ISSN: 1309-470X
e-ISSN: 1309-5994

ACIBADEM ÜNİVERSİTESİ

SAĞLIK BİLİMLERİ DERGİSİ

Volume: 15, Issue: 1, January 2024

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YAYIN TÜRÜ

Hakemli Süreli Yayın

(Dergi, yılda 4 sayı olarak Ocak, Nisan, Temmuz, Ekim aylarında yayımlanır)

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ULAKBİM TR Dizin, EBSCO ve Türkiye Atıf Dizini'nde indekslenmektedir.

ACIBADEM ÜNİVERSİTESİ
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Contents / *İçindekiler*

Research Articles / Araştırma Makaleleri

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Contents / *İçindekiler*

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https://doi.org/10.31067/acusaglik.1351877

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Biochemistry and Cell Biology /Biyokimya ve Hücre Biyolojisi

Relationship Between GRK4 Polymorphisms And Essential Hypertension. A Study In A Group Of Turkish Subjects

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Received: 31 August 2023
Accepted: 17 October 2023

Abstract

Background/Purpose: G protein-coupled receptor kinase (GRK4) is associated with essential hypertension (EHT). GRK4 regulates sodium balance in the proximal tubules of the kidney. In this study, the possible roles of A142V and A486V polymorphisms in the development of hypertension were investigated in a Turkish population.

Methods: Genomic DNA was obtained from white blood cells using the standard DNA isolation kit (Roche). Genotypes of variants of GRK4 were determined by Polymerase chain reaction (PCR) - Restriction fragment length polymorphism (RFLP) analysis.

Results: In this study, GRKA142V and A486V polymorphisms were found to be associated with EHT in the Turkish population ($P<0.05$). The relationship between EHT and the A142V polymorphism was found to be more significant in men than in women.

Conclusion: Our results show that A142V and A486V polymorphisms of the GRK4 were associated with EHT in a Turkish population. As far as we know, this is the first study on the association between the GRK4 A142V and A486V gene polymorphisms and essential hypertension in the Turkish population. GRK4 could be a new therapeutic target for hypertension.

Keywords: Genetic Polymorphism, G-Protein-Coupled Receptor Kinase 4, Signal Transduction Pathways

Özet

Amaç: G protein kenetli reseptör kinaz (GRK4) esansiyel hipertansiyon (EHT) ile ilişkilidir. GRK4 böbreğin proksimal tübüllerinde sodyum dengesini düzenlemektedir. Bu çalışmada A142V ve A486V polimorfizmlerinin hipertansiyon gelişimindeki olası rolleri Türk bireylerde araştırılmıştır.

Yöntemler: Genomik DNA, standart kit (Roche) kullanılarak beyaz kan hücrelerinden elde edilmiştir. GRK4'ün varyantlarının genotipleri Polimeraz zincir reaksiyonu (PZR) – Restiriksiyon fragment uzunluk polimorfizmi (RFLP) analizi ile belirlenmiştir.

Bulgular: Bu çalışmada Türk bireylerde A142V ve A486V polimorfizmlerinin EHT ile ilişkili olduğu bulunmuştur. EHT ile A142V polimorfizminin ilişkisi kadınlara göre erkeklerde daha anlamlı bulunmuştur.

Sonuç: Sonuçlarımız, Türk popülasyonunda GRK4'ün A142V ve A486V polimorfizmlerinin EHT ile ilişkili olduğunu göstermektedir. Bilgilerimiz ışığında bu çalışma, Türk toplumunda GRK4 A142V ve A486V gen polimorfizmleri ile esansiyel hipertansiyon arasındaki ilişkiyi inceleyen ilk çalışmadır. GRK4 hipertansiyon için yeni bir tedavi hedefi olabilir.

Anahtar Kelimeler: Genetic Polimorfizm, G-Protein-Kenetli Reseptör Kinaz 4, Sinyal ileti yolları

Introduction

Hypertension is defined as a systolic blood pressure (SBP) of 140 mmHg or higher, a diastolic blood pressure (DBP) of 90 mmHg or higher, or the use of antihypertensive medication (1).

Hypertension is among the most common chronic medical conditions characterized by a persistent rise in arterial pressure. Essential hypertension is considered to be a typical complex disease and is influenced by both genetic and environmental factors (2). Dopamine is important in the regulation of sodium balance and blood pressure via renal mechanisms (3). The D1-like receptors, comprising the D1 and D5 receptor subtypes, couple to the stimulatory G proteins Gs and Golf and activate adenylyl cyclases (4-6). In the case of sodium excess, locally produced dopamine acts on renal tubule cells to prevent sodium reabsorption (7). Dopamine exerts its natriuretic effects by acting on D1-like and D2-like receptors in the renal proximal tubule (7, 8). Irregularities in dopamine receptor function in the renal proximal tubules have been reported in genetic hypertension (8,9). The increase in dietary sodium stimulates renal dopamine production, which is impaired in some hypertensive patients. The D2-like receptors, comprising the D2, D3, and D4 GPCR kinases (GRKs) belong to a 7- member family of serine/threonine protein kinases and are involved in the desensitization of G protein-coupled receptors including the D1 receptor (7,9). GRKs 1 and 7 belong to the rhodopsin family; GRKs 2 and 3 belong to the β-adrenergic receptor kinase family, and GRKs 4, 5, and 6 belong to the GRK4 family (9).

It has been reported that the expression of GRK4 is significantly increased after myocardial infarction (10,11). The GRK4 Loci on human chromosome 4 have been linked to essential hypertension. The GRK4 locus at 4p16.3 has been linked to the increase in blood pressure from childhood to adulthood and to hypertension in adults (3,12). GRK4 gene variants (R65L, A142V and A486V) are reported to be associated with salt-sensitive or salt-resistant essential hypertension (13). Three variants of the isoform of GRK4γ, R65L, A142V, and A486V have been reported to increase GRK activity, but the mechanism has not yet been elucidated. Constitutive activation of GRK4 γ gene variants causes D1R phosphorylation or modification in the renal proximal tubule. The uncoupling of the D1R from its G protein– effector complex decreases D1R function and impairs its ability to decrease sodium transport (9). Different studies show that GRK4 is a risk factor for hypertension because of its negative regulation of the renal dopaminergic system (14).

The aim of this study was to investigate the association between the GRK4 A142V and A486V gene polymorphisms and essential hypertension in a group of Turkish subjects.

All reagents for PCR amplification and gel electrophoresis were purchased from MBI- Fermentase Life Sciences. All other chemicals were obtained from Sigma (Darmsladt, Germany), unless stated otherwise.

Collection of samples

Approval required for the study was obtained from the Ethics Committee of Marmara University School of Medicine. The control group consisted of healthy individuals with no history of hypertension and no evidence of any metabolic disorders. Hypertension samples were collected from patients with essential hypertension who applied to Dr. Sadi Konuk Training and Research Hospital Cardiology and Internal Diseases Polyclinic and Marmara University Hospital Hypertension Clinic. Information about gender, age, weight, height, SBP, DBP, family history and medical history of the patients and whether they used drugs for treatment were obtained from the patients. The control group consisted of 105 individuals with SBP lower than 140 mmHg, DBP lower than 90 mmHg, who were not hypertensive, and did not use antihypertensive drugs. Patients with hypertension consisted of 95 individuals with blood pressure above these values and on antihypertensive treatment. Individuals with alcohol dependence, heart disease or hormone replacement therapy, diabetes or kidney disease were excluded from the study. The criteria to be followed in patient selection are specified in the Ethics Committee Follow-up Form.

DNA Isolation

Peripheral venous blood was collected into EDTA-coated tubes. Genomic DNA was extracted using DNA isolation kit cat no.11 667 327001 (Roche Diagnostic, USA). DNA purity and quantitation were assessed by A260/280 ratios.

Genotyping

DNA samples were amplified by Polymerase chain reaction (PCR) with the appropriate primers for A142V, A486V polymorphisms as shown in Table 1.

TABLE 1: Primers and restriction endonucleases		
Polymorphisms	**Primer sequence**	**Restriction endonucleasese (RT)**
A142V,679CT	5′-GCAGAAGGTTGGGTGGTGT-3′_ (forward)	BSURI (HaeIII), (37°C)
	5′-AGGAGGAGAACCCTTCCAAAAAGG3′-(reverse)	
A486V,1711CT	5′-AGAGTGGCGGTGTTTATGCG-3′_ (forward)	
	5′-GGTGTCCAGGTAGATCCCTTTCAGC3′-(reverse)	AciI (SsiI), (37°C)

Amplification reactions were carried out on DNA Thermal Cycler (Thermo Electron) in a 50 µl-volume containing 1.5 µg of genomic DNA, 1 U Taq DNA polymerase enzyme, 2 pmol of each primer, 0.2 mmol/L of each dNTP, 10X PCR buffer provided by the manufacturer (Fermentase) and $MgCl_2$ at 1.5–4.0 mM. The primers used are based on previously published sequences (15). For A142V, polymerase chain reaction began with a denaturation step at 94°C for 5 min, followed by 28 cycles of denaturation at 94°C (15 sec), annealing at 58°C (15 sec), and extension at 72°C (30 sec). This was followed by a final extension step at 72°C for 2-7 min. The cycle parameters for A486V were as follows: 5 min of denaturation at 94°C, followed by 15 sec at 94°C, 15 sec at 55°C, 30 sec at 72°C for 38 cycles, and a final extension step of 2-7 min at 72°C.

DNA samples amplified by polymerase chain reaction were run on 2% agarose gels at 80-100 volts (50 mA) for 30 minutes. The gels were stained with EtBr and examined under UV.

To examine the A142V polymorphism, 201 bp (base pair) PCR products were treated with 1 unit of BSURI (HaeIII) enzyme (MBI-Fermentase) at 37ºC for 16 hours. After the enzyme was inactivated at 80ºC, enzyme cleavage was checked with 3% agarose gel electrophoresis. Two bands of 176 and 25 bp were observed for the CC allele, a single band of 201 bp for the TT allele, and three bands of 201, 176 and 25 bp for the CT allele. To examine the A486V polymorphism, 187 bp PCR products were reacted with 1 unit enzyme AciI (SsiI) (MBI- Fermentase) at 37ºC for 15 minutes. After the enzyme was inactivated at 65°C, enzyme cleavage was checked with 3% agarose gel electrophoresis. Three bands of 113, 49, and 25 bp were observed for the CC allele, two bands of 138 and 49 bp for the TT allele, and four bands of 138, 113, 49, and 25 bp for the CT allele. For samples considered to have a single nucleotide polymorphism, PCR was carried out in 50 µl volume. The results were confirmed by sequencing. The PCR products were cleaned with the nucleospin PCR cleaning kit in 25 µl volume with a concentration of at least 50 ng/µl.

Sequencing

Polymerase chain reaction products were purified with a High Pure PCR purification Kit cat no. 1796 828 (Roche Diagnostics, Mannheim, Germany) and sequenced with a dye terminator sequencing kit on the Applied Biosystems ABI automated DNA sequencer (Iontek, Istanbul, Turkey).

Statistical Analysis

Unpaired t-test statistical analysis was performed on patient-control groups. Hardy-Weinberg equilibrium was determined for each polymorphism with the $\chi 2$ test, and a comparison was made between the allelic frequency distribution and phenotypes of the polymorphisms.

Results

The characteristics of the EHT patients and normotensive controls are shown in Table 2

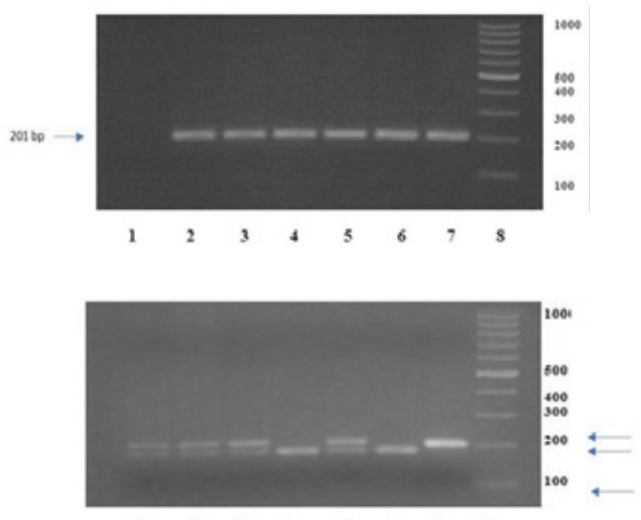
TABLE 2: Demographic and clinical data of healthy controls (NT) and essential hypertensive patients (EHT).			
Parameters	**NT**	**EHT Patients**	**P**
Number of individuals	105	95	-
Male	62	35	-
Female	43	60	-
Age	35.50±2.009	58.86±1.290	<0,0001*
BMI kg/m2	22.02±0.5323	29.52±0.4934	<0,0001*
SBP mmHg	116.3±1.492	152.2±1.884	<0,0001*
DBP mmHg	74.30±1.116	92.65±1.220	<0,0001*

*P<0.0001 Compared with the control group Abbreviations: BMI - body mass index; SBP - systolic blood pressure; DBP - diastolic blood pressure.

Detection of A142V Polymorphism by BSURI (HaeIII) Restriction Enzyme

PCR products were digested with BSURI (HaeIII) restriction enzyme. The reaction mixtures were run on 3% agarose gels and gels were stained with ethidium bromide. The representative restriction fragment digests are shown in Fig 1.

FIGURE 1

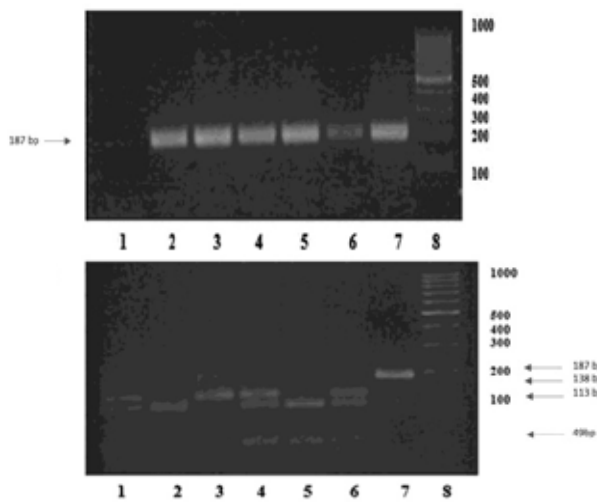


Genotyping for A142V polymorphism of GRK4 using PCR-RFLP. a) PCR products for the A142V polymorphism, 201 bp. b) GRK4-specific PCR products were digested with the BSURI restriction enzyme. Two bands of 176 and 25 bp are seen for the CC allele, three bands of 201, 176 and 25 bp for CT, and a single band of 201 bp for TT.

Detection of A486V Polymorphism by AciI (SsiI) Restriction Enzyme

PCR products were digested with AciI (SsiI) restriction enzyme. The reaction mixtures were run on 3% agarose gels and gels were stained with ethidium bromide. The representative restriction fragment digests are shown in Fig 2.

FIGURE 2



Genotyping for A486V polymorphism of GRK4 using PCR-RFLP. a)PCR products for the A486V polymorphism,187 bp . b) GRK4-specific PCR products were digested with the AciI restriction enzyme. Three bands of 113, 49, and 25 bp are seen for the CC allele, two bands of 138 and 49 bp for the TT allele, and four bands of 138, 113, 49, and 25 bp for the CT allele.

All genotype distributions are in Hardy-Weinberg equilibrium. Genotypes and allele frequencies for polymorphisms A142V and A486V of the GRK4 gene are shown in Table 3.

For A142V, among 105 individuals in the control group, the CC allele was found in 47, the TT allele in 5, and the CT allele in 53 individuals; of the 95 individuals examined in the patient group, the CC allele was found in 42, the TT allele in 21, and the CT allele in 29 individuals. The T allele was calculated as 63% in the control group and 71% in the patient group. When the TT allele frequency was compared in the control and patient groups, the difference was found to be statistically significant. When the T allele (CT/2+TT) was calculated separately, the difference was also found to be statistically significant.

For A486V, among 71 individuals in the control group, the CC allele was found in 31, the TT allele in 2, and the CT allele in 38 individuals; of the 72 individuals examined in the patient group, the CC allele was found in 28, the TT allele in 13, and the CT allele in 31 individuals.

The T allele was calculated as 42% in the control group and 57% in the patient group. When the TT allele frequency was compared in the control and patient groups, the difference was found to be statistically significant when the difference was calculated separately. When the Tallele (CT/2+TT) was calculated separately, the difference was also found to be statistically significant.

When the control and patient groups were compared, the difference between the A142V and A486V polymorphism was found to be statistically significant. For the A486V polymorphism, the difference was found to be significant when we performed statistical analysis by taking the number of samples by 3 times.

Discussion

In this study, the relationship between GRK4 gene A142V and A486V polymorphisms and EHT was investigated in a Turkish population. In our study, the frequency of the T allele of the A142V polymorphism was found to be 30% in the control group and 38.5 % in the patient group. Our results suggested that A142V polymorphism is associated with essential hypertension. The frequency of the T allele for A486V was found to be 29.5 % in the control group and 39.5% in the patient group. Statistical analysis indicated that this polymorphism may also be associated with essential hypertension. There is increasing evidence that G protein-coupled receptor kinase 4 plays an important role in HT, especially in salt-sensitive HT. Different researchers have found that the expression of the A142V variant of GRK4γ in transgenic mice causes HT by disrupting the natriuretic effect of the D1 receptor (7,16). These findings suggest that constitutively active GRK4γ variants contribute to hypertension because the downstream

TABLE 3: Genotypes and allele frequencies polymorphisms A142V and A486V of GRK4 gene in a Turkish population.

Genotypes	NT (n=105) n (%)	EHT (n=95) n (%)	P
A142V			0.0003
CC	47 (44.7)	42 (44,2)	
CT	53 (50.4)	29 (30.5)	
TT	5 (4.7)	21 (22.1)	
*P<0.0001 Compared with the control group Abbreviations: BMI - body mass index; SBP - systolic blood pressure; DBP - diastolic blood pressure.			
Genotypes	**NT (n=71) n (%)**	**EHT (n=72) n (%)**	**P**
A486V			0.0115
CC	31 (43.6)	28 (38.8)	
CT	38 (53.5)	31 (43)	
TT	2 (2.8)	13 (18)	
Allele frequencies			**P**
A142V			0.0880
T	63 (30)	71 (38.5)	
C	147 (70)	113 (61.4)	
A486V			0.0827
T	42 (29.5)	57 (39.5)	
C	100 (70.4)	87 (60.5)	

Distributions of A142V and A486V genotype and allele frequencies in the NT and EHT group classified according to gender are shown in Table 4.

TABLE 4: Genotypes and allele frequencies in a Turkish Population according to gender

Genotypes	NT Female (%)	EHT Patient Female n (%)	Pb (1x/3x) *	NT Male n (%)	EHT Patient Female n (%)	Pb (1x/3x) *
A142V						
CC	18 (41.8)	33 (55)	0.0941/<0.0008	29 (46.7)	10 (27)	0.0001/<0.0001
CT	21(48.8)	17 (28.3)		32 (51.6)	16 (43.2)	
TT	4 (9.3)	10 (16.6)		1 (1.6)	11 (29.7)	
A486V						
CC	14 (45.1)	21 (43.7)	0.0465/0.0001	17 (42.5)	7 (29.1)	0.1245/0.0019
CT	17 (54.8)	19 (39.5)		21 (52.5)	12 (50)	
TT	0 (0)	8 (16.6)		2 (5)	5 (20.8)	
Allele frequencies						
A142V						
T	29	37	0.7622/0.4846	34	38	0.0012/<0.0001
A486V						
T	17	35	0.2986/0.0454	25	22	0.0392/0.0003

effectors of the D1 receptor and active GRK4γ variants do not combine with the downstream effectors of the D1 receptor, thus impairing the natriuretic effect of dopamine. This has the final outcome of reducing sodium excretion by the kidneys and further development of hypertension (7,16). Different investigators have shown that GRK4 affects hypertension by GPCR-mediated regulation of renal and arterial function. Studies demonstrate that GRK4 gene variants (R65L, A142V, and A486V) are related to salt-sensitive or salt-resistant essential hypertension (11,13). Researchers show that GRK4 expression and activity are higher in the hypertensives (12). These studies also suggest that among patients with essential HT, there is a reduced response of the D1 receptor in the proximal tubules as a result of dissociation of the D1 receptor from the G protein/effector enzyme complex (12,16). Williams et al. (17) in their study on Ghanaians found that there was no statistical difference between normotensive and hypertensive individuals, but that SBP was low in homozygous carriers of the A486V allele. Wang et al. (15) in their study in northern China showed that the A486V polymorphism was associated with HT and the A allele of the A486V polymorphism was associated with HT. Speirs et al. (7) found that the V allele of the A486V polymorphism was associated with higher SBP and HT in white British Australians. The same group of investigators also determined that the R65L and A142V polymorphisms were not significantly associated with HT. They found that the L allele of the R65L polymorphism and the V allele of the A142V polymorphism were associated with high DBP only in male hypertensive individuals (7). Martinez Cantarin et al. (18) found a significant relationship between the A486V variant and HT in their study in African Americans. They observed that (TT) and (CT) genotypes increased the risk of HT compared to (CC) genotypes. In their study, no significant relationship was found between GRK4 R65L or A142V variants and HBP. Bengra et al. (19) also reported that the V allele of the A486V polymorphism is a risk factor for HT. Zhu et al. (20,21) found a strong interaction between age and the R65L polymorphism for SBP in their study of White and African American normotensive twins. Asbarinsyah et al. (22) determined an association between the GRK4 A486 V gene polymorphism and hypertension in the rural population of Indonesia . Our study conducted in a Turkish population indicates to a relationship between the GRK4 gene (A142V and A486V) polymorphisms and EHT. When the two polymorphisms were compared, the A142V polymorphism was found to be more significant than the A486V polymorphism in the hypertensive group. Furthermore, the A142V polymorphism was more significant in males than females. To our knowledge, our study is the first to report the frequency of GRK4 polymorphism in the Turkish population.

Conclusion

Essential hypertension is a multifactorial disorder and many genes have been implicated as potential risk factors. The association between genetic variants of the human GRK4 γ and EHT have been demonstrated by previous investigators. These studies pointed to some ethnic differences in Caucasian, American Blacks and Chinese Han populations. Our study performed in a group of Turkish subjects shows that A142V and A486V variants of the GRK4γ gene are associated with essential hypertension. The present study is limited in terms of the small sample of NT and EHT subjects. Hypertensive subjects consisted of an older group than normotensive subjects; furthermore, the number of female subjects was smaller than the males. Further studies with larger samples of EHT subjects are needed to clarify the role of A142V and A486V gene polymorphisms in EHT in the Turkish population.

Declarations

Acknowledgements: This work has been supported by Marmara University Scientific Research Projects Coordination Unit. We would like to thank PhD student Zehra Kanlı for Graphical abstract and Fig.1-2 figure format preparation

Funding: This work was supported by Marmara University Scientific Research Projects Coordination Unit (Istanbul/ Turkey) under grant number SAG-C-YLP-171209-0333) to Hulya Cabadak.

Conflict of interest: No potential conflict of interest relevant to this article was reported. Ethics: This study was approved by Ethics Committee of Marmara University School of Medicine. (25.06.2009 and AEK: 483 number of approval.

Availability of data and material (data transparency): Data supporting the findings of this study are available from the corresponding author upon reasonable request.

Authors' contributions: Sample collection from controls and patients: YD, ÖG. Experiments were performed by: HY, HC, BK, OO, CN. Results were analyzed and research was conducted by: HY, HC, BK.

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https://doi.org/10.31067/acusaglik.1269980

ORIGINAL ARTICLE / KLİNİK ARAŞTIRMA

Infectious Diseases /İnfeksiyon Hastalıkları

The Disease Of All Times: A Retrospective Study Of 272 Syphilis Cases

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Received: 23 March 2023
Accepted: 07 October 2023

Abstract

Background/Purpose: This study aimed to investigate the changes in syphilis cases over the years, their demographic and clinical characteristics, and their laboratory findings.

Methods: The study included patients diagnosed with syphilis between 2018 and 2022 at a tertiary hospital's Dermatology and Infectious Diseases (ID) outpatient clinics. Patients'; demographic, clinical, and laboratory data were evaluated at the time of diagnosis. The Statistical Package for the Social Sciences (SPSS) 20.0 program was used to analyze the data.

Results: A total of 272 syphilis cases were included in the study. Among these cases, 82.4% were male, and 39.6% were 41–60 years old. In total, 7.4% were anti-HIV, and 2.9% were positive for HBsAg. The rates of the cases diagnosed at primary and secondary stages were 74.4%. Syphilis cases were detected more in 2018 than in other years (except 2020) and fewer in 2022 than in other years ($p< 0.001$). Anti-HIV positive cases were diagnosed more frequently at ID outpatient clinics, and cases with clinical findings were diagnosed more at dermatology outpatient clinics ($p< 0.001$). The rate of sexual partners not tested for syphilis was significantly higher in males than in females ($p= 0.027$). The rates of syphilis cases in the study and Turkiye as a whole were similar in 2018 and 2019 but significantly different in 2020,2021 and 2022 ($p< 0.001$).

Conclusion: Reporting syphilis is essential to identify the at-risk population, prevent complications, and reduce transmission. **Monitoring the profile of syphilis cases admitted to the hospital can increase the early detection rate of syphilis cases.**

Keywords: syphilis, sexually transmitted diseases, HIV, detection rate

Registration number and date of registration: E-2023-06, 01.02.2023

Özet

Amaç: Sifiliz olgularının yıllar içindeki değişiminin, demografik ve klinik özelliklerinin, laboratuvar bulgularının incelenmesi amaçlanmıştır.

Metod: Çalışmaya, üçüncü basamak bir hastanenin dermatoloji ve enfeksiyon hastalıkları (EH) polikliniklerinde, 2018–2022 tarihlerinde sifiliz tanısı konulmuş hastalar dahil edilmiştir. Hastaların tanı anındaki demografik, klinik ve laboratuvar verileri değerlendirilmiştir. Verilerin istatistiksel çözümlemesi için SPSS (Statistical Package for the Social Sciences) 20.0 paket programı kullanılmıştır.

Bulgular: Çalışmaya toplam 272 sifiliz olgusu dahil edilmiştir. Olguların %82,4'ü erkek ve %39,6'sı 41-60 yaş grubundadır. Olguların % 7,4'ü Anti-HIV ve %2,9'u HBsAg pozitiftir, %74,4'ü primer ve sekonder evrelerde tanı almıştır. 2018'de tüm yıllardan (2020 hariç) daha fazla ve 2022'de tüm yıllardan daha az sifiliz olgusu tespit edilmiştir ($p <0,001$). Anti-HIV pozitif olgulara daha çok EH polikliniklerinde, klinik bulgusu olan olgulara ise daha çok dermatoloji polikliniklerinde tanı konulmuştur ($p< 0,001$). Erkeklerde cinsel partnerin sifiliz açısından test edilmeme oranı, kadınlardan anlamlı yüksektir ($p= 0,027$). Çalışmanın ve Türkiye geneli sifiliz olgularının oranları 2018-2019 yıllarında benzer iken 2020-2021-2022 yıllarında çalışmadaki sifiliz olgularının oranları anlamlı düzeyde düşük bulunmuştur ($p<0,001$).

Sonuç: Risk altındaki popülasyonu belirlemek, komplikasyonları önlemek ve bulaşmayı azaltmak için sifilizin bildirilmesi esastır. Hastaneye başvuran sifiliz olgularının profilinin izlenmesi, olguların erken tespit edilme oranını arttırabilir.

Anahtar kelimeler: Sifiliz, cinsel yolla bulaşıcı hastalık, HIV, tanı oranı

Kayıt numarası ve kayıt tarihi: E-2023-06, 01.02.2023

Introduction

Syphilis is an infection caused by the Treponema pallidum subspecies pallidum of the spirochete group. The clinical manifestations depend upon the stage of the disease. Syphilis may cause severe complications if untreated and tends to become chronic (1). Although transplacental transmission or blood transfusions are also the modes of transmission, most cases occur through contact with infected lesions during sex (2). **The World Health Organisation (WHO) reported that there were 19.9 million people 15-49 years of age diagnosed with syphilis, of whom 6.3 million were new cases in 2016 (3)**. The United States Centre for Disease Control and Prevention (CDC) estimates that 133945 people were diagnosed with syphilis in 2020. The Republic of Turkiye Ministry of Health, General Directorate of Public Health reported that there were 3533 new syphilis cases in 2022. The number of cases has increased over the years (2,4).

Syphilis is a notifiable infectious disease reported by hospital surveillance units to Turkiye's provincial and district health directorates (4). Reporting syphilis cases is essential in terms of identifying the risk population, providing appropriate treatment, preventing complications, and reducing transmission. In this study, we aimed to investigate the changes in our syphilis cases over the years, demographic and clinical characteristics, and laboratory findings.

The study included patients aged 18 years and older who were diagnosed with syphilis in the dermatology and infectious diseases outpatient clinics of Health Sciences University Dışkapı Yıldırım Beyazıt Training and Research Hospital between 2018 and 2022.

Patients with serological tests positive for both nontreponemal (VDRL (Venereal Diseases Research Laboratory)/ RPR (Rapid Plasma Reagin)) and treponemal (TPHA (Treponema pallidum Haemagglutination Assay) or FTA-ABS total (Fluorescent Treponemal Antibody Absorption)) were diagnosed with syphilis. **Treponemal tests were used as confirmatory tests for syphilis when the nontreponemal tests were reactive. Positive nontreponemal tests were reported as a titer of antibody. Changes in titer were followed 3 months after treatment to detect a therapeutic response. Response to therapy is indicated by a two or more dilution decline in non-treponemal serological test titers or, if initial titers are positive at a 1:1 or 1:2 dilution, it is indicated by non-reactivity (5,6).** According to CDC guidelines, cases were classified into four different stages: primary syphilis, secondary syphilis, latent syphilis, and tertiary syphilis (2). **In accordance with CDC recommendations, all patients received a single injection of 2,4 million units benzathine benzylpenicillin or 2,4 million units of benzathine benzylpenicillin weekly for 3 consecutive weeks appropriate to the stage of syphilis (7).** Demographic, clinical, and laboratory data of the patients at the initial diagnosis were evaluated.

Surveillance department of Dıskapı Yıldırım Beyazıt Training and Research Hospital started to register patients diagnosed with syphilis in 2018 and report them to the Infectious Diseases clinic of the Ankara Provincial Health Directorate. In addition, the physician who ordered the test was contacted for the results of patients with positive treponemal tests. Patients with syphilis were called and informed to contact their physicians. The data of patients were retrospectively obtained from the hospital information management system, patient records, and surveillance unit records. The Ethics Committee of Yıldırım Beyazıt University Yenimahalle Training and Research Hospital approved of the study (Decision No: E-2023-06, Decision Date: 01.02.2023).

Organization and Analysis of the Research Data

The following variables were examined in the study: age group (18-25, 26-40, 41-60, and > 60 years), sex (female, male), educational status **(primary school, secondary school, high school, university),** employment status (employed, unemployed), **unprotected sexual contact** (yes, no, unknown), **syphilis testing of sexual partner** (yes, no, unknown), clinical findings (skin rash, lymphadenopathy, genital lesion), stage of syphilis (primary, secondary, latent, tertiary), clinics (dermatology, infectious diseases), the year of diagnosis (2018 - 2022), VDRL/RPR titer and HBsAg (hepatitis B surface antigen), anti-HCV (hepatitis c virüs), anti-HIV (Human Immunodeficiency Virus) serological tests.

The SPSS (Statistical Package for the Social Sciences) 20.0 package program was used for the statistical analysis of the data. Descriptive statistics are summarized with means and standard deviations, numbers, and percentages. The 95% confidence interval for percentages was calculated with the "Score (Wilson)" method using the OpenEpi online program (https://www.openepi.com/Proportion/Proportion.htm). The chi-square test was used for the comparison of categorical variables. The distribution of cases in Turkiye by year was compared with the distribution in our study. The significance threshold (p-value) was set at 0.05 for all tests. Graphs were generated using the program Excel.

Results

A total of 272 syphilis cases were included in the study. Among these cases, 82.4% were male, and 39.6% were 41–60 years old. Anti-HIV and HBsAg were positive in 7.4% and 2.9% of the cases, respectively. **A total of 37.0% of the cases were diagnosed in the primary stage, while 37.4%**

were diagnosed in the secondary stage. The distribution of syphilis cases by year is shown in Figure 1.

All cases were diagnosed in the ID and/or dermatology outpatient clinics. Figure 2 shows the distribution of syphilis cases compared to the total number of outpatient clinics (2018: 129451, 2019:154029, 2020:64370, 2021:84491, 2022:96622) by year. **As per the findings, syphilis cases were significantly higher in 2018 than in all years (except 2020), and significantly lower in 2022 than in all years.** The female sex diagnosed with syphilis was significantly higher in 2019 than in other years (p:0.007). The rate of sexual partners not tested for syphilis was significantly higher in males than in females (p= 0.027) (Table 1). Genital lesions were detected in 43.8% of patients with the primary stage, and skin rash was observed in 40.4% of patients with the secondary stage. Lymphadenopathy was present in 43% of all patients diagnosed with primary and secondary stages. Anti-HIV positivity was significantly higher in patients diagnosed in the infectious diseases outpatient clinic (p< 0.001). The cases with clinical findings were diagnosed more in the dermatology outpatient clinic (p< 0.001) (Table 2). **VDRL/RPR titers were evaluated three months after the treatment and it was observed that the titers had decreased. Before treatment, the titer was 1/32 in 134 cases and 1/16 in 40 cases. After treatment, the titer became negative in 193 cases, and it was 1/2 in 39 cases.** (Figure 3). Figure 4 shows the number of diagnosed syphilis cases yearly in Turkiye and our study. The rates of syphilis cases in our study and Turkiye as a whole were similar in 2018 and 2019 but significantly different in 2020, 2021, and 2022 (p< 0.001).

Discussion

The study found that syphilis cases were more common in males aged 41-60, and the rate of sexual partners not tested for syphilis was higher in males than in females. In addition, most syphilis cases had unprotected sexual contact. While syphilis cases with clinical findings usually refer to the dermatology clinic, anti-HIV positivity is higher among cases diagnosed at the ID clinic. Lower VDRL/RPR titers were measured in syphilis cases after treatment.

Syphilis is more common in sexually active ages and in those who have risky and unprotected sex (1). The diagnosis of syphilis is more frequent among men in Turkiye and the world (2, 5-8). The reason could be that men have more risky sexual behavior or women are more affected by social structure and pressure. In our study, the rate of not testing sexual partners for syphilis was higher in men than in women. This may be caused by the fact that men prefer polygamous sexual life more. **Studies have reported that syphilis is endemic in low-income countries and that cases have limited knowledge about sexually transmitted diseases (STDs) (10–12). In our study, the educational status and employment status of the cases were evaluated to determine the group at risk for syphilis, and no significant difference was found.**

The primary stage classically presents with a single chancre. In the secondary stage, a diffuse rash occurs, frequently involving the palms of the hands and soles of the feet, with painless lymphadenopathies (7,13). The latent syphilis stage is a period in which only serological tests are positive but no clinical findings are present (7). Our study observed that cases with clinical findings were mostly referred to the dermatology clinic. This was thought to be related to the characterization of syphilis with multiple and different skin lesions. **Additionally, the preference of cases without clinical findings to visit the ID clinic might be related to screening protocols following high-risk sexual behavior or routine follow-up of HIV-positive patients in the ID clinics.**

Syphilis is known to increase transmission in HIV-positive patients or the susceptibility of sexual partners (14). Moreover, studies have confirmed that the incidence of syphilis in HIV-positive patients has increased over the years (15,16). The HIV positivity rate in Turkiye is 0.43% (17). The HIV positivity in syphilis cases in our study was 7.4%, which was significantly higher. This result demonstrates the requirement for anti-HIV screening in syphilis cases. In previous studies, it was reported that education, informative media, posters, and billboard advertisements used for the community have increased condom use and syphilis knowledge level in individuals and decreased high-risk sexual behaviors (12,18). These results indicated that the incidence of coinfection could be reduced through education.

In our study, the distribution of syphilis cases according to years was analyzed and it was observed that most of the patients were diagnosed in 2018 and 2019. Moreover, it was observed that while syphilis cases continued to increase after 2020 based on Turkish data, the number of cases decreased in our hospital. **Our hospital started to provide healthcare to COVID-19 patients in 2020. The decrease in diagnosed syphilis cases may be related to the pandemic hospital status of our hospital. Also, the presence of syphilis may have been underdiagnosed during the pandemic. In addition, due to the workload caused by the pandemic; the notification of patients with a positive treponemal test by the surveillance unit may have been disrupted. In the last four months of 2022, the hospital was in the process of transfer, and therefore the admissions of syphilis cases might have decreased. Notably, in 2019, 50% of women were diagnosed with** syphilis in our hospital. This finding warrants further comprehensive investigation and scrutiny.

This study is a single-center study. Although it was

conducted in a training and research hospital where patients applied from all regions of Ankara, the patients who applied may not be uniformly distributed due to the location and transportation of the hospital. Therefore, the generalizability of the results for Ankara should be interpreted with caution. In addition, changes in the disease reporting system may have influenced the results. **Patient data were obtained retrospectively and the recorded clinical findings of the patients are limited.**

Conclusion

Currently, syphilis stands as a sexually transmitted disease that lends itself to facile diagnosis and potential curability through adherence to contemporary guidelines. A profound understanding of the demographic, clinical, and laboratory attributes of syphilis cases facilitates early diagnosis, curtails transmission, and averts complications. Following Turkiye's data can improve the functioning of hospital surveillance units. **In addition, monitoring the profile of syphilis cases admitted to the hospital can increase the detection rate of syphilis cases. Consequently, hospitals monitoring syphilis cases should diligently pursue notifications and conduct regular follow-ups to gather data concerning temporal variations over the years.**

Declarations

Funding: The authors received no external funding to support this research.

Conflicts of interest/Competing interests: The authors have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

Availability of data and material: The data that support the findings of this study are available from the corresponding author upon reasonable request.

Authors' contributions:

Conceiving the Study: TUU, AHS, SK, İŞ
Data collection: HD, SK,
Data Analysis: CHH, HD
Writing up: TUU, CHH,
Submission,and Revision: TUU, AHS, İŞ

TABLE 1: Comparison of demographic and clinical characteristics of syphilis cases by gender

Variable	Category	Total		Female		Male		p-value
		N	%	N	%	N	%	
Age group	18-25	41	15.1	7	14.6	34	15.2	0.839
	26-40	99	36.4	19	39.6	80	35.7	
	41-60	106	39	19	39.6	87	38.8	
	>60	26	9.6	3	6.3	23	10.3	0.227
Education status	Primary school	73	26.8	14	29.2	59	26.3	
	Secondary school	46	16.9	10	20.8	36	16.1	
	High school	88	32,4	16	33.3	72	32.1	
	University	36	13.2	2	4.2	34	15.2	
	Unknown	29	10.7	6	12.5	23	10.3	
Employment status	Employed	170	62.5	29	60.4	141	62.9	0.740
	Unemployed	102	37.5	19	39.6	83	37.1	
Serological tests	Anti-HIV +	20	7.4	1	2.1	19	8.5	0.488
	HBsAg +	8	2.9	1	2.1	7	3.1	0.780
	Anti-HCV +	0	0	0	0	0	0	-
Year of diagnosis	2018	111	40.8	13	27.1	98	43.8	0.007
	2019*	79	29	24	50	55	24.6	
	2020	33	12.1	4	8.3	29	12.9	
	2021	32	11.8	6	12.5	26	11.6	
	2022	17	6.3	1	2.1	16	7.1	
Unprotected sexual contact	No	38	14.0	2	4.2	36	16.1	0.097
	Yes	194	71.3	38	79.2	156	69.6	
	Unknown	40	14.7	8	16.7	32	14.3	
Syphilis testing of sexual partner	No	144	52.9	21	43.8	123	54.9	0.027
	Yes *	62	22.8	18	37.5	44	19.6	
	Unknown	66	24.3	9	18.8	57	25.4	
Syphilis stage	Primary	98	37.0	12	25.0	86	39.6	0.1302
	Secondary	99	37.4	21	43.8	78	35.9	
	Latent	64	24.2	15	31.3	49	22.6	
	Tertiary	4	1.5	0	0.0	4	1.8	
Presence of clinical finding	Yes	212	77.9	36	75.0	176	78.6	0.584
	No	60	22.1	12	25.0	48	21.4	
Clinical findings&	Skin rash	110	40.4	25	52.1	85	37.9	0.075
	Lymphadenopathy	117	43.0	25	52.1	92	41.1	0.168
	Genital lesion	119	43.8	15	31.3	104	46.4	0.055

* The group from which the difference originates
& Only those with symptoms were included

TABLE 2: Comparison of demographic and clinical characteristics of syphilis cases by clinic of diagnosis

Variable	Category	Infectious Disease (74)		Dermatology (184)		p-value
		N	%	N	%	
Gender	Female	16	21.6	32	17.4	0.433
	Male	58	78.4	152	82.6	
Age group	18-25	10	13.5	30	16.3	0.951
	26-40	27	36.5	66	35.9	
	41-60	29	39.2	70	38.0	
	>60	8	10.8	18	9.8	
Education status	Primary school	22	29.7	51	27.7	0.193
	Secondary school	13	17.6	33	17.9	
	High school	30	40.5	58	31.5	
	University	17	23.0	19	10.3	
	Unknown	6	8.1	23	12.5	
Employment status	Employed	41	55.4	121	65.8	0.125
	Unemployed	33	44.6	63	34.2	
Serological tests	Anti-HIV +	14	18.9	5	2.7	<0.001
	HbsAg +	2	2.7	6	3.3	0.863
	Anti-HCV +	0	0.0	0	0.0	-
Year of diagnosis	2018	33	44.6	70	38.0	0.236
	2019	24	32.4	53	28.8	
	2020	7	9.5	23	12.5	
	2021	9	12.2	22	12.0	
	2022	1	1.4	16	8.7	
Unprotected sexual contact	No	52	70.3	130	70.7	0.988
	Yes	11	14.9	27	14.7	
	Unknown	11	14.9	27	14.7	
Syphilis testing of sexual partner	No	13	17.6	47	25.5	0.338
	Yes	40	54.1	95	51.6	
	Unknown	21	28.4	42	22.8	
Clinical findings	Yes	46	62.2	14	7.6	<0.001
	No	28	37.8	170	92.4	
Clinical findings	Skin rash	21	28.4	89	48.4	0.003
	Lymphadenopathy	19	25.7	94	51.1	<0.001
	Genital lesion	7	9.5	98	53.3	<0.001

FIGURE LEGENDS

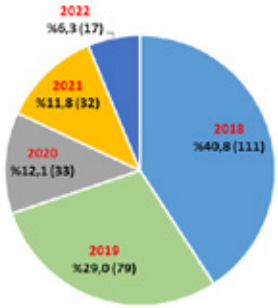

Figure 1 The distribution of syphilis cases by year.

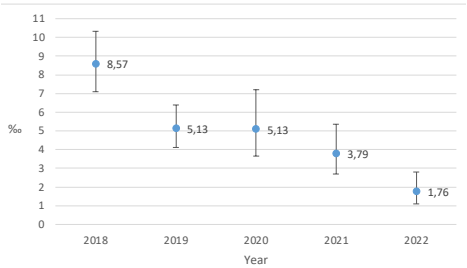

Figure 2 The distribution of syphilis cases compared to the total number of clinics

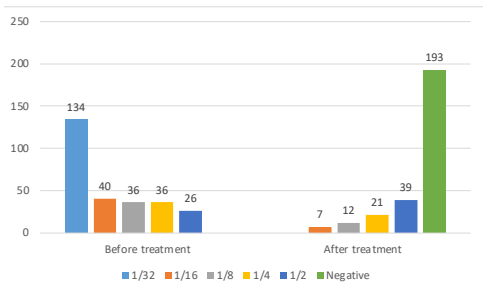

Figure 3 VDRL/RPR titers of syphilis cases before and after treatment

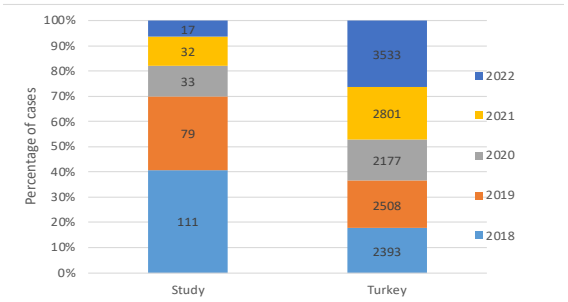

Figure 4 The number of diagnosed syphilis cases yearly in Turkiye and the study

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https://doi.org/10.31067/acusaglik.1202604

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

The Relationship Between Pregnancy Body Mass Index And Delivery Method and Postpartum Depression

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Abstract

Aim: This study was carried out to evaluate the relationship between body mass indexes and delivery types of pregnant women and postpartum depression.

Method: The study is descriptive and cross-sectional and involved 164 postpartum women from February to June 2022. Among the inclusion criteria were the age of 20 or older, the fact that one is primiparous or multiparous, having given birth by vaginal birth or cesarean section, and having been in the postpartum period.

Results: The average age of the participants was 29.72±4.37, and the mean body mass index was 27.98±3.68. 54.6% of the participants are university graduates, the income of 83.4% is equal to their expenses, and 68.1% of them do not work in any job.. While there was a statistically significant relationship between income status and social security and depression status, there was no statistically significant relationship between body mass index and delivery type and postpartum depression ($p< 0.05$).

Conclusion: Although there was no association between postpartum depression and delivery type or body mass index, income status and social security did show a relationship.

Keywords: Postpartum Period, Body Mass Index, Mode of Delivery, Depression.

Özet

Amaç: Bu çalışma, gebelerin vücut kitle indeksleri ile doğum şekilleri ile doğum sonrası depresyon arasındaki ilişkiyi değerlendirmek amacıyla yapılmıştır.

Yöntem: Araştırma tanımlayıcı ve kesitsel tipte bir çalışma olarak yapılmıştır. Çalışmanın verileri Şubat-Haziran 2022 tarihleri arasında İstanbul da özel bir hastanenin kadın doğum polikliniklerine doğum sonrası dönemde kontrole gelen ve çalışmaya gönüllü olarak katılan 164 kadın üzerinde yapılmıştır. Araştırmaya dahil edilme kriterleri arasında 20 yaş ve üzerinde olmak, kadınların primipar veya multipar olması, vajinal doğum veya sezaryen ile doğum yapmış olması ve doğum sonrası dönemde olmasıdır.

Bulgular: Katılımcıların yaş ortalaması 29,72±4,37, vücut kitle indeksi ortalamaları ise 27,98±3,68 idi. Katılımcıların %54,6'sı üniversite mezunu, %83,4'ünün geliri giderlerine eşit ve %68,1'i herhangi bir işte çalışmamaktadır. Gelir durumu ile sosyal güvenlik ve depresyon durumu arasında istatistiksel olarak anlamlı bir ilişki bulunurken, beden kitle indeksi ile doğum şekli ve doğum sonrası depresyon arasında istatistiksel olarak anlamlı bir ilişki saptanmamıştır ($p< 0,05$).

Sonuç: Doğum sonrası depresyon ile doğum şekli veya beden kitle indeksi arasında bir ilişki bulunmamakla birlikte, gelir durumu ve sosyal güvence ile doğum sonrası depresyon arasında istatistiksel olarak anlamlı bir ilişki tespit edilmiştir.

Anahtar kelimeler: Doğumsonu dönem, beden kitle indeksi, doğum şekli, depresyon.

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Received: 11 November 2022
Accepted: 22 August 2023

Introduction

Postpartum depression (PPD) is defined as a period of major depression that occurs during pregnancy or within the first four to six weeks after birth (1,2). Postpartum depression is seen between 6.5% and 19% of all healthy new mothers (3,4). According to studies conducted in Turkey, this rate was found to vary between 14.6% and 28.2% (5,6).Postpartum depression is a significant public health problem as it can negatively affect the cognitive and socio-emotional development of the child, and the well-being of family members (4,7,8). Research in the literature on PPD has identified factors such as changes in body shape, unwanted pregnancies, pressure on the mother because of newborn care, body mass index, method of delivery, preeclampsia, postpartum infection, being a mother at a younger age than sociodemographic characteristics, smoking, low income, and education level. (9-13). Another significant factor affecting postpartum depression is obesity (4).

The average weight gain during pregnancy is 12 kg. Weight gain for pregnant women is estimated based on body mass index (BMI). Using this index, a mother's weight is divided into four groups at the beginning of her pregnancy: underweight, normal, overweight, and obese. About 46% of women have weight changes outside the recommended range (14). However, while there is no relationship between BMI and postpartum depression in some studies, it is stated that there is a negative or positive relationship between depression and BMI in some research results. In a systematic and meta-analysis study by Dachew and coworkers, it was found that pre-pregnancy obesity was associated with an increased risk of maternal depressive symptoms both during pregnancy and in the postpartum period (15).

A woman's satisfaction with her birth experience is very important for the health of the woman and the newborn (16). In the literature, it is suggested that the mode of delivery (cesarean section or vaginal delivery) is among the risk factors for the development of postpartum depression. While studies have shown that cesarean section is a potential risk factor for emotional disorders in mothers in the prenatal and postpartum periods (17-19), one study has shown no connection between PPD and the method of delivery (20-21). During the onset of PPD symptoms, the mother is away from home health personnel. Women who become mothers may not notice psycho-social changes during this time when they think they should be happy, or even if they do, they may not be able to express their concerns, believing that this is a common occurrence. For this reason, it is important to inform not only women but also family members about PPD. In addition, midwives and nurses working in the first step should evaluate their psycho-social status when they visit their mothers at home during the postpartum period. A health institution that is able to diagnose and treat PPD early should consult and direct any mother who has not received training on delivery methods during pregnancy, who has had a normal or cesarean delivery, who has had an intervention during normal delivery, or who has had depression during pregnancy.

It has been determined that many factors are associated with PPD in Turkish women (16,22), but no studies have evaluated the effects of body mass index in pregnancy or the mode of delivery (vaginal or cesarean). In this context, the study was conducted in a cross-sectional and descriptive type in order to determine the relationship between body mass index in pregnancy and mode of delivery and postpartum depression in the postpartum period.

The study is a descriptive and cross-sectional study. The study was carried out in the obstetrics and gynecology outpatient clinics of Private X Hospital between February and June 2022. It is located on the European side of Istanbul, has nine obstetrics and gynecology clinics, and has a very high follow-up rate for normal and cesarean delivery, as well as pregnancy and postpartum periods. The number of births (normal and cesarean section) between January 1 and December 31, 2020, in the hospital, is 7000. By using the raosoft program with the sample calculation of the known universe, the amount of Type I error was calculated as 0.05, the power of the test was 0.80 (α= 0.05, 1-β= 0.80), and the minimal sample number was calculated as 161.
(http://www.raosoft.com/samplesize.html).

Inclusion criteria for the study were: being between the ages of 20-40, being primiparous or multiparous, being in the postpartum period, having had a cesarean or normal delivery, being a single pregnancy, and having signed the voluntary consent form.

Exclusion criteria from the study: Having a serious complication or disease that would endanger the pregnancy (DM, hypertension, heart disease, etc.), having an emergency cesarean section, risky delivery, having any problem that prevents communication (illiteracy in Turkish, listening, speaking skills). having a psychiatric disorder diagnosed before pregnancy (anxiety, schizophrenia, panic attack, obsessive-compulsive disorder, manic depressive disorder, bipolar disorder, etc.) and being treated for it (pharmacotherapy, psychotherapy, non-pharmacological methods).

Introductory Information Form: The form was prepared by the researchers based on the information in the literature. In order to determine the form's intelligibility,

15 women in puerperal status were invited to apply to the hospital's obstetrics clinic, and the form was given its final form. The form consists of 22 questions containing information about the socio-demographic characteristics of the woman, her medical and obstetric history, and the woman's current pregnancy (12,16).

Edinburgh Postpartum Depression Scale (EPDS): This scale, (23) which was developed by Cox et al for screening purposes to determine the risk of depression in postpartum women, was adapted into Turkish by Engindeniz et al. The measurement tool consists of 10 items that include the psychological state of the individual in the last seven days. Each item has a four-point Likert scale rated 0-3 (always, generally, rarely, never). The cut-off point of EPDS was calculated as 12/13, and women with a total scale score higher than the cut-off point are considered as the risk group. The total score is between 0-30. A higher total score indicates the severity of depression. In the validity-reliability analysis of the scale, the Cronbach alpha value was found to be 0.79 (24). The Cronbach's alpha value in this study was 0.78 and the cut-off point was 12.

Data Collection Method: Researchers filled out an introductory form and the Edinburgh Postpartum Depression Scale in 15-20 minutes, on average, with pregnant women waiting in the waiting room before the examination, using a face-to-face interview method, with pregnant women who met the criteria for the study.

Ethics

Before data collection for this study, approval was obtained from the Ethics Committee of Y University. Before the research was conducted, written permission was obtained from the chief physician of the Private X Hospital, where the study would be conducted.

Analysis Of The Data

For data analysis, the IBM SPSS V23 (SPSS, Inc., Chicago, IL, USA) was used. The suitability of the data used for normal distribution was tested. The state of having a normal distribution can be examined with the Q-Q Plot plot. In addition, the normal distribution of the data used depends on the fact that the skewness and kurtosis values are between ±3. For normally distributed data, the independent t-test was applied to compare two independent groups, the one-way analysis of variance was applied to compare more than two independent groups, and when there was a difference, Bonferroni was used to identify the two groups from which the difference originated. Pearson correlation was applied to test the relationship between the scales. Median values (minimum-maximum) for non-normally distributed data, mean ± standard deviation for normally distributed data, and frequency (percent) for categorical data were used to present the analysis results. A p-value of < 0.05 was determined to be statistically significant.

Results

When the participants are examined in terms of socio-demographic and determining characteristics; The mean age was 29.72±4.37, the mean height was 164.41±4.04, the mean weight was 75.64±10.44, and the mean BMI was 27.98±3.68. It was determined that 54.6% of the participants were a university, 68.1% had no job, and 83.4% had expenses equal to their income, based on their marriage duration of 1-5 years. It was determined that 99.4% of the participants had health insurance, 90.8% had a nuclear family structure, and 63.2% of them had self-employed spouses (Table 1).

TABLE 1: Distribution of the participants in the study according to their socio-demographic characteristics

Variables		X	SS
Age		29.72	4.37
Height		164.41	4.04
Weight		75.64	10.44
BMI		27.98	3.68
Variables		**n**	**%**
Marriage Duration	1-5 years	101	62.0
	6-10 years	35	21.5
	+ 10 years	27	16.6
Education Background	Elementary	33	20.2
	High School Degree	41	25.2
	Bachelor's Degree	89	54.6
Employment Status	Yes	52	31.9
	No	111	68.1
Income Status	Income less than expenses	7	4.3
	Income equals expenses	136	83.4
	Income more than expenses	20	12.3
Social Security	Yes	162	99.4
	No	1	0.6
Type of Family	Nuclear Family	148	90.8
	Extended Family	15	9.2
Spouse's Occupation	Civil Servant	30	18.4
	Worker	30	18.4
	Self Employment	103	63.2
Total		**163**	**100.0**

Based on the medical and obstetric characteristics of the participants, 36.2% had a health problem during pregnancy, and 63.8% hadn't. Researchers found that 30.8% of women with health problems suffered from nausea and vomiting. When the distribution of the participants according to the delivery types was examined, it was determined that 50.9% of them gave vaginal birth, 49.1% gave birth by cesarean section, 74.2% wanted these pregnancies, and 80.4% went to the controls during pregnancy. According to the distribution of the baby according to how it is fed, 98.2% stated that they fed their babies with breast milk, and 83.4% quoted that there was someone who would assist them after the baby was born (Table 2).

TABLE 2: Distribution of the participants in the study according to their medical and obstetric characteristics

Variables		n	%
Having health problems during pregnancy	Have	59	36.2
	Have not	27	16.6
The problem experienced	Have not	104	63.8
	Nausea-vomiting	50	30.8
	Excessive weight gain	9	5.4
Delivery method	Vaginal	83	50.9
	Cesarean	80	49.1
Desired pregnancy	Yes	121	74.2
	No	42	25.8
Status of going to check ups during pregnancy	Yes	131	80.4
	No	32	19.6
Diet of baby	Only breast milk	160	98.2
	Breast milk and infant formula	3	1.8
The presence of a helping person after the baby is born	Yes	136	83.4
	No	27	16.6
Total		**163**	**100.0**

As a result of comparing the depression status of the participants with their socio-demographic characteristics; a statistically significant difference was found between the income status and social security of participants and their depression status. The duration of the marriage, education, employment and income, family type, spouse's occupation, and depression did not have a significant relationship ($p<0.05$, Table 3).

TABLE 3: Comparison of depression status of the participants in the study according to their socio-demographic characteristics

Variables		Haven't Depression		Have Depression		Total		Test Value	p
		n	%	n	%	n	%		
Marriage Duration	1-5 years	89	61.4	12	66.7	101	62.0	1.927**	0.381
	6-10 years	30	20.7	5	27.8	35	21.5		
	+10 years	26	17.9	1	5.5	27	16.6		
Education Background	Elementary	28	19.3	5	27.8	33	20.2	0.715**	0.700
	High School Degree	37	25.5	4	22.2	41	25.2		
	Bachelor's Degree	80	55.2	9	50.0	89	54.6		
Employment Status	Yes	49	33.8	3	16.7	52	31.9	2.162**	0.141
	No	96	66.2	15	83.3	111	68.1		
Income Status	Income less than expenses	3	2.1	4	22.2	7	4.3	17.704**	0.000*
	Income equals expenses	122	84.1	14	77.8	136	83.4		
	Income more than expenses	20	13.8	0	0.0	20	12.3		
Any Social Security	Yes	145	100.0	17	94.4	162	99.4	8.105**	0.004*
	No	0	0.0	1	5.6	1	0.6		
Type of Family	Nuclear	132	91.0	16	88.9	148	90.8	0.088**	0.766
	Extended	13	9.0	2	11.1	15	9.2		
Spouse's Occupation	Civil servant	26	17.9	4	22.2	30	18.4	0.207***	0.902
	Worker	27	18.6	3	16.7	30	18.4		
	Self employment	92	63.5	11	61.1	103	63.2		
Total		**145**	**100.0**	**18**	**100.0**	**163**	**100.0**		

*p<0.05, **Chi-square analysis

When the relationship between the participants' BMI and Edinburgh Postpartum depression scale was examined by Pearson correlation analysis; it was determined that there was no statistically significant relationship between BMI and the depression status of the participants (r:-0.040, p:0.614). When the depression status of the participants was compared according to their medical and obstetric characteristics; It was determined that there was no statistically significant difference between the medical and obstetric characteristics of the participants and their depression status (p>0.05, Table 4).

TABLE 4: Comparison of depression status according to medical and obstetric characteristics of the participants participating in the study

Variables		Haven't Depression		Have Depression		Total		Test Value	p
		n	%	n	%	n	%		
Having health problems during pregnancy	Yes	51	35.2	8	44.4	59	36.2	0.596**	0.440
	No	94	64.8	10	55.6	104	63.8		
The problem experienced	Have not	94	64.8	10	55.6	104	63.8	2.923**	0.571
	Nausea-vomiting	43	29.6	7	38.8	50	30.8		
	Excessive weight gain	2	1.4	1	5.6	3	1.8		
	Hypertension	3	2.1	0	0.0	3	1.8		
	Rise of the blood sugar level	3	2.1	0	0.0	3	1.8		
Income Status	Income less than expenses	3	2.1	4	22.2	7	4.3	17.704**	0.000*
	Income equals expenses	122	84.1	14	77.8	136	83.4		
	Income more than expenses	20	13.8	0	0.0	20	12.3		
Delivery Method	Vaginal	75	51.7	8	44.4	83	50.9	0.340**	0.560
	Cesarean	70	48.3	10	55.6	80	49.1		
Desired pregnancy	Yes	109	75.2	12	66.7	121	74.2	0.606**	0.436
	No	36	24.8	6	33.3	42	25.8		
Status of going to checkups during pregnancy	Yes	118	81.4	13	72.2	131	80.4	0.851**	0.356
	No	27	18.6	5	27.8	32	19.6		
Diet of baby	Only breast milk	51	35.2	8	44.4	59	36.2	0.379**	0.538
	Breast milk and infant formula	3	2.1	0	0.0	3	1.8		
The presence of a helping person after the baby is born	Yes	122	84.1	14	77.8	136	83.4	0.469**	0.494
	No	23	15.9	4	22.2	27	16.6		
Total		**145**	**100.0**	**18**	**100.0**	**163**	**100.0**		

*p<0.05, **Chi-square analysis

Discussion

There are many physiological, psychological, emotional, and environmental factors that cause Postpartum depression [9-13]. Studies examining the relationship between mode of delivery, body mass index of women, and PPD are rare in the literature [12, 25]. With this study, the mode of delivery and body mass index of women during pregnancy were examined in relation to postpartum depression, and it is thought that the results will contribute to the national and international literature. In terms of socio-demographic, medical, and obstetric characteristics of the participants (age, height, weight, education level, employment status, income level, social security, smoking status, wishing to conceive, mode of delivery, feeding the baby, going to check-ups during pregnancy, the existence of a person caring for the baby after birth) it is crucial for the reliability of the research In terms of these features, the study's results are in line with those of domestic and international research [12,16-19,26].

In this study, postpartum depression levels of women who gave birth by vaginal or elective cesarean section were evaluated, and it was found that there was no statistically significant connection between delivery type and postpartum depression levels. In reviewing the domestic and international literature, it was determined that the EPDS scores of women who gave birth by cesarean section were higher than those who gave birth vaginally, especially in terms of anxiety and depression symptoms [25]. In the study of Ilska et al. (2020) using the Edinburgh Postpartum Depression Scale (EPDS) with 224 women in the early puerperal period, it was determined that the pain felt by women and the occurrence of early postpartum depression changed according to the type of delivery. Especially in the study, it was determined that women who gave birth by emergency cesarean section were at higher risk for PPD than women who gave birth vaginally [12]. In the study of 1010 women, 36.4% scored 13 points or more on the EDPS; women who delivered vaginally and did not have health insurance scored significantly higher on the EDPS [16]. In the study conducted with 350 postpartum women; It was found that 132 women had an EPDS score of ≥10, but parity, mode of delivery (cesarean section), occupation, socioeconomic level, preterm birth, or breastfeeding were not associated with PPD [21]. In the study conducted, it was stated that there was no relationship between the mode of delivery and PPD [20]. In the study conducted by Sabuncuoğlu and Berkem (2006), it was determined that there was no significant relationship between the mode of delivery and EPDS [22]. In the study conducted by Kim and Dee (2018) with 223 Hispanic women, it was found that there was no significant difference between EPDS scores in women who had a cesarean or normal delivery [26]. In studies conducted in the USA and France, it was determined that the mode of delivery did not have a relationship with PPD, and in another study conducted in Sweden, it was determined that the mode of delivery had no direct effect on PPD [37-29]. While the results of the study are similar to the results of the other studies; they are different from other research results. This difference may be explained by the different cultures of the population in which the study was conducted, the region where the study was conducted, the good social support provided to women, as well as the fact that emergency cesarean sections were excluded from the study.

As a result of in the study, no statistically significant differences were found between birth type and body mass index, and postpartum depression, but there were significant relationships between income level and social security, and postpartum depression. Additionally to studies in the literature stating that the birth type and increase in BMI are risk factors for PPD, there are also studies confirming that these variables are not risk factors for PPD.

Limitations

This study was carried out in the Obstetrics and Gynecology outpatient clinic of a private hospital in Turkey. For this reason, it can only be generalized to the female population in this hospital who come for control in the postpartum period. Another limitation of the study is the small sample size. Since participation in the research was carried out on a voluntary basis, this situation caused difficulties in collecting data in the research.

Funding

This study was supported by Kırklareli University Scientific Research Projects Coordination Unit. The Project Number of the study is KLUBAP-225.

Conflict Of Interest

The authors have no conflict of interest to declare.

Informatıon

We thank the women who agreed to participate in the study.

Author Contribution

ASK: Project development, manuscript writing, data analysis, literature review, critical review.

DKG: Data collection, data analysis, literature review, critical review.

Acknowledgments

We would like to thank all mothers who gave birth who participated in this study.

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https://doi.org/10.31067/acusaglik.1340768

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Organ Transplantation, Gastroenterology and Hepatology/
Organ Nakli, Gastroenteroloji ve Hepatoloji

Hepatocellular Cancer and Liver Transplantation; Is There Any Novelty in Prognostic Factors for Survival and Recurrence?

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Received: 11 August 2023
Accepted: 24 August 2023

Abstract

Objectives: Hepatocellular cancer constitutes 75-85% of liver cancers, and its treatment requires a multidisciplinary approach. Milan criteria are golden standart candidate selection criteria that ensure excellent posttransplant survival and follow up with low recurrence rate. However, other classifications include histopathological features or biological behaviors may vary survival and recurrence. We examined the parameters that may have prognostic value in our study.

Material and Methods: 217 patients for recurrence, 226 patients for overall survival, 48 patients for disease free survival, whose explant pathology is hepatocellular carcinoma and data information can be obtained were evaluated. Recurrence and overall survival and disease free survival were statistically analyzed in terms of age, gender, living and cadaveric transplanted patient groups, blood group, BMİ, MELD and Child scores, Milan criteria and pathological parameters. All survival rates were evaluated in terms of recurrent organ location, number of organ recurrence, and survival rates.

Results: There were less recurrence rates in patients, with 0 blood group, inside milan criteria, with less total and maximum tumor diameter. It was also observed that the maximum tumor size affected the overall survival multivariately It was observed that survival was worse in early recurrence and recurrence in the first 24 months.

Conclusion: İt is observed that being inside the milan and tumor diameter affect the recurrence and survival, surgery to be performed in localized recurrences and additional systemic treatment will affect survival positively.

Keywords: Hepatocellular Carcinoma, Survi, Liver, Transplantation

Özet

Amaç: Hepatoselüler kanser, karaciğer kanserlerinin %75-85'ini oluşturur ve tedavisi multidisipliner bir yaklaşım gerektirir. Milan kriterleri, mükemmel posttransplant sağkalımı ve düşük nüks oranı sağlayan altın standart hasta seçim kriterleridir. Ayrıca, histopatolojik özellikleri ve biyolojik davranışları da içeren diğer sınıflamalar da hayatta kalma süresi ve nüksü değiştirebilir. Çalışmamızda prognostik değeri olabilecek parametreleri inceledik.

Araç ve yöntem: Eksplant patolojisi hepatosellüler karsinom olan ve veri bilgisi alınabilen 217 hasta nüks, 226 hasta genel sağkalım, 48 hastalıksız sağkalım için değerlendirildi. Yaş, cinsiyet, canlı ve kadavra nakli yapılan hasta grupları, kan grubu, BMİ, MELD ve Child skorları, milan kriterleri ve patolojik parametreler açısından nüks ve genel sağkalım ve hastalıksız sağkalım istatistiksel olarak analiz edildi. Tüm sağkalım oranları, tekrarlayan organ yerleşimi, organ nüksü sayısı ve hayatta kalma oranları açısından değerlendirildi.

Bulgular: 0 kan grubu, milan kriterleri içinde, total ve maksimum tümör çapı daha az olan hastalarda daha az nüks oranları vardı. Ayrıca maksimum tümör boyutunun genel sağkalımı çok değişkenli etkilediği gözlendi. İlk 24 ayda erken nüks ve nükste sağkalımın daha kötü olduğu gözlendi.

Sonuç: Milan kriterleri içi olmanın ve tümör çapının nüks ve sağkalımı etkilediği, lokalize nükslerde yapılacak cerrahi ve ek sistemik tedavinin sağkalımı olumlu etkileyeceği gözlenmiştir.

Anahtar Kelimeler: Hepatosellüler, Kanser, Sağkalım, Karaciğer, Nakil

Introduction

Hepatocellular cancer (HCC) constitutes 75-85% of liver cancers (1), and its treatment requires a multidisciplinary approach (2). Transplantation is the most curative treatment option because it provides both oncological resection and eliminate the diseased tissue that prepares the ground for the development of new tumors (2-4). It is known that, the Milan criteria are golden standart candidate selection criteria that ensure excellent posttransplant survival for patients with HCC, although growing experience of liver transplantation for HCC raised concerns about the Milan criteria as being too restrictive and far from satisfying the increasing candidate list. The other expanded classifications include histopathological features such as tumor differentiation / grade, tumor size and number, presence of vascular invasion or tumor markers. Therefore, survival times and the presence of recurrence may vary depending these classifications (2-6). We aimed to present our experience regarding predictive and prognostic factors for recurrence and survival rates after liver transplantation (LT) in HC.

The study was designed as a single center experience. 270 patients underwent liver transplantation due to HCC totally. 217 patients for recurrence, 226 patients for overall survival (OS), 48 patients for disease free survival (DFS), whose explant pathology is HCC and data information can be obtained were evaluated. Median range follow up was between 1-180 months. Patients with combined hepatocellular-cholangiocarcinoma or cholangiocarcinoma as a result of pathology of the surgical specimen or preoperative biopsy were not included in the study.

Preoperative Evaluation

Detailed biochemistry tests were routinely performed on the patients who applied to our clinic. AFP and other tumor markers were examined. Thorax and portal phase abdominal computer tomography (CT) and Abdomen magnetic resonans imaging (MRI) were performed to all patients for preoperative evaluation. HCC was diagnosed in patients with radiologically typical enhancement patterns (early arterial enhancement and late venous wash out). 18F-FDG-PET/CT was performed to evaluate biological behavior and extrahepatic involvement in patients diagnosed with HCC radiologically. Biopsy was performed for lesions with atypical radiological enhancement patterns or suspicious cholangiocarcinoma. TARE was applied to eligible patients with non-milan or high FDG uptake on PET-CT or with AFP >400 supporting poor biological behavior. Liver transplantation was performed in patients who were re-evaluated after 2 months and were thought to be inside milan radiologically and AFP <200. Also, patients who were evaluated as in milan radiologically after TARE but found to be outside milan in the explant pathology were evaluated in terms of recurrence in the study. Transplantation was performed to the patients whose all test results were evaluated in the liver transplantation council and deemed appropriate.

Postoperative Recipient Follow Up

AFP and thorax and abdomen CT and/or abdomen MRI were performed every 3 months in the first year after liver transplantation and then every 6 months. When recurrence was detected in routine follow-ups, options such as chemotherapy, surgery, locoregional therapy or radiotherapy were prefered and used according to location and tumor extent. Control 18 F-FDG-PET-CT was applied to assess treatment response. The treatment strategy was decided according to the result.

Investigated Parameters

Demographic data, age and gender, living and cadaveric transplanted patient groups, blood group, Child and MELD scores, etiology were stated in the study as a ratio (%). Hepatocellular cancer recurrence and overall survival and disease free survival were statistically analyzed in terms of age, gender, living and cadaveric transplanted patient groups, blood group, BMİ, MELD and Child scores, milan criteria, tumor number, maximum tumor diameter, total tumor diameter, microinvasion, macroinvasion/ invasion, multicentricity, grade, etiology. The average recurrence time was specified in months. Those with early recurrence in the first 6 months or recurrence within 2 years and those with recurrence 6 months or 2 years later were analyzed statistically in terms of survival time, separatelly. Primary recurrence locations were examined according to the number of patients and their rates were specified. Survival rates were evaluated in terms of recurrence organ location statistically. Besides, the numbers of all treatment methods related to recurrence were indicated and recurrent organ location evaluated in month and statistically. Also, single and multiple organ recurrence counts were included in the study and were studied in month and statistically. Patients with single or multiorgan recurrence were also statistically analyzed for survival. One, 3 and 5-year DFS and OS durations and rates were examined. DFS rates of patients in and out of Milan were analyzed separately. The patients were informed about the study and their consent forms were obtained. All procedures were conducted in accordance with the ethical standards of the respective committees on human experimentation (institutional and national) and with the Helsinki Declaration of 1964 and later versions. This study was approved by the Human Experiments Ethics Committee with the ethics committee decision number 2020-242.

73% of within Milan had 1-year, 58% had 3-year and 47% had 5-year DFS. On the other hand, 68% of beyond

Statistical Methods

Nominal and ordinal parameters were described with frequency analysis, whereas scale parameters were described with means and standard deviations. Chi-Square Test and Chi-Square Likelihood tests were used for differences between categorical parameters. Kolmogorov Smirnov test was used for normality of scale parameters. Mann Whitney U test was used for difference analysis, since distributions were non-normal. Spearman's rho correlation and Cox Regression tests were used for relational analysis. SPSS 17.0 for windows was used at 95% Confidence Interval.

Results

The average age was 57. 87% of the patients were male and 13% were female. BMI mean was 27.5. Living donor liver transplantion (LDLT) was performed in 83%, and decaesed donor liver transplantation (DDLT) in 17% of the patients. Blood groups were; 39% A group, 16% B group, 37% 0 group, 8% AB group. Child A ratio was 43%, Child B ratio was 23%, Child C ratio was 8%. The mean MELD score was 11.5. In etiology, 45% HBV, 1% HCV, 10% HBV + HDV, 8% NASH, 8% ethanol, 8% cryptogenic, 20% others (autoimmune hepatitis, Budd Chiari, PSC) were observed. Blood group difference between recurrence groups were significantly different ($p<0.05$), and O group was more common in non-recurrence group. Age, gender, transplant donor, etiology, CHILD and meld scores of recurrence group differences were insignificant (table 1), ($p>0.05$). Cox regression analysis for effects of etiology on recurrence with DFS and OS were insignificant ($p>0.05$). In addition, binary logistic regression analysis (with time independent) showed also insignificant results for effects of etiology on recurrence (table 2), ($p>0.05$).

TABLE 1: Demographic Variables, Child And MELD Scores and Spearman's rho correlation analysis results for factors effecting recurrence

	Recurrence	Non-recurrence	P
Age, mean ± SD	56.70±9.63	57.15±10.93	0.387[a]
Gender (n, %) Male Female	 142 (83.5) 28 (16.5)	 44 (91.7) 4 (8.3)	0.159[b]
Transplant donor (n/%) Cadaveric Living	 29 (17.1) 141 (82.9)	 141 (77.1) 42 (22.9)	0.644[b]
Blood Group (n/%) O A B AB	 54 (33.3) 70 (43.2) 27 (16.7) 11 (6.8)	 21 (46.7) 10 (22.2) 7 (15.6) 7 (15.6)	0.031[c]
Child Score (n/%) None A B C	 41 (24.1) 64 (37.6) 48 (28.2) 17 (10.0)	 14 (28.6) 23 (46.9) 9 (18.4) 3 (6.1)	0.346[c]
Etiology(n/%) HBV HCV HBV+HDV Ethanol Cyrptogenic NASH Other	 78 (47.3) 3 (1.8) 12 (7.3) 7 (4.2) 16 (9.7) 15 (9.1) 34 (20.6)	 21 (42.9) - 6 (12.2) 6 (12.2) 3 (6.1) 3 (6.1) 10 (20.4)	0.308[c]
MELD Score	11.91±4.22	11.39±4.92	0.253[a]

a. Mann Whitney-U Test, **b.** Chi-Square Test, **c.** Likelihood Ratio,
SD: Standard Deviation. **HCC:** Hepatocellular carcinoma;

	Recurrence	p	R
	Age	**0.059**	**0.388**
Gender		-0.095	0.161
Blood Group		-0.027	0.699
BMI		-0.129	0.139
MELD		-0.089	0.254
Milan Criteria		0.159	0.026
Tumor Number		0.139	0.056
Max Tumor Diameter		0.148	0.039
Total Tumor Diameter		0.189	0.008
Multicentric		0.084	0.248
Vascular Invasion		0.044	0.555
Microvascular Invasion		0.014	0.850
Macrovascular Invasion		0.085	0.254
Grade		0.172	0.056

TABLE 2: Etiology effects on recurrence by DFS, OS and multinomial variance analysis

	DFS Multivariate analysis			OS Multivariate analysis			Recurrence Multivariate analysis		
	HR	95,0% CI	p	HR	95,0% CI	p	HR	95,0% CI	p
HBV	Referent			Referent		0.415			0.455
HCV				0.729	.342-1.554	0.413	**0.915**	0.390-2.150	0.839
HBV+HDV	0.652	0.301-1.413	0.279			0.980			0.999
Etanol	0.367	0.121-1.116	0.077	1.154	.406-3.279	0.788	1.700	0.508-5.685	0.389
Cyriptogenic	0.464	0.151-1.425	0.180	1.728	.620-4.818	0.296	2.914	0.795-10.678	0.106
NASH	0.811	0.221-2.971	0.752	0.484	.133-1.762	0.271	0.638	0.154-2.639	0.534
Other	0.670	0.182-2.474	0.548	1.668	.455-6.112	0.440	0.680	0.163-2.830	0.596

Spearman's rho correlation analysis results showed that Milan criteria, max tumor diameter and total tumor diameter parameters were positively correlated with recurrence ($p<0.05$). Max tumor diameter had positive or increasing effect on recurrence for DFS univariate analysis ($p<0.05$). However, its effect on recurrence at multivariate level was insignificant for DFS multivariate ($p>0.05$). Both max tumor diameter and total tumor diameter parameters had significant effect on recurrence for OS univariate analysis ($p<0.05$). However, only effect of max tumor diameter had significant on OS multivariate analysis (table 3), ($p<0.05$). Tumor number, multicentricity, microvascular and macro/vascular invasion, grade had no significant effect on recurrence or OS/DFS univariate and multivariate analysis ($p>0.05$).

TABLE 3: Cox regression analysis results for recurrence at DFS and OS with significant cofounders

	DFS Univariate			DFS Multivariate		
	HR	95,0% HR	p	HR	95,0% HR	p
Milan criteria	0.694	0.376-1.284	0.245	1.156	0.473-2.826	0.751
Max Tumor diameter	1.216	1.027-1.441	0.024	1.212	0.983-1.494	0.072
Total Tumor diameter	1.038	0.988-1.090	0.137	1.017	0.942-1.098	0.673
	OS Univariate			**OS Multivariate**		
	HR	95,0% HR	p	HR	95,0% HR	p
Milan criteria	0.560	0.309-1.015	0.056	1.469	0.567-3.805	0.429
Max Tumor diameter	1.288	1.105-1.501	0.001	1.246	1.016-1.529	0.035
Total Tumor diameter	1.081	1.027-1.138	0.003	1.069	0.896-1.158	0.105

Estimated Overall Survival time for inside Milan and for beyond Milan Criteria group was insignificant, statisticaly (respectively, median 31 and 15 months, p>0.05). Estimated DFS for Milan within the group was for Milan beyond group with a statistically insignificant difference (median months: not reached, p>0.05

Survival rates for different recurrent organ were, 36 months for liver (n: 2-71), 62 months for lung (n: 20-159), 66 months for bone (n: 21-177), 43 months for intraabdominal extrahepatic locations (n: 11-79), 89 months for other locations (n: 30-148), 34 months for multiorgan (n: 4-90). Among the patients treated for single organ recurrence, the average survival of those who underwent only surgery was 56 months, received surgery and chemotherapy 78 months, received only chemotherapy, 87 months received chemotherapy and radiotherapy, and 60 months for those who received TARE. Also, among the patients treated for multi organ recurrence, the average survival of those who underwent only surgery was 13 months, received surgery and chemotherapy 34 months, received only chemotherapy, 27 months, and 36 months for those who received TARE.

Survival average differences between 24 month and 6 month cut off groups were statistically significant, as expected (p<0.05). Patients with single organ recurrence had a higher mean OS with a median survival of 58 months, than patients with multiple organ recurrence with a median survival of 34 months, but the difference was statistically insignificant (p>0.05). OS average differences between different recurrent organs and recurrence treatment regime with single-multiple organ were statistically insignificant (table 4), (p>0.05).

TABLE 4: Evaluation of OS and recurrent patients for 24 and 6 months cut-off value

< 24 months (n: 91)	>24 months (n=136)		p value
11.38±7.06	66.88±36.55	**OS Average, months, mean ± SD**	0.000*
Single organ recurrence	**>1 organ recurrence**		
53.11±40.51	34.07±27.60	**OS Average, months, mean ± SD**	0.075*
< 6months (n: 28)	**>6 months (n: 199)**		
3.02±1.77	**50.49±38.76**	**OS Average, months, mean ± SD**	0.000*

*Mann Whitney U Test, SD: Standard Deviation.

Milan had 1-year, 52% had 3-year and 41% had 5-year DFS. Differences of DFS distributions based on Milan groups were insignificant (p=0.201). 91% of within Milan had 1-year, 84% had 3-year and 77% had 5-year OS. On the other hand, 89% of beyond Milan had 1-year, 75% had 3-year and 66% had 5-year OS. Differences of OS distributions based on Milan groups were insignificant (p=0.214).

Discussion

Although Milan criteria provide low recurrence rate and high survival times; In order to increase the number of patients need to benefit from transplantation, different patient selection criteria have been established. İnspite of heterogen results, when those beyond Milan were compared with Milan Criteria, it was seen that OS and DFS results were better in patients within Milan often (3,7-9). İt is more frequently determined that the increase in maximum and total tumor diameter, multicentricity and tumor number reduce the disease-free and overall survival and rise recurrence (7,10-20). At the same time, patients with microvascular invasion have significantly poorer survival outcomes. These analysis show that microvascular or macrovascular invasion may be independent predictor of survival and recurrence (7,9,12,16,21-25). However, the results showing that macrovascular invasion is not predictive of survival and recurrence should not be ignored (26,27).

Therewithal, tumor grade may be a significant risk factor for both survival and recurrence. Patients with well-differentiated tumors had better OS and DFS rates compared to patients with moderate/poor-differentiated tumors. (3,22,23,25-29). However, there might be underlying several tumor features that lead to better survival outcomes after liver transplant even among poorly differentiated tumors (8,24,25,27-32).

For all that there are not many studies showing the predictive value of age, gender, and etiology, on survival and recurrence, several results that being over 60 years old, male gender, and HCV etiology might be remarkable to be poor prognostic factors for survival and recurrence (3,21,29,29-31,33,34).

In our study, it was observed that the differences among age, gender, MELD, Child scores, BMI and etiological factors did not affect recurrence. Also, tumor number, multicentricity, micro and macro vascular invasion, and increasing tumor grade did not make any difference in terms of recurrence. However, there were less recurrence rates in patients, with 0 blood group, inside milan, with less total and maximum tumor diameter. It was also observed

that the maximum tumor size affected the overall survival multivariately.

Most cases of recurrent HCC after LT have been reported to occur at extrahepatic (38.5 to 53%) or both extrahepatic and intrahepatic sites (31 to 38.5%). Also, tumour recurrence is frequently extrahepatic, particularly in the lungs and bones. Although lung recurrence is more common, it has been observed that the survival rates after bone recurrence is shorter, and longer survival in intrahepatic recurrence and other single organ recurrence (5,9,24). Therewithal, the timing of recurrence is important for survival. Many studies have observed longer survival in recurrence after 2 years. In addition, survival in the first 6 months of recurrence appears to be worse, which can be called early recurrence (1,9,23). İn our study, there was no statistical difference between the post-recurrence survival rates of different organs. İt was also observed that multiorgan recurrence did not differ significantly compared to single organ recurrence. However, it was observed that survival was worse in early recurrence and recurrence in the first 24 months compared to the other groups.

İn patients who underwent surgery and systemic treatment for recurrence, surgical treatment has longer survival times than other treatments with a median survival of 28-65 months. It can also be said that this is due to localized disease or good tumor biology. Methods such as TARE, TACE and RFA, radiotherapy and systemic chemotherapy treatments will also contribute somewhat to survival (35). In our study, while the mean survival after surgery for single organ recurrence was 55 months, it was seen that survival time was 78 months after the addition of chemotherapy. However, there was no significant difference in survival among patients who underwent surgery for recurrence treatment, received systemic therapy, and other local ablative treatment methods.

Conclusion

Although liver transplantation is the best treatment option for selected HCC patients, it is important to examine tumor-related factors that may affect recurrence and survival. Morphology or biological behavior of the tumor may also be important determinants of survival after LT. Being inside the milan and tumor diameter affect the recurrence and survival, surgery to be performed in localized recurrences and additional systemic treatment may affect survival positively.

Conflict of Interest: None declared by the authors.
Financial Disclosure: None declared by the authors.
Acknowledgments: None declared by the authors.

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https://doi.org/10.31067/acusaglik.1319964

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Psychiatry /Psikiyatri

The Role Of Basic Personality Traits, Cognitive Coping Strategies In Social Anxiety Symptoms.

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Received: 26 June 2023

Accepted: 24 October 2023

Abstract

Purpose: The aim of this study is to examine the role of personality traits and coping mechanisms in social anxiety symptoms within the scope of predisposing and maintaining risk factors. Methods: The study group consists of 505 participants (female are 52.3%) between the ages of 18-42 studying at different private universities in Istanbul. Data collection tools are Liebowitz Social Anxiety Scale, Basic Personality Traits Scale, Ways of Coping with Stress Scale, Cognitive Emotion Regulation Scale. Results: In the study, Multivariate Analysis of Variance (MANOVA) and Hierarchical Regression Analysis are used. It is observed that participants with low and high social anxiety symptom levels differed in terms of (I) extraversion, agreeableness, openness and negative valence among personality traits; (II) self-confident approach, helpless approach and submissive approach among stress coping styles; and (III) refocusing on the plan, positive reappraisal and catastrophizing among cognitive emotion regulation styles. In addition, as a result of the hierarchical regression analysis, it is found that (I) extraversion, openness and negative valence from personality traits; (II) helpless approach and submissive approach from stress coping styles; and putting into perspective cognitive emotion regulation strategy predicts social anxiety.

Conclusion: The study supported the role of personality traits, ways of coping with stress and cognitive emotion regulation strategies in social anxiety symptoms. These findings provide evidence that extraversion, openness to experience, negative valence personality traits; helpless and submissive stress coping styles might be both maintaining and predisposing risk factors in the conceptualization of social anxiety symptoms. The results might provide potential targets for psychotherapeutic intervention to improve social anxiety symptoms in university students. Theoretical as well as practical implications are discussed.

Keywords: Social anxiety symptoms, personality, coping with stress, cognitive emotion regulation.

Özet

Amaç: Bu çalışmanın amacı, kişilik özelliklerinin ve başa çıkma tarzlarının toplumsal kaygı belirtilerindeki rolünü yatkınlaştırıcı ve sürdürücü risk faktörleri kapsamında incelemektir.

Yöntem: Araştırma grubu, İstanbul'daki çeşitli özel üniversitelerde öğrenim gören, yaşları 20-40 arasında değişen 505 katılımcıdan (%52,3'ü kadın) oluşmaktadır. Çalışmada Liebowitz Sosyal Anksiyete Ölçeği, Temel Kişilik Özellikleri Ölçeği, Stresle Başa Çıkma Tarzları Ölçeği, Bilişsel Duygu Düzenleme Ölçeği veri toplama araçları olarak kullanılmıştır. Bulgular: Araştırmada Çok Değişkenli Varyans Analizi (MANOVA) ve Hiyerarşik Regresyon Analizi kullanılmıştır. Toplumsal kaygı belirti düzeyi düşük ve yüksek olan katılımcıların (I) kişilik özelliklerinden dışadönüklük, uyumluluk, açıklık ve negatif değerlik; (II) stresle başa çıkma tarzlarından kendine güvenli yaklaşım, çaresiz yaklaşım ve boyun eğici yaklaşım; (III) bilişsel duygu düzenleme stratejilerinden plana yeniden odaklanma, olumlu yeniden değerlendirme ve felaketleştirme açısından farklılaştığı görülmüştür. Ayrıca, hiyerarşik regresyon analizine göre (I) dışadönüklük, açıklık ve negatif değerliğin; (II) çaresiz yaklaşım ve boyun eğici yaklaşımın; ve (III) olayın değerini azaltma bilişsel duygu düzenleme stratejisi toplumsal kaygı belirtilerini yordamaktadır.

Sonuç: Bu çalışma toplumsal kaygı belirtilerinde kişilik özelliklerinin, stresle baş etme tarzlarının ve bilişsel duygu düzenleme stratejilerinin rolünü desteklemektedir. Bulgular, dışadönüklük, deneyime açıklık, olumsuz değerlik kişilik özelliklerinin yanı sıra stresle başa çıkma tarzlarındaki çaresiz ve boyun eğici yaklaşımın, toplumsal kaygı belirtilerinin kavramsallaştırılmasında hem sürdürücü hem de yatkınlaştırıcı risk faktörleri olabileceğine işaret etmektedir. Sonuç olarak, belirtilen psikolojik yapılar üniversite öğrencilerinde toplumsal kaygı belirtilerinin tedavisinde bilişsel-davranışçı yönelimli müdahale programlarının geliştirilmesine katkı sağlayabilir.

Anahtar Sözcükler: Toplumsal kaygı belirtileri, Kişilik, Stresle başa çıkma tarzları, Bilişsel duygu düzenleme.

Social anxiety disorder (SAD) is a psychiatric condition characterized by experiencing anxiety and fear in different social interactions during which individuals may feel humiliated, shamed or evaluated negatively (1). Given that SAD is among the most common disorders in young adults (24) and significantly impacts educational attainment, interpersonal relationships and professional life (10), the underlying mechanisms and characteristics of the disorder need to be elucidated for the development and implementation of evidence-based interventions.

The prominent cognitive-behavioral models in SAD elaborate on predisposing and maintaining factors that make it difficult for people to cope with the negative emotions they experience during social interactions in their daily lives (8). Personality is among the predisposing factors related to how a person reacts to a stressful and anxiety-producing events (24). Among all proposed models, the five-factor model of personality (19) has been widely accepted, used for research purposes and also allows for a systematic examination of the relationships between personality traits and psychopathology. This model defines personality based on five traits: neuroticism, extraversion, openness, agreeableness and conscientiousness (29).

In the etiological explanations of SAD, there is a widespread emphasis on personality traits, especially neuroticism and extraversion (4) Although it is proposed that high neuroticism and low extraversion are significantly related to the disorder in both epidemiological and clinical samples (17,28), a growing body of work has indicated that the other five-factor personality traits, such as openness, agreeableness and conscientiousness may also characterize individuals with SAD (17). Thus it is suggested that greater attention to these personality traits can significantly benefit SAD psychopathology research and clinical practice (16). However the initial evidence regarding the relationships between openness, agreeableness, conscientiousness and SAD is inconclusive. For example in one study individuals with high levels of social anxiety reported lower scores in the agreeableness and conscientiousness compared to the control group (5). In another study conducted with only female university students in Iran, it was found that while social anxiety symptoms were negatively associated with agreeableness and conscientiousness, these traits are not significant predictors of social anxiety (23). The meta-analysis evaluating the contribution of personality traits to psychopathology established that SAD is negatively associated with extraversion but not related to agreeableness and openness to experience (16).

The coping strategies, closely associated with personality traits (7) are considered as factors contributing to the mainteinance of SAD (8). Coping is a very broad concept and several classifications of coping have been proposed but the fundamental categories that have garnered the most consensus include emotion and problem focused coping (7). While problem-focused coping which attempts to change the situation is defined as a adaptive strategy, emotion-focused coping which attempts to alter one's emotional reaction to a situation is defined as a maladaptive strategy (18). According to the research (11) in middle childhood emotion-focused coping strategies are found to have a predictive role in shyness behaviours. Another study (3) has demonstrated that university students who more frequently engage isocial avoidance behaviors more frequently use emotion-focused coping strategies and have lower problem-solving skills, emphasizing the importance of problem-solving ability in social anxiety. Furthermore, In Greece, a problem-focused group intervention program lasting for 5 weeks is implemented for students who exhibited symptoms of social anxiety upon entering middle school. It is observed that as students began to employ problem-focused coping strategies, there is a decrease in social anxiety symptoms as measured by self-report scales (6). Although there is growing evidence suggesting that emotion-focused coping might have an important role in social anxiety, the general lack of uniformity in the taxonomies of emotion-focused coping responses makes it difficult to understand through which strategies this coping emerges within the disorder.

Another cognitive coping mechanism that plays a maintaining role for social anxiety is cognitive emotion regulation (CER) (7). This concept encompasses only the cognitive processes of emotion regulation and includes maladaptive strategies such as self-blame, rumination, catastrophizing, other-blame, acceptance and adaptive strategies such as positive refocusing, refocus on planning, positive reappraisal, and putting into perspective strategies (12). Emprical studies focused on a limited number of CER strategies, such as cognitive reappraisal, rumination and catastrophizing have revealed inconsistencies regarding the role of these strategies in SAD. For example, some studies have found that clinically anxious young (14) and middle aged (26) individuals frequently use rumination but they are ineffective in using cognitive reappraisal, while others have failed to find this association (15). In a review article it is asserted that socially anxious individuals tend to use more catastrophic thinking strategies in interpersonal situations compared to participants with other anxiety-related disorders (2).

Taken together, the existing literature has provided consistent evidence for the links between social anxiety, personality traits and coping strategies, however uncertainities and incompatibilities draw attention so it is not clear which personality traits and cognitive coping strategies would play a role in the etiology of SAD.

Various etiological models have been proposed to explain predisposing and maintaining factors in psychopathology. Some of these models include vulnerability and

pathoplasty model. According to the pathoplasty model the presence of psychopathology affects other psychological processes independently of etiology and contributes to the persistence of psychopathologies. In vulnerability model predictor variables have been suggested to increase the risk of developing certain anxiety disorders. In psychopathologies the clearest support for these models would be provided by longitudinal data, in cross-sectional studies, only risk factors can be considered (20). To gain insight into predisposing and maintaining risk factors within the scope of these models, firstly, risk and non-risk groups for social anxiety symptoms were formed to determine if these groups differ in terms of personality traits, coping styles with stress, and cognitive emotion regulation strategies. Secondly, the predictive effects of personality traits, coping styles with stress, and cognitive emotion regulation strategies on social anxiety examined across the entire sample.

Sample

The participants consisted of 505 students attending various faculties of different private universities in Istanbul. Of the participants, 265 (52.3%) are female and 240 (47.7%) are male. The age of the participants ranged from 20 to 40 years (M = 21.8, SD = 2.80). The scales were distributed and collected in person by the researchers.

Liebowitz Social Anxiety Scale

This Scale developed to assess the level of anxiety and avoidance experienced in social interaction situations is adapted to Turkish sample by Soykan, Özgüven and Gençöz (27). Higher scores on the scale indicate greater severity of social anxiety and avoidance behaviors. During scoring, the score of the two sub-dimensions is calculated separately and the total score is calculated. In this study, the Cronbach's alpha coefficient for the total score of the scale is found to be .94.

Inventory of Basic Personality Traits

This scale is developed to examine the five-factor structure of personality in Turkish culture. Although the five-factor structure of personality is supported, it is also found that the 6th dimension of personality is called negative valence. The subscales included agreeableness, neuroticism, conscientiousness, extraversion, openness to experience, and negative valence. The Cronbach's alpha coefficients of the subscales range from .71 to .89 (13). In the current study, the Cronbach's alpha coefficients of the subscales are found to vary between .60 and .83.

Ways of Coping with Stress Scale

The scale is rated on a 4-point Likert scale and converted into a 30-item short form by Şahin and Durak (28). The scale consists of five sub-dimensions: self-confident, seeking social support, optimistic approach are adaptive; helpless and submissive approaches are maladaptive. The Cronbach's alpha coefficients of the sub-dimensions range from .45 to .73. In the current study, the Cronbach's alpha coefficients of the sub dimension range from .60 to .79.

Cognitive Emotion Regulation Scale

This scale aims to measure the cognitive emotion regulation strategies used by participants both in stressful/ negative life events and in general situations. There is nine subscales and Cronbach's alpha coefficients of the subscales ranged from .62 to .77 in Turkish culture (25). In the current study, the Cronbach's alpha coefficients of the scale range from .64 to .81 for the sub-dimensions.

Results

Analysis on Variables Differentiating Groups with High and Low Social Anxiety Symptom Levels

The research data is analyzed using SPSS 25 program. To determine the groups with high and low levels of social anxiety symptoms (SAS), mean (M=86.21) and standard deviation (SD=22.15) values were calculated based on the total scores of Liebowitz Social Anxiety Scale (LSAS). Those who scored 1 standard deviation below the mean is named as the low group (N=87) and those who scored 1 standard deviation above the mean is named as the high group (N=92).

One Way MANOVA was applied to determine whether participants differed in terms of research variables. According to the analysis, it is observed that subscales of Inventory of Basic Personality Traits (IBPT) (Wilks' Lambda = .29, F[6, 172]= 11.99, p<.01), subscales of Ways of Coping with Stress Scale (WCSS) (Wilks' Lambda = .72, F[5, 173]= 13.23, p<.01) and subscales of Cognitive Emotion Regulation Scale (CERS) (Wilks' Lambda = .77, F[9, 169]= 5.65, p<.01) significantly differed between the groups.

One-way Analysis of Variance is conducted to determine which subscales would be in the differentiation. It is found that groups differed significantly in subscales of the (IBPT), neuroticism (F[1-177] = 3.89, p<.05), extraversion (p<.01), agreeableness (F[1-177] = 7.15), openness to experience (F[1-177] = 50.41, p<.01) and negative valence (F[1-177] = 6.22, p<.01). Mean scores of extraversion (M=4.22, SD=.56), agreeableness (M=4.36, SD=.48), openness to experience (M=4.19, SD=. 48) of the group with high SAS were significantly higher than the mean scores of extraversion (M=3.47, SD=.82), agreeableness (M=4.13, SD=.66) and openness to experience (M=3.55, SD=.69) subscales of the group with low SAS. The mean scores of the negative valence (M=1.82, SD=.60) and neuroticism subscales (M=2.88, SD=.76) of the group with high SAS level were higher than the mean scores of the negative valence (M=1.62, SD=.49) and neuroticism (M=2.67,

SD=.64) subscales of the group with low social anxiety symptom level.

Participants significantly differed in the subscales of WCSS, confident (F[1, 177] = 21.57, p<.01), helpless (F[1, 177] = 37.99, p<.01), and submissive (F[1, 177] = 36.88, p<.01) subscales. The mean scores of the group with low SAS in confident (M=2.30, SD=.48) are higher than the mean scores of the group with high SAS (M=1.94, SD=.53). The mean scores of helpless (M=1.41, SD=.53) and submissive (M=1.20, SD=.57) subscales of the participants with high SAS are higher than the mean scores of helpless (M=.97, SD=.43) and submissive (M=.75, SD=.41) subscales of the participants with low SAS.

Also, participants differ significantly in the subscales of CERS, refocusing on planning (F[1, 177] = 16.27, p<.01), positive reappraisal (F[1, 177] = 8.84, p<.01), and catastrophizing (F[1, 177] = 20.50, p<.01). Accordingly, the mean scores of refocusing on the plan (M=15.92, SD=2.90) and positive reappraisal subscales (M=15.54, SD=3.12) of the participants with low SAS level are higher than the mean scores of refocusing on the plan (M=14.18, SD=2.85) and positive reappraisal subscales (M=14.13, SD=3.22) of the high level participants. The mean catastrophizing scores of the group with high SAS level (M=10.96, SD=3.55) are higher than the mean catastrophizing scores of the participants with low SAS (M=8.69, SD=3.10). The results are presented on Table1.

TABLE 1: Statistical Analysis of Scale Scores of Participants with High and Low Social Anxiety Symptom Levels.

Social Anxiety Symptom Level Groups						
Subscales	Low		High		F	η2
	M	Ss	M	Ss		
IBPT						
Extraversion	4.22	.56	3.47	.82	49.50*	.219
Conscientiousness	3.67	.69	3.61	.72	.39	.002
Agreeableness	4.36	.48	4.13	.66	7.15*	.039
Neuroticism	2.67	.64	2.88	.76	3.88*	.021
Openness to experience	4.19	.48	3.55	.69	50.41*	.222
Negative valence	1.62	.49	1.82	.60	6.22*	.034
WCSS						
Seeking of social support	1.99	.60	1.85	.52	2.85	.016
Self confident	2.30	.48	1.94	.53	21.57*	.109
Optimistic	1.80	.54	1.69	.58	1.74	.010
Helpless	.97	.43	1.41	53	37.99*	.177
Submissive	.75	.41	1.20	.57	36.88*	.172
CERS						
Self blame	9.92	2.63	10.83	2.88	4.85	.027
Acceptance	10.38	2.99	11.05	2.94	2.31	.013
Rumination	13.56	3.12	13.80	3.25	.26	.001
Positive Refocusing	12.47	2.78	12.57	3.32	.04	.000
Refocus on planning	15.92	2.90	14.18	2.85	16.27*	.084
Positive reappraisal	15.54	3.12	14.13	3.22	8.84*	.048
Putting into perspective	12.89	2.81	13.57	3.04	2.40	.013
Catastrophizing	8.69	3.10	10.96	3.55	20.50*	.104
Other-Blame	9.96	3.01	10.46	3.29	1.19	.006

*p < .05, BPTS: Basic Personality Traits Scale, WCSS: Ways of Coping with Stress Scale, CERS: Cognitive Emotion Regulation Scale

Hierarchical Regression Analysis Findings on the Prediction of Social Anxiety Symptoms by Research Variables

The correlation between the total score of the LSAS and the subdimensions of the other scales was examined using Pearson's correlation coefficient analysis. The total score of LSAS is significantly correlated with extraversion, agreeableness, neuroticism, openness to experience, and negative valence subscales (in turn r=-0.33, p<.05; r=-0.12, p<0.05, r=0.10, p<.05; r=-0.32, p<.05; r=0.12, p<.05). The total score of LSAS is significantly correlated with the self-confident approach, helpless approach, and submissive approach subscales (in turn r=-0.23, p<.05; r=-.32, p<.05, r=-0.32, p<.05). The total score of LSAS is significantly correlated with the self-blame, refocus on planning, positive reappraisal, catastrophizing, and putting into perspective subscales (in turn r=.11, p<.05; r=-0.18, p<.05; r=-0.14, p<.05, r=-0.21, p<.05, r=-0.10, p<.05). Only subscales that showed significant correlations with the LSAS are included in the regression analysis.

To examine the effects of subscales on LSAS total score, hierarchical stepwise multiple linear regression analysis is conducted. The subscales of openness, extraversion and negative valence (in turn β= -.21, p <.001; β= -.23, p < .001, β= 23, p< .001) predicts LSAS total score and all subscales explain %14 of total variance. In the second stage the subscales of helpless approach and submissive approach (in turn β= .12, p< .01; β= .22, p< .001) predict LSAS total score and all subscales explains 22% of total variance. In the third stage the subscale of putting into perspective predicts LSAS total score (β= .10, p<.05) and all subscales explains 24% total variance. The results are presented on the Table 2.

TABLE 2: Hierarchical Stepwise Multiple Linear Regrassion Analysis Results for the Prediction of Liebowitz Social Anxiety Scale Total Score

Analysis Phase	Predictor variable Subscales	R	R2	ΔR2	B	SH_B	β	t	F
1. Stage	BPTS								
	Extroversion	.39	.15	.14	-6.26	1.49	-.21	-4.19***	14.43*
	Agreeableness				2.54	2.17	.06	1.17	
	Neuroticism				.33	1.44	.01	.23	
	Openness				-8.34	1.84	-.23	-4.55***	
	Negative valence				4.09	2.09	.10	2.08*	
2. Stage	WCSS								
	Self confident	.48	.23	.22	9.59	2.02	-.04	-.73	18.32*
	Helpless				-1.48	2.18	.12	2.51**	
	Submissive				5.46	1.99	.22	4.82***	
3. Stage	CERS								
	Self blame	.50	.25	.24	-.89	.39	-.09	-1.27	12.53*
	Refocus on planning				-.82	.48	-.11	-1.71	
	Positive reappraisal				.48	.49	.07	.98	
	Putting into perspective				.68	.34	.10	1.99*	
	Catastrophizing				.52	.32	.08	1.63	

*p < .05, BPTS: Basic Personality Traits Scale, WCSS: Ways of Coping with Stress Scale, CERS: Cognitive Emotion Regulation Scale

Discussion

The present study examines the role of the five-factor personality traits, cognitive emotion regulation strategies and stress coping styles in social anxiety symptoms among university students. The first variable examined in individuals with both high and low levels of social anxiety is the five-factor personality traits. The findings demonstrate that socially anxious individuals would be defined by personality profile with high neuroticism and negative valence; low extraversion, agreeableness and openness to experience. Thus it can be considered that individuals with social anxiety might have a personality profile that reflects different manifestations of more than one personality trait rather than have just high neuroticism as reported by some of the previous research (17). On the other hand these findings are consistent with theoretical and empirical literature. For example, Costache et al (9) emphasize that socially anxious individuals exhibit a personality profile with higher neuroticism and lower extraversion compared to the control groups. Furthermore, that the findings of extraversion, openness to experience, and agreeableness which are related to interpersonal relationships (19), are low in socially anxious individuals is consistent with the theory that individuals with social anxiety disorder (SAD) often experience difficulties in interpersonal relationships (3). Our findings regarding the high presence of negative valence personality trait, indicating negative self-attributions about oneself (13), on elevated social anxiety symptoms, support cognitive model of SAD, which hypothesize the importance of negative self-beliefs such as inadequacy and worthlessness in maintaining the disorder (8).

With regard to coping with stress, our findings indicate that individuals with high socially anxious have lower levels of self-confident approach and higher levels of helpless and submissive approaches compared to individuals with low social anxiety. These results expand upon previous research (3,12) by illustrating that socially anxious individuals tend to utilize adaptive strategies less frequently and employ multiple maladaptive strategies.
Regarding cognitive emotion regulation strategies, it is found that individuals with high social anxiety exhibit lower scores in plan refocusing and positive reappraisal and higher scores in catastrophising compared to those with low social anxiety symptoms. The results replicate the findings of Rukmini et al. (26), indicating that participants diagnosed SAD use fewer adaptive strategies compared to healthy controls. On the other hand, when considered within the framework of the pathoplastic model, one could hypothesize that the personality traits and coping mechanisms differing between high and low symptom groups may serve as maintaining risk factors for social anxiety.

The symptoms of social anxiety are explained to the extent of 14% by personality traits, 8% by coping with stress strategies with stress 2% cognitive emotion regulation strategies. The findings suggest that personality traits play a greater role than coping mechanisms in social anxiety symptoms. Nevertheless, the study conducted with nonclinical sample indicates that five-factor personality dimensions make much more extensive contribution to social anxiety symptoms (17). The difference in findings regarding the contribution of personality traits to social anxiety symptoms could be related to cultural factors. It has been suggested that the underlying mechanisms of social anxiety symptoms may differ in individualistic and collectivistic cultures (21). In this regard in our country, influenced by a collectivist-based culture, one could hypothesize that environmental and familial factors relative to personality traits may play a more substantial role in social anxiety symptoms (21). Furthermore, cognitive emotion regulation strategies contributing to social anxiety symptoms are quite low, not supporting the model that addresses the importance of cognitive mechanisms in the etiology of SAD (8). This may be due to the fact that the sample is not a clinical sample one.

Regarding the predictive role of the research variables, the symptoms of social anxiety are found to be negatively predicted by openness and extraversion, while positively predicted by negative valence. In this context, it can be said that openness and extraversion act as protective factors against social anxiety symptoms, whereas negative valence serves as a risk factor for social anxiety symptoms. Among coping strategies more engagement in helpless and submissive approaches and less engagement in putting into perspective predict social anxiety. In this regard, within the framework of the vulnerability model, these psychological structures that predicts social anxiety could be considered as predisposing risk factors.

The present results point to a number of clinical implications. The findings of the study suggest that openness, extraversion, and negative valence personality traits as well as helplessness and submissive approaches may serve as common predisposing and maintaining risk factors for social anxiety symptoms. In this context, these psychological constructs could be incorporated into cognitive-behavioral models of SAD. Furthermore, in line with the notion emphasizing the clinical significance of adaptive strategies in psychopathologies (22), the results indicate that individuals with high social anxiety symptoms use adaptive coping strategies less frequently. Therefore, instead of merely reducing maladaptive strategies in the treatment of individuals with social anxiety disorder, efforts to teach adaptive strategies may assist university students in coping more effectively with their social anxieties.

There are several limitations to the present study. The study has been conducted with students who are considered to be of a high socio-economic level. It has been stated that individuals who are in low socio-economic status are exposed to more stressful situations, resort to different coping methods and have a much higher risk of psychological disorders compared to middle and upper socio-economic individuals (30). Thus, more privileged economic back ground provides less conducive environment for psychological constructs underlying mechanisms of SAD. Future studies, having participants from different socio-economic levels would be more beneficial. Future research also should nonetheless replicate this study using a clinical sample with SAD. Despite these limitations, the present study provides potential psychological constructs for future research in the etiology of SAD.

Declarations

Funding: Not Applicable.

Conflicts of Interest: Not Applicable.

Ethics Approval: The Ethical Committee Approval for the study was granted by the Maltepe University Scientific Research Ethical Board on the date of 7.1.2019, It was decided to be ethically appropriate with decision numbers 2019/01 and 2019/01-08.

Data and Material The Data and materials used in this research are available upon request.

Authors' Contributions

First Author Conceived and designed the analysis; Contributed data or analysis tools; Performed the analysis; Wrote the paper.

Second Author: Collected the data, performed the analysis.

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https://doi.org/10.31067/acusaglik.1314895

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Rehabilitation /Rehabilitasyon

Functional Capacity in COVID-19 Related Acute Respiratory Distress Syndrome Survivors

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Received: 20 June 2023
Accepted: 30 August 2023

Abstract

Objective: The aim of this retrospective study is to determine the functional capacity, global muscle weakness and quality of life in COVID-19 survivors.

Background: Acute respiratory distress syndrome survivors frequently develop impaired physical function, quality of life, and muscle weakness.

Method: Acute respiratory distress syndrome survivors related to COVID-19 underwent standardized physical clinical evaluation, Medical Research Council-sumscore, hand-grip strength, 6-minute walk test, 5 repetition-chair-stand test, timed up and go test and Short form-36 evaluation following 4-6 weeks after hospital discharge in Physical Medicine and Rehabilitation Outpatient Clinic.

Results: Fifteen patients (10 men, 5 women) with median age 69 years and length of intensive care unit stay 10 days were analyzed. There were impairments in 6-minute walk test, 5 repetition-chair-stand test, hand-grip strength and, Role-physical, Role-emotional and Social functioning domains of Short form-36. 6-minute walk distance was negatively correlated with timed up and go. SF-physical functioning was positively correlated with hand-grip strength, Medical Research Council-sumscore and 5 repetition-chair-stand. SF-general health was positively correlated with hand-grip strength.

Conclusion: There were varying degrees of functional impairment in survivors. Therefore, it could add advantage to assess these patients after nearly 4-6 weeks following discharge in order to ascertain rehabilitation needs and giving appropriate therapies.

Keywords: post-intensive care syndrome, COVID-19, functional capacity, six-minute walk test, handgrip strength, chair stand test

Condensed Abstract: Acute respiratory distress syndrome survivors related to COVID-19 demonstrated impairments in 6-minute walk test, 5 repetition-chair-stand test, hand-grip strength and, some domains of Short form-36. In order to ascertain rehabilitation needs and giving appropriate therapies, assessing these patients after nearly 4-6 weeks following discharge could add an advantage.

Özet

Amaç: Bu retrospektif çalışmanın amacı, COVID-19 geçiren hastalarda fonksiyonel kapasiteyi, global kas zayıflığını ve yaşam kalitesini belirlemektir.

Arka plan: Akut solunum sıkıntısı sendromu sonrası sıklıkla fiziksel fonksiyonda, yaşam kalitesinde bozulma ve kas güçsüzlüğü gelişir.

Method: COVID-19 ile ilişkili akut solunum sıkıntısı sendromu sonrası taburcu olduktan 4-6 hafta sonra Fiziksel Tıp ve Rehabilitasyon Polikliniği'nde standart fiziksel klinik değerlendirme, Medical Research Council-toplam puan, el kavrama kuvveti, 6 dakika yürüme testi, 5 defa oturup kalkma testi, zamanlı kalk ve yürü testi ve Kısa form-36 testi uygulandı.

Bulgular: Ortanca yaşı 69 olan ve yoğun bakımda kalış süresi 10 gün olan 15 hasta (10 erkek, 5 kadın) analiz edildi. Kısa form-36, 6 dakika yürüme testi, 5 defa oturup kalkma testi, el kavrama kuvveti ve fiziksel, duygusal ve sosyal işlevsellik alanlarında bozulmalar vardı. 6 dakikalık yürüme mesafesi, zamanlı kalk ve yürü testi ile negatif yönde ilişkiliydi. Kısa form-fiziksel fonksiyon, el kavrama kuvveti, Medical Research Council-toplam puanı ve 5 defa oturup kalkma testi ile pozitif yönde ilişkiliydi. Kısa form-genel sağlık durumu el kavrama kuvvetiyle pozitif yönde ilişkiliydi.

Sonuç: COVID-19'a bağlı akut solunum sıkıntısı sonrası yoğun bakım ünitesinden taburcu olanlarda değişen derecelerde fonksiyonel bozulma vardı. Bu nedenle bu hastaların taburculuktan yaklaşık 4-6 hafta sonra değerlendirilmesi, rehabilitasyon ihtiyaçlarının belirlenmesi ve uygun tedavilerin verilmesi açısından avantaj sağlayabilir.

Introduction

COVID-19 virus that emerged in 2019 could cause Acute Respiratory Distress Syndrome (ARDS) which requires intensive care and respiratory support (1). After recovery from acute critical illness and discharge from hospital, disabilities related to Post intensive care syndrome (PICS) could impact one's life. PICS includes Intensive Care Syndrome Acquired Weakness (ICUAW), neuromyopathies, deconditioning, pulmonary dysfunction, cognitive and mental dysfunction, and might reduce functional capacity and health related quality of life (HRQoL) (2).

The long-term consequences of COVID-19 are unclear. There is limited data and information about the functional capacity of these patients after hospital discharge despite increasing the number of articles published about symptoms, diagnosis, preventions, supportive managements and short-term complications (1).

Previous studies in ARDS related to Severe Acute Respiratory Syndrome (SARS) have demonstrated significant impairment in lung function, exercise capacity measured by Six-minute walk test (6MWT) and HRQoL measured by Short Form-36 (SF-36) in short and long term (3). In COVID-19, patients had lower functional capacity measured via 6MWT after achieving hemodynamic stability following ICU discharge in hospital and just after hospital discharge (4,5). In an inpatient rehabilitation unit following ICU stay, only 45% of post-acute COVID-19 patients were able to walk, 18% of them were feasible for 6MWT and the distance was 45±100 meter (6).

Follow-up evaluation of COVID-19 patients after hospital discharge might help assessing and managing the symptoms of PICS, functional capacity and need for physical therapy. European Respiratory Society and American Thoracic Society recommends an assessment at 6-8 weeks following discharge in COVID-19 patients for the rehabilitation need (7).

The aim of this cross-sectional study is to demonstrate the functional capacity, global muscle weakness and HRQoL in COVID-19 survivors after 4-6 weeks following hospital discharge.

Materials and Methods

The STROBE checklist was followed. This cross-sectional, descriptive study was approved by Medical Ethics Committee (Koc University) before the study and registered to ClinicalTrials.gov (NCT04952844). COVID-19 related ARDS survivors were assessed 4-6 weeks following discharge from the hospital in Koc University Hospital, Physical Medicine and Rehabilitation Department outpatient clinic between June 2020 and September 2020. All ARDS survivors related to COVID-19 who were treated in ICU were invited to outpatient clinic after 4-6 weeks following discharge from hospital in order to assess the need of rehabilitation. 15 patients out of 32 attended the evaluation.

Inclusion criteria were as follows; older than 18 years, ARDS survivors related to COVID-19 who were treated in ICU and attended the outpatient evaluation. Exclusion criteria were as follows; diseases that could affect functional capacity, muscle strength and quality of life, such as cancer, spinal cord disease, neuromuscular diseases and unwillingness to attend the study.

The primary outcome was 6MWT. Secondary outcomes were Medical Research Council (MRC)-sumscore, hand-grip strength (HGS), 5 repetition sit-to-stand test (5STS), timed up and go test (TUG) and Short form-36 (SF-36).

Six-minute walk test is a field test evaluating submaximal aerobic capacity. The technical standards are defined by European Respiratory Society and American Thoracic Society. The individuals were asked to walk as far as possible in a 30-meter corridor in 6 minutes and the distance, oxygen saturation (SpO2), heart rate, systolic blood pressure and Borg rate of perceived exertion (RPE) scale (0-20) were recorded before and immediately after the test, and at the first-minute of recovery. It is a valid and responsive measurement of functional capacity and also predicts HRQoL in ARDS survivors with minimal clinical important difference of 20-30 meters (8). Mean 6MWD of healthy individuals aged 50-85 was defined as 631 ± 93 m (ranging 383-820 m); it was 84 m greater in male compared to female subjects (9).

Handgrip strength was measured using a handheld dynamometer (JAMAR Plus+ electronic dynamometer, part number: 563213, serial number: 2019070814, Sutton-in-Ashfield, Nottinghamshire, UK) according to the instructions of the American Society of Hand Therapists. Patients were requested to seat placing their arms by their sides with the elbow flexed to 90°, the forearm mid-prone, and the wrist in neutral position. Using standard verbal encouragement, patients were asked to grip the dynamometer in dominant hand with maximal effort. Three trials were performed with a 30-second interval between trials and the highest value was recorded in kg. The cut-off values of grip strength are 28.6 kg and 16.4 kg in elderly men and women, respectively. (10). It correlates with 6MWD in subjects with chronic obstructive pulmonary disease exacerbation (11).

Medical Research Council-sumscore which is valid and reliable tool in survivors of critical illness, were used in order to evaluate the overall muscle strength (12). Muscle strength of arm abduction, forearm flexion,

wrist extension, hip flexion, knee extension and ankle dorsiflexion in both limbs were evaluated and graded using MRC scale that range from 0 (no muscle contraction) to 5 points (normal muscle strength). Clinical important muscle weakness is defined as MRC-sumscore <48 out of maximum 60 points (13).

For HRQoL in ARDS survivors, SF-36 was used. Reductions in all domains were demonstrated in ARDS (14). It is a self-reported survey which evaluates individual health status with eight parameters (physical function, pain, role limitations attributed to physical problems, role limitations attributed to emotional problems, mental health, social functioning, energy/vitality, general health perception). There is not a sum score, each section is scored between 0-100, 0 indicates the worst condition, 100 indicates the best.

5 repetition sit-to-stand test was performed to evaluate the strength and endurance of lower limbs. Patients were asked to sit on a chair with 46 cm seat height by crossing their hands over their chest and stand and sit five times consecutively as fast as possible. The test starts in the sitting position and terminate at the end of fifth sitting and the time was recorded (15). Heart rate and SpO2 were monitorised during the test. The mean time of 5STS test was 14.1 sec in COPD patients with mean age 69 years (16). Normative values of the 5-repetition sit to stand test are 11.4 sec (60 to 69 years), 12.6 sec (70 to 79 years), and 14.8 sec (80 to 89 years) in healthy individuals. It could be considered worse than average performance if exceed these values (17). The 5STS test is a significant clinical determinant of poor performance in COPD if ≥ 13 seconds (18).

Timed up and go test was used to assess physical function. It is an objective, reliable and simple test to evaluate both balance and functional movement. The patients were asked to get up from a chair, walk 3 m, turn around, walk back and sit on the chair again. The time was recorded in seconds (19). Normative TUG values for healthy elderly were described as 8.1 (7.1-9.0) sec for 60 – 69 years, 9.2 (8.2-10.2) sec for 70–79 years, and 11.3 (10.0-12.7) sec for 80–99 years. It could be decided worse if time exceeds the upper limits (20).

Statistical analysis was performed using the SPSS Version 26 for Windows. Shapiro-Wilk test was used for normal distribution. Demographic variables were analyzed with descriptive statistics and presented as median (min-max) (interquartile range: IQR) or number (percentage). The correlation between the variables was analyzed using Spearman's correlation test. Statistical significance level was accepted as $p < 0.05$.

Results

Fifteen patients (10 men, 5 women) out of 25 were assessed by a Physical Medicine and Rehabilitation physician at the 4-6 weeks following discharge from hospital. The characteristics of the patients were presented in Table 1.

TABLE 1: Demographic and clinical characteristics of COVID-19 survivors.

Variables	Value Median (Interquartile range) / Number
Age (years)	69 (59-75)
Sex (man/woman)	10/5
BMI (kg/m2)	27.7 (26.0-32.3)
BMI, man (kg/m2)	26.8 (25.6-31.7)
BMI, woman (kg/m2)	30.5 (27.4-34.7)
Length of ICU stay (day)	10 (7-18)
Length of total hospital stay (day)	21 (16-25)
Length of mechanical ventilation (day)	5 (0-15)
Comorbidities (n, %)	
Hypertension	9 (60%)
COPD	2 (13%)
Diabetes mellitus	5 (33%)
Oxygen need following discharge (n, %)	1 (7%)

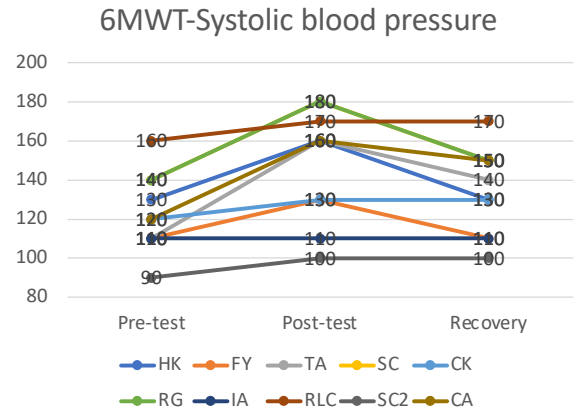
BMI: Body mass index; ICU: Intensive care unit; COPD: Chronic Obstructive Pulmonary Disease

Ten patients completed the 6MWT, three were unable to perform the test due to dyspnea (n=2) or hypertension (n=1) and two refused to attend the test. Median 6MWD was 387 m (min-max: 210-540 m, IQR: 284-480 m). SpO2, heart rate, systolic blood pressure and Borg RPE scale before the test, immediately after the test and at first minute of recovery were presented in Figure 1.

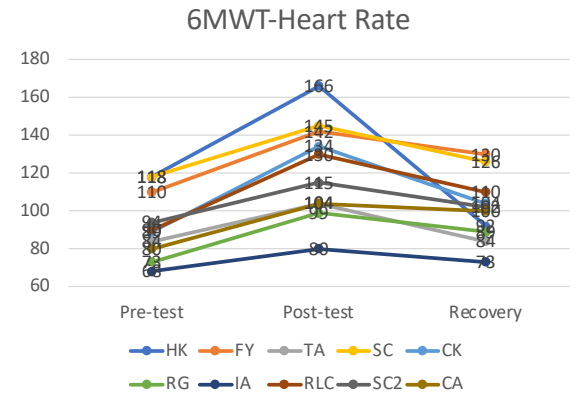
Figure Legends

Figure 1: Systolic blood pressure (a), heart rate (b), SpO2 (c) and Borg RPE (d) before the test, immediately after the test and at first minute of recovery for each individual patient (provided by the initials of the patient name). RPE: Rate of perceived exertion

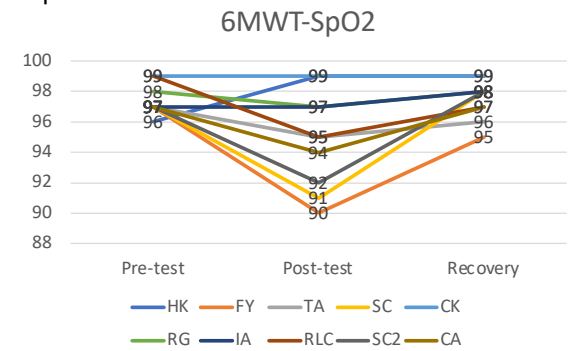
1a: Systolic blood pressure



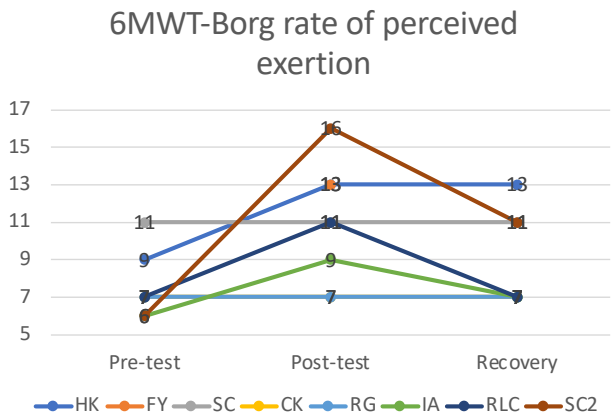
1b: Heart rate



1c: SpO2



1d: Borg RPE



6MWD was significantly negatively correlated with TUG and age (rs(7)= -.916, p=0.001 and rs(8)= -.673, p=0.033, respectively). Male patients walked longer distance than the females (421m / 345m).

All patients could perform the HGS test. Median HGS was 24 kg (min-max: 6-36 kg, IQR: 12-30 kg) in all patients, 26.5 kg (min-max: 12-36, IQR: 21.3-32) in men and 9 kg (min-max: 6-27, IQR: 6.5-20.5) in women. 50% of men and 80% of women had HGS values lower than the aforementioned cut-off values. HGS was significantly correlated with physical functioning, social functioning and general health domains of SF-36 (rs(13)= .711, p=0.003, rs(13)= .516, p=0.049 and rs(13)= .751, p=0.001, respectively).

Motor strength was evaluated in all patients. Median score was 57 (min-max: 48-60, IQR: 51-60) in all patients, 57.5 (min-max: 48-60, IQR: 51.5-60.0) in men and 56 (min-max: 48-60, IQR: 49.5-60) in women. MRC-sumscore was significantly positive correlated with physical functioning and role-physical domains of SF-36 (rs(13)= .709, p=0.003 and rs(13)= .539, p=0.038, respectively).

Twelve patients were able to complete the TUG test (2 women who also could not perform the 6MWT, could not perform TUG test due to dyspnea, 1 man did not want to attend the test). Median time was 7.6 sec (min-max: 6.4-24.7, IQR: 6.9-9.1). There was a significant negative correlation between TUG and 6MWD (rs(7)= -.916, p=0.001). TUG was normal in all patients except one man (24.7 sec).

Twelve patients completed the test, 2 women who also could not perform either 6MWT or TUG tests, could not perform 5STS test due to dyspnea, 1 man who also could not perform the 6MWT could not perform due to hypertension. Median time was 14.4 sec (min-max: 9.0-19.3, IQR: 13.1-16.3). There was a significant negative correlation between 5STS and SF- physical functioning (rs(10)= -.577, p=0.05).

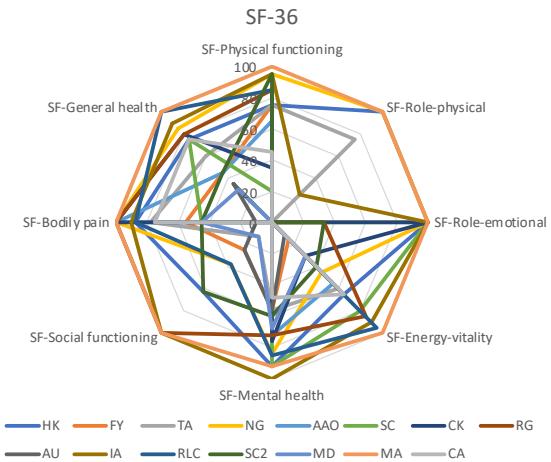
All patients completed the SF-36. There were impairments in role-physical, role-emotional, social functioning domains of SF-36 (Table 2).

TABLE 1: Median values of SF-36 domains of COVID-19 survivors.

SF-36	Value Median (min-max) (Interquartile range)
Physical functioning	75 (0-100) (35-95)
Role-physical	0 (0-100) (0-75)
Role-emotional	33.3 (0-100) (0-100)
Energy-vitality	60 (11.2-100) (30-85)
Mental health	72 (48-100) (56-92)
Social functioning	25 (10-100) (0-62.5)
Bodily pain	87.5 (30-100) (45-100)
General health	75 (30-100) (45-85)

SF-36 scores of the 15 patients were represented in Figure 2.

Figure 2: Short Form-36 scores of 15 patients



SF- physical functioning was negatively correlated with 5STS (rs(13)= -.577, p=0.05), and positively correlated with MRC-sumscore and HGS (rs(13)= .709, p=0.003 and rs(13)= .711, p=0.003, respectively). There was significant positive correlation between SF- Role-physical and MRC-sumscore (rs(13)= .539, p=0.038). There was significant positive correlation between SF- Social functioning and HGS (rs(13)= .516, p=0.049). There was significant positive correlation between SF- General health and HGS (rs(13)= .751, p=0.001). SF-36 items had not any correlations with 6MWD or TUG.

Discussion

This study demonstrated that following 4-6 weeks from hospital discharge COVID-19 related ARDS survivors had lower median 6MWD than normal population. Oxygen saturation was decreased at the end of the test and returned to normal at the recovery period in three out of 10 patients who could perform the test. 6MWD was not correlated with HGS, MRC-sumscore, 5STS or SF-36, however it was negatively correlated with TUG.

At 4-6 weeks following discharge, patients had lower median HGS and longer median 5STS, however median MRC-sumscore, TUG and SF-36 except for three domains was normal. Lower HGS was correlated with poor quality of life in physical functioning, social functioning and general health domains of SF-36. Longer 5STS time was associated with worse physical functioning scores in SF-36.

The median 6MWD was lower than the normal population in our patients. In healthy subjects ages between 45 and 85 years, the mean 6MWD were 682 m and 643 m for men and women, respectively (21). In patients with COPD <350 m was associated with increased mortality and morbidity (22) . A meta-analysis in critical illness survivors reported that ARDS patients had 73 meters shorter 6MWD than that of non- ARDS patients at 3, 6 and 12 months, and the difference was stable at these time points. In ARDS patients 6MWD improved from 361 m at 3 months to 436 m at 12 months (23). In our patients who attended the test, 6MWD was lower than 300 m in 6 patients (3 patients could not even start the test due to dyspnea and high systolic blood pressure). In that meta-analysis male sex was significantly associated with greater 6MWD and comorbidities prior to ICU was associated to lower 6MWD, and there was no association between 6MWD and ICU related factors such as illness severity, neuromuscular blockers, corticosteroids, mechanical ventilation duration, length of ICU or hospital stay (23). Similarly, in our study, male patients walked longer distance than the females, patients with more than one comorbidity walked shorter distance or could not perform the test, and ICU related factors did not affect the walking distance. In our study, 66% of the patients were able to perform 6MWT which is higher than that of Curci et al. (19%) which evaluated COVID-19 patients at early post-acute period. 6MWD in our study (387 m) was also longer than theirs (45 meters) (24). 6MWT is not feasible due to dyspnea which is present even in minimal activities in the early post-acute period, as European Respiratory Society and American Thoracic Society recommend assessment at 6-8 weeks following discharge (7). On the other hand, Spielmanns et al reported that 6MWD was 176±141 meters in COVID-19 patients following acute care phase of the infection, measured within two days after hemodynamical stability, and 357±132 meters after a 3-week pulmonary rehabilitation program (5). In another study, 6MWT was performed in 26 discharge-ready COVID-19 patients in order to investigate silent hypoxia, it was reported that 50% of the patients completed the test, the other half terminated prematurely due to hypoxia (SpO2<90%). The comorbidities were similar between them, but history of ICU and mechanical ventilation were higher in early terminated group (25). We also observed desaturation in 3 patients at the end of the test which improved in the first minute of recovery. They concluded that 6MWT is a potential tool in the diagnosis of asymptomatic exercise-induced hypoxia in COVID-19 patients prior to hospital discharge.

Following hospital discharge, 6MWD was measured 162±72 meters in elderly patients with COVID-19 (4), but the time period after discharge was not given. In another study with 97 SARS survivors (31 required ICU admission, 6 required invasive mechanical ventilation), 6MWD was also lower than normal subjects (464 m, 502 m and 511 m at 3, 6 and 12 months after symptom onset, respectively). ICU support or intubation were not found to affect 6MWD at 12 months (26). They found 6MWD was correlated with SF-36 except for mental health domain at 12 months. Contrarily there was no correlation between 6MWD and any SF-36 domains in our patients. Small sample size and earlier evaluation time in our sample might have masked the association.

To assess functional capacity 6MWT is the most widely used test, however it is not a feasible test to perform for all patients who recently achieve stability. Therefore, easier tests might be more convenient and informative in the early period (27). The TUG assesses mobility skill, strength, balance, and agility in many populations and conditions (28). In our study, 6MWD was negatively correlated with TUG. This strong correlation makes us suggest that TUG might reflect functional capacity in this population during 4-6 weeks after hospital discharge and it might be an alternative test to 6MWT in patients who are unable to perform 6MWT.

Another alternative test might be for functional capacity assessment in severely deconditioned patients. 5STS correlates with exercise capacity and lower limb strength in COPD (16).

In pulmonary fibrosis there was moderate correlation between 5STS and 6MWD (28). However, there was not such a correlation in COVID-19 related ARDS in our patients. All patients in our study except one had longer 5STS than normal individuals. The test represents sitting and standing in the daily life that exhibit lower extremity strength. It could give information about mild deficits in quadriceps that we could not assess with manual muscle test in PICS. 5STS can be used during each phase of the disease whenever COVID-19 patients are able to stand and sit independently. On the other hand, in our study the patients who could not perform 6MWT also could not perform 5STS.

To assess muscle strength HGS and MRC are easy to perform and feasible tests as all patients in our study could perform both measures. HGS was low in 2/3 of our COVID-19 survivors similar to two studies regarding SARS survivors measured at 6 weeks (29). As HGS is a measure of general health, it was recommended for the patients that could not perform 6MWT during the exacerbation period due to its moderate correlation (11). However, we could not detect similar correlation in COVID-19 survivors. MRC-sumscore was above the cut-off value in our population. MRC-sumscore could not determine those patients who could not perform 5STS and low HGS values in 4-6 weeks. So, in addition to manual muscle test, using performance tests are recommended. MRC-sumscore maybe more useful in early period in order to screen the change in muscle strength.

It is reported that, HRQoL is affected in COVID-19 after hospital discharge (4). SF-social functioning was worse in these patients, but this might not be unique for post ARDS patients, pandemic also could affect negatively social functioning of healthy individual. There were problems with work or other daily activities as a result of physical and emotional health in COVID-19 related ARDS survivors. Interestingly there was not significant impairments in other parameters of SF-36. This might be due to the gratitude recovering from a mortal disease and trusting their doctors about their health. Quality of life was worsened 44% of patients measured by EuroQol visual analogue scale in 143 patients (15% received non-invasive ventilation; 5% received invasive ventilation) 60 days after the onset of COVID-19 symptoms in the post-acute outpatient service (30). We only included COVID-19 patients required ICU.

The limitations of the study as follows: The sample size of the cohort is small; however, we analyzed the patients and results in detail and this study might shed light to future studies and professionals involved in the management of patients with COVID-19. There are no long-term follow-up results of the same patients, because the patients did want to come hospital again, only one of them attend to tele-rehabilitation program. Strengths of the study as follows: This study demonstrates the functional capacity, disability and overall muscle strength of COVID-19 survivors 4-6 weeks after discharge in detail. It could shed light to clinical practice and future scientific researches.

In conclusion COVID-19 related ARDS survivors at 4-6 weeks after hospital discharge had negative results in 6MWT, 5STS, HGS, and several domains of SF-36. 6MWD was negatively correlated with TUG. There are varying degrees of functional impairment in survivors. So, it could add advantage to assess the patients after nearly 4-6 weeks following discharge in order to ascertain rehabilitation needs. Furthermore, this documentation is beneficial both for clinical practice and scientific research. Middle and long-term consequences should be detected with long term studies in order to provide appropriate management.

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https://doi.org/10.31067/acusaglik.1340686

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Public Health/Halk Sağlığı

Relationships Between Perceived Social Support And Treatment Adherence In Type-2 Diabetes Patients

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Abstract

Type-2 Diabetes is a disease that may cause many complications or even early mortality. Thus, adherence to treatment is crucial for people with Type-2 Diabetes. Treatment regimens for diabetes include many steps like controlling for blood sugar levels and exercising and also it is known that support from the environment might motivate patients to adhere to their treatment regimens more. Accordingly, the purpose of the current research article is to understand the relationships between perceived social support and treatment adherence in Type-2 Diabetes patients. For this aim, after obtaining the necessary ethical approval, I administered surveys to 119 Type-2 Diabetes patients. As a result, I found that patients who feel more support from their significant ones adhere to their treatment regimens significantly more. This result shows the importance of social support for Type 2 Diabetes patients. Thus, in the future researchers might try to understand how people make those people suffer from diseases feel more supported and create some intervention programs accordingly.

Key Words: Type-2 Diabetes, treatment adherence, perceived social support

Özet

Tip-2 Diyabet birçok komplikasyona hatta erken ölüme neden olabilen bir hastalıktır. Bu nedenle, Tip-2 Diyabetli kişiler için tedaviye uyum çok önemlidir. Diyabet tedavisi rejimleri, kan şekerini kontrol altına almaktan egzersiz yapmaya kadar pek çok basamağı içerir ve ayrıca çevreden gelecek desteğin, hastaları tedavi rejimlerine daha fazla uymaya motive edebileceği bilinmektedir. Buna göre bu araştırma makalesinin amacı, Tip-2 Diyabet hastalarında algılanan sosyal destek ile tedaviye uyum arasındaki ilişkileri anlamaktır. Bu amaçla etik onaylar alındıktan sonra 119 Tip-2 Diyabet hastasına ölçek formları uygulanmıştır. Sonuç olarak, yakınlarından daha fazla destek hisseden hastaların tedavi rejimlerine önemli ölçüde daha fazla bağlı kaldıkları gözlenmiştir. Bu sonuç Tip 2 Diyabet hastaları için sosyal desteğin önemini göstermektedir. Bu nedenle, gelecekte araştırmacıların, insanların hastalıktan mustarip insanları nasıl daha fazla desteklediklerini anlamaya çalışmaları ve buna göre bazı müdahale programları oluşturmaları literatür açısından da destekleyici olacaktır.

Anahtar Sözcükler: Tip-2 Diyabet, tedavi uyumu, algılanan sosyal destek

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Received: 10 August 2023
Accepted: 20 October 2023

Diabetes mellitus is one of the metabolic diseases in which there is an inability to regulate glucose levels in the blood, resulting from inadequate levels of insulin. Diabetes Mellitus results in many complications like dysfunctions in the eyes, kidneys, nerves, heart, and blood vessels (1). It was suggested the prevalence of Type 2 Diabetes is increasing globally (2) with its increasing rates also among children, adolescents, and young adults (3). There are 415 million diabetic patients, 9 million of whom live in Turkey (2).

As the proportion of having diabetes increases, the problems related to having diabetes become more important. In a research, it was found that middle-aged adults with diabetes died 6 years earlier than people without diabetes (4). This is the reason why studying diabetes is imperative. In the literature, it was also shown that adherence to a healthy lifestyle is associated with a reduced risk of death among diabetes patients (5). Therefore, treatment adherence may have a significant role in the lives of people with Type 2 Diabetes. In the light of this information, my aim is to understand the factors behind good treatment adherence in type-2 diabetes patients.

Adherence is "the extent to which a person's behavior – taking medication, following a diet, and/or executing lifestyle changes, corresponds with agreed recommendations from a health care provider". It was shown that the adherence rate of people suffering from chronic diseases in developed countries is only around 50 % (6). The adherence to treatment of patients is one of the most important factors for ameliorating the disease (7) and non-adherence to treatment increases the hospitalization rate of patients (8). In Diabetes, medical care can be provided by proper usage of diabetic pills and induction of insulin, monitoring blood glucose levels, examining feet, exercising, and diet (9). Proper treatment adherence including insulin injections, oral medications, diet, and exercise is essential to protect the health of diabetic patients (10). For example, in studies conducted on diabetes patients with the highest cardiovascular complications, it was found that medication adherence was related to a reduced mortality rate (11, 12). There are many results of no adherence to treatment and hypertension is one of these. It was found that proper usage of pills to control hypertension is very important to prevent death caused by hypertension in diabetic patients (13). Poor treatment adherence also leads to complications in disease (6). Additionally, even in healthy people, not adhering to regular exercise or a healthy eating plan can result in situations like obesity which is also one of the leading causes of Type 2 Diabetes especially among adolescents (3).

There are conflicting findings about rates of adherence in Type 2 Diabetes. In one research, where compliance to the medical regime of Type 2 Diabetes patients was understood by self-report, it was found that only 46 % of people showed optimal adherence (14). In another study, researchers showed that 65 % of Type 2 Diabetes patients had good adherence (15). Yet a review study showed that less than 50% of people with diabetes reached glycemic goals and two-thirds of them died because of cardiovascular disease (16), which can also be a side effect of diabetes. The different conclusions between the studies may result from methodology or differences between cut-off points of the adherence scales (17). In a study called PANORAMA, which was conducted with 5000 Type 2 Diabetes patients, it was found that the ones who had at least one severe hypoglycemic episode had poorer adherence compared to the ones who did not have that kind of episode (18).

According to WHO (2003), there are five dimensions that play a role in treatment adherence. These dimensions are namely; social/economic, health care system, condition of the disease, therapy, and patient-related factors. There might be numerous factors that lead to poor treatment adherence (19). To explain clearly, while situations like having low socio-economic status, and high cost of medications and injections might be classified into realm of the social/economic factors; having no social insurance is a problem related to health care system factors. In addition, patient-related factors include low motivation to treatment and hopelessness (6). Since adherence to a medical regimen consists of behavioral intentions to comply, the psychological situation of the patient might be important to fulfill these plans. Accordingly, in a review article, it was stated that low self-efficacy and low social support from family are the most frequently seen barriers to diabetes-related self-management (20).

Shumaker and Brownell (1984) have stated that if a person has supportive relationships with others then s/he maintains his/her health by promoting healthy behaviors like being careful about prescribed health care and stopping smoking (21). The help of multiple sources of support is needed for the self-management of Type 2 Diabetes (22). In a study, it was found that there was a significant and positive relationship between satisfaction from the amount of social support and blood glucose monitoring. In this study, researchers also found that there was a significant relationship between social support and following a healthy eating plan, and regular exercise among Type 2 Diabetic African Americans (23). The mediator effect of perceived social support was also found between the depressive symptoms and self-care activities like diet and physical activity among Type 2 Diabetic patients (24). In the light of above information,

my aim in the current study is to understand the relationship between perceived social support and levels of treatment adherence in people with type-2 diabetes. Considering the literature findings, it was hypothesized that perceived social support of type 2 diabetes patients will be positively associated with their levels of adherence to treatment plans.

Participants

There were 119 participants in the study. 70 (58.8 %) participants were female and the ages of participants ranged between 21 and 65 (M = 52.35, SD = 10.15). In terms of education status, 50 (42.0 %) of them were graduates of primary school. The majority of the participants (81.5%) stated that they have middle income and again the majority of the participants (69.7 %) said that they spent most of their lives in metropolitan.

All of the participants were officially diagnosed with type 2 diabetes and were receiving treatment for their diabetes. In terms of the type of treatment, the majority of the participants (N = 81, 68.1 %) were taking only pills for their treatment. 26 (21.8 %) of the participants were using both pills and insulin injections, and the remaining 12 participants (10.1 %) were using only insulin injections as their treatment. Participants also reported the level of adherence to their treatment and this was their perceived adherence rate. When they were asked the question "Do you use your pills and injections regularly as your doctor said?", 74 (62.2 %) of the participants answered the question as "Yes, I use them regularly', 38 (31.9 %) of them answered as "I used them regularly as best as I can", and the remaining 7 (5.9 %) participants answered as "No, I do not use them regularly". Additional information about the demographic characteristics of participants might be seen in Table 1.

TABLE 1: Demographic Characteristics of Participants

Characteristics	Frequency (n)	Percentage (%)
Gender		
Female	70	58.8
Male	49	41.2
Education		
No Education	13	10.9
Primary School	50	42
Secondary School	15	12.6
High School	23	19.3
Higher Education/University/ Master	18	15.1
Marital Status		
Married	97	81.5
Single	22	18.5
Working Status		
Working	43	36.1
Not Working	76	63.9
Perceived Income		
Low	18	15.1
Middle	97	81.5
High	4	3.4
Residence		
Village, town, county	14	11.8
City	22	18.5
Metropolitan	83	69.7
Psychological Treatment		
Yes	18	15.1
No	101	84.9

TABLE 1: Demographic Characteristics of Participants		
Characteristics	**Frequency (n)**	**Percentage (%)**
Severity of the Disease		
None	1	.8
Very Low	7	5.9
Low	37	31.1
High	46	38.7
Very High	28	23.5
Any Other Diagnosis		
Yes	68	57.1
No	51	42.9
Note. N = 119		

Measures

A questionnaire set was prepared and administered to the participants. It consisted of a Demographic Information Form, a Medical Adherence Scale, and Multidimensional Scale of Perceived Social Support (MSPSS). Since the current study is part of a larger study, participants filled out three other scales as well. However, these will not be mentioned in the aim of the current study.

Demographic Information Form

The demographic information form was prepared by the researchers. It included questions about gender, age, education level, marital and working status, perceived income, space of living, with whom the patients live, the patient's perceived control of the illness, and the perceived severity of the illness. The participants also answered questions like whether they have additional psychological or physical illnesses and their perceived adherence to the usage of their pills or injections.

Multidimensional Scale of Perceived Social Support (MSPSS)

Zimet et al. (1988) developed the Multidimensional Scale of Perceived Social Support to understand the subjective perception of social support. It has three factors, namely family, friends, and significant others (25). There are 4 items in each subscale, so it has 12 items rated on a 7-point Likert-type scale, on which the higher scores indicate higher perceived social support. To assess its psychometric qualities, researchers administered it to undergraduate students. According to researchers, MSPSS has good reliability (.88), factorial validity, and modest construct validity (25). The test-retest reliability of the subscales ranged from .72 to .85. In terms of validity, researchers found that MSPSS is negatively correlated with depression and anxiety.

Eker and Arkar (1995) adapted MSPSS into Turkish by studying it on 2 samples one of which was university students and the other one was patients from psychiatry and renal departments (26). In this study three-factor model was also maintained with high reliability; it ranged between .77 to .92 for both subscales and the total scale. In terms of construct validity, it was found that MSPSS is negatively correlated with depression and anxiety scores. The revised version was studied by Eker et al. (2001) to study the reliability of the significant other subscale but they found similar results (27). In the present study, the first version was used by looking at the total score.

Treatment Adherence Scale

The Summary of Diabetes Self-Care Activities (SDSCA), which is the most widely used scale for understanding diabetes self-care activities, was first developed in 1993 by Toobert and Glasgow (9). It has five subscales, namely general diet, specific diet, exercise, medication taking, and blood-glucose testing. In this scale, participants answer the questions considering their adherence activities in the last seven days. In the revised form of SDSCA, there are also questions about smoking and foot care. Toobert et al. (2000) revised the SDSCA by reviewing 7 other studies (9). They added a question about smoking and deleted the question on medication taking because of the ceiling effect. They also deleted specific diet subscales because of their insufficient internal consistency. In the revised form instead of percentages, "days per week" are asked of the participants. Higher scores on the scale indicate better adherence except for the question about the amount of days for eating fatty meals. This item was reversed while coding. Toobert et al. (2000) did a meta-analysis to understand the reliability of the self-care measurement in 7 studies and the results showed that the inter-item correlations of the original scale within subscales were acceptable (.47) except from specific diet with moderate test-retest reliability (.40). Correlations among the SDSCA subscales that measure different regimen behaviors in different studies were generally low and consistent with previous research (mean r = .23), however, there was predictive validity (9).

Later, a Maltese version of the revised form was also created by researchers (28), and a Turkish adaptation was created by researchers (29) based on the Maltese version. In Turkish adaptation, there is no question about smoking and there is a question about medication taking as opposed to Toobert et al. (2000)'s measurement. The reliability of the adapted instrument was studied in the present study and the overall reliability was found as .62.

Procedure

First, ethical approval was obtained from the Middle East Technical University Human Subjects Ethics Committee. The majority of the participants were reached via face-to-face contact. Some of the participants were reached through the students of the PSY 102 Introduction to Psychology II course given at Middle East Technical University. The students who helped the researcher in data collection were given extra credit by the instructor of the course. The questionnaires were given to the participants after they had accepted to participate to the study voluntarily. The questionnaires were filled out approximately in 15 minutes. The Statistical Package for Social Sciences (SPSS) version 23 for Windows was used to analyze the present data. Conducted statistical analyses were independent-samples-t-test analysis and simple correlation analysis.

Results

Group Comparisons

Independent-samples-t-test was used to compare the scores of perceived social support of married (m = 68.73, sd = 13.45) and single (m = 58.36, sd = 18.49) participants, and it revealed a significant difference, (t(117) = -3.03, p =.003, d = .64). That is to say, married diabetes patients perceived more social support than single diabetes patients. There were no significant differences between the levels of marital status on the other study variables.

Correlations among the Measures of the Study

In order to assess the associations among the variables of the study, Pearson's correlation coefficients were calculated. It was found that the total adherence score was positively correlated with perceived social support (r = .29, p < .01), which means that participants who adhered to their whole treatment regimen, were more likely to evaluate the degree of social support taken from the social environment higher. Information about properties and correlations of the study variables might be seen at Table 2.

TABLE 2: Properties and Correlation of Perceived Social Support (PSS) and Treatment Adherence

Variables	M	SD	Cronbach's a	r
1. PSS	66.81	14.98	.90	-
2. Treatment Adherence	32.34	11.76	.62	.29*
*p < .01				

Discussion

Diabetes Mellitus is a common chronic disease around the world (1, 2) and treatment adherence is one of the most important factors to reduce early mortality rates of people with Type 2 Diabetes (11, 12). Since adherence to treatment in the case of Diabetes Mellitus includes many behavioral duties like giving importance to the cleanness of feet, monitoring the blood glucose levels, adherence to a diet plan, and taking pills or injections regularly, the psychological situation of the patients might be also important. From earlier studies, it is also known that perceived social support might be initiating factor to adhere treatment plan. Accordingly in the current study, it is our aim to investigate the relationship between perceived social support and treatment adherence in Type 2 Diabetes patients.

In this study, married participants showed higher scores on perceived social support when compared to single participants. This result was congruent with the recent finding by Yalçın et al. (2022) revealing that married participants with multiple sclerosis had higher levels of perceived social support (30). In the current study, it was shown that Type 2 DM patients who perceive more support from their environment, are more likely to adhere to their treatment plan. This might mean that when people with Type 2 Diabetes perceive more social support they might control their blood levels, exercise, and take their pills or injections in a more planned way. This result is congruent with the earlier findings (23, 24). One explanation for the positive relationship between perceived social support and treatment adherence might be related to the relationship between perceived social support and motivation. People who show their emotional support to Type 2 Diabetes patients might encourage them to be more hopeful about the likelihood of getting rid of the disease so they might motivate them to adhere to their treatment regimen. However, in the current study, the possible mediator role of motivation was not investigated. Thus, it would be better to look at the joint effect of perceived social support and motivation on treatment adherence of Type 2 Diabetes patients in future studies.

Interestingly, in the current study, there was not a significant difference between married and single patients in terms of their treatment adherence. Since the perceived social support levels of married patients are significantly higher than single patients it might be accepted that treatment adherence of married patients will also be significantly higher than single patients. However, this was not the case in the current study. This situation might be related to the multidimensional character of treatment adherence as was represented in WHO (2003) report. For example, even if a married patient feels higher social support they might also have economic problems which prevent their access to medications. I had not ask participants whether they have difficulties covering the costs of their medications or if they have problems with transformations to healthcare areas, However, in demographics, the majority of the participants stated that they have a middle income. . If they really have these kinds of problems they might not adhere to treatment even if they feel high social support and this might be the limitation of our study. Since I did not investigate all of the five dimensions of treatment adherence, we might not reach accurate statistical results which might be considered as a limitation of the current study. In the future, researchers might investigate the five dimensions and form intervention programs to enhance treatment adherence accordingly.

Conclusion

Diabetes Mellitus is a disease that necessitates adhering to treatment for having a qualified life. Since the treatment regimen for Type-2 Diabetes includes different responsibilities ranging from making exercises, controlling blood glucose levels, and adhering to a certain diet, social support might be an important factor to motivate patients to fulfill all of these responsibilities. Accordingly, in my current research, I found that when people perceive more social support from their environment then they adhere to their treatment regimen significantly more. Although this is an important result, current research has some limitations. For example, all of the dimensions of treatment adherence were not investigated in the current research. In the future, researchers might include these dimensions in their research and might also try to create interventions to increase the support that people can show to other people suffering from diseases.

Declarations

Funding: None

Conflicts of interest/Competing interests: None

Ethics approval: Middle East Technical University-11.02.2016

Protokol Numarası: 2016-SOS-017

Availability of data and material: The data file is available as an SPSS document upon request.

Authors' contributions: Not applicable. I'm the only author (D.K).

Acknowledgement

I would like to express my gratitude to Prof. Dr. Özlem Bozo for her valuable comments.

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1359063

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Public Health /Halk Sağlığı

An Example of a Retrospective Analysis of the Socio-Demographic Characteristics of Substance Abuse Patients Receiving Inpatient Treatment

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Received: 12 September 2023
Accepted: 19 October 2023

Abstract

Objective: The aim of this study was to examine the socio-demographic data of the patients who attended the AMATEM clinic in 2019, but to evaluate them according to the forensic case situation, which is a gap in the literature, and to share it with the scientific world.

Method: The medical records of 481 patients who underwent inpatient treatment at the AMATEM clinic of Kayseri State Hospital in 2019 were retrospectively reviewed. Sociodemographic characteristics, physical and psychiatric disorders, military service status, smoking and alcohol consumption, type of substance and consumption, and forensic case status of the patients were studied. The statistical evaluation of the data was recorded in a database prepared using the SPSS 23 program, with a confidence level of 95% and a statistical significance limit of $p<0.05$ for all analyses.

Results: The mean age of the participants in our study was 32.12±10.25 years. It is observed that 54.9% of the participants (n=264) were married. It was found that 21.2% (n=102) of the participants had not served in the military, while 1.5% (n=7) were still soldiers. When the number of hospitalisations of the participants was examined, it was found that 88.4% (n=425) were hospitalised for the first time, 8.9% (n=43) for the second time, 1.5% (n=7) for the third time, 0.8% (n=4) for the fourth time, 0.2% (n=1) for the fifth time and 0.2% (n=1) for the seventh time. The mean length of hospital stay was 11.57±8.07 days, with a minimum of 0 days (same day discharge) and a maximum of 41 days. At the same time, a statistical significance was found between the number of substances use and methamphetamine use of the participants and the decriminalisation cases, while at the same time 15% of the participants (n=72) had never used substances (p=0.002, p=0.000 respectively).

Conclusion: It is believed that the study will contribute to the cumulative knowledge due to the fact that there is a limited number of studies in the literature on the subject we are doing. The implementation of studies in this area, which is lacking, will be a guide both to the scientific world and to individuals working in the relevant field in the field.

Keywords: Addiction, substance use, sociodemographic characteristics

Özet

Amaç: Bu çalışma AMATEM kliniğine 2019 yılı içerisinde başvuru yapmış olan hastaların sosyo-demografik verilerinin irdelenmesi bununla birlikte literatürde boşluğu bulunan adli vaka durumuna göre değerlendirilmesi ve bilim dünyası ile paylaşılması amaçlanmıştır.

Yöntem: Kayseri Devlet Hastanesi 2019 yılı AMATEM kliniğinde yatarak tedavi gören 481 hastanın tıbbi kayıtları geriye dönük incelenmiştir. Hastaların sosyodemografik özellikleri, fiziki ve psikiyatrik rahatsızlıkları, askerlik durumu, sigara ve alkol kullanımı, madde ve kullanım çeşitleri, adli vaka durumu araştırılmıştır. Verinin istatistiksel değerlendirmesi SPSS 23 programı ile hazırlanan bir veri tabanına kaydedilerek, güvenilirlik düzeyi %95 olarak alındı ve tüm analizler için istatistiksel anlamlılık sınırı $p<0.05$ olarak kabul edilmiştir.

Bulgular: Çalışmamızdaki katılımcıların yaş ortalaması 32,12±10,25 saptanmıştır. Katılımcıların %54,9'unun (n=264) evli olduğu görülmektedir. Katılımcıların %21,2' sinin (n= 102) askerlik yapmadığı, %1,5'inin (n=7) ise halen asker olduğu saptanmıştır. Katılımcıların hastaneye yatış sayıları incelendiğinde %88,4'ünün (n=425) hastaneye birinci, %8,9'unun (n=43) ikinci, %1,5'inin (n=7) üçüncü, %0,8'inin (n=4) dördüncü, %0,2'sinin (n=1) beşinci ve %0,2'sinin (n=1) yedinci yatışı olduğu belirlendi. Hastanede yatış süresi ortalamasının 11,57±8,07 olduğu, minimum 0 gün (aynı gün taburculuk), maksimum 41 gün olduğu saptandı. Katılımcıların %15' inin (n=72) hiç madde kullanmadığı aynı zamanda katılımcıların madde kullanım sayıları ve metamfetamin kullanımı ile adli vaka olma durumları arasında istatistiki anlamlılık saptanmıştır(sırasıyla p=0,002, p=0,000).

Sonuç: Çalışmanın yaptığımız konuda literatürde sınırlı sayıda araştırmanın olmasından dolayı birikimsel bilgiye katkı sağlayacağı düşünülmektedir. Eksiklik bulunan bu alanda çalışmaların gerçekleştirilmesi hem bilim dünyasına hem de sahada ilgili alanda çalışan bireylere yön gösterici nitelik taşıyacaktır.

Anahtar kelimeler: Bağımlılık, Madde Kullanımı, Sosyodemografik Özellikler

Introduction

Since ancient times, people have tried everything to amuse themselves or feel euphoric, discovering herbs, special mixtures and the like. For this reason, the use of drugs and non-drug substances has increased in recent years. The problem of substance abuse is one of the most serious and growing problems, leading to an increase in morbidity and mortality with a range of health problems worldwide. Substance abuse is one of the top 20 risk factors for health worldwide, and health care costs for substance abusers are almost double those of non-users (1).

Drug addiction is difficult to treat, and is further complicated in the case of polysubstance abuse, where the addict's drug use does not involve a single primary drug. According to a World Health Organization (WHO) report, long-term use of a psychoactive substance can lead to an addiction syndrome in the addict (1).

The United Nations Office on Drugs and Crime (UNODC) estimates that 155-250 million people (3.5-5.7 per cent) aged 15-64 worldwide used illicit substances at least once in 2014, of whom 10-15 per cent had mental health problems. Cannabis is estimated to be the most commonly abused substance (129-190 million), followed by amphetamines (13.7-52.9 million), opiates (12.8-21.8 million) and cocaine. Co-morbidity resulting in the spread of infectious diseases through the sharing of injecting equipment is common. 12 million people are estimated to be injecting drug users, including 1.6 million with HIV, 6.1 million with hepatitis C, 1.3 million with hepatitis C and HIV, and a high incidence of tuberculosis among them (1,2).

It is known that the rates of drug use in Turkey are relatively lower than in the countries of the European continent and the United States of America (USA), but it is also known that there is an increasing trend in the prevalence of drug use. It is known that the largest prevalence survey in the field of addiction has been conducted by the Turkish Monitoring Centre for Drugs and Drug Addiction (TUBIM). According to this survey, conducted in 2011 among the population aged 15-64, it is estimated that 1 million 351 thousand people use drugs, which is 2.7 per cent of the total population (3).

The Alcohol and Drug Addiction Treatment and Research Centre (AMATEM) in Kayseri province was opened in 2007. Although there have been administrative changes over the years, it is still in operation today. It provides medical treatment and rehabilitation services to both outpatients and inpatients. Patients who apply to the clinic are assessed in the outpatient clinic, and then those who are expected to require inpatient treatment are given an appointment and admitted to the clinic. In-patients are given the most appropriate treatment for the removal of toxic substances according to the body's response to the withdrawal of the substance. Once the process of eliminating toxic substances is complete, rehabilitation services are provided to patients individually and in groups, together with the necessary pharmacological treatments to resolve their emotional and behavioural problems, and to improve and protect their mental health. Information such as psychiatric assessment notes, treatments and personal data of patients admitted to the clinic are stored in patient files and hospital information systems. Analysis of the socio-demographic data, clinical characteristics and treatment methods of substance-dependent patients is of great importance for the prevention and treatment of these diseases, which are becoming increasingly prevalent in society. In this sense, the aim is to study the socio-demographic data of the patients who attended the AMATEM clinic in 2019, as well as to evaluate them according to the forensic case status, which is a gap in the literature, and to share them with the scientific world.

Study Design, Participants and Procedure

In this study, the records of 481 patients who received inpatient treatment at the AMATEM Clinic of Kayseri State Hospital in 2019 were retrospectively analysed. Our study, which was based on the principle of adherence to the tenets of the Declaration of Helsinki, also has a research permit dated 23.08.2021 and numbered 146012545 issued by Kayseri Provincial Health Directorate.

Since 1952, the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association has been replaced by the DSM-5, the latest edition of which was published in 2013; Patients were included if they had a high level of craving for the substance with developed withdrawal symptoms, repeated use of the substance in physically dangerous situations, developed tolerance to the substance, were unable to stop using the substance despite craving, continued to use despite knowing the harm, and had at least one toxic substance found in urine tests.

Sociodemographic data such as age, sex, place of birth, marital status, disease diagnoses and length of hospitalisation were obtained from the patient registration system, and other data were obtained through interviews with the data processor.

Statistical Analyses

The data obtained were analysed clinically and/or prognostically in the computer environment, together with the socio-demographic characteristics, length of hospital stay, chronic diseases and clinical conditions of the participants. Numbers and percentages were

used in the presentation of frequency tables, and the Kolmogorov-Smirnov test and skewness and kurtosis values were used to assess the suitability of numerical data for normal distribution. Parametric tests were used to compare groups that showed normal distribution and met parametric assumptions, and non-parametric tests were used for groups that did not meet parametric assumptions. In the analyses, the confidence level was set at 95% and $p<0.05$ was considered statistically significant.

Results

The flowchart of our study is shown in Figure 1 below.

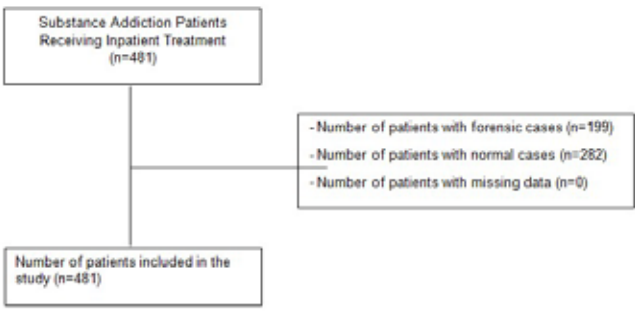

Figure 1 Flowchart (Note: Figure created by the authors)

The mean age of the participants in our study was 32.12±10.25 years. Of the participants, 96% (n=462) were male and 4% (n=19) were female. Regarding the place of birth, 78.6% (n=378) of the participants were born in Kayseri. The nationality of 98.3% (n=473) of the participants was the Republic of Turkey. 96.9% (n=466) of the participants had no physical illness. 87.1% (n=419) of the participants did not have a psychiatric illness. When the participants were analysed according to their educational status, 40.7% (n=196) were middle school graduates, 34.5% (n=166) were high school graduates, and 1.7% (n=8) were university graduates. When analysing the participants according to their occupation, tradesmen were in first place with 44.1% (n=212) and the unemployed in second place with 34.3% (n=165).

It was found that 54.9% (n=264) of the participants were married. It was found that 21.2% (n=102) of the participants had not served in the military and 1.5% (n=7) were still serving in the military. It was found that 58.6% (n=282) of the participants had not undergone a judicial investigation. Statistical significance was found between participants' place of birth and military service status and their status as a judicial case (p=0.000, p=0.002, respectively). The socio-demographic characteristics, forensic investigation status, military service status, psychiatric and physical disorders of the participants are presented in Table 1.

TABLE 1: Some information about the participants

	All Patients (n = 481)	Forensic cases (n=199)	Normal cases (n=282)	P value
Age, Year (mean±SD)	32,10±10,25	30,35±8,89	33,34±10,96	0,092
Gender (n (%))				0,436
Male	462 (96)	189 (95,0)	273 (96,8)	
Woman	19 (4)	10 (5,0)	9 (3,2)	
Place of Birth (n (%))				0,000*
Kayseri	378 (78,6)	173 (86,9)	205 (72,7)	
Other Provinces	103 (21,4)	26 (13,1)	77 (27,3)	
Nationality (n (%))				0,148
Turkish	473 (98,3)	198 (99,5)	275 (97,5)	
Other	8 (1,7)	1 (0,5)	7 (2,5)	
Physical Discomfort (n (%))				1,000
Those without Disorders	466 (96,9)	193 (96,0)	273 (96,8)	
People with Disorders	15 (3,1)	6 (4,0)	9 (3,2)	
Psychiatric Disorder (n (%))				0,464
Those without Disorders	419 (87,1)	176 (88,4)	243 (86,2)	
People with Disorders	62 (12,9)	23 (11,6)	39 (13,8)	

TABLE 1: Some information about the participants

	All Patients (n = 481)	Forensic cases (n=199)	Normal cases (n=282)	P value
Education (n (%))				0,106
Primary School	111 (23,1)	35 (17,6)	76 (27,0)	
Middle School	196 (40,7)	89 (44,7)	107 (37,9)	
High School	166 (34,5)	71 (35,7)	95 (33,7)	
University	8 (1,7)	4 (2,0)	4 (1,5)	
Occupation (n (%))				0,050
Tradesmen	212 (44,1)	81 (40,7)	131 (46,5)	
Labourer	62 (12,9)	29 (14,6)	34 (12,1)	
Unemployed	165 (34,3)	76 (38,2)	88 (31,2)	
Pensioner	18 (3,7)	7 (3,5)	11 (3,9)	
Student	13 (2,7)	6 (3,0)	7 (2,5)	
Officer	11 (2,3)	0 (0)	11 (3,9)	
Marital Status (n (%))				0,086
Married	264 (54,9)	100 (50,3)	164 (58,2)	
Single	217 (45,1)	99 (49,7)	118 (41,8)	
Military Service (n (%))				0,002*
Served Military Service	379 (78,8)	143 (71,9)	236 (83,7)	
No Military Service	102 (21,2)	56 (28,1)	46 (16,3)	

* p<0,005

The alcohol and drug use status of participants was analysed according to the types of substances they used, whether or not they were forensic cases. It was found that 15% (n=72) of the participants did not use any substances, 58.6% (n=282) used one substance, 20.2% (n=97) used two substances and 6.2% (n=30) used three substances.

Statistical significance was found between participants' number of substances used and methamphetamine use and their status as a forensic case (p=0.002 and p=0.000, respectively). The relationship between participants' alcohol use, substance types and intravenous (IV) use and their status as a forensic case or not is shown in Table 2.

TABLE 2: Associations between participants' alcohol/substance use status.

	All Patients (n = 481)	Forensic cases (n=199)	Normal cases (n=282)	P value
Substance Use (n (%))				0,002*
Unused	72 (15)	16 (8,0)	56 (19,9)	
Use of a Substance	282 (58,6)	126 (63,3)	156 (55,3)	
Two Substance Use	97 (20,2)	47 (23,6)	50 (17,7)	
Three Substance Use	30 (6,2)	10 (5,0)	20 (7,1)	
Alcohol Use (n (%))				0,372
No	104 (21,6)	47 (23,6)	57 (20,2)	
Yes	377 (78,4)	152 (76,4)	225 (79,8)	
Amphetamine Use (n (%))				1,000
No	474 (98,5)	196 (98,5)	278 (98,6)	
Yes	7 (1,5)	3 (1,5)	4 (1,4)	

TABLE 2: Associations between participants' alcohol/substance use status.

	All Patients (n = 481)	Forensic cases (n=199)	Normal cases (n=282)	P value
Methamphetamine Use (n (%))				0,000*
No	275 (57,2)	88 (44,7)	187 (66,7)	
Yes	206 (42,8)	111 (55,3)	95 (33,3)	
Ecstasy Use (n (%))				0,699
No	437 (90,9)	182 (91,5)	255 (90,4)	
Yes	44 (9,1)	17 (8,5)	27 (9,6)	
Synthetic Cannabis (n (%))				0,012
No	279 (58,0)	102 (51,3)	177 (62,8)	
Yes	202 (42,0)	97 (48,7)	105 (37,2)	
Cocaine (n (%))				0,855
No	457 (95,0)	190 (95,5)	267 (94,7)	
Yes	24 (5,0)	9 (4,5)	15 (5,3)	
Heroin (n (%))				0,785
No	401 (83,4)	167 (83,9)	234 (83,0)	
Yes	80 (16,6)	32 (16,1)	48 (17,0)	
Morphine (n (%))				-
No	481 (100)	199 (41,4)	282 (58,6)	
Yes	0 (0)	0 (0)	0 (0)	
Volatile (n (%))				1,000
No	480 (99,8)	199 (41,4)	281 (58,4)	
Yes	1 (0,2)	0 (0)	1 (0,2)	
Diazepam-Nordiazepam (n (%))				-
No	481 (100)	199 (41,4)	282 (58,6)	
Yes	0 (0)	0 (0)	0 (0)	
Clonazepam (n (%))				-
No	481 (100)	199 (41,4)	282 (58,6)	
Yes	0 (0)	0 (0)	0 (0)	
Lorazepam (n (%))				-
No	481 (100)	199 (41,4)	282 (58,6)	
Yes	0 (0)	0 (0)	0 (0)	
Intravenous use status (n (%))				0,822
No	401 (83,3)	165 (41,1)	236 (58,9)	
Yes	80 (16,7)	34 (42,5)	46 (57,5)	

* p<0,005

It was found that 100% of the participants (n=81) smoked cigarettes, the mean number of cigarettes smoked was 20.45±1.99, the minimum number of cigarettes smoked was 1 and the maximum number of cigarettes smoked was 28.

When analysing the number of hospitalisations of the participants, 88.4% (n=425) were first, 8.9% (n=43) second, 1.5% (n=7) third, 0.8% (n=4) fourth, 0.2% (n=1) fifth and 0.2% (n=1) seventh hospitalisations. The mean length of hospital stay was 11.57±8.07 days, with a minimum of 0 days (same day discharge) and a maximum of 41 days.
When analysing the participants in terms of penalty points received, it was found that 92.5% (n=445) received no penalty points, 7.5% (n=36) received penalty points, the mean penalty point received was 22.08±18.41, the minimum penalty point received was 10 and the maximum penalty point received was 110.

Discussion

In our study, which aims to examine the socio-demographic data of the patients who applied to the AMATEM clinic of Kayseri State Hospital in 2019, as well as to evaluate them according to the forensic case status, which has a gap in the literature, and to share them with the scientific world, it is seen that the male gender is dominant when looking at the gender distribution of the total participants. This dominance is seen to be 96% male and 4% female. It is seen that the results of the data we obtained are compatible with the results of other studies conducted in our country; namely Karaağaç et al. (2017), Bulut et al. (2006) and Mutlu et al. (2019) (3,4,5).

When analysing the Turkey 2020 Drug Report, it was found that 93.9% of the patients who received inpatient treatment in 2019 were male, 6.1% were female and the average age of the patients applying for treatment was 28.02. When analysing the distribution of patients by age group, it can be seen that the patients applying for treatment are concentrated in the 20-29 age group. The ratio of patients in the 20-29 age group to the total number of patients was 57.1%. Looking at the age of first use of the substance among inpatients, it can be seen that use is concentrated in the 15-24 age group. It was observed that the proportion of clients in the 15-24 age group was 66% of all clients and the average age of first use was 21.63 years (6). As stated in the results section of our study, 96% (n=462) of the participants were male, 4% (n=19) were female and the mean age was 32.12±10.25 years. In this context, the data obtained in our study support the findings of the research.

In 2019, when analysing the educational status of the patients receiving treatment, 1.8% had never attended school, 88.2% had 1-8 years of education, 6.3% had 9-12 years of education and 1.3% were university graduates. In 2019, when the employment status of the patients receiving treatment was analysed, 20.1% were unemployed, 40.2% did not have a regular job, 34.4% had a regular job and 2.5% were students (6). As 2.7% of the participants in our study were students, the result we obtained shows compatibility.

According to the European Drug Report (2019), 29 % of the 96 million adult population (aged 15-64) in the European Union are estimated to have tried illicit drugs at some point in their lives. Drug use experience was more common among men (57.8 million) than women (38.3 million). The most commonly used drugs were cannabis (55.4 million males and 36.1 million females), cocaine (12.4 million males and 5.7 million females), MDMA (9.3 million males and 4.6 million females) and amphetamines (8.3 million males and 4.1 million females) (7). In our study, the most commonly used illicit drug is cannabis.

The results obtained from the data in our study showed a high degree of consistency when compared with the European Drug Report, which was conducted at the international level, and the Turkish Drug Report, which was conducted at the national level. This may indicate that our sample is highly representative of the population. In Gündüz's (2020) master's thesis entitled Experiences of Individuals Treated in AMATEM Clinic in the Treatment Process and Requirements After Discharge (8), The 76 participants diagnosed with alcohol or drug dependence were young adults, male, single and heroin users, the average age of drug users was significantly lower than that of alcohol users and the majority of participants were secondary school graduates. In this context, the majority of the 481 participants in our study were male, the use of synthetic cannabis and heroin was relatively high, and most participants were secondary school graduates.

In Kamil and Tuncay's (2020) study of 140 out of 489 drug users, 9.3 % of the participants were women (13 people) and 90.7 % were men (127 people). It was thought that 50% of the participants (70 people) were secondary school graduates, 79.3% of the participants (111 people) used cannabis the most, and the reason for this was thought to be "due to misinformation or belief that cannabis is not addictive" (9). As a result of this study, a significant difference was found between the frequency of substance use and gender, and a very high degree of statistical significance was found between substance use and judicial case registration. In this context, a very high degree of significance was found in the relationship between substance use and forensic case, which is one of the main themes of our study. The results of our study confirm that the majority of participants were male, that secondary school graduates were more likely to use substances and that cannabis use was more common.

Similarly, a study conducted in nine provinces to determine the prevalence of tobacco, alcohol and drug use among primary and secondary school students found that the use of alcohol, volatile and illicit substances was higher among males (10). In a study of university students, smoking, alcohol and drug experience was found to be higher in males than in females (11).

In a study conducted at Dicle University, 108 out of 123 participants used cannabis (12), In another study, when the rate of cannabis use was examined by gender, it was found that the rate of cannabis use was higher among men (13). The ease of access to cannabis in our country may be the reason for this situation compared to Kamil and Tuncay's (2020) comment that "cannabis use is due to the misinformation or belief that cannabis is not addictive".

The main limitations are that the design of our study was retrospective and the data were obtained on a self-report basis. Another limitation is that no comparison was made with the control group and the data obtained included only inpatients with a diagnosis of substance use disorder. The aim of this study is to investigate the socio-demographic characteristics of drug addiction patients undergoing inpatient treatment at Kayseri State Hospital, Kayseri Province, using a retrospective analysis method, and to make the data available to the scientific community. Analysing the patients concerned in terms of clinical characteristics and treatment methods applied is of great importance in the prevention and treatment of these diseases, which are becoming increasingly common in society. As there are a limited number of studies in the literature on the subject we studied, it is believed that our study will contribute to cumulative knowledge. Conducting studies in this area, which is lacking, will be a guide for both the scientific world and individuals working in the field.

The fact that our study was conducted in a 300-bed hospital with a B role in the province of Kayseri may indicate that a partially small sample was selected. Although this situation is the limitation of the study, it may be the essence of the study as it is a generalisable situation within the framework of scientific research techniques. However, it can be recommended to the researchers to carry out the study with a larger sample group in a descriptive, cross-sectional approach and to reveal the socio-demographic characteristics of AMATEM patients.

The study conducted by Gürbüz and Şahin (2018) using the snowball method (14), which is one of the non-probabilistic techniques, stresses the importance of using the social environment of each patient who comes to the AMATEM unit and is diagnosed with drug addiction, and the importance of applying social rehabilitation and addiction treatment in patient groups formed with the addicts. This is because it is believed that the high level of honesty, reality and shyness in environments such as family, friends and work groups, which are the necessities of being human, will contribute to the treatment process. The examination of the participants in our study in terms of forensic case records emphasises the necessity and importance of considering the environment and the case. Our study highlights the need for a holistic perspective by considering forensic, social and demographic characteristics together in the treatment and rehabilitation of addiction.

Although the analysis of socio-demographic characteristics of inpatients with substance dependence according to their forensic case status is the core of our study, a review of the literature revealed that there are not enough studies examining socio-demographic characteristics in relation to forensic cases in addicted patients. In this context, it is believed that studies with a larger sample size will be of great benefit to the scientific community.

Declarations

Funding: The present study was not funded by any corporation.

Conflicts of Interest: The authors declare no conflict of interest.

Ethics Approval: Since the data of our study, which we think will shed light on the literature, covers the year 2019, ethics committee permission was not obtained in accordance with the decision dated February 25, 2020 published by ULAKBIM. However, research permission was obtained from the hospital where the study was conducted. We thank our esteemed editors for their efforts.

Availability of Data and Material

All data is available

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1290237

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Nursing/Hemşirelik

Investigation of the Relationship between Self-Confidence Levels and Professional Attitudes among Nursing Department Students

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Abstract

Purpose: The aim of this study was to investigate the relationship between self-confidence levels and professional attitudes of nursing students.

Material and Method: The descriptive and correlational study was conducted with 533 nursing students at the Faculty of Health Sciences Nursing Department of Kafkas University between October 10 and November 5, 2022. Data collection tools were created on the internet using Google Forms and a link was created online. Data were collected using the "Identification Characteristics Question Form", "Self-Confidence Scale", and "Attitude Scale for Nursing Profession (ASNP)" and analyzed by utilizing the IBM SPSS Statistics 28 package program.

Results: The mean self-confidence score of nursing students participating in the study was 113.23±28.40 and the mean attitude score towards the nursing profession was 153.93±24.87. The Pearson correlation coefficient between the self-confidence scale scores and attitude scale scores towards the nursing profession of nursing students participating in the study was found to be 0.394.

Conclusion: As a result, it was determined that nursing students participating in the study had moderate self-confidence and positive professional attitudes. In addition, a statistically significant moderate positive correlation was found between nursing students' self-confidence and their attitudes towards the nursing profession ($p<0.001$).

Keywords: Nursing, Students, Self-Confidence, Attitude

Özet

Amaç: Bu çalışmada; hemşirelik bölümü öğrencilerinin özgüven düzeyleri ile mesleki tutumları arasındaki ilişkinin incelenmesi amaçlanmıştır.

Materyal ve Metot: Tanımlayıcı-ilişki arayıcı türde yapılan çalışma; 10 Ekim-5 Kasım 2022 tarihleri arasında Kafkas Üniversitesi Sağlık Bilimleri Fakültesi Hemşirelik Bölümünde öğrenim gören 533 hemşirelik bölümü öğrencisiyle yapılmıştır. Veri toplama araçları internet ortamında Google Forms kullanılarak bir link oluşturulmuş ve çevrim içi olarak uygulanmıştır. Veriler, "Tanıtıcı Özellikler Soru Formu", "Özgüven Ölçeği" ve "Hemşirelik Mesleğine Yönelik Tutum Ölçeği" kullanılarak toplanmış ve IBM SPSS Statistics 28 paket programı üzerinden analiz edilmiştir.

Bulgular: Çalışmaya katılan hemşirelik öğrencilerinin özgüven puan ortalaması 113,23±28,40 ve hemşirelik mesleğine yönelik tutum puan ortalaması 153,93±24,87 olarak hesaplanmıştır. Çalışmaya katılan hemşirelik öğrencilerinin özgüven ölçeği puanları ile hemşirelik mesleğine yönelik tutum ölçeği puanları arasındaki Pearson korelasyon katsayısı 0,394 olarak bulunmuştur.

Sonuç: Çalışmaya katılan hemşirelik öğrencilerinin orta düzeyde özgüvene sahip oldukları ve olumlu mesleki tutuma sahip oldukları belirlenmiştir. Ayrıca hemşirelik öğrencilerinin özgüvenleri ile hemşirelik mesleğine yönelik tutumları arasında istatistiksel olarak anlamlı orta düzeyde pozitif yönlü ilişki olduğu saptanmıştır ($p<0,001$).

Anahtar sözcükler: Hemşirelik, Öğrenciler, Özgüven, Tutum

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Received: 30 April 2023
Accepted: 1 October 2023

Introduction

Self-Confidence is a construct that determines an individual's attitudes and behaviors towards themselves, simultaneously encapsulating their self-evaluations (1). One of the factors that affects individuals' self-confidence is profession choice. When individuals have a profession in which they can express their abilities and feel a sense of effectiveness, there's an observed increase in their self-confidence (2). Meanwhile, a profession is defined as an aggregate of activities based on knowledge and skills gained through specialized education, which is determined by societal norms and engaged in for livelihood (3). The current nursing students are destined to be the future nurses. Nurses, forming the backbone of healthcare systems worldwide, play a critical role in determining patient outcomes and the quality of care in hospitals (4). The nursing profession holds substantial responsibilities in health protection, promotion, and improvement during illness (5).

However, having professional competence and understanding one's job nuances do not suffice to perform the job at its best. Alongside these, one should also possess a positive attitude towards the job (6). Negative attitudes of nurses adversely affect both the profession and human life (7). In conducted studies, 30.3% (8) and 46% (9) of nurses have demonstrated a positive attitude towards nursing. Negative attitudes exhibited by nurses lead to detrimental consequences such as losing interest in patient care, providing care without compassion, shyness, and intentions of leaving the profession (9). Consequently, nursing education institutions require students with a positive professional outlook (10).

In a study on nursing students, it was determined that the students had a positive professional attitude, and more than half of them willingly chose their profession (11). Other studies have found that nursing students who willingly chose their profession have a more positive attitude towards nursing than those who chose it unwillingly (10, 12). Furthermore, nursing students who willingly select their department might contribute to an increase in their self-confidence (13).

In the nursing literature, no studies were encountered that investigated the relationship between self-confidence levels and professional attitudes. It is crucial to determine the self-confidence levels, attitudes towards the profession, and the relationship between self-confidence levels and professional attitudes of individuals who will practice nursing. Thus, this descriptive-correlational study aims to examine the relationship between nursing students' self-confidence levels and their professional attitudes.

Location and Time of Research

This study was conducted with all students enrolled in the Nursing Department of the Faculty of Health Sciences at Kafkas University between October 10 and November 5, 2022.

Population and Sample of the Research

The study's scope encompassed 777 nursing students enrolled in the Department of Nursing, Kafkas University Faculty of Health Sciences. There was no distinct sample selection; the study incorporated 533 nursing students who voluntarily consented to participate (68.59%). Full accessibility to the entire student population was hampered by student absences during the research implementation times and the choice of some students to decline participation. The power analysis of the study was computed utilizing the G*Power 3.1.9.7 software program. The effect size of the study, determined from the results, was found to be 0.394. Accordingly, the power of the study, completed with 533 participants at a significance level of 0.05, and an effect size of 0.394, was determined to be 100%.

Data Collection Tools and Features

In data collection, the "Descriptive Characteristics Questionnaire" (3, 11, 14, 15) prepared by the researcher using literature, the "Self-Confidence Scale" (16), and the "Attitude Scale for Nursing Profession (ASNP)" (17) were used to collect data.

Descriptive Features Questionnaire

This tool is bifurcated into two segments. The initial segment contains 12 queries regarding the sociodemographic attributes of the nursing students (3, 11, 15), while the second segment includes seven queries related to their professional domain (11, 14).

Self-Confidence Scale

Developed by Akin (16), the scale was conducted with 796 high school students in various high schools in Kocaeli, Istanbul, and Sakarya. The scale consists of 33 items gathered under two factors: internal self-confidence and external self-confidence. The scale is prepared with a 5-point Likert type. The options for each question asked to participants are: Never '1', Rarely '2', Often '3', Usually '4', and Always '5'. The scores obtained from the scale range from a minimum of 33 points to a maximum of 165 points. A high score from the scale indicates a high level of self-confidence. The self-confidence levels of the participants are interpreted by dividing the total score obtained from the scale by the number of items in the scale. A result below 2.5 points indicates low self-confidence, between 2.5 and 3.5 points indicates moderate self-confidence, and 3.5 points and above indicates high self-confidence (16). The Cronbach's Alpha coefficient of this scale was found to be 0.94 for the whole scale, 0.97 for the internal self-confidence subscale, and 0.87 for the external self-confidence subscale (16).

In this study, these values were 0.97, 0.96, and 0.95, correspondingly.

Attitude Scale for Nursing Profession (ASNP): Developed by Ipek Coban and Kasikci (17), the scale consists of sub-dimensions related to the preference for the nursing profession, characteristics of the nursing profession, and the general situation of the nursing profession. It consists of a total of 40 items. For positive questions, 1 point is given for the "strongly disagree" response, 2 points for "disagree", 3 points for "agree moderately", 4 points for "strongly agree", and 5 points for "completely agree". Items 21, 23, 25, 26, 28, 30, 34, and 38 are reverse-scored. As the score obtained from the scale increases, the positive attitude towards the nursing profession also increases. The highest score that can be obtained from the scale is 200 points, and the lowest is 40 points. If the total score obtained from the scale is above 120 points, it can be said that the individuals have a positive attitude (17). The Cronbach's Alpha coefficient of this scale was found to be 0.91 (17). In this study, the Cronbach's Alpha coefficient was found to be 0.94.

Data Collection: Due to the necessity of adhering to physical distancing and reducing personal contact, as well as the privacy issues surrounding self-confidence, data collection for this research was conducted via Google Forms in an online environment. A link was created using Google Forms and distributed to the students. Students accessed the study by clicking on this link, read the written explanation about the study, and gave their online consent before filling out the data collection tools. Students who were absent on the day of the study or who did not wish to participate were excluded. The data for this research was collected between October 10 and November 5, 2022.

Data Evaluation: Analyses were performed using the IBM SPSS Statistics 28 software package. While evaluating the study data, frequencies (number, percentage) were used for categorical variables, descriptive statistics (mean, standard deviation, minimum, maximum), Pearson Correlation Coefficient, Independent Sample T-Test, and One-Way Analysis of Variance (ANOVA) were used for numerical variables.

In case of a difference in the ANOVA results, the group causing the difference was identified using the Tukey multiple comparison test. Statistical significance in the analyses was interpreted at the 0.05 level. The Cronbach's Alpha internal consistency coefficients of the scales used in the study were calculated, and the scales were found to be reliable ($\alpha>0.700$).

Ethical Aspect of the Research: Prior to initiating the study, ethical approval was secured from the Non-Invasive Research Ethics Committee of the Faculty of Health Sciences on September 30, 2022, under the decision number 81829502.903/91. Formal permission was received from the Rectorate of Kafkas University on October 14, 2022, with the reference number E-10160100-399.99-37310. Permissions were secured from the corresponding authors to employ the "Self-Confidence Scale" and the "Attitude Scale for Nursing Profession". Furthermore, informed consent was obtained online from students willing to participate in the study.

Limitations of the Research: The data derived from this study can only be generalized to the group incorporated in the study, as it reflects individual participant inputs and comprises their self-expression. The study is limited to voluntary participants enrolled in the Department of Nursing, Faculty of Health Sciences, Kafkas University.

Results

This study, aimed at examining the relationship between the self-confidence levels and professional attitudes of nursing students, included 533 participants. In Table 1, it was found that female students had statistically significantly higher scores in the external self-confidence subscale than male students ($p=0.040$). Students with an income higher than their expenses had statistically significantly higher self-confidence scale score averages compared to those with equal or lower income ($p=0.011$). Students with social security had statistically significantly higher self-confidence scale scores than those without social security ($p=0.023$). Students who described their feelings towards the nursing profession as "average" before coming to school had statistically significantly lower self-confidence scale score averages than those who described it as "very good" or "good" ($p=0.002$).

First-year students' average scores for the subscale of preferring the nursing profession were statistically significantly higher than those of second, third, and fourth-year students as given in Table 2 ($p<0.001$). First-year students' attitude subscale scores towards the general situation of the nursing profession were statistically significantly higher than those of second-year students ($p=0.011$). Female students had statistically significantly higher average scores on the ASNP than male students ($p<0.001$). Participants living in their family's residence for 1-10 years had statistically significantly lower ASNP score averages than those living there for 11-20 years or more than 20 years ($p=0.037$). Students currently living with their family had statistically significantly higher ASNP score averages than those currently living with friends ($p=0.016$). Students with an income lower than their expenses had statistically significantly lower ASNP scores than those with equal or higher income ($p=0.002$).

Students with social security had statistically significantly higher ASNP score averages than those without social security (p=0.007). Students who chose their department voluntarily had statistically significantly higher ASNP score averages than those who did not (p<0.001). Students not considering changing departments had statistically significantly higher ASNP scores than those considering it or undecided (p<0.001). Students who described their feelings towards the nursing profession as "very good" or "good" before coming to school had statistically significantly higher ASNP score averages than those who described it as " average ", "bad", or "very bad" (p<0.001). Students planning to continue in the nursing profession in the future had statistically significantly higher ASNP score averages than those not planning to do so (p<0.001). Students without family members working as nurses had statistically significantly higher average scores for the subscale of preferring the nursing profession than those with family members working as nurses (p=0.043).

In Table 3, the study's participating nursing students had an average self-confidence scale score of 113.23±28.40, an internal self-confidence subscale score average of 58.99±14.81, and an external self-confidence subscale score average of 54.24±14.06. The average score for the ASNP was found to be 153.93±24.87, with a subscale average score of 75.05±15.06 for nursing profession characteristics, 46.30±9.51 for the preference of the nursing profession, and 32.58±5.27 for the attitude towards the general status of the nursing profession.

As given in Table 4, correlation analyses conducted in the study revealed a statistically significant moderate positive relationship between the self-confidence scale scores of the participating nursing students and the ASNP scores (p<0.001, r=0.394). There was a statistically significant moderate positive relationship between self-confidence scale scores and nursing profession characteristics (r=0.345) and attitude towards the general status of the nursing profession (r=0.350). A statistically significant low positive relationship was found between self-confidence scale scores and the preference of the nursing profession (r=0.290). The internal self-confidence scores had a statistically significant moderate positive relationship with the ASNP (r=0.395), nursing profession characteristics (r=0.348), and attitude towards the general status of the nursing profession (r=0.353). There was a statistically significant low positive relationship between internal self-confidence scores and preference of the nursing profession (r=0.288). External self-confidence scores had a statistically significant moderate positive relationship with the ASNP (r=0.379), nursing profession characteristics (r=0.330), and attitude towards the general status of the nursing profession (r=0.335). A statistically significant low positive relationship was found between external self-confidence scores and the preference of the nursing profession (r=0.283).

Discussion

Self-Confidence provides motivation related to the learning process. Higher self-confidence in nursing students leads to better future expectations and a positive attitude towards their profession. Therefore, professional self-confidence is a crucial factor for these students (18, 19). This research was conducted to examine the relationship between the self-confidence levels of nursing department students and their professional attitudes.

In a study, it was found that self-confidence increases as income level rises (20). In this research, the average self-confidence scale scores of students whose income exceeded their expenses were found to be statistically significantly higher than the scores of students with equal or lower income compared to their expenses (p=0.011, Table 1). Twenge and Campbell (21) reported that those with higher socio-economic status had higher self-confidence. Few studies in the existing literature explore this topic (20, 21), but these findings suggest that a healthy income level might positively influence self-confidence.
One of the major obstacles to the nursing profession, which holds a significant position in the health field, appears to be related to gender roles in the profession (22). In this study, it was found that the average scores on the attitude towards nursing scale were significantly higher for women than men (p<0.001, Table 2). A study by Çalışkan, et al. (11) on nursing students also determined that female students had a more positive attitude towards the nursing profession than male students. According to a study conducted with high school seniors, female students' average scores on the ASNP were higher than those of male students, suggesting a more positive attitude (7). These results might be associated with the societal perception that nursing is still a female-dominated profession.

This study found no difference in the attitudes of nursing students towards the profession based on their year of education. However, when looking at the sub-dimensions of the scale, it was determined that first-year students had significantly more positive attitudes towards choosing the nursing profession than second, third, and fourth-year students (p<0.001). A study with nursing students found that first-year students had a more positive attitude in all sub-dimensions of the scale related to the nursing profession than fourth-year students (12), which is consistent with findings of this study. In contrast, another study found that fourth-year students had a more positive attitude towards the nursing profession than the first, second, and third-year students, and this positive attitude decreased as the year decreased (11). The studies

present different results. Nonetheless, it is essential for an individual to willingly choose their profession to execute it appropriately and benefit those served (23). In this study, the attitude towards the nursing profession of students who willingly chose their department was statistically significantly higher than those who did not ($p<0.001$). It has been determined in studies that the majority of students willingly chose the nursing profession (10, 12). In a study by Yazıcıoğlu (15) on nursing students, it was found that students who willingly chose their profession had statistically significantly higher attitudes towards the nursing profession than those who did not. It is expected that students who willingly choose their department would have a more positive attitude.

In this research, it was revealed that students without family members in the nursing profession had a significantly higher average preference score for the profession, indicating a more positive attitude than their counterparts with family members in nursing ($p=0.043$). Conversely, high school seniors with a family member who is a nurse exhibited a more positive attitude towards the nursing profession than those without such familial connections (7). We hypothesize that this outcome could be attributed to individuals being more informed about the profession's challenges due to having family members working as nurses.

It was found that the average ASNP score was statistically significantly higher among students who were not considering a department change compared to those contemplating a change and those undecided about a department change in this research ($p<0.001$, Table 2). In another study conducted with nurses, 44.2% of the nurses reported that they did not consider changing their profession (14). In a study conducted with nursing students, 74.3% expressed satisfaction with their department, and of these, 63.3% had no intentions of changing their department (24). These findings imply that individuals who are not considering a department change display a positive attitude towards their profession and enjoy their role.

In the literature, it has been found that nursing students have high levels of self-confidence (25, 26). In this study, the average self-confidence score of nursing students was found to be 113.23±28.40 (item average; 3.43). Therefore, it can be inferred that the participating nursing students possessed a moderate level of self-confidence. In a different study conducted with nursing students, it was determined that the students had moderate self-confidence (27), consistent with this study.

In this study, the average score of nursing department students on the ASNP was found to be 153.93±24.87 (Table 3). Accordingly, it has been determined that the nursing students participating in the study have a positive professional attitude. Studies have also found that nursing students have a positive attitude towards the nursing profession (4, 10, 28). It is believed that nursing students having a positive attitude, as in these studies, is crucial for the professionalization of the profession and for both future colleagues and patients.

In conclusion, this study determined that nursing students have moderate self-confidence and a positive professional attitude. Additionally, a statistically significant, moderate positive relationship was found between nursing students' self-confidence and their attitudes for the nursing profession ($p<0.001$, $r=0.394$, Table 4). However, in the literature, there are no studies comparing self-confidence and professional attitude in studies conducted with nursing students or nurses. Therefore, it is thought that comparing the self-confidence and professional attitudes of nursing students in different sample groups may be beneficial.

Declarations

Funding: None

Conflicts of interest/Competing interests: The authors declare that they have no conflict of interest.

Ethics approval: Approval was obtained from the Non-Interventional Research Ethics Committee of the Faculty of Health Sciences on September 30, 2022, with the decision number 81829502.903/91. Official permission was obtained from Kafkas University Rectorate on October 14, 2022, with the number E-10160100-399.99-37310.

Availability of data and material: All data and material are available on request from the authors.

Authors' contributions

SC: Authored the paper, collected data, designed and executed the analysis and statistical procedures.

RTD: Designed the study, revised the manuscript, and contributed to the design and execution of the analysis and statistical procedures.

Acknowledgements

This study was produced from Master thesis of Senay CINEMRE under the supervision of Rukiye TURK DELIBALTA.

	Self-Confidence scale Mean±Std	Internal Self-Confidence Mean±Std	External Self-Confidence Mean±Std
Age (Years)			
17-19	108,46±28,69	56,75±15,06	51,71±14,06
20-22	113,99±28,09	59,16±14,51	54,83±14,02
23+	117,45±28,90	62,02±15,54	55,44±14,00
F;p	2,480;0,085	2,727;0,066	2,408;0,091
Gender			
Male	110,70±30,53	58,14±16,01	52,56±14,99
Female	114,72±27,01	59,50±14,05	55,22±13,41
t;p	-1,532;0,126	-0,990;0,323	-2,058;0,040*
Year			
1st Year	112,84±28,57	59,32±14,66	53,52±14,27
2nd Year	111,94±27,69	58,06±14,51	53,87±13,68
3rd Year	113,02±29,77	58,88±15,66	54,14±14,48
4th Year	115,33±27,40	59,92±14,22	55,41±13,85
F;p	0,330;0,803	0,364;0,779	0,414;0,743
The Last School Graduated From			
Public High School	113,33±30,10	59,17±15,40	54,16±15,10
Anatolian High School	113,47±27,40	59,13±14,36	54,34±13,52
Science High School	108,31±29,67	56,22±15,52	52,09±14,62
Vocational High School	116,55±29,86	60,79±15,34	55,76±14,99
F;p	0,910;0,436	1,034;0,377	0,736;0,531
Mother's Educational Level			
Illiterate	112,68±27,87	58,78±14,75	53,89±13,55
Primary School	114,19±29,32	59,41±15,16	54,78±14,55
High School	112,49±25,20	58,59±13,11	53,90±12,94
F;p	0,201;0,818	0,143;0,866	0,259;0,772
Father's Educational Level			
Illiterate	108,16±26,00	56,32±13,67	51,84±13,06
Primary School	114,18±28,91	59,56±15,08	54,62±14,18
High School	114,61±25,68	59,60±13,44	55,01±12,93
University	109,68±32,08	57,07±16,55	52,62±15,94
F;p	0,865;0,459	0,903;0,439	0,782;0,504
Place of Residence of the Family			
Province	112,39±28,38	58,72±14,85	53,68±13,99
District	112,27±28,88	58,42±15,10	53,85±14,29
Village	116,75±27,71	60,42±14,19	56,33±13,90
F;p	1,013;0,364	0,658;0,518	1,426;0,241

	Self-Confidence scale Mean±Std	Internal Self-Confidence Mean±Std	External Self-Confidence Mean±Std
Length of Residence in the Place of Family's Residence			
0-1 Year	113,73±28,66	59,91±15,06	53,82±14,02
1-10 Year	111,11±26,55	57,84±13,72	53,27±13,46
11-20 Year	113,61±28,28	59,06±14,68	54,55±14,05
20 + Year	114,11±30,04	59,25±15,74	54,86±14,68
F;p	0,272;0,845	0,354;0,786	0,324;0,808
Current Place of Residence			
With Family	118,84±29,94	61,60±15,59	57,24±14,73
In a Dormitory	112,22±27,34	58,50±14,23	53,72±13,60
With Friends at Home	114,97±30,40	60,00±15,95	54,97±15,01
Alone at Home	109,33±35,10	56,95±18,60	52,38±16,74
F;p	1,186;0,314	1,019;0,384	1,303;0,273
Income Level			
1) Less than expenses	111,96±29,08	58,41±15,20	53,55±14,29
2) Equal to expenses	112,27±27,45	58,28±14,19	53,98±13,70
3) Greater than expenses	125,13±25,57	65,57±13,33	59,55±13,26
F;p	4,590;0,011*	5,175;0,006*	3,775;0,024*
Difference (Tukey)	3>1,2	3>1,2	3>1,2
Social Security			
Yes	115,90±28,17	60,14±14,69	55,76±13,95
No	110,32±28,41	57,75±14,86	52,58±14,03
t;p	2,276;0,023*	1,870;0,062	2,628;0,009*
Choosing the Field of Study by Own Will			
Yes	113,84±27,99	59,29±14,51	54,54±13,93
No	111,66±29,47	58,22±15,56	53,45±14,42
t;p	0,791;0,429	0,752;0,452	0,806;0,420
Consideration of Changing the Field of Study			
Yes	114,24±32,17	59,11±16,22	55,13±16,27
No	114,34±28,50	59,51±14,89	54,83±14,08
Unsure	107,63±24,91	56,62±13,37	51,01±12,09
F;p	2,030;0,132	1,355;0,259	2,766;0,064
Feelings About Nursing Profession Before Starting University			
1) Very Good	120,88±34,17	62,96±17,90	57,92±16,61
2) Good	116,43±26,79	60,66±13,91	55,77±13,45
3) Fair	107,60±25,92	56,32±13,52	51,28±12,88
4) Poor	115,30±29,14	59,43±15,26	55,86±14,29
5) Very Poor	110,03±31,21	56,34±16,43	53,69±15,13
F;p	4,250;0,002*	3,980;0,003*	4,385;0,002*
Difference (Tukey)	3<1,2	3<1,2	3<1,2

TABLE 1: Distribution of Self-Confidence Scale and Sub-Dimension Mean Scores According to Students' Sociodemographic Characteristics.

	Self-Confidence scale Mean±Std	Internal Self-Confidence Mean±Std	External Self-Confidence Mean±Std
Intention to Continue the Nursing Profession in the Future			
Yes	113,96±28,19	59,33±14,66	54,63±13,98
No	111,38±28,95	58,13±15,18	53,25±14,26
t;p	0,942;0,346	0,840;0,401	1,019;0,309
Presence of Family Member(s) Working as Nurse(s)			
Yes	113,99±28,57	59,38±14,77	54,62±14,22
No	112,88±28,35	58,82±14,84	54,06±14,01
t;p	0,420;0,675	0,402;0,688	0,424;0,672
Chronic Disease Status			
Yes	113,41±27,34	59,23±14,54	54,18±13,31
No	113,22±28,51	58,98±14,84	54,24±14,13
t;p	0,041;0,968	0,103;0,918	-0,027;0,978
std: standard deviation			

TABLE 2: Distribution of Attitude Scale and Subscale for Nursing Profession Scores According to the Sociodemographic Characteristics of Students

	Attitude Scale for Nursing Profession Mean±Std	Characteristics of the Nursing Profession Mean±Std	Preference for Choosing the Nursing Profession Mean±Std	Attitude towards the General Condition of the Nursing Profession Mean±Std
Age				
17-19	154,15±28,25	73,42±17,14	48,17±9,55	32,56±5,45
20-22	154,76±23,51	76,10±14,03	45,84±9,56	32,82±5,06
23+	149,14±25,56	72,21±16,14	45,59±8,90	31,33±5,93
F;p	1,430;0,240	2,722;0,067	2,819;0,061	2,219;0,110
Gender				
Male	145,02±27,01	70,65±17,24	42,87±9,74	31,49±5,67
Female	159,16±21,93	77,63±12,97	48,32±8,78	33,22±4,92
t;p	-6,243;<,001*	-4,922;<,001*	-6,630;<,001*	-3,557;<,001*
Year				
1st Year	157,52±28,74	74,11±17,07	49,89±10,36	33,52±5,27
2nd Year	149,32±26,27	72,92±16,49	45,00±8,82	31,40±5,89
3rd Year	154,65±24,27	76,18±14,46	45,70±9,37	32,77±5,10
4th Year	155,06±19,19	76,82±11,68	45,40±9,00	32,84±4,52
F;p	2,512;0,058	1,954;0,120	6,849;<,001*	3,726;0,011*
Fark (Tukey)	-	-	1>2,3,4	1>2

	Attitude Scale for Nursing Profession Mean±Std	Characteristics of the Nursing Profession Mean±Std	Preference for Choosing the Nursing Profession Mean±Std	Attitude towards the General Condition of the Nursing Profession Mean±Std
The Last School Graduated From				
Public High School	152,05±27,62	73,16±17,16	47,25±9,72	31,63±5,53
Anatolian High School	155,00±22,75	76,07±13,43	46,31±9,37	32,62±5,17
Science High School	149,65±25,58	72,59±16,49	44,15±8,45	32,91±4,79
Vocational High School	155,33±28,89	74,71±17,27	47,31±10,49	33,30±5,45
F;p	0,945;0,418	1,355;0,256	1,432;0,233	1,254;0,289
Mother's Educational Level				
Illiterate	152,35±26,92	74,10±16,51	45,99±9,97	32,26±5,61
Primary School	155,60±23,84	76,03±14,08	46,63±9,42	32,94±5,13
High School	153,67±23,50	74,62±14,49	46,75±8,76	32,30±5,01
F;p	0,906;0,405	0,927;0,396	0,283;0,754	1,022;0,361
Father's Educational Level				
1)Illiterate	156,44±28,47	74,56±17,39	48,48±9,37	33,40±5,56
2)Primary School	153,16±25,51	74,57±15,39	46,34±9,37	32,25±5,44
3)High School	156,68±20,27	77,60±11,46	45,79±9,86	33,29±4,74
4)University	150,40±29,25	71,78±19,07	46,48±8,95	32,14±5,52
F;p	1,293;0,276	2,729;0,043*	0,605;0,612	1,653;0,176
Difference (Tukey)	-	3>4	-	-
Place of Residence of the Family				
Province	155,93±23,82	75,94±14,31	46,94±9,61	33,05±5,09
District	152,22±25,61	74,34±15,29	45,82±9,82	32,06±5,39
Village	151,26±26,42	73,77±16,67	45,19±8,68	32,30±5,47
F;p	1,798;0,371	0,995;0,371	1,478;0,329	1,974;0,140
Length of Residence in the Place of Family's Residence				
1) 0-1 Year	156,01±29,81	74,43±17,49	48,53±10,99	33,06±5,28
2) 1-10 Year	147,88±26,00	71,57±15,92	45,16±9,45	31,14±5,39
3) 11-20 Year	155,22±22,78	75,95±14,32	46,16±9,11	33,10±4,96
4) 20+ Year	155,70±22,65	77,01±13,22	45,99±8,94	32,70±5,43
F;p	2,858;0,037*	3,084;0,027*	2,241;0,083	3,737;0,011*
Difference(Tukey)	2<3,4	2<4	-	2<3
Current Place of Residence				
1)With Family	160,44±20,29	79,31±10,39	47,23±9,57	33,90±4,55
2)In a Dormitory	154,35±25,01	75,10±15,14	46,73±9,49	32,51±5,27
3)With Friends at Home	148,39±25,36	72,28±15,92	44,06±9,99	32,06±5,57
4)Alone at Home	145,43±28,32	70,57±19,57	43,29±6,60	31,57±5,90
F;p	3,457;0,016*	3,089;0,027*	2,453;0,062	1,812;0,144
Difference (Tukey)	1>3	1>3	-	-

	Attitude Scale for Nursing Profession Mean±Std	Characteristics of the Nursing Profession Mean±Std	Preference for Choosing the Nursing Profession Mean±Std	Attitude towards the General Condition of the Nursing Profession Mean±Std
Income Level				
1) Less than expenses	150,58±26,43	73,57±16,31	45,18±9,52	31,83±5,72
2) Equal to expenses	157,45±21,89	76,50±13,13	47,54±9,05	33,41±4,57
3) Greater than expenses	160,55±23,30	78,38±13,37	48,26±10,51	33,91±4,20
F;p	6,387;0,002*	3,497;0,031*	4,720;0,009*	7,026;<,001*
Fark (Tukey)	1<2,3	1<3	1<2,3	1<2,3
Social Security				
Yes	156,73±23,16	76,60±13,85	46,92±9,54	33,20±4,89
No	150,89±26,31	73,35±16,13	45,63±9,45	31,91±5,59
t;p	2,725;0,007*	2,486;0,013*	1,575;0,116	2,829;0,005*
Choosing the Field of Study by Own Will				
Yes	158,03±24,55	76,13±14,60	49,10±8,78	32,80±5,21
No	143,27±22,46	72,23±15,91	39,03±7,23	32,01±5,40
t;p	6,362;<,001*	2,695;0,007*	13,527;<,001*	1,558;0,120
Consideration of Changing the Field of Study				
1) Yes	137,30±25,88	68,28±18,84	37,98±7,16	31,04±6,37
2) No	157,79±23,65	76,31±14,08	48,47±9,09	33,01±5,05
3) Unsure	146,86±24,03	73,57±15,64	41,69±8,13	31,60±5,27
F;p	21,928;<,001*	7,422;<,001*	48,465;<,001*	5,212;0,006*
Difference (Tukey)	2>1,3	2>1	2>1,3	2>1
Feelings About Nursing Profession Before Starting University				
1) Very Good	163,94±29,50	76,61±16,89	53,23±10,06	34,09±5,74
2) Good	158,50±24,16	76,03±14,78	49,63±8,45	32,85±5,00
3) Fair	151,10±20,42	75,20±13,12	43,52±7,58	32,37±4,88
4) Poor	140,11±24,08	71,00±16,73	38,54±7,87	30,57±5,41
5) Very Poor	136,17±26,85	68,76±20,24	36,48±5,95	30,93±6,88
F;p	12,965;<,001*	2,364;0,052	45,559;<,001*	3,926;0,004*
	1>3,4,5		1>2,3,4,5	
Difference (Tukey)	2>3,4,5	-	2>3,4,5	1>4,5
	3>5	-	3>4,5	
Intention to Continue the Nursing Profession in the Future				
Yes	157,92±23,98	75,86±14,37	49,11±8,65	32,95±5,02
No	143,75±24,26	72,98±16,57	39,13±7,68	31,63±5,77
t;p	6,118;<,001*	1,870;0,063	13,005;<,001*	2,455;0,015*

	Attitude Scale for Nursing Profession Mean±Std	Characteristics of the Nursing Profession Mean±Std	Preference for Choosing the Nursing Profession Mean±Std	Attitude towards the General Condition of the Nursing Profession Mean±Std
Presence of Family Member(s) Working as Nurse(s)				
Yes	152,12±24,81	74,61±15,27	45,08±8,92	32,44±5,62
No	154,76±24,88	75,25±14,98	46,87±9,73	32,64±5,11
t;p	-1,139;0,255	-0,459;0,646	-2,026;0,043*	-0,414;0,679
Chronic Disease Status				
Yes	155,31±26,86	74,87±16,38	47,41±9,92	33,03±4,61
No	153,82±24,73	75,06±14,97	46,22±9,48	32,54±5,32
t;p	0,358;0,720	-0,076;0,939	0,754;0,451	0,548;0,584

TABLE 3: Distribution of Mean Scores on the Self-Confidence Scale and Attitude Scale for Nursing Profession and Their Subscasles

	Mean	Standard Deviation	Min	Max
Self-Confidence Scale	113,23	28,4	37	165
Internal Self-Confidence	58,99	14,81	17	85
External Self-Confidence	54,24	14,06	18	80
Attitude Scale for Nursing Profession	153,93	24,87	72	194
Characteristics of the Nursing Profession	75,05	15,06	18	90
Preference for Choosing the Nursing Profession	46,3	9,51	19	65
Attitude towards the General Condition of the Nursing Profession	32,58	5,27	17	45

TABLE 4: Investigation of the Relationships Between Subscales Scores of the Self-Confidence Scale and Attitude Scale for Nursing Profession

		Attitude Scale for Nursing Profession	Characteristics of the Nursing Profession	Preference for Choosing the Nursing Profession	Attitude towards the General Condition of the Nursing Profession
Self-Confidence Scale	r	,394**	,345**	,290**	,350**
	p	<,001	<,001	<,001	<,001
Internal Self-confidence	r	,395**	,348**	,288**	,353**
	p	<,001	<,001	<,001	<,001
External Self-confidence	r	,379**	,330**	,283**	,335**
	p	<,001	<,001	<,001	<,001

r: Pearson Correlation Coefficient **:p<0,01

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1306956

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Nursing /Hemşirelik

"Ours Is A Hopeless Disease": A Qualitative Study On The Supportive Care Needs Of Women Under Treatment For Gynecological Cancer

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Abstract

Background/Purpose: Identifying and managing unmet supportive care needs while caring for a patient with gynecological cancer is an important component of healthcare. The purpose of this study is to determine the supportive care needs of women receiving gynecological cancer treatment.

Methods: This study, using a qualitative research design, was conducted with 15 women diagnosed with gynecological cancer. Face-to-face interviews were conducted with the participants determined by the purposive sampling method until reached the saturation point. The interviews were held between January and May 2022.

Results: The mean age of the participants was 53.5±11.14, five of them were primary school graduates, nine of them had a medium income and 10 were married. Seven of the participants had endometrial cancer and the mean diagnosis period was 10.4±2.5 months. As a result of the analysis of the data, five themes were determined. These themes; the continuity of the need for care, lack of social support, lack of sense of control, the desire to cope with uncertainty, and the lack of communication in the health institution.

Conclusion: It was determined that women who were treated for gynecological cancer had care needs that were not met and needed to be supported due to individual, economic, social and medical reasons. Supportive care needs of women receiving gynecological cancer treatment should be evaluated within the framework of a multidisciplinary team approach, and counseling and rehabilitation programs including symptom management and psychosocial support should be organized in order to improve coping methods with their diseases.

Keywords: gynecological cancer, qualitative study, supportive care, need, woman

Özet

Giriş/Amaç: Jinekolojik kanserli hastaya bakım verilirken karşılanmamış destekleyici bakım ihtiyaçlarının belirlenmesi ve yönetilmesi sağlık hizmetlerinin önemli bir bileşenidir. Bu çalışmanın amacı jinekolojik kanser tedavisi gören kadınların destekleyici bakım gereksinimlerini belirlemektir.

Gereç ve Yöntem: Nitel araştırma desenin kullanıldığı bu çalışma, jinekolojik kanser tanısı alan 15 hasta ile yürütüldü. Amaçlı örnekleme yöntemiyle belirlenen katılımcılarla doyum noktasına ulaşıncaya kadar yüz yüze görüşmeler yapıldı. Görüşmeler Ocak-Mayıs 2022 tarihleri arasında gerçekleştirildi.

Bulgular: Katılımcıların yaş ortalaması 53,5±11,14, beşi ilkokul mezunu, dokuzu orta düzeyde geliri sahip olup ve 10'u evlidir. Katılımcıların yedisinin tanısı endometrium kanseri olup tanı süresi ortalaması 10,4±2,5 aydır. Verilerin analizi sonucunda beş tema belirlendi. Bu temalar; bakımın gereksiniminin sürekliliği, sosyal destek eksikliği, kontrol duygusu eksikliği, belirsizlikle baş etme isteği ve sağlık kurumunda iletişim eksikliği olarak belirlendi.

Sonuç: Jinekolojik kanser tedavisi gören kadınların bireysel, ekonomik, sosyal ve tıbbi nedenlerden dolayı karşılanmamış ve desteklenmesi gereken bakım gereksinimlerinin olduğu belirlendi. Jinekolojik kanser tedavisi gören kadınların destekleyici bakım gereksinimleri multidisipliner bir ekip anlayışı çerçevesinde değerlendirilmeli, hastalıklarıyla baş etme yöntemlerini geliştirmek için semptom yönetimi ve psikososyal destek konularını içeren danışmanlık ve rehabilitasyon programları düzenlenmelidir.

Anahtar Kelimeler: jinekolojik kanser, niteliksel çalışma, destekleyici bakım, gereksinim, kadın

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Received: 30 May 2023
Accepted: 21 September 2023

Introduction

Gynecological cancers are one of the diseases that should be given importance due to the serious consequences they cause. Gynecological cancers are among the top 10 most common cancer types in women, and these are endometrial, ovarian, and cervical cancers (1). According to Globocan 2020 data, when the most common cancer in women is examined; cervix cancer ranks 4th, endometrial cancer 6th, and cancer ranks 8th (2). Women undergoing gynecological cancer treatment go through a process that includes different treatment methods such as surgical treatment, chemotherapy and radiation therapy. During the treatment process, women's physcial functions, social life and quality of life are adversely affected. Among these effects, common physical complications, psychological distress, changing body image and changing personal relationships increase the psychological burden of cancer (3-5).

As gynecological cancer patients transition into survival, inappropriate management of disease process and cure sequelae increases the challenges they face. In order to eliminate these problems and meet the needs of the patients, women with cancer need supportive care (6). Addressing the effects of gynecological cancer multidimensionally requires a comprehensive supportive care service. Supportive care is a person-centered approach that provides basic services to people, living with or affected by cancer to meet their physical, sexual, psychological, spiritual, social and informational needs during cancer pre-diagnosis, treatment and survival process (7). As advances in the treatment of gynecological cancers contribute to increasing survivors, it becomes increasingly important to meet the care needs of women living with cancer to be supported (6).

Health professionals are in an important position to provide professional care to reduce the symptoms and complications for gynecological cancers on life quality. In order to meet the supportive care needs of patients, healthcare professionals should prevent complications, symptoms or side effects caused by cancer and the treatment process, as early as possible and throughout the treatment period. It is a primary component of providing care that health professionals identify the supportive care needs of women undergoing gynecological cancer treatment. This approach, which includes evaluating the patient and her family at all stages of cancer, provides a holistic perspective and contributes to the improvement of the patient's quality of life (2,8-10). This study is designed to assess the various aspects of the supportive care needs of women receiving gynecological cancer treatment and to provide basic information for the policy makers, health professionals and researchers toward the appropriate planning that in turn help to promote the health of women undergoing gynecological cancer treatment. Most of the researches about supportive care needs of women receiving gynecological cancer treatment have been conducted with a quantitative approach (5,7-9), and limited qualitative data are available on women's experience of supportive care needs (6,10). Unlike previous studies, the present study points to the different challenges and changing needs of women throughout the treatment process. Thus the impact of the treatment process on needs was the primary focus of the present study. In addition, the qualitative approach adopted in this study sought to understand the reasons, concerns and contradictions underlying the failure to meet women's specific needs. In line with this information, the present study was conducted to determine the supportive care needs of women receiving gynecological cancer treatment.

Materials And Methods

Design

In this study, a qualitative research method was applied. Adopting a qualitative design allows researchers to explore context and details regarding participants' needs (11). This study was carried out between January 2022 and May 2022 within a city center located in the Southeastern Anatolia Region of Turkey.

Sample

Female patients diagnosed with gynecological cancer registered in the chemotherapy unit of the training and research hospital in the city center were included in the study. The study sample consisted of 15 participants. The participants, who were determined by the purposeful samples method, were interviewed until they reached the saturation point (n=15). Inclusion criteria for the study; being diagnosed with gynecological cancer, being over 18 years old, currently undergoing cancer treatment, and volunteering to participate in the study. The exclusion criterion was determined as having any comprehension that communication problems.

Instruments and Data Collection

Data of the study were collected by using an sociodemographic characteristics form and semi-structured interview form designed by the auther in line with the literature (5,6,9,12). The sociodemographic characteristics form consists of six questions to determine age, income status, education level, marital status, and how many years they have taken. The structured interview form, which consists of three open-ended questions, is as follows: "What are your needs that you cannot meet to provide your care during the treatment? Which needs for your care were met by the health institutions you applied to? In which aspects would you like to receive support from the health institution during the treatment?". Data

collection forms were evaluated by experts (two nurse academics).

The interviews were conducted face-to-face in a room in the hospital where the study was conducted, in a room where confidentiality could be ensured. The duration of the interviews varied between 30 minutes and one hour. With the consent of the participants, the interviews were audio recorded. During the recording of the data, the participants were coded by giving numbers from one to fifteen.

Statistical Analysis

The sociodemographic charecterisitcs of participants were evaluated by number, mean, percentage, and standard deviation. Expressions of the participants were analyzed by content analysis method. The data recorded with the audio device were converted into written text as raw data after listening immediately after the interviews and transferred to the Nvivo 11 package program. In line with the purpose of the research, the statements were read many times and the data were coded. Views were combined according to their semantically similarity and code names were created to represent these views. After the generated codes were grouped according to the integrity of meaning, the sub-theme representing these codes and finally the themes of the study were obtained. The data obtained at the end of the analysis were transferred to the participants to confirm the results. Themes, sub-themes and analysis results. It was evaluated by three different academics who were not involved in this study, who are experts in qualitative research and women's health for counseling.

In the study, credibility, consistency and confirmability criteria were provided in order to ensure validity and reliability. In order to increase the credibility of the study, while the personal information form and in-depth interview questions were created, a conceptual framework was created by reviewing the relevant literature and expert opinion was sought. In the content analysis, the themes and the relationship between the sub-themes forming the themes and the relationship of each theme with the others were checked and integrity was ensured. In order to increase the consistency, all the findings are given directly without comment. In-depth data collection, expert review strategies, and participant consent were adopted to ensure reliability.

Results

When the sociodemographic characteristics of the participants shown in Table 1 are examined, the mean age of participants was 53.5±11.14. Five of the participants were primary school graduates, nine of them had middle level and 10 of them were married. Seven of the participants were diagnosed with endometrial cancer and the mean diagnosis time was 10.4±2.5 months. Nine of the participants were being treated with both chemotherapy and surgery.

As a result of the analysis of the interview data, five main themes were created that reflect the supportive care needs of the participants (Fig. 1). These themes were; continuity of care, lack of social support, desire for a sense of control, inability to cope with uncertainty, and lack of communication in the health institution.

Continuity of Care

All participants stated that they needed the support of someone else while meeting the need for care during the treatment process and that this should be continuous. Subject-oriented life two sub-themes were determined as change of lifestyle and financial hardship. All of the participants stated that there were changes in their lives after the diagnosis of cancer and during the treatment process, that they had difficulty in adapting to this process and that they needed the support of someone else during the adaptation process. 12 participants stated that their economic expenses related to cancer treatments were constantly increasing, they had difficulty in meeting this, and they needed to be supported financially by their family members.

Lack of Social Support

10 participants reported that they needed the support of family members or friends during the treatment process.

Desire for a Sense of Control

Six participants stated that they needed to develop a sense of control to adapt to changes in their body during the treatment process and to be respected in order to shape the treatment plan.

Inability to Cope with Uncertainty

Five participants stated that they experienced uncertainty about the future and needed support to improve their coping skills. Two sub-themes were determined for the subject: time of death and treatment process. Four participants expressed concern about the uncertainty of the time of death. Four participants stated that they needed support to cope with the uncertainty of the treatment process.

Lack of Communication in the Health Institution

Seven participants stated that they had communication problems in health institutions and that this problem should be solved. Two sub-themes were identified, the desire for information and the lack of trust. Six participants stated that they needed information about the diseases, symptoms and treatment process. Four participants

stated that there were problems about the treatment plans due to gaps in interdisciplinary communication, and therefore they did not trust health institutions. The same participants stated that they needed support from the health institution to resolve this problem.

How these supportive care needs were expressed by the participants is shown below with direct quotes from their responses (Table 2).

TABLE 2: The data structure for expressions of participants

Theme	Subtheme	Examples of illustrative quotes
Continuity of care	Change of lifestyle	"Our life has completely changed. I have to adjust everything according to my disease. Now I get tired quickly, especially after chemotherapy for a week, I cannot recover, someone has to be by my side all the time" (P3, 62 years old, endometrial cancer) "Yes, I got cancer and I accepted it. After that, it is not really easy. I have to think about everything from food to the my trip. This is not easy either. Someone needs to accompany me" (P5, 45 years old, cervical cancer)
	Financial hardship	"The money flows like water during the treatment and it bothers me very much that I had to constantly make calculations. Someone from my family has to transfer money to me" (P6, 48 years old, endometrial cancer) "It is a fact that I have financial hardship. I do not know where to transfer the money. Sometimes we make a loan. Yes there is insurance but it only covers part of my treatment. I have special medicines that come from abroad and they are very expensive. My husband even took out a loan. It's hard for me to be a burden to him like this." (P10, 55 years old, ovarian cancer)
Lack of social support		"My family tells me that if I had not smoked, I would not have cancer. Let alone asking for support, I am also blamed for having cancer. This situation embarrasses me" (P1, 48 years old, cervical cancer) "My children always tell me to be strong, you will beat cancer, you will succeed. Actually, they have good intentions. It seems boring to say this all the time. It backfires. But I guess ours is a hopeless disease, I'll embarrass them. Having so many surgeries and taking drugs doesn't give a person that power anyway. I expected them to understand this" (P9, 50 years old, ovarian cancer) "I need my friends and family in this process. You ask why? because they are my reason for survival and we must achieve this together. If they were in my place (God forbid), I would give all kinds of support"(P2, 50 years old, cervical cancer)
Desire for a sense of control		"Someone decides about me, yes for me to be well, but no one asks me if it's appropriate. For example, this drug that is right, I have to accept it. Or you will come to the hospital today. I surrender myself to the treatment helplessly and without question. I have cancer. but I can still decide, at least it will make me feel better. I need to control the process" (P15, 40 years old, cervical cancer) "My body has changed after the surgery, I have already entered menopause. I can't stand the heat anymore, they call it hot flashes. Or I vomit after taking my medications. But I used to have no stomach complaints. My body was not like that" (P13, 53 years old, overian cancer)
Inability to cope with uncertainty	Time of death	"Yes, everyone will die one day, but it is difficult to know that I will die of cancer. It is harder to predict when it will happen. I wonder when death waits for the right time? It cannot be said that my illness is going well. But my children have not married yet, I have no grandchildren. Mine should not be an unquestioned surrender, I have to cope, I need this, I'm so sorry" (P4, 52 years old, endometrial cancer) "I have a lot of things to do before I die. I am very worried in case I die suddenly without doing these things. When I get cancer, I keep thinking about when I'm going to die" (P12, 55 years old, endometrial cancer)
	Treatment process	"There are cancer patients around me. They beat cancer but reappeared. Mine can too. I have not recovered from cancer yet, but every time I give a tests, I am waiting for my results and I am afraid that there will be a worse result at any moment. This situation makes me very uncomfortable and I need support in this regard" (P7, 33 years old, endometrial cancer) "It is unclear how long my treatment will continue. I had surgery first, now chemotherapy. This uncertainty is very sad" (P13, 53 years old, overian cancer)

TABLE 2: The data structure for expressions of participants

Theme	Subtheme	Examples of illustrative quotes
Lack of communication in the health institution	Desire for information	"When I go to the hospital, I wonder what was my test result, how is my illness going, what should I do at home? Sometimes health experts give missing answers. In general, they are very busy people, it is okay, but if they spend me a little more time, I would know what to do" (P11, 43 years old, ovarian cancer)
	Lack of trust	"You have to be your own lawyer in the hospital, because I receive heavy treatments and a mistake can throw away everything. I prefer this way to trust the health personnel. I have been treated in larger hospitals and I realized this. When I do not question, I cannot access enough information and services. It is uncomforting to be in this situation, hospitals should deal with this issue " (P8, 30 years old, endometrial cancer) " We do not expect much from hospitals. I want to trust the hospital we go to. For example, let them not do anything wrong because of intensity. They should make us feel that we can trust them " (P14 , 47 years old, endometrial cancer)

Discussion

Women undergoing treatment for gynecological cancers have unmet needs that need to be supported. It is important to continually assess, anticipate and meet the needs of women living with gynecological cancers (13). The supportive care needs stated by the participants in this study are the fields of continuity of care, financial difficulties, psychological, communication and social support. In the literature review, it was determined that the main unmet needs of women treated for gynecological cancer were related to psychological, symptom management, economic and daily life problems (8,14–17).

The theme of "continuity of care needs" determined in this study is an important indicator in terms of increasing the quality of daily life of the participants. In a study conducted in Indonesia, it was reported that daily life changing among the most frequently unmet physical needs of women diagnosed with gynecological cancer (18). In a study conducted in Turkey on this subject, it was determined that 46% of women had needs for daily life changes (9). Thus, the fact that the needs of women who are treated for gynecological cancer to continue care in daily life are not met, shows that it continues as an important problem that prevents individuals from improving their quality of life.

The themes of "desire to cope with uncertainty", "sense of control", and "lack of social support" identified in this study revealed the importance of organizing counseling and rehabilitation programs that include symptom management and psychosocial support for women who are in treatment, and their families and relatives. In the study of Lopez et al., patients treated for gynecological cancer reported needs for social support, isolation, uncertainty, escape from illness, and advocacy. In the same study, participants reported the need for symptom management of regarding the impact of surgical treatment-induced menopause (10). In a study conducted in Turkey on the subject, it was determined that women had problems in meeting the symptom management requirements diagnosed with gynecological cancer (19). Providing support to patients diagnosed with gynecological cancer and their relatives on how to manage the treatment process will make it possible to reduce these concerns. Furthermore, participants needed help coping with family members' expectations of being a "cancer survivor", and strengthening social support in this study. Similarly, other studies reported that many gynecological cancer patients experience increased distress about family members' perspective on cancer and lack of social support (20,21). For these problems, nurses can facilitate open discussions with family members, elicit their fears and concerns, and provide education about common concerns faced by the gynecological cancer patients.

In this study, the sub-themes of "request for information", and "lack of trust" revealed the importance of healthcare professional-patient communication and the fact that these expectations are often not met. A study conducted in Indonesia confirms that 98% of patients with gynecological cancer have at least one unmet need for supportive care, and the need for information is the most widely reflected topic (5). In a study conducted in Sweden, it was defined that the service provided in a health institution is a desire for consistency and continuity in order to improve the quality of life of patients with gynecological cancer (22). The attitude of health professionals is important in terms of reducing communication and information concerns of women who are treated for gynecological cancer. Therefore, health professionals should pay special attention to the problems originating from health institutions in the process of evaluating the supportive unmet needs of gynecological cancer patients.

Several limitations were determined for the present study. Firstly, it was used a small purposive sample that included

a diverse group of gynecological cancer types. The sample was heterogeneous and consisted of endometrial, ovarian, and cervical cancers and diagnosis period ranging from 6 to 10 years. Although most of the participants were treated with both surgery and chemotherapy, their treatment regimens and sociodemographic characteristics were variable and this may affect the type of needs expressed by the participants. Finally, each participant was interviewed only once. More interviews over a period of time could have provided a more complete picture of knowledge on their needs to be supported.

Conclusion

In this study, within the scope of the unmet and to be supported needs of women receiving gynecological cancer treatment; knowledge of continuity of care, psychological, financial, communication, and social support needs were obtained.

A multidisciplinary team approach is needed to meet the supportive care needs of the patients, including oncologists, gynecological oncology nurses, social workers, dietitians, and physiotherapists. A systematic screening process is recommended to identify women undergoing gynecological cancer treatment who need and want support, and to ensure appropriate and timely assistance or referral. In addition, the results of the study showed that research involving large sample groups is needed to determine to what extent these needs are met in health institutions.

Declarations

Ethical Approval: This study was performed in line with the principles of the Declaration of Helsinki. It was obtained Ethics committee approval from Siirt University Non-Interventional Clinical Research Ethics Committee (Application date: 26/11/2021 and, Approval number: 2021/26.11.08), and written informed consent from all participants.

Conflict of interest: The author reported no conflict of interest.

Financial support: The author received no financial support for this study.

Acknowledgements

The author thank the women who participated in this study. This study was presented as an oral presentation at the 1st International Congress of Palliative Care in Nursing 2022 (October 6-8, 2022).

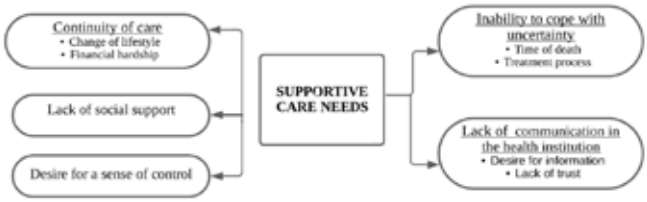

Figure1 Themes and sub-themes emerging from the data analysis

TABLE 1: Sociodemographic characteristics of participants

Characteristics	n	%
Education level		
Illiterate	2	13.3
Literate	3	20.0
Primary school	5	33.4
High school	3	20.0
University	2	13.3
Perceived income level		
Good	2	13.3
Moderate	9	60.0
Poor	4	26.7
Marital status		
Married	10	66.6
Single	5	33.4
Diagnosis		
Endometrial	7	46.6
Ovarian	4	26.7
Cervical	4	26.7
Treatment received*		
Surgery	14	
Chemo	10	
Radiation	3	
Age	X±SD 53.5±11.14 (Min: 40 Max: 62)	
Diagnosis time	X±SD 10.4±2.5 Min: 6 Max: 20	

X: Mean; SD: Standart Deviation; Min: Minimum; Max: Maximum; * Multiple options select

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1347064

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Health Service /Sağlık Hizmetleri

Examination of Dysfunctional Beliefs and Attitudes About Symptoms, Sleep Quality and Sleep in Patients Receiving Hemodialysis Treatment

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Received: 23 August 2023
Accepted: 6 September 2023

Abstract

Objective: This study was conducted to examine the relationship between symptoms, sleep quality, and dysfunctional beliefs and attitudes about sleep in patients receiving hemodialysis treatment.

Material and Methods: This descriptive and correlational study was conducted with 120 patients undergoing hemodialysis in a private hemodialysis center. Data were collected using the Descriptive Information Form, Dialysis Symptom Index (DSI), Pittsburgh Sleep Quality Index (PSQI), and Dysfunctional Beliefs and Attitudes About Sleep Scale-16 (DBAS-16). The statistical analysis of the data obtained as a result of the study was analyzed using number, percentage, standard deviation and arithmetic mean as descriptive statistics, Pearson correlation test and structural equation modeling in IBM SPSS 26 program. Ethics committee approval and permission from the research institution were obtained for the conduct of the study.

Results: The most common hemodialysis-related symptoms were fatigue (70.8%), feeling irritable (61.7%), difficulty falling asleep (60.8%). The mean PSQI Global sleep score of the patients was 7.40±5.02 points. Dialysis Symptom Index explained 26.5% of the change in PSQI Global sleep score in a statistically significant way (F=42.479 p<0.001). The DSI and the total score of the DBAS-16 explained 45.2% of the change in the PSQI Global sleep score in a statistically significant way (F=48.301 p<0.001).

Conclusion: As a result of this study, it was observed that symptom burden and dysfunctional beliefs and attitudes about sleep negatively affected sleep quality in hemodialysis patients. Studies on the management of sleep-related symptoms and regulation of dysfunctional beliefs and attitudes about sleep are recommended to improve sleep quality.

Keywords: Hemodialysis, sleep quality, symptom

Özet

Amaç: Bu çalışma, hemodiyaliz tedavisi alan hastalarda görülen semptomlar, uyku kalitesi ve uyku ile ilgili işlevsiz inanç ve tutumlar arasındaki ilişkinin incelenmesi amacıyla yapıldı.

Gereç ve Yöntem: Bu araştırma tanımlayıcı ve ilişki arayıcı türde, özel bir hemodiyaliz merkezinde hemodiyalize giren 120 hasta ile yapıldı. Veriler Tanıtıcı Bilgi Formu, Diyaliz Semptom İndeksi (DSİ), Pittsburgh Uyku Kalite İndeksi (PUKİ), Uyku ile İlgili İşlevsiz İnanç ve Tutumlar Ölçeği-16 (DBAS-16) kullanılarak toplandı. Araştırma sonucunda elde edilen verilerin istatistiksel analizi IBM SPSS 26 programında tanımlayıcı istatistikler olarak sayı, yüzde, standart sapma ve aritmetik ortalama, pearson korelasyon testi ve yapısal eşitlik modeli kullanılarak analiz edildi. Araştırmanın yürütülebilmesi için, etik kurul onayı ve araştırmanın yapılacağı kurumdan izin alındı.

Bulgular: Hemodiyalize bağlı en çok yaşanan semptomların yorgunluk (%70,8), sinirli hissetme (%61,7), uykuya dalmada zorlanma (%60,8) olduğu belirlendi.Hastaların PUKİ Global uyku puan ortalamasının 7,40±5,02 puan olduğu saptandı. DSİ'nin, PUKİ Global uyku puanı üzerindeki değişimin %26,5'ini istatistiksel olarak anlamlı şekilde açıkladığı (F=42,479 p<0,001) belirlendi. DSİ ve DBAS-16 toplam puanının PUKİ'deki Global uyku puanı üzerindeki değişimin %45,2'sini istatistiksel olarak anlamlı şekilde açıkladığı (F=48,301 p<0,001) görüldü.

Sonuç: Bu çalışma sonucunda hemodiyalize giren hastalarda semptom yükünün ve uyku ile ilgili işlevsel olmayan inanç ve tutumların uyku kalitesini olumsuz etkilediği görülmüştür. Uyku kalitesinin geliştirilmesi için uyku ile ilgili semptomların yönetimine ve uyku ile ilgili işlevsel olmayan inanç ve tutumların düzenlenmesine ilişkin çalışmalar yapılması önerilir.

Anahtar Kelimeler: Hemodiyaliz, uyku kalitesi, semptom

Introduction

Although hemodialysis (HD) is a life-saving treatment method in Chronic Kidney Disease (CKD), symptoms such as muscle cramps, fatigue, sleeplessness, nausea and vomiting, loss of appetite, itching, and irritability are common in patients undergoing hemodialysis (1,2). Insomnia, which is among the common symptoms in HD patients (1,3-6). It is emphasized that it should be considered among the priority symptoms to be managed (7). Sleep problems may occur in association with many factors such as CKD and HD itself, pain, dietary limitations, fatigue, dyspnea, itching, restless leg syndrome, and psychosocial problems caused by a chronic disease, and sleep quality may be negatively affected due to these sleep problems (1,3,4,8). Inability to fall asleep on time, waking up unintentionally at night, not waking up rested in the morning, daytime sleepiness and impaired daytime functioning are indicators of poor sleep quality. In improving sleep quality, it is important to change dysfunctional beliefs and attitudes about sleep. Cognitive Behavior Therapy (CBT) can be used as an effective method in the treatment of chronic insomnia in adults (8). Cognitive Behavior Therapy-Insomnia (CBT-I) method can support the change of dysfunctional beliefs and attitudes about sleep. For this, it may be necessary to evaluate the symptom burden, sleep quality, and dysfunctional beliefs and attitudes about sleep in patients undergoing HD. This study was conducted to evaluate the relationship between symptom experiences, sleep quality and dysfunctional beliefs and attitudes about sleep in patients undergoing HD, which is expected to contribute to the management of sleep quality in patients undergoing HD.

Materials And Methods

Study Design

This descriptive and correlational study was conducted in a private dialysis center.

Sample

Patients who underwent HD in a private dialysis center between 1 July and 30 September 2022 constituted the population of the study. Between these dates, 200 patients were evaluated for research. The sample of the study consisted of 120 patients who met the inclusion criteria and volunteered to participate in the study. Post hoc power analysis was performed for the results found to examine the power of the study. For a sample of 120 patients, the power of the study was found to be 99.9% for the effect of DSI score on PSQI at 5% significance level and power above 80% is considered sufficient in the literature. Individuals aged 18 and over, receiving hemodialysis treatment, volunteering to participate in the study, and having no communication barriers were included in the study.

Measurement Tools

Personal Information Form: The Personal Information Form consisted of a total of 17 questions evaluating participants' age, gender, education, marital status, and information related to hemodialysis (1,6).

Dialysis Symptom Index (DSI): DSI was developed by Weisbord et al. (9) in HD patients in order to determine the symptoms experienced by patients and the level of their effects on patients. The responses were obtained through 5-point Likert scale. The symptoms experienced in the last seven days were answered as yes-no; if the answer was yes, the amount of the effect of this symptom was evaluated as "0=none, 1=a little, 2=sometimes, 3=very little, 4=too much" in 5-point Likert scale. The total score was found by summing up the points obtained. This value ranged from "0 to 150". The value of "0" indicated no symptoms. The increase in the total scores of the answers to 150 points indicated that the effect of the mentioned symptom increased. The validity and reliability of DSI in Turkish was performed by Önsöz and Usta Yeşilbakan (Cronbach's $\alpha = .83$) (10). In this study, Cronbach's Alpha coefficient was found to be 0.89.

Pittsburgh Sleep Quality Index (PSQI): The PSQI has 19-items that are categorised into seven components: subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleep medications and daytime dysfunction. The score for each of the seven components can range from 0 to 3. The PSQI global sleep score is calculated by the sum of the seven components, which ranges from 0 to 21, with a global score ≥ 5 indicating poor sleep quality in the previous month (11). The PSQI has acceptable reliability in Turkish (12). In this study, the Cronbach's Alpha coefficient for the PSQI scale calculated based on 7 components was found to be 0.84.

The dysfunctional beliefs and attidudes about sleep-16 (DBAS-16): It is a scale developed to determine individuals' false beliefs and attitudes about sleep (13). The total score of the scale is obtained by summing the scores obtained from all items (16 items) and dividing by 16. As the score obtained from the scale increases, dysfunctional beliefs about sleep also increase. The DBAS-16 has acceptable reliability in Turkish (Cronbach's $\alpha = .82$) (14). In this study, Cronbach's Alpha coefficient was found to be 0.92.

Data Collection

For participation in the study and data collection, hemodialysis patients were informed about the study and patients who agreed to participate in the study were asked to fill out the data collection forms face to face. It took an average of 10-15 minutes to fill out the data forms.

Data Analysis

Data were evaluated using IBM SPSS Statistics Standard Concurrent User V 26 (IBM Corp., Armonk, New York, USA) statistical package programs. Descriptive statistics were given as number of units (n), percentage (%), mean (Mean), standard deviation (SD), median (M) and minimum (min), maximum (max) values. The normal distribution of the numerical variables was evaluated by Shapiro Wilk normality test and it was found that the scale scores were normally distributed. Therefore, Independent Sample t Test was used to compare two groups and analysis of variance (ANOVA) was used to compare more than two groups. Multiple comparisons were made with Bonferroni test. The relationships between numerical variables were evaluated with Pearson correlation coefficient.

Before starting the basic analysis, the prerequisites of the structural equation model such as sample size, outlier analysis, multicollinearity problem and normality assumption were examined. The non-zero values of the mediating variables at 95% confidence intervals indicate that the indirect effect is significant. For this reason, the bootstrap method was preferred for testing mediation models as it provides more reliable results. $p<0.05$ level was considered statistically significant.

Ethical Consideration

In order to conduct the research, ethical approval was obtained from the KTO Karatay University Non-Drug and Non-Medical Device Research Ethics Committee under the approval number 2022/033, and permission was obtained from the institution where the research would be conducted. Participation in the study was entirely voluntary, and written consent was obtained from the participants.

Results

The mean age of the participants was 54.71±12.11 years, 55.8% were male, 75.8% were married, 84.2% had an additional chronic disease, and 50% had been on hemodialysis for ≥3 years (Table 1).

TABLE 1: Distribution of participants' socio-demographic characteristics and hemodialysis history

Age, (Year)	
Mean±SS	54.71±12.11
Median (min-max)	53.5 (35-86)
Gender, n (%)	
Woman	53 (44.2)
Male	67 (55.8)
Marital Status, n (%)	
Married	91 (75.8)
Single	29 (24.2)
Education Status, n (%)	
Primary School	87 (72.5)
High School	18 (15.0)
College	15 (12.5)
Working Status, n (%)	
Working	96 (80.0)
Not Working	24 (20.0)
Chronic Disease, n (%)	
Yes	111 (84.2)
No	19 (15.8)
Hemodialysis Time, n (%)	
<1 year	15 (12.5)
1-3 years	45 (37.5)
≥3 year	60 (50.0)
mean± standart deviation and Median (minimum, maximum)	

The most common symptoms related to hemodialysis treatment were feeling fatigue/decrease in energy (70.9%), difficulty maintaining sleep (61.7%), difficulty falling asleep (60.8%), feeling irritable (58.4%), muscle cramps (48.3%), worrying (46.7%), dry skin (42.5%), itching (42.5%), feeling uncomfortable (40.9%), and numb feet (39.2%) (Table 2).

TABLE 2: The frequency and severity of the symptoms experienced by patients according to the dialysis symptom index (n=120)

	None %	Little%	Sometimes %	Very little %	Too much %
Feeling fatigue/Decrease in energy	29,2	14,2	17,5	12,5	26,7
Difficulty maintaining sleep	38,3	7,5	10,8	4,2	39,2
Difficulty falling asleep	39,2	10	8,3	6,7	35,8
Feeling angry	41,7	10	10	9,2	29,2
Muscle cramps	51,7	8,3	16,7	7,5	15,8
Worrying	53,3	10	7,5	5	24,2
Dryness in the skin	57,5	5	6,7	7,5	23,3
Itching	57,5	4,2	7,5	5	25,8
Feeling irritable	59,2	8,3	6,7	6,7	19,2
Drowsiness/Tingling in Feet	60,8	5,8	9,2	5	19,2
Bone-Joint Pain	62,5	8,3	10,8	5,8	12,5
Feelind sad	64,2	9,2	7,5	5	14,2
Feeling anxious	64,2	10,8	3,3	3,3	18,3
Constipation	66,7	5,8	10	6,7	10,8
Headache	67,5	10	11,7	5	5,8
Shortness of breath	68,3	12,5	10	1,7	7,5
Dry mouth	68,3	5	12,5	4,2	10
Muscle soreness	68,3	5,8	9,2	5,8	10,8
Swelling in the legs	69,2	10	9,2	9,2	2,5
Difficulty in keeping the legs still	69,2	9,2	0,8	5,8	15
Difficulty in concentrating	70	5,8	10,8	5	8,3
Drowsiness/Diziness	71,7	10	8,3	6,7	3,3
Cough	75	6,7	10	5	3,3
Difficulty becoming sexually aroused	76,7	1,7	5	4,2	12,5
Decrease in interest in sex	77,5	3,3	3,3	5	10,8
Decrease in appetite	83,3	5,8	5	2,5	3,3
Vomiting	85	5,8	4,2	0,8	4,2
Diarrhea	88,3	5	1,7	0	5
Chest pain	88,3	4,2	5,8	0,8	0,8
Nausea	92,5	0,8	2,5	1,7	2,5

The mean DSI score of the participants was 28.44±21.23 points, the mean PSQI Global sleep score was 7.40±5.02 points, and the mean DBAS-16 total score was 5.34±1.99 points (Table 3).

TABLE 3: Mean scores of Dialysis Symptom Index (DSI), Pittsburgh Sleep Quality Index (PSQI) and Dysfunctional Beliefs and Attitudes Scale-16 (DBAS-16).

Scale	Mean±SD	M (min-max)
Dialysis Symptom Index	28.44±21.23	24.50 (0-80)
PSQI Subjective sleep quality	1.42±1.07	1 (0-3)
PSQI Sleep latency	1.77±1.17	2 (0-3)
PSQI Sleep duration	1.04±1.16	0 (0-3)
PSQI Habitual sleep efficiency	0.83±1.16	0 (0-3)
PSQI Sleep disorder	1.14±0.58	1 (0-3)
PSQI Daytime dysfunction	0.81±0.85	1 (0-3)
PSQI Sleep medication usage	0.36±0.86	0 (0-3)
PSQI Global sleep score	7.40±5.02	7 (0-21)
DBAS-16 Perceived consequences of insomnia	7.71±2.41	5.17(1-17)
DBAS-16 Worry/helplessness about insomnia	62,5	8,3
DBAS-16 Sleep expectations	64,2	9,2
DBAS-16 Medication	64,2	10,8
DBAS-16 Total Score	5.35±2.70	5,8

mean ± standart deviation ve Medyan (min- max)

There were statistically significant positive correlations between PSQI Global sleep score and DSI scale total scores (r=0.649 p<0.001), positive correlations between DBAS-16 and DSI scale total scores (r=0.514 p<0.001), and positive correlations between DBAS-16 and PSQI Global sleep scores (r=0.485 p<0.001) (Table 4).

TABLE 4: Correlation between total scores of DSI, PSQI, and DBAS-16 scales (N=120).

	DSI	PSQI
PSQI	r=0.649 p<0.001	
DBAS-16	r=0.514 p<0.001	r=0.485 p<0.001

r: Pearson correlation coefficient, Bolded sections are statistically significant (p<0.05).

DSI had a statistically significant positive effect of 0.05±0.01 units on the PSQI (zβ=0.52 p<0.001). DSI explained 26.5% of the change in PSQI in a statistically significant manner (F=42.479 p<0.001) (Table 5). In the mediator model, DSI had a statistically significant positive effect of 0.13±0.02 units on the PSQI (zβ=0.54 p<0.001). DBAS-16 had a statistically significant positive effect of 0.52±0.20 units on PDSI (zβ=0.21 p<0.001). The total scores of DSI and DBAS-16 statistically significantly explained 45.2% of the change in PDSI (F=48.301 p<0.001) (Table 5).

TABLE 5: Evaluation of the mediator role of DBAS-16 in the impact of DSI on PSQI.

	Result Variables			
Prediction Variables	DBAS-16		PSQI	
	β±se	p	β±se	p
DSI	0.05±0.01	<0.001	0.13±0.02	<0.001
DBAS-16	-	-	0.52±0.20	0.011
Constant	3.97±0.26	<0.001	0.98±0.98	0.324
	R^2=0.265		R^2=0.452	
	F=42.479 p<0.001		F=48.301 p<0.001	

β: Regression coefficient, se: Standard error, R2: Coefficient of determination, Bolded sections are statistically significant (p<0.05).

While the increase in the overall total score of DSI increases the DBAS-16 score, the increase in these two scales statistically significantly increases the PSQI Global sleep score. The model created is given in Figure 1.

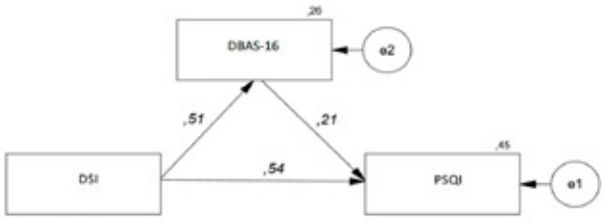

Figure1. Structural Equation Model (SEM) for the mediating role of DBAS-16 in DSI's impact on PSQI

Discussion

In this study, it was determined that patients on hemodialysis most commonly experienced fatigue, difficulty maintaining and falling asleep, feeling irritable, and muscle cramps. In a recent study on the symptom burden of 620 patients undergoing hemodialysis, it was determined that the most common symptoms were muscle cramps, itching, nervousness and anxiety (2). Another study found that patients undergoing hemodialysis most frequently experienced symptoms of fatigue/lack of energy, muscle cramps, bone/joint pain, constipation an difficulty falling asleep (1). In a study evaluating the symptoms reported by 512 patients undergoing hemodialysis at three time points, it was found that the most common symptoms were fatigue, dry skin, difficulty maintaining sleep and muscle cramps (15). As seen in the studies, symptoms such as fatigue, muscle cramps and itching are common in patients undergoing hemodialysis. This shows the importance of symptom management in hemodialyzed patients.

In this study, it was determined that the PSQI global sleep score average of the participants was above 5 points. In the study of Pan et al., similar to the findings of this study, it was found that the global PSQI score average of patients undergoing hemodialysis was 5 points above (16). Primary insomnia may also occur at the beginning of HD treatment, and the incidence of HD-related insomnia may increase further (17). Studies have shown that most of the patients undergoing hemodialysis have poor sleep quality (18-20). In a meta-analysis evaluating the sleep quality of patients entering HD, it was found that 75.30% of the patients had poor sleep quality (21). Side effects such as fatigue, anxiety, muscle cramps and itching may negatively affect sleep quality (20, 22). In a study, they found that fatigue, anxiety, and depression were higher in patients with poor sleep quality, and that patients with insufficient sleep experienced 3.9 times more fatigue (20). In another study, in patients entering HD, feeling tired/lack of energy and difficulty falling asleep; difficulty falling asleep and staying asleep; It was determined that feeling tired/lack of energy and difficulty in maintaining sleep constitute a symptom cluster (23). As can be seen, the side effects experienced in patients undergoing hemodialysis may cause sleep quality, and poor sleep quality may cause more adverse effects and adversely affect the quality of life (24). Cognitive Behavioral Therapy-Insomnia (CBT-I), which is applied with the use of various combinations such as stimulus control, sleep restriction, sleep hygiene, relaxation and psychoeducation of cognitive restructuring for dysfunctional beliefs and attitudes about sleep, is a treatment approach with proven effectiveness in eliminating sleep problems (8,25). In order to manage sleep problems and improve sleep quality, it is important to evaluate the sleep problem and the factors affecting it and to create a care plan according to the results of this evaluation. In this study, it was determined that dysfunctional beliefs and attitudes about sleep together with symptom burden negatively affect sleep quality in patients undergoing hemodialysis. Studies have shown that changing false beliefs and attitudes about sleep supports improvements in sleep (26,27) and cognitive behavioral therapy for insomnia has moderate to large effects on dysfunctional beliefs about sleep (28). In a study in which the effect of CBT on sleep-related cognitive status was evaluated, it was determined that DBA mediated the effect of CBT-I on the severity of insomnia and had a 6-month effect on sleep quality and sleep problems (29). Studies on improving sleep quality with CBT-I in HD patients are limited (30). According to the results of this study, it is thought that evaluating dysfunctional beliefs and attitudes about sleep and managing the symptoms that are thought to be effective on sleep quality will be effective in improving sleep quality in HD patients.

Conducting the study in a single HD center constituted the limitation of the study. In addition, patients may have been tired due to the use of a subjective form for symptoms, sleep quality and false belief attitudes.

Conclusion

This study investigated the effects of symptom burden and dysfunctional beliefs and attitudes about sleep on sleep quality. It was concluded that sleep quality was poor in HD patients and symptom burden and dysfunctional beliefs and attitudes about sleep negatively affected sleep quality. This result reveals the importance of improving sleep quality in patients undergoing HD. In improving sleep quality, it is recommended to reduce symptom burden and to conduct studies to identify symptoms associated with sleep quality in patients undergoing HD. In addition, in order to improve sleep quality in patients undergoing HD, it is recommended that symptoms, sleep

quality and false beliefs and attitudes about sleep should be evaluated regularly in patients undergoing HD and care should be planned according to the results of the evaluation.

Declarations

Funding: No financial support was received fort he study.

Conflict of interest: No potential conflict of interest was reported by the authors.

Ethics Approval: The study was approwed by KTO Karatay University Tıbbi Cihaz ve İlaç Dışı Ethics Committe, report number 2022/033 (date:15.06.2022).

Avaliability of Data and Material: The dataset of this study are available from the corresponding author on a reasonable request.

Authors Contributions: All authors contributed to the study's conceived and designed the analysis. Collected the data HGH, HH, contributed data or analysis tools, FG,HGH,HH, performed the analysis, FG, Wrote the paper FG, HGH, HH. All authors read and approved the final manuscript. The article was presented as an oral presentation at the 1st International Selcuk Health Sciences Congress on 13 November 2022.

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1255604

ORIGINAL ARTICLE

Health Institutions Management /Sağlık Kurumları Yönetimi

Traditional And Complementary Medicine Practices Used To Prevent Covid-19 Pandemic: A Cross-Sectional Study From Turkiye

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Received: 24 April 2023
Accepted: 13 September 2023

Abstract

Purpose: The COVID-19 pandemic has shown its effect worldwide and has caused people to experience hard times. This study aims to determine the traditional and complementary medicine (T&CM) practices applied to protect from COVID-19 and attitudes toward them.

Methods: This is a cross-sectional study. Individuals aged 18 years and older were included in the study. A questionnaire form was delivered between April 1 and April 30, 2021, to the participants online through social media due to the measures implemented throughout the country due to the COVID-19 pandemic. In this study, descriptive statistics (mean, standard deviation, median value, minimum, maximum, number, and percentile) were given for categorical and continuous variables. Whether there is a difference between the ratios of a single categorical variable and the relationships between two categorical variables were analyzed using Fisher's exact and chi-square tests. A $p < 0.05$ was considered statistically significant.

Results: About half of those surveyed used T&CM to ward off the COVID-19 outbreak. The most used method was herbal mixtures. The prevalence was strongly associated with gender and previous diagnosis of COVID-19. Most of the participants believed that T&CM practices were necessary.

Conclusion: Societies'T&CM experiences are valuable and worth learning. There is an opportunity to test the true value of T&CM in prevention and treatment of COVID-19. Considering the frequency of use of T&CM practices, it can be suggested that this should be implemented more frequently by health professionals as a policy.

Keywords: T&CM, Complementary medicine, Traditional medicine, COVID-19, protection.

Özet

Amaç: COVID-19 pandemisi dünya genelinde etkisini göstermiş ve insanların zor zamanlar yaşamasına neden olmuştur. Bu çalışma, COVID-19'dan korunmak için uygulanan geleneksel ve tamamlayıcı tıp uygulamalarını ve bunlara yönelik tutumları belirlemeyi amaçlamaktadır.

Yöntemler: Bu, kesitsel bir çalışmadır. 18 yaş ve üzeri bireyler çalışmaya dahil edildi. COVID-19 pandemisi nedeniyle ülke genelinde uygulanan tedbirler nedeniyle katılımcılara 1 Nisan-30 Nisan 2021 tarihleri arasında sosyal medya üzerinden online olarak anket formu ulaştırıldı. Bu çalışmada kategorik ve sürekli değişkenler için tanımlayıcı istatistikler (ortalama, standart sapma, ortanca değer, minimum, maksimum, sayı ve yüzdelik) verilmiştir. Tek bir kategorik değişkenin oranları arasında fark olup olmadığı ve iki kategorik değişken arasındaki ilişkiler Fisher'in kesin ve ki-kare testleri kullanılarak analiz edildi. Bir $p < 0,05$ istatistiksel olarak anlamlı kabul edildi.

Bulgular: Ankete katılanların yaklaşık yarısı COVID-19 salgınını önlemek için geleneksel ve tamamlayıcı tıp uygulamaları kullandı. En çok kullanılan yöntem fitoterapi yani bitkisel karışımlardı. Prevalans, cinsiyet ve önceki COVID-19 tanısı ile güçlü bir şekilde ilişkiliydi. Katılımcıların çoğu geleneksel ve tamamlayıcı tıp uygulamalarının gerekli olduğuna inanıyordu.

Sonuç: Toplumların geleneksel ve tamamlayıcı tıp deneyimleri değerlidir ve öğrenmeye değerdir. COVID-19'un önlenmesi ve tedavisinde geleneksel ve tamamlayıcı tıp uygulamalarının gerçek değerini test etme fırsatı oldu. Geleneksel ve tamamlayıcı tıp uygulamaları kullanım sıklığı göz önüne alındığında bunun bir politika olarak sağlık profesyonelleri tarafından daha sık uygulanması önerilebilir.

Anahtar Kelimeler: COVID-19, Geleneksel ve Tamamlayıcı Tıp, korunma, salgın hastalıklar.

Introduction

COVID-19 was first reported on December 29, 2019, in Wuhan, Hubei Province, China, as cases of pneumonia of unknown cause at the time. On January 5, 2020, it was defined as a new coronavirus that had never been detected before (1). On March 12, 2020, the World Health Organization (WHO) declared COVID-19 a pandemic. The first case was confirmed in Turkey on March 11, 2020 (2, 3). The spread of COVID-19 has varied in each country. The common idea about the transmission of COVID-19 is person-to-person and respiratory droplet transmission. Research shows that the virus is transmitted by respiratory droplets and direct contact, and this is the most important point in the transformation of COVID-19 into an epidemic. To break the chain of transmission, the WHO recommended washing hands frequently with soap for 20 seconds, covering the mouth with the inside of the arm when coughing or sneezing, not touching body cavities such as eyes, mouth, and nose, and keeping a minimum distance of six feet between people (4). In addition to these measures, in line with the COVID-19 guidelines and treatment algorithms prepared by the Scientific Committee of the Ministry of Health in Turkey, medical treatment is applied to patients diagnosed with or suspected of COVID-19 (3).

The WHO announced that $1.96 billion under the COVID-19 Strategic Preparedness and Response Plan will be spent to prevent transmission, reduce exposure, counter misinformation and disinformation, protect vulnerable areas, reduce death and disease rates, and increase equity. Fighting against coronavirus, including prevention, treatment, and vaccine studies, is costly in all aspects (2). While the emergence of effective vaccines offers hope to governments, the scientific community, and the public, no definitive pharmacotherapy has yet been established to prevent and treat COVID-19 (5). However, many publications from different countries on the use of traditional and complementary medicine (T&CM), which are popular in some cultures, in the COVID-19 pandemic are entering the literature.

T&CM has been used to treat numerous epidemics in human history, which offers hope to combat COVID-19 in some regions. But governments often remain silent about these practices because of the potential harm. This difference results from inconsistency in culture, history, and philosophical views on healthcare and medicine (6). While some countries, including China and India, report the use of various T&CM practices (7-9), European and North American countries remain silent on these practices (10). There is also news that T&CM is being used in Turkey (11).

The WHO defines T&CM as "physical and mental therapy, which is the total of knowledge, skills, and practices used in the prevention, diagnosis, improvement, or treatment of diseases as well as in the maintenance of health, based on theories, beliefs, and experiences specific to different cultures, whether explainable or not." The WHO and the health ministries of many countries consider T&CM necessary (12).

The subject of curiosity, which is the basis of this study, is to determine the T&CM methods used by people living in Turkey within the scope of the measures during the COVID-19 epidemic, for which modern/scientific medicine has not yet found a full cure. This study aims to determine the T&CM uses and attitudes toward them to protect from COVID-19.

The study questions are as follows

1. Which T&CM methods have been used to protect from the COVID-19 pandemic?
2. Are T&CM methods used to protect from the COVID-19 pandemic related to sociodemographic characteristics?

Materials And Methods

Study Design

This is a cross-sectional study, which is one of the descriptive study types. The study included individuals aged 18 years and older. A survey form was prepared by the researchers using Google forms. The questionnaire form was delivered between April 1 and April 30, 2021, to the participants online through social media due to the measures implemented throughout the country due to the COVID-19 pandemic. Thed a preliminary questionnaire that was tested in the pilot study. Later, the questionnaire was revised, and data were collected via Google form on social media.

Participants

Adults over the age of 18 were included in the study. The sample selection method was not used, and those who filled out the online questionnaires at the time of data collection constituted the study group. The data of 549 participants were collected. Five participants were excluded from the study group because they were under the age of 18, and the number of participants decreased to 544.

Ethical Aspect

For this research, which aims to collect data on the use of T&CM during the COVID-19 pandemic period, permission was obtained first from the Ministry of Health of the Republic of Turkey and then from the Ethics Committee of Non-Interventional Clinical Researches of KTO Karatay University. The participants were given written information about the study, and their consent was obtained before starting the survey.

Statistics

SPPS 25 (IBM SPSS Statistics for Windows, Released 2017, IBM Corp., Armonk, NY) statistical package program was used to evaluate the data. In this study, descriptive statistics (mean, standard deviation, median value, minimum, maximum, number, and percentile) were given for categorical and continuous variables. Whether there is a difference between the ratios of a single categorical variable and the relationships between two categorical variables were analyzed using Fisher's exact test and chi-square test. $p < 0.05$ was considered statistically significant.

Results

The demographic data of the 544 participants are presented in Table 1.

The data revealed that 51% of the participants were aged between 18 and 29 years, 21% between 30 and 39 years, 16% between 40 and 49 years, and 13% 50 years and over. 25% of the participants were males, and 75% were females. 9% of the participants had primary school education level, 4% secondary school education level, 9% high school education level, 76% university education level, and 2% postgraduate education level. 27% reported that their income was low, 61% reported that their income was equal to expenses, and 12% reported that their income was high. While 19% of the participants were diagnosed with COVID-19 at a previous time, 81% were undiagnosed. The rate of those with a chronic disease was 20%. 96% of the participants thought that they had enough information about the COVID-19. In the study, it was found that 63% of the participants took the recommended measures for COVID-19, while 36% took them partially and 1% did not take any precautions (Table 1).

TABLE 1: Demographic characteristics (n = 544).

		n	%
Age group (years)	18-29	273	51
	30-39	113	21
	40-49	89	16
	50 +	69	13
Gender	Male	134	25
	Female	410	75
Level of Education	Primary Level	48	9
	Middle School	24	4
	High School Level	49	9
	Undergraduate Leve	413	76
	Post-Graduate Level	10	2
Income perception	Low income	145	27
	Income equals expense	332	61
	High income	67	12
Being diagnosed with Covid-19 at a previous time	Yes	101	19
	No	443	81
Chronic disease	Yes	110	20
	No	434	80
Knowing what kind of disease COVİD-19 is	Yes	521	96
	No	23	4
Complying with all necessary measures to protect from COVİD-19	Yes	343	63
	No	5	1
	Partially	196	36

The beliefs and practices of the participants about T&CM are presented in Table 2. 36% of the participants stated that they had knowledge about T&CM, 51% had partial knowledge, and 13% did not have knowledge. 15% of the participants found their knowledge sufficient, 55% found it partially sufficient, and 30% found it insufficient. While 96% of the participants stated that they had a source of information about T&CM, 4% stated that they did not have

any. The participant reported that the information sources were Internet (32%), physicians (16%), friends (15%), family (13%), books (13%), and herbalists (10%). 71% of the participants reported that T&CM was necessary, 28% were unsure, and 1% found it unnecessary. When they got sick, 44% of the participants first used T&CM and 56% applied to health institutions. In case of illness, 9% relied on T&CM, 38% on physician recommendations, and 53% on both. 79% of the participants thought that T&CM was beneficial, 20% had no idea, and 1% thought that it was harmful. When the T&CM used by the participants to protect themselves from COVID-19 was examined, 65% of the participants reported that they used any method. 53% of the methods used were herbal mixtures, 28% okuma, 10% other methods, 4% acupuncture, 4% hijama, and 1% hirudotherapy. While 11% of the participants found T&CM sufficient, 89% thought that it was insufficient. 13% of those who used T&CM recommended it to others, 87% did not recommend it to anyone else (Table 2).

TABLE 2: Beliefs and practices of participants about T&CM (n = 544)

		n	%
Knowledge about T&CM	Yes	198	36
	No	71	13
	Partially	275	51
Status of finding sufficient T&CM related information	Yes	84	15
	No	163	30
	Partially	297	55
T&CM information resource	Family	195	13
	Herbalist	140	10
	Friends	222	15
	Physician	240	16
	Books	195	13
	İnternet	475	32
Believing in the necessity of T&CM	Necessary	385	71
	Unnecessary	8	1
	To be not sure	151	28
The most trusted application in case of illness	T&CM	49	9
	Physician recommendations	205	38
	Both of them	290	53
Believing in the benefit of the T&CM used	Damaging	3	1
	No idea	111	20
	Beneficial	430	79
Using T&CM to protect Covid 19	Yes	353	65
	No	191	35
T&CM used to protect from Covid-19	Herbal Mixtures	232	53
	Okuma	121	28
	Acupuncture	16	4
	Hacamat	19	4
	Other	44	10
	Hirudoterapi	5	1
Believing in T&CM stand-alone sufficiency	Yes	58	11
	No	486	89
Recommend used T&CM to someone else	Yes	70	13
	No	474	87

Table 3 shows the T&CM used to protect from COVID-19 according to the participants' sociodemographic characteristics. The use of T&CM for protection from COVID-19 showed a statistically significant relationship with gender ($\chi^2 = 9.717$; $p = 0.002$) and being diagnosed with COVID-19 ($\chi^2 = 8.287$; $p = 0.004$). 20.4% of those who used T&CM to protect themselves from COVID-19 were men, and 79.6% were women. 32.5% of nonusers were male, and 67.5% were female. 22.1% of those who used T&CM to protect themselves from COVID-19 had been diagnosed with COVID-19 before, and 77.9% had not. 12% of those who did not use T&CM were diagnosed with COVID-19, and 88% did not. There was no statistically significant relationship between other demographic characteristics and the use of T&CM to protect from COVID-19 ($p > 0.05$) (Table 3).

TABLE 3: Evaluation of demographic characteristics by T&CM use for protection from COVID-19

		Using T&CM to protect Covid 19			
		Yes (%)	No (%)		
Age group, years	18-29	171 (%48,4)	102 (%53,4)	Critical value	p¥
	30-39	71 (%20,1)	42 (%22)	5,177	0,270
	40-49	67 (%19)	22 (%11,5)		
	50 +	44 (%12,5)	25 (%13,1)		
Gender	Male	72 (%20,4)	62 (%32,5)	9,717	0,002 **
	Female	281 (%79,6)	129 (%67,5)		
Level of education	Primary Level	27 (%7,6)	21 (%11)	4,724	0,317
	Middle School	12 (%3,4)	12 (%6,3)		
	High School Level	34 (%9,6)	15 (%7,9)		
	Undergraduate Level	273 (%77,3)	140 (%73,3)		
	Post-Graduate Level	7 (%2)	3 (%1,6)		
Income perception	Low income	86 (%24,4)	59 (%30,9)	2,703	0,259
	Income equals expense	222 (%62,9)	110 (%57,6)		
	High income	45 (%12,7)	22 (%11,5)		
Being diagnosed with Covid-19 at a previous time	Yes	78 (%22,1)	23 (%12)	8,287	0,004 **
	No	275 (%77,9)	168 (%88)		
Chronic disease	Yes	69 (%19,5)	41 (%21,5)	0,283	0,595
	No	284 (%80,5)	150 (%78,5)		
Knowing what kind of disease COVİD-19 is	Yes	339 (%96)	182 (%95,3)	0,17	0,68
	No	14 (%4)	9 (%4,7)		
Complying with all necessary measures to protect from COVİD-19	Yes	224 (%63,5)	119 (%62,3)	1,386	0,500
	No	2 (%0,6)	3 (%1,6)		
	Partially	127 (%36)	69 (%36,1)		

It is the prayer done by a holistic person or by yourself.

[b]**Acupuncture:** it is a healing therapy that is used around the world and dates back 3000 years. Acupuncture, which is used in various diseases, is a treatment method with needles placed at some special points of the body (13).

[c]**Hijama:** it is a treatment method dating back to BC. Hijama is the sunnah of Prophet Muhammad. It is a method in which blood is taken from the patient through the skin to prevent and treat diseases (14).

[d]**Hirudotherapy:** hirudotherapy is a form of treatment that has been used to treat diseases for centuries using medicinal leeches. Leeches have been used therapeutically for many years, but their use has decreased as pharmacotherapy progresses. Today, several biologically and pharmacologically active bioactive substances have been identified in the secretion of leeches they give to tissues they bite during blood sucking (15).

Others: other methods include apitherapy, yoga, and mesotherapy.

T&CM applications used to protect from COVID-19 were evaluated (Table 4). When T&CM applied to protect from COVID-19 was examined, it was determined that 53% of the participants used herbal mixtures, 28% reading, 4% acupuncture, 4% hijama, and 1% hirudotherapy, and 10% other methods. A statistically significant difference was observed between these rates ($\chi^2 = 538.419$; $p = 0.001$) (Table 4). The study findings support the literature information.

TABLE 4: Evaluation of T&CM according to use case for protection from COVID-19.

	n	%	Critical value	p[¥]
Herbal Mixtures	232	53	538,419	0,001 **
[a]Okuma	121	28		
[b]Acupuncture	44	10		
[c]Hacamat	19	4		
[d]Hirudoterapi	5	1		
Other	16	4		
Total	437	100		

Discussion

This study was conducted to determine the T&CM practices used to protect from the COVID-19 pandemic in Turkey and attitudes toward them. More than half of the participants (65%) use T&CM to protect themselves from the COVID-19 pandemic. It is consistent with the results of studies investigating the frequency of T&CM use in Turkey (12, 16).

Considering the sociodemographic data in the study, it was found that only the gender factor made a significant difference in terms of T&CM use (Table 3). The study results showed that women use T&CM applications more frequently than men. This finding is consistent with different T&CM study results (12). In another study, no difference was found between the genders (17).

In a study by Cetin (2007) in Turkey, it was stated that the majority of people who turned to T&CM had a severe illness (cancer, asthma, kidney failure, etc.) in the last year (16). The fact that T&CM is among the types of treatment sought for the disease and the orientation of people shows us that these applications are necessary. This study shows that those who have been diagnosed with COVID-19 at a previous time tend to use T&CM at a high rate. COVID-19 is a difficult disease in many ways. Individuals who had the disease may once have resorted to more protective measures to avoid relapse.

In this study, very few participants recommended the method they used to someone else. In the study by Şimşek et al. (2017), more than half of the participants stated that they used T&CM applications with the advice of the individuals around them (12).

In this study, the source of information for one-third of the participants is the Internet. The reason why the Internet is an important source of information may be that COVID-19 was thought of as an uncertain disease in society for a long time. Another reason is that T&CM in Turkey started to be used in institutions affiliated to the Ministry of Health after the regulations were published by the ministry in 2014 (3), but its application is still uncommon in T&CM health institutions (12).

In a previous study, it was found that the majority of the participants thought that T&CM delayed the timely and correct treatment of sick individuals and that it should be used in cases where medical treatment was not sufficient (18). In this study, it was found that nearly half of the participants first applied T&CM in case of illness.

Since herbal mixtures, one of the T&CM methods, are natural products, it is thought that they will have more beneficial effects than harmful effects, so people have

turned to herbal products instead of using chemical drugs. At the same time, when people want to take a more active role in their health, they may turn to T&CM applications and natural health products based on the assumption that "it is harmless because it is natural." One of the reasons for this orientation may be the desire for a healthy lifestyle (19). In a study covering the whole of Vietnam, more than half of the participants used herbal medicines during the COVID-19 pandemic period (20).

In this study, more than half of the participants think that T&CM applications are beneficial. Similar to our study findings, participants in some studies find T&CM methods useful (19, 21). A very small part of the participants in this study think that T&CM applications are harmful. The underlying reasons for this thought may be the lack of knowledge in that area and how T&CM applications are used or information pollution. In a study parallel to this study, few participants stated that T&CM applications were harmful (22). In another study, a small number of participants reported that they did not find herbal medicines safe (20).

In this study, one of every two T&CM users preferred herbal mixtures. According to the study by Şimşek et al. (2017), the most commonly used T&CM method in Turkey is herbal mixtures (12). Herbal mixtures are widely used worldwide (12, 17, 20).

Limitations

There are several limitations to the studies included in this study. Research findings depend on participants' self-report. No observations were made.

Conclusion

T&CM has accumulated hundreds of years of experience in prevention and treatment of endemic and pandemic diseases. There is still a need to provide complementary and alternative therapies for prevention of COVID-19 and the management of infected patients. Societies' T&CM experiences are valuable and worth learning. There is an opportunity to test the true value of T&CM in prevention and treatment of COVID-19.

The tendency of people to T&CM has increased due to the sudden emergence of the COVID-19 epidemic and its rapid spread among countries and accordingly the slow development of treatment and vaccine methods in Turkey. During the pandemic period, T&CM was used extensively to protect from COVID-19. However, the participants learned and applied this information from unreliable sources such as the Internet, friends, or family, not from health professionals. Considering the frequency of use of T&CM, it can be recommended that it be carried out more widely by health professionals.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Financial support

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1262732

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Evaluation Of The Knowledge And Attitudes About Hypospadias Of The Parents Of Children Diagnosed With Hypospadias: A Qualitative Study

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Received: 10 March 2023
Accepted: 16 September 2023

Abstract

Purpose: The purpose of the study to determine the knowledge and attitudes of the parents of children diagnosed with hypospadias.

Methods: This descriptive study conducted on the families of children diagnosed with hypospadias and discharged from a pediatric surgery clinic in a state hospital in Istanbul between April 2018 and December 2018. Data collected with parent information form, type recorder, semi-structured interview. Content analysis was used to evaluate the qualitative data. Research results are reported according to the COREQ Checklist.

Results: After analyzing the interviews of the participants, eight themes have been created: "Inaccuracy of information about hypospadias", "The fact that the information is not clear and understandable by the family", "Anxiety about the surgery and the prognosis of the disease in the pre-operative period", "Fears about the process and after the surgery", "Positive emotions after surgery", "Negative emotions after surgery", "Supporting post-operative care", "Importance of cosmetic appearance",

Conclusion: It was found that the parents did not have enough information about hypospadias and the postoperative process adversely affected the attitudes of the parents towards the disease.

Keywords: Attitude; children; parents; hypospadias.

Özet

Giriş: Hipospadias 300 doğumda bir görülen konjetinal doğum anomalisidir. Toplumda görülme sıklığının fazla olması nedeniyle bu hastalığa sahip olan ailelerin bilgi ve tutumlarının bilinmesi önem taşımaktadır.

Amaç: Araştırma hipospadiaslı çocuğu olan ailelerin bilgi ve tutumlarının incelenmesi amacıyla yapılmıştır.

Yöntem: Tanımlayıcı olan araştırma Nisan 2018-Aralık 2018 tarihleri arasında İstanbul'da bir eğitim araştırma hastanesinin çocuk cerrahisi kliniğinden taburcu olmuş 31 hipospadiaslı çocuğun ebeveyni ile yapılmıştır. Veri toplama aracı olarak; Ebeveyni Tanıtıcı Bilgi Formu, Ses Kayıt Cihazı, Yarı Yapılandırılmış Görüşme Formu kullanılmıştır. Niteliksel verileri değerlendirmek için içerik analizi yapılmıştır. Araştırma sonuçları COREQ Checklist'e göre raporlanmıştır.

Bulgular: Katılımcıların görüşmeleri çözümlenmiş ve sekiz adet tema oluşturulmuştur: "Hipospadias Hakkında Doğru Bilgiye Sahip Olmama", "Yapılan Bilgilendirmenin Aile Tarafından Açık ve Anlaşılır Bulunmaması", "Ameliyat Öncesi Dönemde Ameliyat ve Hastalığın Prognozuna İlişkin Anksiyete", "Ameliyat Süreci ve Sonrasına İlişkin Korkular", "Ameliyat Sonrası Olumlu Duygular", "Ameliyat Sonrası Olumsuz Duygular", "Ameliyat Sonrası Bakımın Desteklenmesi", "Kozmetik Görünümün Önemi".

Sonuç: Ebeveynlerin hipospadiasla ilgili yeterli bilgiye sahip olmadıkları, ameliyat sonrası sürecin ebeveynlerin hastalığa karşı olan tutumlarını olumsuz etkilediği saptanmıştır.

Anahtar Kelimeler: Aile; çocuk; hipospadias; tutum.

Introduction

Hypospadias is a congenital birth anomaly that is seen in approximately one in 300 births and is characterized by the urethral meatus being located proximal instead of ventral to the penis. (1). Although the etiology of hypospadias anomaly is not known exactly, it is thought to be affected by many factors such as environmental, genetic and endocrine causes (2,3). The only treatment method for hypospadias, which is easily diagnosed in the routine examination of the neonate (4), is surgery. (5).

Nursing care gains importance in hypospadias anomaly due to both the psychological status of the child and the parents and the variability of the surgical procedure. Hypospadias care includes pre and post-operative care (6). The nurse, who will carry out the care in a holistic manner during the operation, should ensure that the child and parents are informed about the pre and post-operative procedures and its complications. (7).

Attitude literally means "the way taken, the manner". (8). According to another definition, attitude is defined as “a relatively stable organization of beliefs, feelings, and tendencies towards something or someone, the object of attitude”. (9). Attitudes are individual and cannot be observed. Observing attitudes is only possible if it is reflected in behaviour. It is difficult to change because they emerge as a result of experience. If the attitude that develops in the face of thoughts and objects is positive, positive behaviours emerge. Even if a negative attitude is developed, behaviours such as adopting, rejecting, and distancing can be seen. (10). As in hypospadias, the parents who experience stress due to the necessity of a surgical intervention may develop ignorance and negative attitudes towards the procedures performed in the hospital. For this reason, family-centred care should be applied in the care of the child, and the child and the family should be considered as a whole (11). Knowing the attitudes that may occur against any event or disease increases the quality of care by ensuring that the nursing care is effective. (12).

Based on this information, the study was planned to determine the knowledge and attitudes of the families of children diagnosed with hypospadias.

Research Questions

1. Is the knowledge of the families of children with hypospadias sufficient about the disease?
2. Does the postoperative period affect the attitudes of families about the disease?

The research, which was planned in the phenomenology design, which is one of the qualitative research methods, was carried out in the paediatric surgery service of a training and research hospital in Istanbul between April 2018 and December 2018.

Participants

The population of the study consisted of the parents of children with hypospadias who had undergone surgery in the paediatric surgery service of a training and research hospital. Purposive sampling method was used in the research. Parents who met the criteria for the children of the families to have had hypospadias surgery and to voluntarily participate in the study were included in the study. Participants who did not complete the focus group interview were excluded from the study. The sample did not calculate. The study was concluded when the data were satisfactory. The study was concluded with 31 parents.

Data Collection Tools

Parent introductory information form: The form consists of 6 closed-ended questions containing sociodemographic characteristics of parents (age, education level) prepared by the researcher by the literature.

Semi-structured interview form: The form consists of 6 semi-structured interview questions prepared by the researcher in line with the literature:

1. Did you know about what hypospadias was before the diagnosis? Please explain.
2. Were you sufficiently informed about the hypospadias surgery before the operation? Please explain.
3. What were your preoperative concerns? Please explain.
4. How did you feel on the day of the surgery? Please explain.
5. How did you feel after the surgery? Please explain.
6. How did you feel when you returned home after the surgery? Please explain.

6.1. Are you satisfied with the postoperative appearance and voiding function? Please explain.

Data Collection

Data collection was carried out in the presence of a moderator (researcher KT) and a reporter by means of a mini group interview consisting of 4-6 people. A pilot study was conducted with a group of 5 people in terms of the intelligibility of the questions. Since the participants stated that the questions were understandable, no correction was needed. The study was concluded when the data were satisfied with a total of 31 parents. Verbal permission was obtained from the parents for the interview and a common time frame was determined. The interviews were conducted in the form of face-to-face focus group discussions. Name badges were distributed to the parents participating in the study.

Before starting the interview, it was stated the purpose of the study, a voice recorder would be used during the interview, and that the information and ideas received would not be shared with anyone and would remain confidential. Written consent of the parents was obtained with the "Information Consent Form". First of all, demographic information of the parents was collected with the "Parent Introductory Information Form". During the interview, the parents' feelings, thoughts, attitudes and opinions about the research topic were obtained through semi-structured interview questions. The information was recorded on the voice recorder. The duration of the interviews was between 45 and 60 minutes. The interviews were concluded when the participants started to have similar feelings, thoughts and opinions, that is, when they reached satisfaction.

Data Analysis

In the analysis phase, all the answers, reactions, moments of silence, etc. of the participants were recorded by making use of the observation notes and it was translated into writing in a short time after the interview in order to avoid data loss. In the first stage of the analysis of the data, firstly, meaning extraction (1st level coding) was made from these data in line with the purpose of the research. In the second stage, the data were classified (2nd level coding). In the third stage, themes were created in line with the classified data (3rd level coding) (13). In terms of reliability, the data were analysed by another expert besides the researcher.

The records were listened to by a second expert who is an expert in pediatric nursing and has scientific studies on qualitative research method, and they were translated into writing independently of the researcher, and the themes were finalized by comparing them with the codes created by the researcher. In the analysis of sociodemographic characteristics, number, percentage, mean and standard deviation were used according to the normal distribution characteristics of the data. Research results are reported according to the COREQ Checklist.

Ethical Considerations

Ethical approval was obtained from the Ethics Committee of Marmara University Health Sciences Institute with the approval number 78 dated 05.03.2018. Written and verbal consent was obtained from all participants. Research and publication ethics were complied with in the article.

Results

Sociodemographic characteristics of the parents participating in the study are shown in Table 1.

TABLE 1: Sociodemographic characteristics of parents

Characteristic	n	%
Education		
Literate	1	3.23
Primary school	4	12.90
Secondary school	9	29.03
High school	10	32.25
Associate degree	2	6.46
Bachelor's degree	4	12.90
Master degree	1	3.23
Number of children whom parents have		
1	12	38.70
2	10	32.25
3	7	22.59
4	2	6.46
TOTAL	**31**	**100**

As a result of the focus interviews held during the research process eight themes namely "Inaccuracy of information about hypospadias", "The fact that the information is not clear and understandable by the family", "Anxiety about the surgery and the prognosis of the disease in the pre-operative period", "Fears about the process and after the surgery", "Positive emotions after surgery", "Negative emotions after surgery", "Supporting post-operative care", "Importance of cosmetic appearance", were created and related results were presented.

Theme 1 Inaccuracy of information about hypospadias

When the parents participating in the research were asked the question "Did you know about hypospadias?", the majority of them stated that they heard the disease from the internet source, from the people around them, from their relatives.

Theme 2 The fact that the information is not clear and understandable by the family

When the question of the adequacy of the information given to the parents was asked, they stated that they were not informed or that the information provided was not sufficiently understood.

Theme 3 Anxiety about the surgery and the prognosis of the disease in the pre-operative period

When the parents participating in the study were asked about their preoperative concerns, they expressed many concerns about the surgery and the prognosis of the disease. Some of these are: sexual problems, inability to

have a child, the psychological state of the child, the fear of being able to get out of the surgery.

Theme 4 Fears about the process and after the surgery

When parents were asked how they felt about the surgery on the day of the surgery, most of them stated that they were sad, stressed, fearful that the surgery might repeat, restless, distressed and nervous.

Theme 5 Positive emotions after surgery

When parents were asked how they felt after the surgery, most of them expressed positive emotions such as relief, gratitude and happiness.

Theme 6 Negative emotions after surgery

When parents were asked how they felt after the surgery, some of them stated that they cried, panicked and felt uncomfortable seeing their children with medical devices like foley catheter.

Theme 7 Supporting post-operative care

When parents were asked about what they experienced and felt on returning home, they stated that they had difficulty in providing post-operative care, the development of complications made care difficult, they had a bad period and they could not get support from physicians for home care.

Theme 8 Importance of cosmetic appearance

When parents were asked whether they were satisfied with the post-operative appearance, some stated that they were satisfied, while others stated that they were not.

Discusion

The discussion section was written under the theme titles obtained from the research results.

Theme 1 Inaccuracy of information about hypospadias

In a study evaluating the experiences of hypospadias surgery, it was concluded that only 28% of hypospadias was noticed by the family. (14). On the other hand, Özgör ve ark. found that the diagnosis was made mostly by the doctor and traditional circumciser (15). It was determined that parents generally searched for information about hypospadias from the internet, heard from their friends or learned during the doctor's examination when they went to the hospital to be circumcised. This suggests that families do not have enough information about hypospadias.

Illness perception and health beliefs are affected by the society and culture in which the person lives (16). Knowing hypospadias as the circumcision of the prophet in our society may cause delays in the diagnosis of the disease. These studies are similar to the findings of the research.

Theme 2 The fact that the information is not clear and understandable by the family

In the studies in which the literature was accessed, it was found that the information provided was not clear and intelligible because the information period was short, explanations were made using medical terms or the physicians did not inform sufficiently (17-18). Parents who participated in the study stated that the information provided by the physicians was generally insufficient and sometimes they could not get any information at all. Although the families signed the informed consent, they stated that the information was insufficient. These statements are consistent with the research.

Theme 3 Anxiety about the surgery and the prognosis of the disease in the pre-operative period

Fear of surgery, fear of repeat surgery, small child, fear of complications, etc. These situations cause families to experience fear and anxiety. Due to the importance given to the penis in Turkish society, families may feel high anxiety. In the literature, it is stated that preoperative anxiety is an expected situation and is generally moderate in severity (19-21).

Theme 4 Fears about the process and after the surgery

In studies on the subject, parents' concerns and fears about anesthesia were found to be quite high (19,21,22). It is thought that parents develop a fear of anesthesia because of their insufficient knowledge about anesthesia and their fear of its side effects. In the study of Karadağ Arlı, it was determined that the surgery creates different emotions in people and they feel different intensities according to the degree of surgery (23). These findings are the emotions that apply to the parents of the child who has undergone surgery. Families feel anxious and fearful when their children undergo surgery.

Theme 5 Positive emotions after surgery

Karaman Turan mentions that families experience anxiety for reasons such as not being able to help their children, reducing their pain, and invasive procedures (22). In the study of Karaca Çiftçi et al., it was concluded that the anxiety of the parents was high on the day of surgery (21). The same results were obtained in this study. After the surgery, it was determined that the anxiety left its place to the feeling of relaxation.

Theme 6 Negative emotions after surgery

In studies conducted on day case surgery, the causes of anxiety in parents were found to be inability to wake up after anesthesia and not being able to control pain at home (19). Mutlu and Savaşer concluded that emotional support was provided to parents by informing them about the appearance of their children after the surgery (24). It is thought that informing families about home care will reduce the anxiety of the family. It is thought that

informing families about how their children will look after hypospadias surgery will make them feel comfortable.

Theme 7 Supporting post-operative care

Studies have shown that the burden of caregiving varies from person to person (24, 25). It has been found that the burden of caregiving changes depending on the patient's illness, daily working process, and the effect on social life. In the study, families stated that they had difficulties in home care. Pfeil et al. stated that nurses take on many roles during the operation process and have important contributions to the success of the operation (preparation for surgery, pain control, wound care, preparation for discharge, etc.) (26). In a study, it was determined that the rate of giving information about home care was 57.1% (27). It is thought that providing information about home care while sending children with hypospadias home will help in the care of the family and increase the speed of recovery.

Theme 8 Importance of cosmetic appearance

When studies on this subject are examined, penile appearance and voiding function were found to be variable according to prognosis and mean age in cases operated for hypospadias. Appearance is evaluated differently according to individuals, and post-operative satisfaction is stated in general (28-30). The results are consistent with this research.

Limitations

The research is limited to the parents in the institution where the study was conducted and cannot be generalized to the country.

Conclusion

In the research, the answer of the question "Is the knowledge of the families of children diagnosed with hypospadias sufficient about the disease?" was "No" and; the answer of the question "Does the post-operative process affect the attitudes of families about the disease?" was "Yes". It was found that the parents did not have enough information about hypospadias and the postoperative process adversely affected the attitudes of the parents towards the disease.

Implications for Nursing Practice

According to the results, nurses' knowledge of parents' attitudes will increase the quality of care. For this reason, training on attitudes towards nurses should be organized. Primary nursing services related to hypospadias should be planned. Care plans should be established by determining the needs of the child and family, and standards of care should be established to provide quality care. Structured trainings should be organized before the operation in order to inform the families about the disease and the operation process. Educational brochures/mobile applications should be prepared for families. Parents should be given the opportunity and time to express themselves. In the postoperative period, home visits and follow-ups should be made within the scope of home care services.

Declarations

Funding: Not applicable

Conflicts of interest: No conflict of interest between the authors.

Ethics approval: Marmara University Institute of Health Sciences Ethics Committee for Non-Interventional Studies (05.03.2018/ 78). Written and verbal consent was obtained from all participants. Research and publication ethics were complied with in the article.

Availability of data and material: Available upon request.

Authors' contributions: Concept - ÇÇÖ, KT; Design - ÇÇÖ, KT; Supervision –Data Collection and/or Processing - KT; Analysis and/or Interpretation - ÇÇÖ, KT; Literature Search - ÇÇÖ, KT; Writing Manuscript - ÇÇÖ, KT; Critical Review - ÇÇÖ

Acknowledgements: We thank all participants for their participation.

Table 2: Quotes, codes, subthemes and main themes obtained from parents

Quotes	Subthemes	Main themes
"When we took him for normal circumcision, they said that the child should have an operation and that there should not be a normal circumcision, so I learned that." (HG, 30 aged, mother) "I had no knowledge, I only knew the name of the circumcision of the prophet." (SA, 33 aged, mother) "I didn't know about it either, but it happened to a friend of mine, and we got information from him. His child also had this problem. The surgery was troublesome, and it happened 2-3 times. So, we waited for a while, but then we applied. After all, we chose this place because it was a surgery that needed to be done." (AY, 30 aged, father) "I always search online." (AY, 27 aged, mother) "It seems like a good thing at first, but when you start researching, you see that it is not so. So, it breaks you down a bit. So, it's completely destroyed. The name of the circumcision of the prophet attracts people. Oh, you say, my child, the prophet was born circumcised, but the truth of the matter is that it's not like that. (İÇ, 30 aged, father) "I even thought that if the prophet was circumcised, it would be good, but it was problematic. But then we found out what." (ZE, 29 aged, mother)	• Inaccuracy of information about the disease • Sources of false information • Inaccuracy of information about hypospadias is a disease • Inaccuracy of information about the importance of hypospadias • Thinking that hypospadias is a good thing	**Theme 1** Inaccuracy of information about hypospadias
"I did not get very clear information below in the first place. So, while you're inspecting below. To be honest, they did not inform much." (SK, 30 aged, mother) "No notification has been made." (BÖ, 37 aged, mother) "Yes, but what we experienced had nothing to do with it, it was very different from what was told." (EÇ, 29 age, mother)	• Insufficient information of physicians about the disease • The information is not clear and understandable.	**Theme 2** The fact that the information is not clear and understandable by the family
"I lived with that fear, the day of the surgery, I thought a lot if something would happen, could it hold up, could it take the body?" (AY, 27 aged, mother) "I wonder how can it remove the anesthesia? She was very small when we had the operation because, as a mother, you think about everything whether she plays or pulls that hose. We were shocked, but not as much as we feared, thank goodness." (SA, 33 aged, mother) "We were worried if there would be sexual problems in the marriage, but they said it had nothing to do with it, I hope not." (SS, 39 aged, mother) "The first thing that comes to my mind is the question of will there be infertility when he grow up?" (ÖG, 28 aged, mother)	• Fear-anxiety related to the operation process • Health in advanced ages • fear-anxiety about problems	**Theme 3** Anxiety about the surgery and the prognosis of the disease in the pre-operative period

Table 2: Quotes, codes, subthemes and main themes obtained from parents

Quotes	Subthemes	Main themes
"Will we go into the second surgery, will it stop?" (İÇ, 30 aged, father) "He was afraid of getting narcosis, in case he couldn't get out of the surgery. Thank goodness he survived." (BÖ, 37 aged, mother) "Mine was already crying until they got out of the way they took Batu. It was very bad, I don't know. There were problems after he came out, we spent 12-13 days in the hospital for the first operation with the foley catheter. Let's say we're worried." (ÖG, 28 aged, mother) "I was very nervous that day too. Ensar was very restless. he was crying and he was nervous because he had been hungry all day. I mean, if they let me go, I would go to the surgery with him. I wanted to stay downstairs all the time, and they even allowed me a little. It was a tense and troublesome process." (ZE, 29 aged, mother)	• Fear of repeat surgery • Fear of giving anesthesia Feeling different emotions on the day of surgery	**Theme 4** Fears about the process and after the surgery
"I was relieved after surgery. I saw him with my own eyes and he came to me. I don't know, the fear was gone a little bit." (AY, 27 aged, mother) "After the surgery, we felt a lot of relief. But when my son came to bed, he wasn't himself. He was afraid at first. He was not himself. But we relaxed a lot and the child was relieved too.." (AY, 30 aged, father) "Either we experienced two emotions together. We were both sad and happy. Of course, we were happy that the doctor said that we were successful and that there will be no second time." (MK, 35 aged, father) "I am very happy that he finished a 2-3 session procedure in one session." (EY, 33 aged, father)	• Post-operative relief • Post-operative happiness	**Theme 5** Positive emotions after surgery
"I was scared from foley catheter frankly, it sounded like something bad happened to me but then I get used to it as the hours pass of course." (ZE, 29 aged, mother) "A week after he went home, his stitches opened. When I brought it to the control, they said that two more surgeries may be needed. I mean, there are two surgeries at the moment, but I don't know, of course. That's a huge problem." (AY, 27 aged, mother) "It hurts a lot with the foley catheter. He wants it removed. But it has to stay there too, he gets used to it after a while, but we had some difficulties in the process of getting used to it, of course.." (İÇ, 30 aged, mother)	• Continuing anxiety after surgery • Unpleasant feelings after surgery	**Theme 6** Negative emotions after surgery

Table 2: Quotes, codes, subthemes and main themes obtained from parents

Quotes	Subthemes	Main themes
"We learned something by living and started to act accordingly. This allowed the stitches to hold. We don't seem to have a problem now." (AA, 37 aged, mother) "We slept here for 7-8 days, but it was difficult to take care of her at home. Because the foley catheter was attached and we were drilling 2-3 times a day. We were soaking them in water, they had creams or something. got us so busy. (BG, 34 aged, father) "We were discharged in the first surgery, we went home and the stitches were opened. It was very bad, of course, we took it back again, the seams were still on it, the seams were still on it. Then he said to us that such things could happen, of course we were shocked. While I was waiting for it to get better, it got worse than before." (YB, 28 aged, mother)	• Strain in post-operative caregiver role • Lack of knowledge about posr-operative care	**Theme 7** Supporting post-operative care
"Before the child had surgery, I felt that something was wrong, he was peeing intermittently. I could see he was peeing at his feet. We are happy with the normal look now." (BT, 30 aged, mother) "Since we were not informed, my child urinates intermittently and urinates very often. I am not satisfied. Frankly, I'm not very happy with the way it looks.." (DK, 30 aged, mother) "Normal in appearance, normal in function. He said that it hurts for the first 6 months, but now there is no problem, everything is normal.." (MK, 35 aged, father)	• Evaluation of penis appearance and voiding function evaluated differently by parents to parents	**Theme 8** Importance of cosmetic appearance

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1349105

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Healthcare Services and Systems/Sağlık Hizmetleri ve Sistemleri

Quality of Sleep and Factors Affecting Sleep Quality in Hospitalized Patients in the Orthopedics and Traumatology Clinic

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Received: 24 August 2023
Accepted: 09 September 2023

Abstract

Purpose: In this study, our purpose was to determine the sleep quality and the factors affecting sleep quality of the hospitalized patients orthopedics and traumatology clinic.

Methods: This study was conducted as a descriptive study in a hospital between March 30 and June 16, 2022. The sample of the study consisted of 200 patients hospitalized in the orthopedics and traumatology clinic. The data of the study were collected through face-to-face interviews with the patients using the "Sociodemographic and Descriptive Characteristics Questionnaire" and the "Richard-Campbell Sleep Questionnaire".

Results: The average Richard-Campbell Sleep Questionnaire scores of the patients were determined to be 43.33±28.31. While there was no statistically significant difference ($p>0.05$) observed between the gender, preoperative or postoperative status, presence of noise, room lighting, room crowding, attached the body medical devices, treatment interventions during sleep hours, and Richard-Campbell Sleep Questionnaire score averages of the patients; a statistically significant difference was found in the Richard-Campbell Sleep Questionnaire score averages based on pain and medical diagnosis ($p<0.05$). It was found that the variation in Richard-Campbell Sleep Questionnaire scores attributed to patient's pain and diagnosis variables is 8% ($R2=0.082$). An increase of one unit in the presence of pain led to a decrease of 8.571 unit in sleep quality and the sleep quality of patients diagnosed with coxartrosis decreased by 12.298 units.

Conclusions: The patients' sleep quality was found to be below the moderate level, and it was observed that sleep quality was significantly affected by pain and diagnosis.

Keywords: Orthopedics, traumatology, patients, sleep quality, nursing

Özet

Amaç: Bu çalışmanın amacı; ortopedi ve travmatoloji kliniğinde yatan hastaların uyku kalitesini ve etkileyen faktörleri belirlemekti.

Yöntem: Bu çalışma, 30 Mart-16 Haziran 2022 tarihleri arasında bir hastanede tanımlayıcı bir çalışma olarak gerçekleştirildi. Çalışmanın örneklemini, ortopedi ve travmatoloji kliniğinde yatan 200 hasta oluşturdu. Çalışmanın verileri, hastalarla yüz yüze görüşme tekniğiyle "Sosyodemografik ve Tanımlayıcı Özellikler Anketi" ve "Richard-Campbell Uyku Anketi" kullanılarak toplandı.

Bulgular: Hastaların Richard-Campbell Uyku Anketi puan ortalamaları 43,33±28,31 olarak belirlendi. Hastaların cinsiyetleri, ameliyat öncesi veya sonrası durumları, gürültü varlığı, oda kalabalığı, vücuda bağlı tıbbi cihazlar, uyku saatlerinde tedavi girişimleri ve Richard-Campbell Uyku Anketi puan ortalamaları arasında istatistiksel olarak anlamlı bir fark ($p>0,05$) yok iken; ağrı ve tıbbi tanı, Richard-Campbell Uyku Anketi puan ortalamaları arasında istatistiksel olarak anlamlı bir fark vardı ($p<0,05$). Hastaların ağrı ve tanı değişkenlerinin, Richard-Campbell Uyku Anketi puanlarındaki değişimin %8'ini açıkladığı bulundu ($R2=0,082$). Ağrı varlığındaki bir birimlik artışın, uyku kalitesinde 8,571 birimlik azalmaya yol açtığı ve koksartroz tanısı alan hastalarda uyku kalitesinin 12,298 birim azaldığı belirlendi.

Sonuç: Hastaların uyku kalitesi orta seviyenin altında bulundu ve uyku kalitesinin ağrı ve tanı değişkeninden önemli ölçüde etkilendiği gözlendi.

Anahtar Kelimeler: Ortopedi, travmatoloji, hastalar, uyku kalitesi, hemşirelik

Introduction

Sleep is one of the essential daily life activities that affects individuals' quality of life and health, and is a physical requirement for all humans (1,2). Adequate sleep plays a significant role in healing, anabolic steroid production, and patient satisfaction. Furthermore, it contributes to overall well-being and optimal recovery (3). Adequate sleep also has an impact on sleep quality. Sleep quality is described as the efficiency of sleep, and it consists of components such as subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, and use of sleep medication. It is a factor that affects an individual's well-being, functional state, and quality of life (4,5).

There are many factors that influence an individual's sleep quality (5). Among these factors, difficulty in meeting sleep requirements is also present, particularly among hospitalized patients with health issues (1,6). The foreign environment of the hospital setting, pain, fear, frequent disruptions of the sleep cycle for treatment and care, visiting hours, and the side effects of medications used can lead to problems in patients' sleep patterns and quality (7,8). Poor sleep quality during hospitalization is associated with adverse health outcomes such as cardiometabolic complications and increased risk of delirium (9,10). In the study conducted by Şirin and Yüksel Deniz (5), it is indicated that 91% of patients experienced changes in their sleep patterns after being hospitalized, and 22% of the participating patients described their sleep quality as very poor. In a study by Alvetogt and Colten (11) aiming to examine the sleep status of individuals in the hospital, it is reported that patients couldn't sleep enough. In addition, it is known that in orthopedic and traumatology clinics, where patients suffering from pain are mostly treated, patients experience sleep problems, especially related to pain, both before and after surgical procedures (12, 13). In a study conducted by Kaya and Yılmaz (13), it was determined that 60.7% of total knee arthroplasty patients experienced sleep problems, and they had the most difficulty in falling asleep. In their study, Manning et al. (14). reported that patients experienced transient sleep disturbances in the early postoperative period following total joint arthroplasty. It has been reported that patients undergoing orthopedic surgery, especially during the first two nights postoperatively, experience a lack of REM sleep (10). In a study conducted by Vitale and colleagues (15), it was determined that the sleep quality of patients undergoing knee and hip arthroplasty significantly worsened on the first night after surgery compared to the night before the surgery, and high pain scores were associated with a decrease in overall sleep quality. Orthopedic and traumatology patients also experience sleep problems before surgery. Sleep problems can arise due to the psychological impact of trauma, pre-surgical physiological effects, or pain. In their study, Yang et al. (16) indicated that many orthopedic trauma patients have difficulty falling asleep easily and quickly, or staying asleep because of post-traumatic stress disorder. Studies examining sleep disturbances in patients undergoing rotator cuff repair surgery (17), total hip, and knee arthroplasty have shown a high prevalence of sleep disturbances before these surgeries (18). In a systematic review conducted by Kunze and colleagues (19), investigating the sleep quality of patients before and after arthroscopic rotator cuff repair surgery, it was reported that patients had significantly low sleep quality before the surgery. Poor sleep quality, when combined with surgical stress, can lead to an increase in catabolic activity and tissue breakdown, as well as a reduction in anabolic activity, thereby affecting postoperative recovery in patients. Therefore, good sleep quality is crucial for patients admitted to the orthopedic and traumatology clinic. The assessment of sleep quality and factors influencing it in orthopedic and traumatology patients is believed to be important for planning and implementing nursing interventions aimed at ensuring better sleep quality for patients. The aim of this research is to determine the sleep quality of patients admitted to the orthopedic and traumatology clinic and identify the factors influencing sleep quality.

Materials And Methods

Study population and sample

The research was conducted as a descriptive study. The population of the study consisted of patients hospitalized in the Orthopedics and Traumatology Clinic at a hospital located in the Central Anatolia region of Turkey, between March 30 and June 16, 2022. The research sample size was calculated using Cohen's standardized effect size and the G*Power 3.1.9.7 software. In the calculation, an independent samples t-test was employed, considering a Type I error rate of 0.05 and a Type II error rate of 0.20 (80% power), with a moderate effect size (0.50). Accordingly, a minimum of 128 participants were required for the study. To enhance the research power and account for potential sample losses, the final sample size reached 200 individuals. Therefore, the research sample comprised 200 patients. The study included patients who were 18 years of age and older, capable of communication, without a psychiatric diagnosis, without neurological or cognitive impairments, without a diagnosed sleep disorder, and hospitalized for a minimum of two days. Only those who voluntarily agreed to participate in the research were included. Patients were provided with information about the face-to-face research in their hospital rooms. Patients who volunteered to participate in the study were informed about the data collection tools and asked to respond to the survey and scale questions. It took approximately 15-20 minutes for patients to complete the questionnaire.

Data collection tools

The data of the study were collected using the "Sociodemographic and Descriptive Characteristics Form" and the "Richards-Campbell Sleep Questionnaire"

Sociodemographic and Descriptive Characteristics Form

The researchers prepared a 15 item questionnaire that includes sociodemographic information such as patients' age, gender, marital status, education level, and employment status, as well as clinical characteristics including patients' length of hospital stay, diagnosis, type of surgery, and pre/post-operative period. This questionnaire also includes questions related to factors influencing sleep.

Richards-Campbell Sleep Questionnaire (RCSQ)

The RCSQ was developed by Richards (20) in 1987. It consists of six items that assess the depth of nocturnal sleep, sleep onset latency, frequency of awakenings, time awake after sleep onset, sleep quality, and ambient noise level. Each item is evaluated on a visual analog scale ranging from 0 to 100. Scores between "0-25" on the scale indicate very poor sleep, while scores between "76-100" represent very good sleep. As the scores on the scale increase, patients' sleep quality improves. Its Turkish validity and reliability were established by Karaman Özlü and Özer (21).

Statistical Analysis

The IBM SPSS 25 software was used for data analysis. The normal distribution of numerical data was assessed using the Shapiro-Wilk test. Descriptive statistics such as frequency, percentage, mean, standard deviation, minimum, and maximum were employed to analyze the data. For binary group comparisons, the independent samples t-test was utilized, while for comparisons involving more than two groups, one-way ANOVA was used. The relationship between numerical variables and the scale score average was examined through correlation testing, and the impact of variables on the scale score average was determined using multiple linear regression analysis.

Ethical Considerations

In order to conduct the research, ethical approval was obtained from the XXXX University Faculty of Medicine Ethics Committee for Non-Drug and Non-Medical Device Research, with approval number 2022/006 issued on March 22, 2022. Permission was also obtained from the institution where the research was conducted. Patients were informed that they could withdraw from the study at any time, and consent was obtained from participants before their involvement in the research.

Limitations of the Study

There is a limitation in current study. This study was conducted in a single hospital by one orthopedic clinic team. As such, these findings may not represent other orthopedic clinic teams. Therefore, the results cannot be generalized to the entire population. It is recommended to plan prospective studies related to the subject in larger orthopedic clinics with a broader sample group and a greater variety of different diagnoses.

Results

The mean age of the participating patients was 55.62±17.92, with 55% being female, 76% married, and 54% having completed primary education. The average length of hospital stay for the patients was 3.07±3.09 days, with 30% admitted with a diagnosis of Gonarthrosis and 88% in the postoperative period. Among those in the postoperative period, 38% were on the first day after surgery. During the hospital stay, 76% of the patients reported not experiencing a restful sleep process while in the hospital, and 97% mentioned that they could not maintain their sleep habits in the hospital environment (Table 1).

TABLE 1: Sociodemographic and clinical characteristics of patients (n=200)

	Mean±SD (Min-Max)		
Age (year)	55.62±17.92 (19-91)		
Hospital stay duration	3.07±3.09 days		
		n	**%**
Gender	Female Male	111 89	55 45
Marital status	Married Single	152 48	76 24
Education status	Below primary school Primary school High school Bachelor and above	40 108 41 11	20 54 20 6
Surgery period	Before surgery After surgery	25 175	12 88
Day after surgery	0 day (Postop. 0) 1st day (Postop.1) 2nd day (Postop. 2) 3th day (Postop. 3) and above	33 67 35 40	19 38 20 23
Diagnosis	Lower extremity fracture Upper extremity fracture Coxarthrosis Gonarthrosis Diabetic foot Joint/bone infection Meniscus tear Others (Rotatar cuff tear, Hallux valgus)	31 33 23 59 5 6 19 24	16 15 12 30 3 3 10 11
Room features	Single room Double room	85 115	43 57
Perception of having slept well during the hospital stay	Yes No	49 151	24 76
Perception of continuing sleep habits in the hospital	Yes No	5 147	3 97

The average RCSQ scores of the participating patients were determined to be 43.33 ± 28.31. While there was no statistically significant difference (p>0.05) observed between the gender, preoperative or postoperative status, presence of noise, room lighting, room crowding, attached medical devices, treatment interventions during sleep hours, and RCSQ score averages of the participating patients; a statistically significant difference was found in the RCSQ score averages based on pain and medical diagnosis (p<0.05) (Table 2).

TABLE 2: Comparison of patients' sociodemographic, clinical characteristics and some factors related to sleep with mean scores of RCSQ (n=200)

		Mean±SD	Min.-Maks	
Richards – Campbell Sleep Questionnaire		43.33±28.1	0-100	
		Mean±SD	**&t**	**p**
Gender	Female Male	40.06±28.1 47.41±27.3	-1.83	0.06
Surgery period	Before surgery After surgery	48.92±30.82 42.53± 27.94	1.05	0.29
Presence of pain	Yes No	30.70±21.54 43.91±19.74	-2.58	0.01*
Presence of noise	Yes No	17± 13,07 32.40± 21.45	-1.23	0.21
Room crowding	Yes No	34.80± 10.63 32 ± 21.68	0.28	0.77
Room features	Single room Double room	45.33±31.74 41.86±25.53	0.85	0.39
Treatment during sleep hours	Yes No	13 ± 4.24 32.35 ±21.42	-1.27	0.20
Medical devices on the body	Yes No	35.45±22.67 31.64±21.27	0.70	0.48
Anxiety	Yes No	34.90±23.29 30.76±20.41	1.11	0.26
		Mean±SD	**+F**	**p**
Diagnosis	Lower extremity fracture Upper extremity fracture Coxarthrosis Gonarthrosis Diabetic foot Joint/bone infection Meniscus tear Others (rotatar cuff tear, Hallux valgus)	45.51± 28 47.36±26.13 20.39±16.38 39.56±36.65 14±13.83 41.16±15.66 60.78±23.10 59.08±33.49	6.27	0.00*

t: İndependent samples t-test; +F: One-way ANOVA; *p<0.05

When the relationship between age and RCSQ score average along with the duration of stay was examined; it was observed that there is a statistically significant, moderately strong, and negatively directed relationship between age and RCSQ score average (r= -.31; p=0.00). However, it was found that there is no statistically significant relationship between the duration of stay and RCSQ score average (r= .08; p=0.25) (Table 3).

TABLE 3: Relationship between age, hospital stay duration and RCSQ total mean scores of the patients (n=200)

	RCSQ Total Mean Scores	
	&r	p*
Age	-.31	0.00*
Hospital Stay Duration	.08	0.25

&r: Pearson's correlation coefficient; *p<0.05

In the advanced analysis conducted for the factors affecting the RCSQ score; the model for RCSQ is statistically significant and has satisfied the assumptions of multiple linear regression analysis (F=4.459; p=0.00). It was determined that pain and diagnosis variables which were included in the model were significant predictors of sleep quality (p<0.05). Acording to the established model, it was found that the variation in RCSQ scores attributed to patient's pain and diagnosis variables is 8% (R2=0.082). An increase of one unit in the presence of pain led to a decrease of 8.571 unit in sleep quality and the sleep quality of patients diagnosed with coxartrosis decreased by 12.298 units but there was no statistically significance effect on the RCSQ score due to the age variable (Table 4).

TABLE 4: The effect of variables on sleep quality score mean (n=200)

Sleep Quality	B	Se	Z β	t	P	95% Confidence Interval for β	
Richards – Campbell Sleep Questionnaire					0-100	Lower limit	Upper limit
Model							
Constant	49.430	4.303		11.488	0.00	40.928	57.932
Age	-.128	.099	-.106	-1.284	0.20	-.324	.069
Presence of pain	-8.571	4.683	-.148	-1.830	0.04	-17.825	.683
Diagnosis Coxarthrosis	-12.298	4.676	-.221	-2.630	0.00	-21.539	-3.058
Diagnosis Gonoarthrosis	.600	3.443	.015	.174	0.86	-6.202	7.403

Model Significance: F=4.459; p=0.00; R2=0.08
β: Regression coefficient, Se: Standard error, zβ: Standardized regression coefficient, R^2: Coefficient of determination. Bold sections indicate statistically significant results (p<0.05).

Discussion

In current study, it was determined that the sleep quality of orthopedic and traumatology patients hospitalized is below the moderate level (RCSQ score 43,33±28,1). The majority of the patients (76%) also indicated that they did not experience a restful sleep during their time in the hospital. In a study conducted by Esen Büyükyılmaz and colleagues (22), which examined the pain level and sleep quality of orthopedic and traumatology patients, it was reported that the patients experienced severe pain at night, leading to a low quality of sleep. In another study that evaluated the sleep quality of patients hospitalized in the orthopedic and traumatology clinic due to musculoskeletal injuries, it was shown that patients had a moderate level of pain, and this condition reduced their sleep quality (23). In a conducted study, it was determined that 60.7% of patients with gonarthrosis experienced sleep problems during their stay in the orthopedic ward. Among the patients who reported sleep problems, 56% had difficulty falling asleep, 4.4% woke up very early in the morning, 27.5% woke up frequently, and 12.1% mentioned that they couldn't sleep at all (13). In a study assessing the sleep quality of patients hospitalized in surgical clinics, it was indicated that the patients' total RCSQ score average was just below the midpoint of the scale (49.61±25.34), thus indicating a moderate level of sleep quality for the patients (24). The current study yields similar results to the literature. It can be stated that the sleep quality of orthopedic and traumatology patients is poor based on these results.

In the current study, factors such as age, gender, length of hospital stay, noise, room occupancy, single or double occupancy, pre- or post-operative status, anxiety, and medical devices attached to the body, treatment during

sleep hours were found not to affect sleep quality. However, as observed in the multiple linear regression analysis, pain and diagnosis were identified as factors influencing sleep quality. In a study investigating the sleep quality of patients in the early postoperative period, it was noted that patients complained about factors such as pain, poor room ventilation, medical devices attached to the body, treatments administered at sleep time, crowded room conditions, and surrounding noise. These factors were reported to affect sleep (25). In a review examining perioperative sleep disorders, it was reported that noise, light, pain, perioperative mental disorders, anxiety, surgery, and anesthesia influence sleep quality (26). It is observed that the findings of this study differ from the literature in terms of environmental factors. The reason for this is thought to be that orthopedic and traumatology patients, compared to general surgical patient groups, experience more frequent and intense pain, which may lead them to pay less attention to environmental factors. The findings of the study related to orthopedic and trauma patients are consistent with the current study findings, indicating a negative impact of pain on sleep quality. Especially in patients with osteoarthritis (gonarthrosis or coxarthrosis), a decrease in sleep quality is observed. In a study, it has been reported that the sleep quality of patients with osteoarthritis is significantly compromised due to pain (27). Particularly, the pain and symptoms arising from hip osteoarthritis (coxarthrosis) significantly affect sleep quality, which is quite common (28). In a study evaluating sleep disturbances and risk factors in total hip and knee arthroplasty based on an enhanced recovery after surgery concept, it has been demonstrated that pain and anxiety are significantly associated with postoperative sleep disturbance (29). In a study investigating the relationship between pain, anger levels, and sleep quality among patients hospitalized in the orthopedics and traumatology clinic due to musculoskeletal injuries, it was indicated that the patients had moderate levels of pain and that it decreased sleep quality (23). While these findings are consistent with similar studies, it is believed that particularly in the orthopedic and trauma clinic where pain is intense, there is a need for more effective pain management both before and in the early postoperative period.

Conclusion

The data obtained from the study revealed that a significant majority of patients experienced sleep problems during their stay in the orthopedic and trauma clinic. The patients' sleep quality was found to be below the moderate level, and it was observed that sleep quality was significantly affected by pain and diagnosis. The sleep quality score was lower for patients with coxarthrosis and gonarthrosis, as well as those with pain compared to those without. Based on these results, it is considered important to ensure effective pain management for achieving quality sleep in orthopedic patients. Therefore, for improving patients' sleep quality, it is recommended that pain be comprehensively assessed by orthopedic nurses, and appropriate interventions be planned. Additionally, evaluating patients' sleep quality and level using valid and reliable scales and collaborating with consultation-liaison psychiatric nurses when necessary is also suggested.

Declaration

This study was presented as an abstract oral presentation at the 10th National Orthopedics and Traumatology Nursing Congress (October 25-30, 2022, Antalya, Turkey).

Funding: No financial support was received for this study.
Conflicts of Interest: The authors declare that they have no conflict of interest.
Ethical Approval: The ethics committee approval was received from the KTO Karatay University Faculty of Medicine Ethics Committee for Non-Drug and Non-Medical Device Research, on the date of March 22, 2022 with 2022/006 decision number.
Author Contributions: Idea/Concept: S.S. Design: S.S. Data Collection and/or Processing: S.S., F.S., A.D.K. Analysis and/or Interpretation: S.S. Literature Review: S.S., F.S., F.G., A.D.K. Writing of the Article: S.S., F.S., F.G., A.D.K. Critical Review: S.S., F.S., F.G.

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Acıbadem Univ. Sağlık Bilim. Derg. 2024; 15 (1)
https://doi.org/10.31067/acusaglik.1341267

ORIGINAL ARTICLE / ARAŞTIRMA YAZISI

Radiotherapy Technician/Radyoterapi Teknikerliği

Investigation of the Contribution of Radiotherapy Therapist Education to Working Life: A National Survey Study

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Abstract

Background/Purpose: To investigate the perception of working radiation therapists (RTTs) regarding the contribution of RTTs training provided in Turkey to their working lives.

Methods: The study employed a questionnaire consisting of 22 questions. The questionnaire was distributed via email to RTTs working in Turkey. The questionnaire explored various aspects of the participants' education, including their internship opportunities, the duration of their internships, the treatment devices they worked with, and the adequacy of their experiences.

Results: One hundred and eighty-one RTTs participated in the survey. The majority of participants (57.3%) completed their education at foundation universities, while 42.7% attended state universities. During their education, 80.5% of participants found the internship opportunities offered by their schools to be adequate. 92.6% of the participants reported that the experience they gained during their internship had a positive impact on their working life. A statistically significant relationship was observed between the adequacy of the treatment device variety used during the internship and the contribution of the internship to their working life ($p<0.05$).

Conclusion: The majority of RTTs who participated in the survey found that the education they completed were largely sufficient in terms of contributing to their working lives.

Keywords: Radiation Therapist, Education, Training

Özet

Amaç: Bu çalışmada ülkemizde verilen radyoterapi teknikerliği (RTT) eğitiminin çalışma hayatına olan katkısının çalışan

RTT'ler tarafından nasıl algılandığı araştırılmıştır.

Yöntem ve Gereç: Ülkemizde çalışan RTT'lere 22 sorudan oluşan bir anket e-posta aracılığıyla gönderilmiştir. Katılımcılara eğitimleri sırasında okullarının sunduğu staj imkanları, staj yaptıkları süreler, staj yaptıkları klinikteki cihaz çeşitliliği ve kazandıkları tecrübenin yeterliliği yanı sıra aldıkları teorik derslerin klinik pratiğe olan katkılarıyla ilgili sorular yöneltilmiştir.

Bulgular: Ankete yüzseksenbir RTT katılmıştır. Katılımcıların %57,3'ü vakıf üniversitelerinde, %42,7'si devlet üniversitelerinde eğitimlerini tamamlamışlar ve eğitimleri sırasında okullarının sunduğu staj imkanlarını %80,5 oranında yeterli bulmuşlardır. Yüzde 92,6 gibi büyük bir çoğunluk stajları sırasında edindikleri tecrübenin çalışma hayatlarına katkısı olduğunu belirtmişlerdir. Staj yapılan klinikteki cihaz çeşitliliğinin yeterliliği ile stajın çalışma hayatına katkısı arasında istatistiksel olarak anlamlı bir ilişki bulunmuştur ($p<0,05$).

Sonuç: Sonuç olarak, ankete katılan RTT'ler eğitimleri sırasında aldıkları teorik dersleri ve yaptıkları stajları çalışma hayatlarına olan katkıları açısından değerlendirdiklerinde çoğunlukla yeterli bulmuşlardır.

Anahtar kelimeler: Radyoterapi Teknikerliği, Eğitim, Öğretim

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Received: 10 March 2023
Accepted: 16 September 2023

Introduction

Radiation therapy requires an interdisciplinary team effort, consisting primarily of radiation oncologists, medical physics specialists and radiation therapists (RTTs) (1). The success of treatment in radiotherapy depends equally on the knowledge and experience of the employees of these three disciplines. Radiation oncologists are responsible for determining the treatment scheme, medical physics specialists are responsible for ensuring the quality of treatment devices and creating treatment plans, while RTTs are responsible for accurately and precisely administering the prescribed radiation dose to the patient (2). In addition, since they are in contact with the patient in each fraction, they are also responsible for monitoring side effects and referring the patient to the nurse or physician (3).

In an era when imaging and treatment techniques are more complex due to technology, the role and level of responsibility of RTTs are constantly developing and expanding (4). Given the complexity of modern radiotherapy, it is necessary to develop special training programs specific to the RTTs profession. Educational programs should provide RTTs with the scientific theoretical basis of the profession and ensure that they, as practitioners, are able to synthesize, evaluate and apply their knowledge in a clinical setting (5).

RTTs training should include the steps of patient positioning and immobilization, image taking, contouring of organs at risk, control of compliance of treatment parameters with the planned one, verification of patient position and application of treatment, which they are responsible for in the clinic. In the RTTs course manual published by the International Atomic Energy Agency (IAEA), it is stated that when developing any training program, first of all, a short application survey should be conducted on the academic and clinical infrastructure that is already available. It has been pointed out that the information obtained from this survey will efficiently help identify needs and plan any new courses or expand existing programs (5).

Accordingly, in this survey study, it was aimed to investigate how the effects of the training provided in RTTs programs in Turkey on clinical practice are evaluated by working RTTs. This is the first study evaluating how the contribution of RTTs' training to working life is perceived in our country.

Materials And Methods

A questionnaire consisting of 22 questions was prepared on google forms (docs.google.com). The website link to the questionnaire was distributed via email and shared on social media platforms to radiation therapists employed in Turkey through the Association of Radiotherapy Therapists. Based on personal communication with the association management, the number of association members in April 2023 was reported to be 168. For sample selection, the simple non-selective sampling method, which is one of the probability-based sampling methods, was employed. According to this method, a minimum sample size of 118 was calculated for a study involving a population of 168, with a 95% confidence interval and a margin of error of 0.05. The survey questions are designed to take about five minutes to complete. To ensure broad participation from RTTs working in diverse institutions across our country, the survey data collection was conducted over a week period. The first four questions directed to the participants were related to the institution they worked at, while the next three questions were related to the information about the school where they received RTTs training. The 14 questions in the second part question the contribution of the theoretical and practical trainings they received at their schools to their working lives with the Likert scale answer (from 1 to 5, completely agree, completely disagree). The questions related to theoretical courses were created by examining the information packages of the Turkish Higher Education Qualifications Framework of various state and foundation universities (6-9). Finally, there is an open-ended question in which recommendations for improving the contribution of RTTs training to clinical practice are questioned. The survey outputs were taken from the website and entered the SPSS program for statistical analysis.

This study was deemed ethically appropriate by the Acıbadem Mehmet Ali Aydınlar University Ethics Committee, with the reference number 2023-08/288, on May 12, 2023.

Statistical Analysis

Descriptive statistics were performed for all categorical variables. Correlations between the multiple independent categorical variables were evaluated by Chi-square test. Independent samples T-test was used for mean comparison. Statistically significant p value was accepted as <0.05 within %95 confidence interval.

Results

One hundred and eighty-one RTTs working in Turkey participated in the survey and all of them were taken into consideration. While 64.8% (n=116) of the participants are composed of those working in the Marmara region, the second rank is composed of those working in the Central Anatolia region with 15.6% (n=28). The lowest participation was from the Eastern 2.8% (n=5) and Southeastern Anatolian 0.6% (n=1) regions. The proportion of RTTs with up to five years of experience was found to be 57.1% and the proportion of those

with more than fifteen years of experience was found to be 18.6%. The answers given to the question "What tasks do you do in the institution you work for?" showed that RTTs mostly perform treatment, simulation, and contouring tasks. While 42.7% of the participants stated that they received education in state universities, 57.3% stated that they completed their education in foundation universities. When the participants are sorted according to the institutions they work, the most are 42.5% private hospital, 29.9% university hospital and 27.6% state hospital. There was a significant correlation observed between individuals who pursued their education at state universities (68.7%) and subsequently pursued careers in public hospitals, as well as individuals who attended foundation universities (73.9%) and later worked in private hospitals. ($p<0.05$). When the adequacy of the internship opportunities of the institution they were trained in was questioned, only 8.9% of the participants stated that they were insufficient and 10.7% of them stated that they were very insufficient (Figure 1).

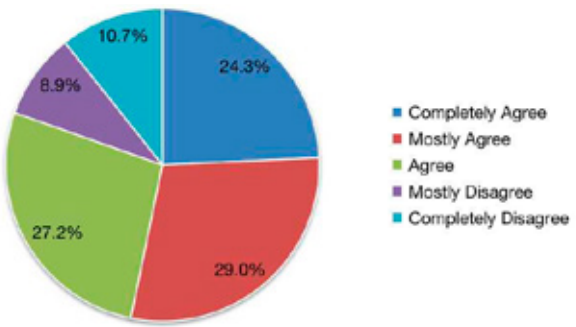

Figure 1 Percentage graph where the adequacy of internship opportunities provided by the school is evaluated

There was no significant correlation between the institution where the training was received and the adequacy of internship opportunities ($p>0.05$). Both those who completed their education at state universities and those who completed their education at foundation universities found their internship experiences during their studies to be satisfactory, with percentages of 81% and 80%, respectively. It has been observed that 77% of students studying at foundation universities consider the diversity of equipment in the clinics where they conducted their internships to be sufficient, whereas for students from state universities, this percentage dropped to 68% However, despite this differences, students from both state and foundation universities have reported that their internships had a positive impact on their professional lives, with percentages of 89.4% and 95%, respectively. Figure 2 also shows the percentage graph of the internship periods during their education.

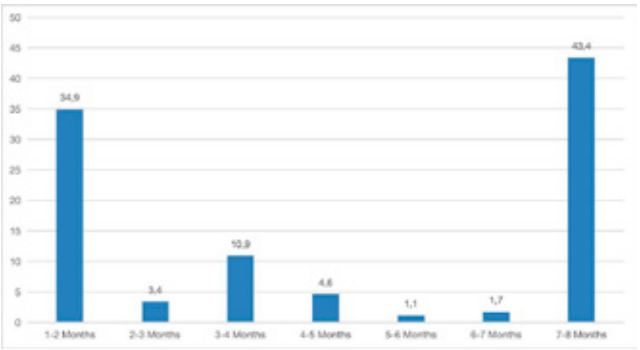

Figure 2 Percentage chart of internship periods during training

When the contributions of their internship experience to working life were questioned, it was stated that 36.4% were highly satisfied, 36.9% were very satisfied and 19.3% were satisfied. While 26.6% of the participants stated that the variety of treatment devices in the place where they did their internship was insufficient, 73.4% stated that it was sufficient (Figure3).

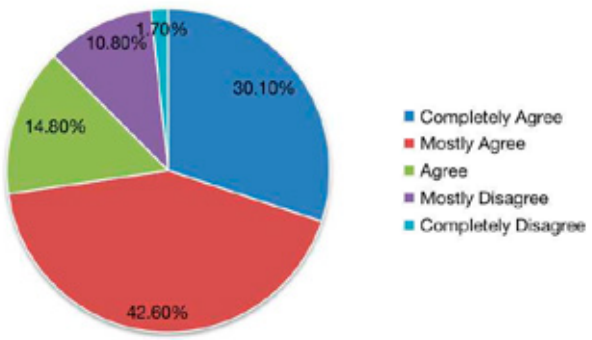

Figure 3 Percentage graph in which the adequacy of the treatment device variety in the clinic where the internship is performed is evaluated

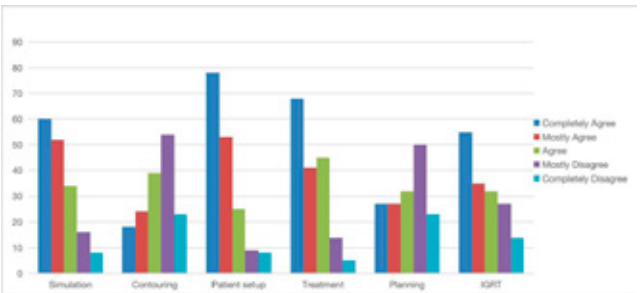

Figure 4 Percentage chart showing the adequacy of the experience gained in different fields during the internship period

A significant relationship was found between work experience and the perception that internship is beneficial to working life ($p=0.04$). Those with 0-5 years of work experience stated that the internship they did during their education did not contribute to working life, while

those with 5-15 years of work experience stated that it contributed. The evaluation of the contribution of the theoretical courses they studied during their education to their working life is given in Table1.

TABLE 1: Percentage distribution of the contribution of theoretical courses taken during RTTs trainings to working life.

Lectures	Highly Satisfied	Very Satisfied	Satisfied	Not Satisfied	Not at All Satisfied
Radiotherapy Physics	13%	22,6%	%40,7	%14,7%	9
Anatomy	%30,5	%26	%32,2	%8,5	%2,8
Radiological Anatomy	%36	%21,1	%29,1%	8	%5,7
Radiation Protection	%27,4	%21,7	%18,9	%5,7	%1,1
Radiation Oncology	%37,1	%27,4	%29,7	%5,1	%0,6
Quality Assurance	%18,6	%22,7	%34,9	%14,5	%9,3
Professional Ethics	%20,5	%25,1	%38,6	%12,3	%3,5
Medical Terminology	%25,9	%23,6	%35,6	%11,5	%3,4
Professional English	%6,9	%13,9	%28,3	%30,1	%20,8

To the expression ''Having a radiotherapy laboratory in our school would have contributed to our education.''; answers were given that 55.9% completely agree, 20% mostly agree, and 16.5% agree. The open-ended question ''How do you think RTT education can be improved in Turkey?'' was answered by 73 RTT. Mostly, the answers given are to increase the internship period (n=20), to reduce the quotas (n=11), to have undergraduate education (n=8) and to have laboratories in schools (n=7).

Discussion

In this study, we conducted a survey to investigate the impact of the education and training received by RTTs during their university education on their professional careers in Turkey. Our aim was to gain insights into the effectiveness of RTTs education and training in our country and identify areas that may require improvement. The results of this study could be used to inform future training programs and improve the overall quality of treatment provided by RTTs.

A total of 181 RTTs, predominantly from the Marmara and Central Anatolian regions, participated in this study, which aimed to investigate, for the first time, how RTTs training in Turkey was evaluated by working RTTs. A limitation of the study was the low participation rate from the Eastern and Southeastern Anatolia regions, which we believe is due to the limited number of radiotherapy clinics in these regions. Specifically, the Eastern Anatolia region has only nine radiation oncology clinics, and the Southeastern Anatolia region has only seven (10).

The ESTRO Young Committee stated that due to the absence of a consensus on the appropriate methodology to assess the quality of education programs, they used a non-validated, self-produced questionnaire (11). Similarly, to measure how RTTs perceive the contribution of the education they receive to their working lives, we prepared an online questionnaire consisting of 22 questions. A significant relationship was found between RTTs who graduated from public schools and work in public hospitals, and those who graduated from foundation schools and work in private hospitals. We hypothesize that this may be because faculty members working in hospitals prefer to work with RTTs whom they have trained themselves.

According to the ESTRO Core Curriculum, ''there are two components to an initial undergraduate education program for Radiation Therapists (RTTs): the academic and clinical components, and the learning outcomes of each should be complementary'' (ESTRO Core, p9) (12). Additionally, according to the IAEA Handbook for the Education of Radiation Therapists, experienced clinical RTTs are expected to support students in gaining understanding and developing their technical and psychosocial skills. The clinical environment plays an essential role in providing students with practical learning experiences that will underpin their future practice. Students are expected to work the same hours as the clinical staff and full attendance is compulsory, unless otherwise notified (p51, 5). As emphasized in the ESTRO Core Curriculum and IAEA's Handbook, the proficiency of the internship is an important component of RTTs training.

When examining the results of the survey, it is evident that the majority of participants find their internships to be sufficient. However, only those with 5-15 years of experience stated that the internship is beneficial to

their working life. There may be two different reasons for this discrepancy between those with 5-15 years of work experience and those with 0-5 years of work experience who state that the internship does not contribute. One possible reason is that as RTTs gain more work experience, they better perceive the benefits of their internships during their education and more accurately evaluate their effects. The second reason could be that those with more than 5 years of work experience may have actually had a more beneficial internship period.

ESTRO emphasizes the importance of a variety of treatment devices being available in the clinic where internships are held, stating, ''As a core requirement, students must spend a significant amount of time on dual modality multi-energy linear accelerators with imaging facilities and CT scanners/simulators for treatment planning purposes. It is also recommended that students have exposure to orthovoltage/superficial units, brachytherapy, and advanced technologies" (12, p.12). A large majority of the participants found the variety of treatment devices in the clinic where they completed their internships to be sufficient.

According to Coffey's study (3), 11 countries, including Turkey, indicated that their clinical departments set and fulfill standards in terms of equipment variety and practice to train students as part of the clinical component of the training program. However, when evaluating the adequacy of the experience gained during the internship in different areas, it was found to be sufficient for simulation, treatment, and IGRT, but insufficient, especially in the areas of contouring and planning (13). The knowledge of basic planning techniques gained during the internship is important for RTTs to accurately evaluate errors such as incorrect energy selection, higher than expected MU values, etc. that may arise during treatment planning (14). Additionally, RTTs who participated in the survey stated that they were mostly involved in contouring after treatment and simulation. Considering that in our country, tasks such as importing DICOM data to the planning system, registering different image sets, and OAR contouring are mostly performed by RTTs, it underscores the importance of students gaining sufficient experience in the fields of contouring and planning during internships. Therefore, it is crucial to ensure that students have more efficient internships in these areas as well. Dubois et al (15) conducted a similar study where they evaluated RTTs training using a questionnaire. They also concluded that RTTs require more hands-on teaching in areas such as planning, contouring, dose prescribing, and dosimetry, which is consistent with the findings of our study.
The ESTRO Core Curriculum states that ''Laboratory-based education allows students to learn and train outside of the clinical setting, without interfering with clinical patient data and with the added benefit of repetition of the exercises until the defined competence has been achieved. The students have the possibility to ask questions without disturbing the staff and the patient"(12, p.54). A large majority of the participants also agree that having a radiotherapy laboratory at the school will make a positive contribution to their education. Some even felt the need to reiterate the laboratory requirement in the open-ended question section. However, we could not find a statistically significant relationship between those who stated that the internship opportunities offered by their schools were insufficient and those who thought that having a radiotherapy laboratory in the school would be beneficial.

Another issue that stands out in the open-ended question section is the extension of the education period to the bachelor level. The International Atomic Energy Agency (IAEA) also endorsed the 2-year training program for Radiation Therapists (RTTs), while recommending that it may be increased to 3 years where possible. On the other hand, ESTRO recommends that the duration of training should be 3 years (5, 12). In their study, Coffey et al (3) presented the duration of RTTs training for 30 countries (26 European, 4 non-European) and emphasized that this period was 2 years in only 3 countries: the USA, Slovenia, and Turkey. It has been determined that the duration of education in only 5 countries is 4 years, while in others it is 3 years. Countries with a 4-year education period include Albania, Greece, Hungary, Malta, and The Netherlands. In a survey conducted by ESTRO for professionals working in the field of radiation oncology in Europe, the improvement of education was investigated (16). Four hundred and sixty-three respondents from 34 European countries participated in the survey, including 45% clinicians (n=210), 29% physicists (n=135), 24% RTTs (n=108), and 2% radiobiologists (n=10). When the participants were asked to evaluate the effectiveness of the training they received for different areas, it was seen that clinical practice was given the most importance (18% very important and 77% most important). In addition, when asked what could be done to improve education, it was stated that the duration of education should be increased, similar to the results of our study.

While the contribution of radiation oncology and radiation protection theoretical courses to the working life was mostly found to be satisfactory, the contribution of only the professional English course was mostly reported as unsatisfactory. This may be due to the short duration of the professional English course. However, no requests related to this issue were stated in the suggestions for improving

education. In fact, professional English is crucial for the working life of RTTs, as treatment devices and planning systems interfaces are in English. Additionally, operating manuals for these treatment devices and most scientific publications in the field of radiation oncology are also in English. Although the open-ended question "How can RTTs education be improved in Turkey?" was mostly answered by suggesting an increase in the duration of the internship, no statistically significant relationship could be found between the duration of the internship and the perceived benefit of the internship in working life.

Conclusion

Radiation therapy has become increasingly complex over time and is rapidly evolving with advances in technology. As radiation therapists play a vital role in the interdisciplinary team, their training must prepare them to work effectively in the future and provide safe and high-quality radiation therapy services. In conclusion, the participants of the survey largely found the education and internships they received during their RTTs training to be sufficient in terms of their contributions to their working lives.

Declarations

A part of this study was presented at the 3rd National Radiotherapy Congress and Training Seminars. 27-30 April 2023, Antalya, Turkey.

Funding: The author has no other relevant affiliations or financial involvement with any organization or entity with a financial interest in or financial conflict with the subject matter or materials discussed in the manuscript. No writing assistance was utilized in the production of this manuscript.

Conflicts of interest/Competing interests: The author declare that they have no competing interests.

Ethics approval: The authors state that they have obtained appropriate institutional review board approval or have followed the principles outlined in the Declaration of Helsinki for all human or animal experimental investigations. This study was evaluated and approved by Acibadem Mehmet Ali Aydinlar University Ethics Committee. (Date: 12.05.2023, Registration number: 2023-08/228).

Availability of data and material: The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Authors' contributions: EG conceived and designed the study. EG prepared the first draft and subsequent drafts and the final paper.

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