regions, these changes were not statistically significant (p > 0.05). A decrease in pain levels in the lower back was observed as well, but this change was also not statistically significant (p = 0.291). No significant changes were recorded in other body regions (upper arm, forearm, wrist). These findings demonstrate that ergonomics training significantly improved neck pain but did not have a marked impact on other regions (Figure 1).

Table 3. Cornell Musculoskeletal Discomfort Questionnaire Upper Extremity Data

	N	Average	SS	Z	p
Neck first	25	7,140	14,8545	-2,941	,003
Neck final	25	2,920	6,2026		
Right Shoulder first	25	1,260	3,3946	-1,761	,078
Right Shoulder final	25	,360	1,246		
Left Shoulder first	25	,760	2,8582	-1,342	,180
Left Shoulder final	25	,300	1,224		
Back first	25	8,600	24,8105	-1,262	,207
Back final	25	5,740	14,2610		
RightUpperArmfirst	25	,060	,3000	,000	,317
RightUpperArmfinal	25	,12	,4153		
LeftUpperArmfirst	25	,36	1,8	2,0	,592
LeftUpperArmfinal	25	,62	2,803		
Lower Back first	25	7,580	19,3373	1,055	,291
Lower Back final	25	3,420	8,5619		
Right Forearm first	25	,000	,0000	,0000	,0000
Right Forearm final	25	,000	,0000		
Left Forearm first	25	,375	1,8371	,000	,317
Left Forearm final	25	,000	,000		
Right Wrist first	25	,360	1,2460	2,0	,256
Right Wrist final	25	,06	,3000		
Left Wrist first	25	,24	1,2000	,000	,317
Left Wrist final	25	,0000	,0000		

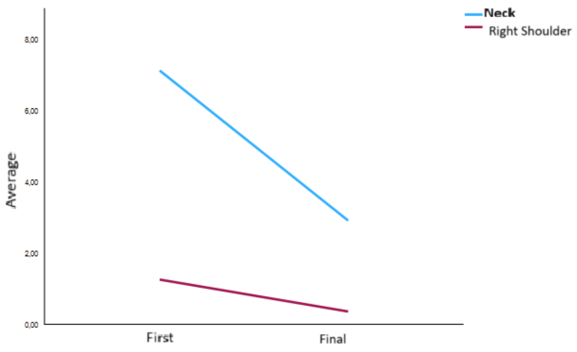


Figure 1. Initial and Final Measurements with Significant Differences

Table 4 presents the findings evaluating the impact of ergonomics training on lower extremity musculoskeletal problems. The data compare the levels of pain or discomfort in the hip, upper leg, knee, lower leg, and foot regions before and after the training based on average scores. A reduction in pain levels was observed in the hip region after the training compared to before, but this change was not statistically significant (Z = -1.192, p = 0.233). Changes in average scores were also recorded for the right and left upper legs, knees, lower legs, and feet, but none of these changes were statistically significant (p > 0.05). These findings indicate that ergonomics training did not have a significant effect on lower extremity musculoskeletal problems.

Tablo 4. Cornell Musculoskeletal Discomfort Questionnaire Lower Extremity Data

	N	Average	SS	Z	p
Hip first	25	,880	1,9164	-1,192	,233
Hip final	25	,320	,9341		
RightUpper Legfirst	25	,120	,6000	-,447	,655
RightUpper Legfinal	25	1,320	6,2946		
Left Upper Leg first	25	,180	,6595	-,447	,654
Left Upper Leg final	25	1,380	6,2887		
Right Knee first	25	1,080	4,1825	-,211	,833
Right Knee final	25	1,100	2,8137		
Left Knee first	25	1,080	4,1825	,948	,343
Left Knee final	25	1,500	4,3970		
RightLower Legfirst	25	,260	,9028	,542	,588
RightLowerLegfinal	25	1,500	6,2899		
LeftLowerLegfirst	25	,180	,6595	-1,289	,197
LeftLowerLegfinal	25	1,560	6,2821		
Right Foot first	25	1,020	3,0669	-,431	,667
Right Foot final	25	,360	,8958		
Left Foot first	25	1,020	3,0669	-,689	,491
Left Foot final	25	,300	,7500		

4. Discussion

The study evaluating the effects of physical ergonomics training on sleep quality and musculoskeletal system disorders among factory workers found that such training improved sleep quality and reduced musculoskeletal issues, particularly in the neck region.

Physical ergonomics awareness training is applied to reduce the risk of workplace injuries and enhance productivity. However, a previous study emphasized that working in an ergonomically appropriate environment alone is insufficient to reduce health problems. Awareness training plays a critical role in improving work performance and preventing musculoskeletal disorders. Such training enhances ergonomic awareness, reducing work-related health issues and associated productivity losses (16).

Ramos et al. (2018) evaluated the effects of Transcutaneous Electrical Nerve Stimulation (TENS) and posture exercises on musculoskeletal discomfort, fatigue, transverse abdominis activation, and functionality in patients with lumbar disc herniation. Positive results were observed across all parameters, including sleep quality (17). Consistent with the literature, our study found that the home exercise program, provided alongside ergonomics training, significantly reduced musculoskeletal issues among participants. These findings highlight the importance of physical ergonomics training and exercises in reducing musculoskeletal problems among factory workers.

Numerous studies in the literature have examined the impact of exercise and ergonomics training on musculoskeletal disorders in individuals from different sectors. Many studies have highlighted the effectiveness of exercise programs in reducing pain levels associated with musculoskeletal disorders, such as chronic lower back, neck, and upper back pain, among workers in various professions (18, 19, 20, 21). In our study, a significant reduction in neck pain was observed after the training, while reductions in pain levels in the right and left shoulders, back, and lower back were not statistically significant. No significant changes were recorded for other body regions (upper arm, forearm, wrist). Tanır et al. (2013) conducted a study involving 680 workers in an automotive factory who had taken medical leave due to musculoskeletal disorders in the past year. Ergonomics and posture correction training resulted in significant pain reductions in lower back, neck, and upper extremity regions (22). Similarly, another study focusing on ergonomics training for operating room nurses showed significant reductions in discomfort and risks, particularly in regions like ankles, wrists, back, neck, hips, and shoulders, after a three-month program (23).

Regarding lower extremity musculoskeletal problems, reductions in pain levels were observed in the hip region post-training. Changes in pain levels in the upper and lower legs, knees, and feet were also recorded but were not statistically significant. These findings indicate that ergonomics training did not significantly affect lower extremity musculoskeletal problems.

The study confirmed that physical ergonomics training improved participants' sleep quality. Pehlevan et al. conducted a randomized controlled trial among factory workers with back pain. Workers were divided into two groups, both receiving physical ergonomics training, with one group also undergoing stretching and posture exercises. Significant improvements in sleep quality, alongside reductions in pain and fatigue, were observed in the exercise group (24). Studies suggest that a combination of exercise programs and ergonomics training is more effective in managing functionality and pain intensity. Based on these findings and the current study, a workplace-specific ergonomics and physical exercise program can effectively reduce pain and improve functionality in workers with chronic pain.

Another study investigating the relationship between musculoskeletal disorders and sleep quality among office workers found that 83.3% had musculoskeletal problems and 74.7% reported poor sleep quality. Workers with musculoskeletal issues showed significantly worse sleep quality compared to those without (25). Consistent with our findings, musculoskeletal disorders appear inversely related to sleep quality.

Thus, the importance of ergonomics training in improving sleep quality and indirectly enhancing life quality among factory workers cannot be underestimated.

5. Conclusion and Recommendations

The study found that physical ergonomics training improved sleep quality and reduced musculoskeletal disorders in the neck region among factory workers. Further research involving larger participant groups is needed to explore the effects of physical ergonomics training on factory employees more comprehensively. It is recommended that physical ergonomics training be provided to factory workers to enhance their well-being, maximize workplace productivity, and reduce workforce losses due to health problems.

Limitations

The study's limitations include its implementation at a single center, the relatively small sample size, and the absence of long-term follow-up.

References

1. Hoe VC, Urquhart DM, Kelsall HL, Zamri EN, Sim MR. Ergonomic interventions for preventing work-related musculoskeletal disorders of the upper limb and neck among office workers. Cochrane Database Syst Rev. 2018;10(10):66-78.
2. Seeberg KGV, Andersen LL, Bengtsen E, Sundstrup E. Effectiveness of workplace interventions in rehabilitating musculoskeletal disorders and preventing its consequences among workers with physical and sedentary employment: Systematic review protocol. Syst Rev. 2019;8(1):1-7.
3. Choobineh AR, Rahimi Fard H, Jahangiri M, Mahmood Khani S. Musculoskeletal injuries and their associated risk factors in office workplaces. Iran Occupat Health. 2012;8(4):70-80.
4. Chen M, Liu JF. Virtual simulation of production line for ergonomics evaluation. Adv Manuf. 2014; 2:48-53.
5. Tahir SA, Ahmed A, Hanif K, Saeed A. Prevalence of work-related low back pain in healthcare professionals. Asian J Allied Health Sci. 2020; 2:26-30.
6. Basakci Calik B, Yagci N, Oztop M, Caglar D. Effects of risk factors related to computer use on musculoskeletal pain in office workers. Int J Occup Saf Ergon. 2022;28(1):269-74.
7. Piranveyseh P, Motamedzade M, Osatuke K, Mohammadfam I, Moghimbeigi A, Soltanzadeh A, et al. Association between psychosocial, organizational and personal factors and prevalence of musculoskeletal disorders in office workers. Int J Occup Saf Ergon. 2016;22(2):267-73.
8. Okezue OC, Anamezie TH, Nene JJ, Okwudili JD. Work-related musculoskeletal disorders among office workers in higher education institutions: A cross-sectional study. Ethiop J Health Sci. 2020;30(5):715-24.
9. Kim BI, Yoon SY, Kim JS, Woo KH, Cho SY, Lee H, et al. Factors related with quality on sleep of daytime workers. Ann Occup Environ Med. 2018; 30:63.
10. Furuichi W, Shimura A, Miyama H, Seki T, Ono K, Masuya J, et al. Effects of job stressors, stress response, and sleep disturbance on presenteeism in office workers. Neuropsychiatr Dis Treat. 2020; 16:1827-33.
11. Catanzarite T, Tan-Kim J, Whitcomb EL, Menefee S. Ergonomics in surgery: A review. Female Pelvic Med Reconstr Surg. 2018; 24:1-2.
12. Hamid A, Ahmad AS, Dar S, Sohail S, Akram F, Qureshi MI. Ergonomics hazards and musculoskeletal disorders among workers of health care facilities. Curr World Environ. 2018; 13:251-8.
13. Dong H, Zhang Q, Liu G, Shao T, Xu Y. Prevalence and associated factors of musculoskeletal disorders among Chinese healthcare professionals working in tertiary hospitals: A cross-sectional study. BMC Musculoskelet Disord. 2019; 20:1-7.
14. Ağargün MY, Kara H, Anlar Ö. Pittsburgh uyku kalitesi indeksi'nin geçerliliği ve güvenirliliği. Türk Psikiyatri Dergisi. 1996;7(2):107-15.
15. Erdinç O, Hot K, Özkaya M. Turkish version of the Cornell Musculoskeletal Discomfort Questionnaire: Cross-cultural adaptation and validation. Work. 2011;39(3):251-60. doi: 10.3233/WOR-2011-1173.

16. Robertson MM, Huang YH, O'Neill MJ, Schleifer LM. Flexible workspace design and ergonomics training: Impacts on the psychosocial work environment, musculoskeletal health, and work effectiveness among knowledge workers. Appl Ergon. 2008;39(4):482-94.
17. Ramos LAV, Callegari B, França FJR, Magalhaes MO, Burke TN, Carvalho E Silva AP, et al. Comparison between transcutaneous electrical nerve stimulation and stabilization exercises in fatigue and transversus abdominis activation in patients with lumbar disk herniation: A randomized study. J Manipulative Physiol Ther. 2018;41(4):323-31.
18. Almhdawi KA, Obeidat DS, Kanaan SF, Oteir AO, Mansour ZM, Alrabbaei H. Efficacy of an innovative smartphone application for office workers with chronic non-specific low back pain: A pilot randomized controlled trial. Clin Rehabil. 2020;34(10):1282-91.
19. Brandt Y, Currier L, Plante TW, Schubert Kabban CM, Tvaryanas AP. Exercises in helicopter crewmembers with low back pain. Aerosp Med Hum Perform. 2015;86(10):889-94.
20. Murtezani A, Hundozi H, Orovcanec N, Sllamniku S, Osmani T. A comparison of high intensity aerobic exercise and passive modalities for the treatment of workers with chronic low back pain: A randomized, controlled trial. Eur J Phys Rehabil Med. 2011;47(3):359-66.
21. Pillastrini P, Mugnai R, Bertozzi L, Costi S, Curti S, Mattioli S. Effectiveness of an at-work exercise program in the prevention and management of neck and low back complaints in nursery school teachers. Ind Health. 2009;47(4):349-54.
22. Tanır F. Musculoskeletal disorders in an automotive manufacturing plant and the outcomes of ergonomics and exercise training in workers who used sick leave. J Phys Med Rehabil Sci. 2013; 59:214-21.
23. Abdollahi T, Pedram Razi S, Pahlevan D, Yekaninejad MS, Amaniyan S, Leibold Sieloff C, et al. Effect of an ergonomics educational program on musculoskeletal disorders in nursing staff working in the operating room: A quasi-randomized controlled clinical trial. Int J Environ Res Public Health. 2020;17(19):1-14.
24. Pehlevan E, Şevgin Ö. Effect of exercise given to factory workers with ergonomics training on pain and functionality: A randomized controlled trial. Int J Environ Res Public Health. 2024;195-205.
25. Okan F. The relationship of musculoskeletal system disorders with sleep quality among office workers. Genel Tıp Derg. 2023;33(3):316-21.

Article Information Form

Author(s) Notes: We sincerely thank the editors and reviewers for their valuable contributions, constructive comments, and suggestions, which have significantly improved this study.

Author(s) Contributions: All authors have equally contributed to this study, read the final version, and approved it.

Conflict of Interest Disclosure: The authors declare no conflict of interest.

Supporting/Supporting Organizations: No financial or grant support was received for this study.

Ethical Approval and Participant Consent: This research was approved by the Ethics Committee of the Graduate Education Faculty, Sakarya University of Applied Sciences (Date: 08/08/2024, No: 47/27).

Plagiarism Statement: This article has been scanned by iThenticate.

Sakarya Üniversitesi Holistik Sağlık Dergisi
Sakarya University Journal of Holistic Health

ISSN : 2687-6078
Publisher : Sakarya University

Vol. 7, No. 3, 230-241, 2024
DOI: https://doi.org/10.54803/sauhsd.1461503

Case Report

Nursing Care According to NANDA-I Diagnoses, NIC Interventions, and NOC Outcomes in a Patient with Autoimmune Encephalitis: A Case Report

Emine Ezgi Özçelik[1*], Selda Çelik[2]

[1] Taksim Training and Research Hospital, Neurosurgery Critical Care Unit, Istanbul, Türkiye. ezgiozcelik94@gmail.com

[2] University of Health Sciences, Hamidiye Faculty of Nursing, Department of Internal Diseases Nursing, Istanbul, Türkiye. selda.celik@sbu.edu.tr

*Corresponding Author

Received: 29.03.2024
Accepted: 29.12.2024
Available Online: 30.12.2024

Abstract

Encephalitis, defined as inflammation of the brain tissue, is an uncommon yet serious condition that can lead to severe brain damage. Nursing care is critical in increasing the effectiveness of treatment in patients with encephalitis. In the case presented here, care was planned and implemented based on nursing diagnoses by field in the NANDA-I classification, NIC interventions, and NOC outputs. The patients' nursing diagnoses were identified as ineffective health management, imbalanced nutrition: less than body requirements, fluid volume deficit, constipation, impaired physical mobility, impaired verbal communication, hopelessness, impaired social interaction, ineffective sexuality, risk for impaired psychological health, risk for ineffective activity planning, risk for impaired independent decision making, hyperthermia, chronic pain, and risk for delayed development. The care plan for four of these diagnoses is presented.

Keywords: Encephalitis, Nursing Process, Nursing Diagnoses

1. Introduction

Encephalitis is defined as the inflammation of brain tissue. This disease can occur worldwide and at any age. It is considered a significant condition due to its potential to cause damage to the brain and the increasing prevalence globally (1-3). Encephalitis arises from infectious agents in the brain (viral, bacterial, fungal, or parasitic) or from autoimmune diseases. In the early stages of the disease, serious, acute, and potentially fatal symptoms, such as brain damage, are commonly observed. Although the severity of brain damage varies from person to person, it is often permanent (1,2). In 2021, encephalitis-related deaths worldwide were reported to be 91,947, with 242 cases in our country. The prevalence of encephalitis in 2021 was reported as 4,643,564 globally and 17,138 in our country (3). Initially presenting with a silent progression, it typically begins with a few days of malaise, myalgia, and headache. Fever is observed in 90% of patients. Nausea, vomiting, meningeal irritation, deterioration in consciousness, and increased intracranial pressure may also occur. Behavioral and speech disturbances can be seen (1-3). In treatment, especially in cases of viral encephalitis, antiviral agents should be initiated urgently. It is crucial to start treatment quickly to reduce the risk of long-term complications. Symptomatic treatment should also be included, with antipyretics for fever and antiepileptic medications for seizures (1-6).

The primary aim of nursing care is to alleviate the symptoms of the existing illness, maintain fluid and electrolyte balance, ensure balanced nutrition, evaluate the implementation and effects of treatment, increase activity levels, prevent complications related to the disease, and enhance the knowledge level of the individual and their family. Nursing care should be delivered holistically to the patient and family considering health patterns. The systematic presentation of nursing care employs nursing processes and classification systems that facilitate the achievement of targeted outcomes and provide

Cite as: Özçelik EE, Çelik S. Nursing Care According to NANDA-I Diagnoses, NIC Interventions, and NOC Outcomes in a Patient with Autoimmune Encephalitis: A Case Report. *Sakarya University Journal of Holistic Health.* 2024;7(3): 230-241. https://doi.org/10.54803/sauhsd.1461503

organization. The North American Nursing Diagnosis Association (NANDA) Taxonomy II is one of the classification systems used for this purpose, comprising three levels that include areas, classes, and nursing diagnoses. As of the 2018 update, this structure consists of a total of 13 areas, 47 classes, and 244 nursing diagnoses. Utilizing the interventions specified in the Nursing Interventions Classification (NIC) for nursing diagnoses determined by NANDA has proven effective in achieving correct care outcomes. The Nursing Outcomes Classification (NOC) system is employed in the evaluation of the interventions specified by NIC, with each outcome having its definition and code number within the classification (7-8). This case presentation has been deemed necessary due to the limited number of care plans in the literature for patients diagnosed with encephalitis and the scarcity of care plans prepared using NIC-NOC interventions. Data have been collected and adapted according to Gordon's Functional Health Patterns Model**.**

2. Case Presentation

M.A., a 47-year-old single male patient, is currently unemployed. In 2021, he was diagnosed with autoimmune encephalopathy due to LGI1 antibody positivity at an external center and received treatment. At the time of diagnosis, the patient experienced complaints of dropping objects with his hands, jerking movements in his arms, kicking with his right foot, and oral twitching. No anomalies were detected in the electroencephalography and magnetic resonance imaging performed during that period. Following a leftward head deviation and the development of generalized tonic-clonic seizures, a lumbar puncture was performed. The lumbar puncture results showed no cells. The patient presented to the emergency department with complaints of hiccups, fever, chills, and speech disturbances. He was admitted to the Neurology Clinic with a preliminary diagnosis of encephalitis. The patient was evaluated on the second day of admission. Data were collected through physical examination, interviews, medical history, and demographic information.

During the physical examination, the patient's skin appeared dry, and his temperature was measured at 37.6 °C during the initial assessment; the anticipated rise in temperature was monitored frequently, at least every four hours. The patient's blood pressure was recorded at 135/88 mm Hg, and his pulse was 89 beats per minute, with a normal sinus rhythm observed on the electrocardiogram. The patient's consciousness was clear, cooperative, and oriented, although he was somewhat hesitant during communication. Lung sounds were normal, but intermittent coughing was noted. Auscultation of bowel sounds revealed a total of five bowel sounds in all four quadrants. The medications the patient was using (Figure 1) and the nursing diagnoses established on 21.09.2023 (Figure 2) were shared. The patient was informed about the case presentation, and verbal and written consent was obtained.

Medications Used by the Patient

- Calcimax-D3 Efervesan Tablet PO 1*1
- Deltacortil 5 Mg Tablet PO 1*1
- Enox 4000 Anti-xa SC IU/0,4 Ml 1*1
- Merosid 1000 Mg IV 3*1
- Duphalac 670 Mg/300 Ml PO (just in case)
- Zygozis 40 Mg IV 1*1
- Serum %0,9 İsotonic1000 ml IV 2*1

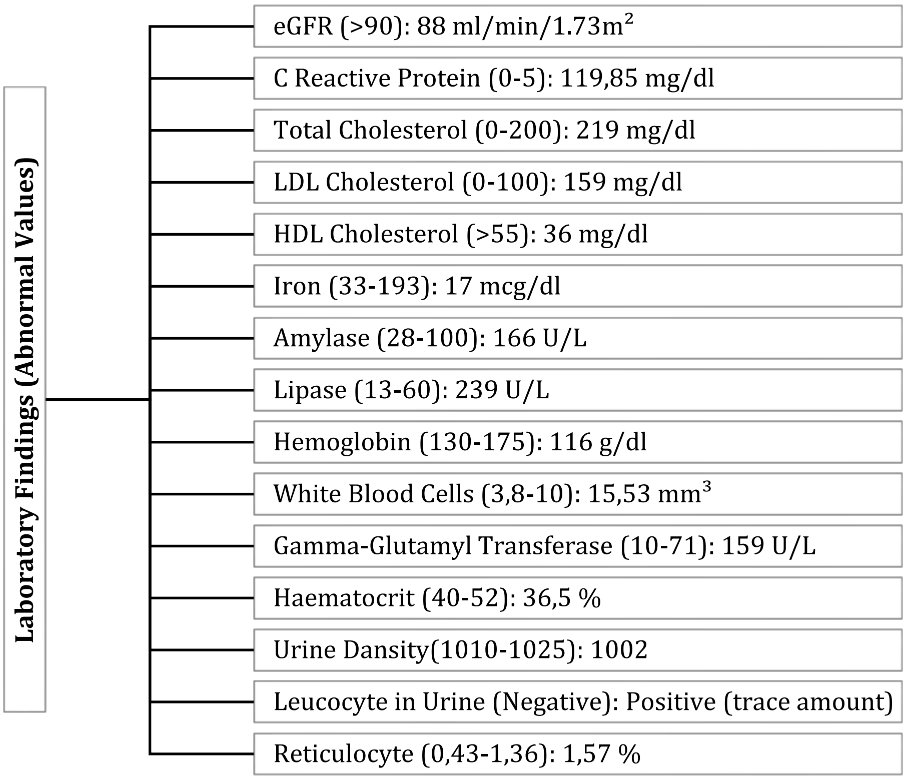
Figure 1. Medications Used by the Patient

Domain 1. Health Promotion	• Ineffective Health Management*
Domain 2. Nutrition	• Imbalanced Nutrition: Less than Body Requirements* • Fluid Volume Deficit
Domain 3. Elimination and Gas Exchange	• Constipation*
Domain 4. Activity/Rest	• Impaired Physical Mobility • Disturbed Sleep Pattern
Domain 5. Perception/Cognition	• Impaired Verbal Communication
Domain 6. Self-Perception	• Hopelessness
Domain 7. Role Relationship	• Impaired Social Interaction
Domain 8. Sexuality	• Ineffective Sexuality
Domain 9. Coping/Stress Tolerance	• Risk for Impaired Psychological Health • Risk for Ineffective Activity Planning
Domain 10. Life Principles	• Risk for Impaired Independent Decision-Making
Domain 11. Safety/Protection	• Hyperthermia*
Domain 12. Comfort	• Chronic Pain
Domain 13. Growth/Development	• Risk for Delayed Development

**The marked diagnoses are shown in the care plan tables (Tables 1-4).*

Figure 2. NANDA-I Diagnoses and Domains Based on Nursing Needs for a Patient Diagnosed with Autoimmune Encephalitis (7)

Abnormal values from the laboratory results dated 20.09.2023 related to the case are shared in Figure 2. The abnormal values observed in the findings indicate an increase in infection parameters (CRP, WBC, and positive leukocyte in urine), and treatment with Meropenem 1000 mg IV three times daily was initiated. The elevation of amylase and lipase was due to an autoimmune process. The individual exhibited low levels of hemoglobin, hematocrit, and iron, with no signs of bleeding noted during the physical examination. The estimated glomerular filtration rate (eGFR) was found to be slightly low, approaching the lower limit. The identified infection and autoimmune response were thought to be related. The low urine specific gravity was considered potentially infection related. The elevated reticulocyte count is indicative of erythrocyte insufficiency due to anemia, which is often associated with low hemoglobin, hematocrit, and iron levels. The increased total cholesterol and LDL cholesterol levels suggest the possibility of hyperlipidemia (the individual has no known diagnosis of cholesterol-related disease). The elevated Gamma GT also raises concerns about potential liver dysfunction (no abnormalities were found in the ALT and AST values) (Figure 3).



Laboratory Findings (Abnormal Values)

eGFR (>90): 88 ml/min/1.73m^2
C Reactive Protein (0-5): 119,85 mg/dl
Total Cholesterol (0-200): 219 mg/dl
LDL Cholesterol (0-100): 159 mg/dl
HDL Cholesterol (>55): 36 mg/dl
Iron (33-193): 17 mcg/dl
Amylase (28-100): 166 U/L
Lipase (13-60): 239 U/L
Hemoglobin (130-175): 116 g/dl
White Blood Cells (3,8-10): 15,53 mm^3
Gamma-Glutamyl Transferase (10-71): 159 U/L
Haematocrit (40-52): 36,5 %
Urine Dansity(1010-1025): 1002
Leucocyte in Urine (Negative): Positive (trace amount)
Reticulocyte (0,43-1,36): 1,57 %

Figure 3. Laboratory Findings

Table 1. Nursing Care Plan-1 for a Patient Diagnosed with Autoimmune Encephalitis

<table>
<tr><td>Nursing Diagnosis 1. İneffective Health Management</td><td>Domain: 1</td><td>Class: 2</td><td>Concept: Health Management</td><td>Diagnosis Code: 00078</td></tr>
<tr><td colspan="5">Related Factors: Conflicts in decision-making, complexity of the treatment regimen, weakness, intra-family conflict.</td></tr>
<tr><td colspan="5">Expected Patient Outcomes
1. The individual will adhere to the recommended treatment program and perform daily living activities as advised.
2. The individual will organize the health program as directed by health professionals.</td></tr>
<tr><td colspan="5">NIC Interventions
Facilitating Learning: Communication was established with the individual through eye contact. When expressing himself or asking questions, the individual was encouraged to articulate words one at a time, allowing for self-expression.
Support for Self-Change: The importance of adherence to treatment for health status was explained to the individual. It was emphasized that questions directed to the companion (his mother) should be answered by the patient himself, as providing answers on his behalf does not facilitate his process but rather diminishes his self-confidence.
Mutual Goal Setting: The significance of mobilization was discussed. With the individual expressing feelings of fatigue, a goal was set for a ten-minute walk within the room each time. It was explained that pain is a possible occurrence during the disease process, and the individual was instructed to report any pain experienced.</td></tr>
<tr><td>NOC Outcome</td><td>Selected Indicators</td><td>(20.9.23)</td><td>(23.9.23)</td><td rowspan="8">Evaluation: As a result of the interventions implemented, the individual's participation in treatment has increased. It was observed that the individual is willing to improve his health status. The care score was elevated from 19 to 28.</td></tr>
<tr><td>Measurement</td><td>-Implements the recommended treatment program.</td><td>4</td><td>5</td></tr>
<tr><td>1: Never</td><td>-Monitors response to treatment.</td><td>3</td><td>4</td></tr>
<tr><td>2: Rarely</td><td>-Performs daily living activities as recommended.</td><td>2</td><td>4</td></tr>
<tr><td>3: Sometimes</td><td>-Expresses himself when experiencing pain.</td><td>3</td><td>5</td></tr>
<tr><td>4: Often</td><td>-Attempts to understand and respond to directed questions.</td><td>4</td><td>5</td></tr>
<tr><td>5: Always</td><td>-Reports a decrease in pain experience.</td><td>3</td><td>5</td></tr>
<tr><td colspan="2">Care Score</td><td>19</td><td>28</td></tr>
</table>

Wilkinson JM, Barcus L. (Trans. Sevgisun Kapucu, İmatullah Akyar, Fatoş Korkmaz) Pearson Nursing Diagnoses Handbook: NANDA-I Diagnoses, NIC Interventions, NOC Outcomes. 11th Edition. Ankara. Pelikan Publishing. 2018.

Table 2. Nursing Care Plan-2 for a Patient Diagnosed with Autoimmune Encephalitis

<table>
<tr><td colspan="2">Nursing Diagnosis 2. Imbalanced Nutrition: Less than Body Requirements</td><td>Domain: 2</td><td>Class: 1</td><td>Concept: Nutritional Intake</td><td>Diagnosis Code: 00002</td></tr>
<tr><td colspan="6">Related Factors: Loss of appetite, inadequate nutrient intake, lack of basic nutrition knowledge.</td></tr>
<tr><td colspan="6">Expected Patient Outcomes
1. The individual will express willingness to maintain the planned dietary regimen.
2. The individual will report feeling more energetic and adhere to the planned dietary program and complete meals.</td></tr>
<tr><td colspan="6">NIC Interventions
Nutritional Therapy: Fluid replacement was provided during times when the patient could not eat. The freedom of consume preferred foods (with physician’s approval) was granted.
Nutritional Counseling: The importance of nutrition for a quicker resolution of the inflammatory process was explained. It was noted that decreased activity and inadequate nutrition could lead to skin integrity issues. The individual was motivated while taking meals.
Monitoring Nutrition: The possibility of experiencing loss of appetite due to illness was explained. The amount of food consumed after meals was inquired about. Environmental factors were managed by removing unpleasant odors before meals, and an appropriate setting was provided. It was explained that consuming food at a warm temperature. Protein-rich oral supplements were given three times a day after meals with physician oversight.</td></tr>
<tr><td>NOC Outcome Measurement</td><td>Selected Indicators</td><td>(20.9.23)</td><td>(23.9.23)</td><td colspan="2" rowspan="7">Evaluation: As a result of the interventions, the individual's knowledge about the importance of nutrition has increased, and he has shown diligence and willingness in consuming meals. The care score has decreased from 18 to 9.</td></tr>
<tr><td>1: Always</td><td>-Tries to consume meals to recover health.</td><td>4</td><td>2</td></tr>
<tr><td>2: Often</td><td>-Strives not to skip meals.</td><td>4</td><td>2</td></tr>
<tr><td>3: Sometimes</td><td>-Performs daily living activities as recommended.</td><td>3</td><td>2</td></tr>
<tr><td>4: Rarely</td><td>-Knows which foods are beneficial for him.</td><td>3</td><td>2</td></tr>
<tr><td>5: Never</td><td>-Pays attention to the organization of the environment before meals.</td><td>4</td><td>1</td></tr>
<tr><td colspan="2">Care Score</td><td>18</td><td>9</td></tr>
</table>

Wilkinson JM, Barcus L. (Trans. Sevgisun Kapucu, İmatullah Akyar, Fatoş Korkmaz) Pearson Nursing Diagnoses Handbook: NANDA-I Diagnoses, NIC Interventions, NOC Outcomes. 11th Edition. Ankara. Pelikan Publishing. 2018.

Table 3. Nursing Care Plan-3 for a Patient Diagnosed with Autoimmune Encephalitis

Nursing Diagnosis 3. Constipation	Domain: 3	Class: 2	Concept: Gastrointestinal Function	Diagnosis Code: 00011

Related Factors: Inadequate nutrition, sedentary lifestyle, polypharmacy, environmental changes.

Expected Patient Outcomes

1. The individual will express that he does not have constipation by rating it (1-5: always, often, sometimes, rarely, never).
2. The individual will state that there is no blood or pain during defecation.
3. The individual will describe his stool as soft and formed.

NIC Interventions

Bowel Management: The state of distension, elimination habits, and activity level were evaluated. Regular bowel elimination was targeted (fiber intake was increased, adequate hydration was ensured, and the individual was encouraged to sit on the toilet at the same time each day). An enema was applied when there was no defecation.

Fluid Management: The importance of fluid intake in preventing constipation was explained to the individual and family.

Enema Administration: Information about enemas was provided to the individual and family. An enema was administered on 21.09.23, and there was no need for it on subsequent care days. The individual was instructed not to strain during defecation. Pain assessment was conducted. The importance of movement for bowel elimination was discussed, and the individual was encouraged to move within the room and in bed.

NOC Outcome Measurement	Selected Indicators	(20.9.23)	(23.9.23)	Evaluation: As a result of the interventions, an increase in bowel movements was observed. The care score decreased from 19 to 9.
1: Always	- Successfully performs bowel elimination.	5 (21.9.23 laxative)	2	
2: Often	- Reports increased appetite.	4	3	
3: Sometimes	- Reports a decrease in discomfort.	5 (bowel sound:59	2 (bowel sound: 9)	
4: Rarely	- Reports a decrease in pain.	3	1	
5: Never	- States feeling comfortable.	3	1	
Care Score		19	9	

Wilkinson JM, Barcus L. (Trans. Sevgisun Kapucu, İmatullah Akyar, Fatoş Korkmaz) Pearson Nursing Diagnoses Handbook: NANDA-I Diagnoses, NIC Interventions, NOC Outcomes. 11th Edition. Ankara. Pelikan Publishing. 2018.

Table 4. Nursing Care Plan-4 for a Patient Diagnosed with Autoimmune Encephalitis

Nursing Diagnosis 4. Hyperthermia	Domain: 11	Class: 6	Concept: Thermoregulation	Diagnosis Code: 00007
Related Factors: Illness, dehydration				
Expected Patient Outcomes 1. The skin temperature and sweating will demonstrate effective thermoregulation according to severity (1-5: severe, serious, moderate, mild, no deviation from normal). 2. The individual and family will identify methods to prevent and reduce body temperature elevation and recognize the signs and symptoms of hyperthermia.				
NIC Interventions **Assessment**: The individual's skin turgor, mucous membranes, blood pressure, pulse, and respiration were evaluated. The appropriateness of clothing, room temperature, and bedding materials were assessed. The individual and family were informed not to significantly increase room temperature and to avoid thick clothing and heavy bedding materials. Body temperature was monitored regularly (at least every four hours and more frequently if needed). **Education**: Signs of hyperthermia, such as shivering and sweating, were explained to the family. They were instructed to notify the nurse when these symptoms are observed. It was advised that the individual could take a lukewarm bath when body temperature rises. On 21.09.23, the individual had a fever of 37.9°C, and a lukewarm bath was administered. The individual was provided with 1500-2000 ml of fluids intravenously. In cases of persistent hyperthermia, antipyretic treatment was planned based on physician recommendations.				

NOC Outcome Measurement	Selected Indicators	(20.9.23)	(23.9.23)	Evaluation: As a result of the interventions, the individual's body temperature was brought under control, and hydration was ensured. The care score improved from 11 to 18.
1: Severe	- Effective thermoregulation (body temperature 36.5-37.5°C).	2	4	
2: Serious	- No changes in neurological status.	3	5	
3: Moderate	- Vital signs remain within normal ranges.	3	5	
4: Mild	- Adequate hydration is maintained (2000 ml fluid intake).	3	4	
5: No deviation from normal				
Care Score		11	18	

Wilkinson JM, Barcus L. (Trans. Sevgisun Kapucu, İmatullah Akyar, Fatoş Korkmaz) Pearson Nursing Diagnoses Handbook: NANDA-I Diagnoses, NIC Interventions, NOC Outcomes. 11th Edition. Ankara. Pelikan Publishing. 2018.

3. Discussion

Within the scope of "Health Promotion" (Domain 1), the nursing diagnosis of "Ineffective Health Management" was addressed. The individual was responsive during communication, answering questions, but exhibited reluctance. It was explained that accepting the illness and being willing to express oneself could lead to a better sense of well-being, and that they should not hesitate to articulate their feelings. Time was given for the individual to express themselves, with an expectation to maintain eye contact while completing their sentences. Subsequently, the individual expressed that engaging in dialogue and having conversations with nurses made them feel better. Through the nursing interventions, it was observed that the individual became more willing to express themselves and behaved more comfortably. Literature indicates that individuals often cannot return to their pre-illness lifestyles due to the prognosis of the disease, which diminishes their quality of life and complicates coping mechanisms (1). Additionally, chronic pain is noted to complicate coping (9).

Regarding "Imbalanced Nutrition: Less Than Body Requirements" (Domain 2), it was observed that the individual disliked hospital food and had a reduced appetite due to their illness. The importance of nutrition in treatment success was communicated to the individual. It was noted that the individual ate more willingly when their preferred foods were available. Adequate time was allocated for meals, the room was ventilated, and attention was given to cleanliness and organization. Furthermore, it was emphasized that they needed to replenish fluids lost through excessive sweating (a condition they also experienced in their normal life). The individual was informed that their current lip dryness could be due to dehydration. They expressed difficulty with eating but stated that drinking mineral water was more beneficial. The nursing interventions resulted in the individual striving to consume their meals and demonstrating willingness to do so. One study emphasizes that inflammatory diseases can affect individuals' appetites, highlighting the need for risk factor identification and nursing intervention planning, calling for more research in this area (10).

In relation to "Constipation" (Domain 3), it was reported that the individual defecated approximately 2-3 times a week, with the last defecation occurring three days prior. Fluid intake was monitored, and the individual was encouraged to mobilize both in bed and outside of it. These nursing interventions increased the individual’s bowel movements, although a laxative syrup was required for defecation afterward. The importance of mobilization and fluid intake was communicated one-on-one, and it was observed that the individual made efforts to remain mobile rather than staying in bed. The individual reported feeling better as they moved more. Research highlights that constipation can occur within the first three days of hospitalization (11).

Regarding "Hyperthermia" (Domain 11), the individual was educated about the infection and inflammation processes, and information was provided about abnormal laboratory values. Signs of fever (shivering, sweating) were taught to the individual and their family. It was explained that these symptoms could arise due to the infection process. Body temperature monitoring was conducted at least every four hours, and more frequently if necessary. During care, the body temperature was measured at one point at 37.9°C, which was managed with lukewarm applications and antipyretic medication, bringing it back to a normal level (36.8°C). The nursing interventions observed an increase in comfort for the patient, who had previously been disturbed and anxious due to hyperthermia. Additionally, it was noted that both the patient and their relatives paid more attention to visitor restrictions, room ventilation, and hand hygiene. Hyperthermia can be seen in cases of encephalitis (2), and antipyretic treatment alongside physical cooling methods are identified as the most commonly used strategies in nursing care (12).

4. Conclusion and Recommendations

In conclusion, the implementation and monitoring of treatment for individuals diagnosed with encephalitis, education of the patient and family, monitoring of hemodynamic parameters, and provision of emotional support are fundamental components of nursing care. Proper management of the nursing process, considering these variables, is vital for delivering high-quality care and achieving optimal patient outcomes. The NIC interventions and NOC outcomes developed to strengthen nursing care and provide a systematic perspective demonstrate the success of interventions, outcomes, and evaluations through care scores. There is a need in the literature for nursing professionals and nursing students to learn better from care plans prepared with NIC interventions and NOC outcomes, to increase awareness and comprehension of their practice.

References

1. Easton A, Pewter S, Williams H, Johnson L, Wilkins E, Mestecky AM. Care of patients with central nervous system infections. In: Görak G, translator. Evidence-based practices in neurological nursing. Woodward S, Mestecky AM, editors. Istanbul: Nobel Medical Publishing; 2014. p. 401-410.

2. Venkatesan A. Encephalitis and brain abscess. Continuum (Minneapolis, Minn). 2021;27(4):855-886. doi:10.1212/CON.0000000000001006. Accessed 2024 Aug 9.

3. Institute for Health Metrics and Evaluation (IHME). Encephalitis statistics [Internet]. 2024. Available from: https://vizhub.healthdata.org/gbd-compare. Accessed 2024 Aug 5.

4. Ellul M, Solomon T. Acute encephalitis - diagnosis and management. Clin Med (Lond). 2018;18(2):155-159. doi:10.7861/clinmedicine.18-2-155. Accessed 2024 Aug 11.

5. Frackowiak M, Easton A, Michael BD. Encephalitis. Br J Hosp Med (Lond). 2019;80(4). doi:10.12968/hmed.2019.80.4.C50. Accessed 2024 Aug 11.

6. Betaş S, Demir G. A case of treatment-resistant anti-LGI1 associated autoimmune encephalitis. Pamukkale Med J. 2021;15(1):197-200. Available from: https://dergipark.org.tr/tr/download/article-file/1626122. Accessed 2024 Aug 21.

7. Wilkinson JM, Barcus L. Pearson nursing diagnoses handbook: NANDA-I diagnoses, NIC interventions, NOC outcomes. 11th ed. Ankara: Pelikan Publishing; 2018.

8. Gülpak M, Oktay AA. Nursing care of patients with chronic kidney disease using NANDA diagnoses and NIC interventions: A case study. KSÜ Med Fac J. 2020;15(2):67-79. Available from: https://dergipark.org.tr/en/download/article-file/1186304. Accessed 2024 Aug 20.

9. Karadakovan A. Nervous system diseases. In: Karadakovan A, Eti Aslan F, editors. Care in internal and surgical diseases. Ankara: Akademisyen Publishing House; 2020. p. 1174-1175.

10. Fan Y, Yao Q, Liu Y, Jia T, Zhang J, Jiang E. Underlying causes and co-existence of malnutrition and infections: An exceedingly common death risk in cancer. Front Nutr. 2022;9:1-11. doi:10.3389/fnut.2022.814095. Accessed 2023 Dec 10.

11. Noiesen E, Trosborg I, Bager L, Herning M, Lyngby C, Konradsen H. Constipation – prevalence and incidence among medical patients acutely admitted to hospital with medical conditions. J Clin Nurs. 2013;23(15-16):2295-2302. doi:10.1111/jocn.12511. Accessed 2023 Dec 11.

12. Altun Uğraş G, Yüksel Gürdil Yılmaz S, Şirin K, Turan Y, Eroğlu S. Nursing interventions for fever control in the neurosurgery intensive care unit. ACU Health Sci J. 2019;10(2):271-276. Available from: http://journal.acibadem.edu.tr/tr/download/article-file/1701885. Accessed 2023 Dec 11.

Article Information Form

Author(s) Notes: The authors would like to express their sincere thanks to the editor and the anonymous reviewers for their helpful comments and suggestions.

Author(s) Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by authors.

Supporting/Supporting Organizations: No grants were received from any public, private or non-profit organizations for this research.

Ethical Approval and Participant Consent: It is declared that during the preparation process of this study, scientific and ethical principles were followed and all the studies benefited from are stated in the bibliography.

Plagiarism Statement: This article has been scanned by iThenticate.