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The new face of commercial academia: Octopus affiliation

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In academic publishing, the institution to which the author is affiliated is the place where the author publishes/writes about/conducts the research. Author affiliation is an important element in research articles because it provides readers with useful information about where the research was conducted. It is becoming increasingly common for authors to specify more than one affiliation and this is referred to as "octopus affiliation" in the academic world (1). Octopus affiliation is when an author includes in his/her article the institutions to which he/she has more than one affiliation.

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Affiliations are important for universities that rely on rankings to boost their recruitment and revenue. One way for universities to increase their productivity indicators is to ask authors to include them as an organization. But if this does not accurately represent where the work is done or where the responsibility lies, it becomes a case of gratuity institutional authorship.

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If we look at the effects of octopus affiliation on authors in commercial academia, it leads authors to declare institutions or organizations other than the institution where the research is conducted in order to receive more financial support. This leads authors to adapt to the functioning of the commercial academic system and encourages them to publish paid articles at the same time as normalization. It should be recognized that paid article publishing is part of a large commercial network that goes beyond reducing the financial burden of journals and providing financial support.A 2016 study of Scopus-indexed articles investigated all authors who reported multiple institutional affiliations, at least one of which was with a university in Chile. Of the 4,961 author records with multiple links, 38% of the links to a Chilean university could not be verified by checking institutional websites. For-profit private universities had a higher proportion of potentially misrepresented author links (40%) compared to non-profit universities (28%) and public universities (26%) (3). A recent study showed an increase in multiple linking in journal publications, with one in three articles ha-ving more than one linked author (4).

As we have already mentioned, the most important steps that can be taken are; to remove academic publishing from the monopoly of large commercial publishing houses, to ensure that items with high commercial expectations of intermediary consultant companies can be met by the labor of board members, to prevent researchers from preferring commercial publishing houses and journals, projects to increase the academic enthusiasm and cooperation of board members and reviewers, and to encourage non-commercial / fundable public or association publishing (5). In addition, international neutral bodies such as COPE or ICMJE should urgently address the issue of octopus authorship and take action to create guidance documents on appropriate and ethical reporting of author affiliations.

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Why do psychiatrists commit suicide? Denial or stigma?

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SUMMARY

Objective: Suicide is a complicated public health issue. Despite the expectation that psychiatrists have the most knowledge of suicide from a biopsychosocial perspective, there are few studies assessing the mental health and suicide rates of psychiatrists.This study aims to assess the suicide-related attitudes and behaviors of mental health professionals, as well as the stigma associated with suicide.

Method: This cross-sectional survey was conducted with psychiatrists (resident in psychiatry and specialist) in Turkey. An online survey was created via the Google Forms public web address. Online questionnaires were delivered through Google Forms by emailing and messaging on WhatsApp, Telegram, Google and Yahoo groups.The study was performed between November 23, 2022 and February 23, 2023. The Socio-demographic Information Form and the Stigma of Suicide Scale (SOSS) were used to evaluate the participants.

Results: 225 psychiatrists participated in the study. All participants reported low levels of stigmatization related to suicide. Assistant physicians had significantly higher scores in the elevation/norming subscale compared to specialist physicians (p=0.018). Participants who believe in a religion received significantly higher scores in the stigmatization and isolation/depression subscales compared to those who do not believe (p=0.006, p=0.003, respectively). Participants without a history of suicidal ideation received significantly higher scores in the stigmatization subscale compared to those who have had suicidal ideation (p=0.004).

Discussion: Although the stigma scores related to suicide reported by the participants were low, we know that the suicide rates among psychiatrists are high. Psychiatrists may hide, deny, and rationalize their feelings, thoughts, and beliefs about suicide

Key Words: Suicide, social stigma, denial, psychiatrists

INTRODUCTION

Suicide and suicide attempts, which can be seen in people of all ages around the world, are a complex public health problem. According to the World Health Organization, approximately 800,000 people die by suicide each year (1), and it is estimated that the number of people who attempt suicide is at least three times this figure. The devastating consequences of suicide become even more significant when considering the affected families, friends, and communities of each person who dies by suicide.

Studies have reported that physicians have higher suicide rates than the general population (2). A meta-analysis published in 2019 indicated that suicide rates among physicians are higher than in the general population, and the risk varies among countries. Female physicians are more at risk, and anesthesiologists and psychiatrists have higher suicide rates compared to other physician groups (3). Personality traits such as intense work conditions, perfectionism, and an excessive sense of responsibility, as well as difficulties in balancing personal and professional life, are associated with physician suicide (4).

There are a limited number of studies evaluating the mental health and suicide rates of psychiatrists, despite there being many studies on physician suicides in general (5-8). It is noteworthy that despite psychiatrists being expected to have the best know-

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ledge of suicide from a biopsychosocial perspective, as well as approaches and prevention methods, there are few studies on this topic. Although it is well known that psychiatrists are at higher risk of suicide compared to other specialties, the reasons for the high suicide rates among them should be discussed and investigated. Factors leading to high suicide rates among psychiatrists, which are largely preventable and emphasized at every opportunity, need to be studied. Stigma associated with suicide, which can cause patients to avoid seeking medical help, ignore their illness, or self-treat, can be a significant factor in suicides among psychiatrists. This study aims to evaluate the attitudes and behaviors of mental health professionals that may be related to suicide, as well as the level of stigma associated with suicide.

METHODS

The populatıon and sample

This study is a cross-sectional study. The population of the study consists of mental health professionals (psychiatry residents and specialists) working in Turkey. Doctors who graduate from medical school in Turkey are entitled to receive training in the field of mental health and illnesses by passing a specialization exam. After completing their 4 or 5-year education, they become specialists in mental health and illnesses. When planning the study, the minimum sample size was calculated to represent the population of psychiatrists. The sample size was calculated using the following formula: “Sample size n = [DEFFNp(1-p)]/ [(d2/Z21-ɑ/2(N-1)+p*(1-p)].” The total number of psychiatrists in Turkey is 3330 (n), and based on a 5% margin of error, an 80% confidence interval, and a 50% assumed frequency of results, the minimum sample size was calculated as 157 participants using the OpenEpi, Version 3, open-source calculator.

Data Collection

Snowball sampling method was used as the data collection method in the study. The Socio-demographic Information Form and the Stigma Toward Suicide Scale were used to evaluate the participants. For this purpose, a survey was created specifically for the research using "Google Forms" web address. The link containing the research questions was shared on e-mails and social media platforms where psychiatrists were present. Those who agreed to participate in the research gave their consent to participate in the study.

Materials

Socio-demographic information form: The form was created by the researchers after reviewing relevant literature and examining similar studies. The form includes a total of 18 questions, including socio-demographic characteristics such as age, gender, and marital status. In addition to this information, there are also questions regarding alcohol and substance use, psychiatric consultation, self-medication, and suicidal ideation and attempts.

Stigma of Suicide Scale (SOSS): The scale contains a set of one or more word phrases that describe someone who has committed suicide (e.g., 'selfish', 'cowardly', 'brave'). It was developed by Batterham and colleagues (9) in 2013. The validity and reliability studies of the Turkish version of the scale were conducted by Öztürk, Akın, and Durna (10) in 2016. SOSS has a three-dimensional structure, with one of the dimensions evaluating stigmatization towards people who died by suicide, another dimension associating suicide with isolation or depression, and the last dimension including items related to the normalization or glorification of suicide (10). The Turkish version of the Stigma of Suicide Scale had an intraclass correlation coefficient value of 0.93. Cronbach's alpha values were found to be 0.90 for the total scale, 0.90 for the stigma sub-scale, 0.87 for the isolation/depression sub-scale, and 0.79 for the normalization/glorification sub-scale.

Ethical Approval

The study was approved by the Gazi University Ethics Committee on 22.11.2022 with Research Code No. 2022-1324

Statistics

The data on demographic characteristics of the sample and scores obtained from the scales were analyzed using the Kolmogorov-Smirnov test to assess normal distribution and descriptive statistics were used. Descriptive values are presented as number (n), percentage (%), mean, and standard deviation (SD). Cronbach's Alpha coefficient was used to evaluate the internal consistency reliability of each subscale score of SOSS. Independent T-Test was used to measure differences between groups divided according to parameters such as work experience, gender. Statistical analyses were conducted using the SPSS 22 program. $p<0.05$ was considered statistically significant.

RESULTS

225 individuals working in the field of mental health and illness participated in the study. The mean age of the participants was 37.74 ± 9.05 years, and the mean length of service in the field was 11.73 ± 8.40 years. Other sociodemographic data of the participants are shown in Table 1.

Answers to questions prepared by the researchers regarding the individual's psychiatry application, self-medication, psychotropic drug abuse, family history, alcohol and substance use, presence or absence of suicidal ideation or attempts, and psychiatrists' attitudes towards suicide risk are presented in Table 2.

The participants were divided into groups based on gender, experience, religious beliefs, presence of suicidal ideation, and whether they practiced self-medication, and were compared in terms of SOSS subscales in Table 3. As a result, psychiatry residents had significantly higher scores in the elevation/norming subscale compared to specialist physicians ($p=0.018$). Individuals who believe in a religion received significantly higher scores in the stigmatization and isolation/depression subscales compared to those who do not believe ($p=0.006$, $p=0.003$, respectively). Finally, individuals without a history of suicidal ideation received significantly higher scores in the stigmatization subscale compared to those who have had suicidal ideation ($p=0.004$). In our study, Cronbach's alpha values were 0.942 for the total scale, 0.943 for the stigmatization subscale, 0.890 for the isolation/depression subscale, and 0.838 for the elevation/norming subscale.

Table 1 Socio-demographic characteristics of the participants

	n	%
Gender		
Female	149	66.2
Male	76	33.8
Marital status		
Married	149	66.2
Single	59	26.2
Widow	1	0.4
Divorced	16	7.1
Childhood income level		
Low	38	16.9
Medium	145	64.4
High	42	18.7
Do you drink alcohol three or more times a week?		
Yes	13	5.8
No	212	94.2
Have you ever used a substance at least once in your life?		
Yes	65	28.9
No	160	71.1
Do you consider yourself a regular substance user?		
Yes	2	0.9
No	223	99.1
Does your family have a history of mental illness?		
Yes	136	60.4
No	89	39.6
Do you follow a religion?		
I have no faith in any religion.	115	51.1
I believe in a faith	110	50.9

DISCUSSION

The aim of this study was to evaluate the suicidal thoughts, attempts, and factors related to suicide among physicians working in the field of mental health, as well as the level of stigma related to suicide. Suicide and/or suicide attempts are complex issues with no single cause or solution. Biological factors such as genetic predisposition, childhood psychological trauma, early loss, and psychiatric illness are the same in everyone as factors that increase the risk of suicide (11). The higher suicide rates among physicians and psychiatrists appear to require us to focus more on psychosocial factors rather than these biological factors.

A total of 225 physicians working in the field of psychiatry participated in our study. Looking at the socio-demographic data, the average age of the physicians participating in our study was 37.74, and their average duration of experience in psychiatry was 11.73 years. Suicide is reported as the second

Table 2. Questions asked to participants about suicide and related situations

	n	%
Have you ever visited a psychiatrist for mental distress?		
Yes	124	55.4
No	101	44.6
If you have any mental complaints		
I commence self-medication	99	44.0
I consult my psychiatrist friends.	18	8.0
I consult a senior I trust.	59	26.2
I refer to a psychiatrist I don't know personally.	49	21.8
Have you ever used psychotropic drugs for a short or long period of time without thinking you had a mental disorder?		
Yes	82	36.4
No	143	63.6
Have you ever had suicidal thoughts before?		
Yes	101	44.9
No	124	55.1
Have you ever attempted suicide?		
Yes	13	5.8
No	212	94.2
In the past week, have you considered death a good alternative?		
Yes	17	7.6
No	208	92.4
How does the risk of suicide among psychiatrists compare to other medical specialties, in your opinion?		
Lower	11	4.9
Equal	64	28.4
Higher	150	66.7

most common cause of death among individuals aged 15-29 worldwide (1). Despite the fact that the age average of our participants is outside of this range, 44.9% of the participants reported previous suicidal thoughts and 5.8% reported previous suicide attempts. Although they have an older age average, these reported rates raise questions about whether the rates are higher in younger physicians in their residency period.

In our study, although 55.4% of all participants reported having been examined by a psychiatrist before, 44% reported that they would start medication on their own if they had a mental complaint, while 34.2% reported that they would consult a psychiatrist friend or trusted mentor, and 21.8% reported that they would go to a psychiatrist whom they had never met. The rate of those who reported using psychotropic drugs, either short or long term, despite not considering themselves to have any mental disorders was 36.4%. We do not know when those who reported having been examined by a psychiatrist in the past were examined. However, nearly half of them reported that they would start medication on their own if they had a complaint. This finding is consistent with studies that report high rates of self-treatment among psychiatrists (6). This can be explained in several ways: the cultural belief that knowledge about mental illnesses can protect those who treat them from becoming ill themselves, the belief that "I should not/ cannot have a mental problem," and the denial of mental distress experiences. On the other hand, the continuation of symptoms and their ease of access may have also led to self-treatment behavior. In our country and worldwide, pharmacotherapy is often recommended as the primary treatment for most mental disorders, but it is also known that medication alone is often not enough (6). A physician who believes more in biological psychiatry may also prefer to start treatment on themselves, like in other branches. While this behavior may be reasonable for mild-to-moderate depression or anxiety disorders, it may prevent appropriate and accurate treatment services for mental disorders such as alcohol-substance use disorders, bipolar affective disorders, and psychotic disorders where insight can be impaired, and reality assessment can be distorted. However, in our country, there are no restrictions on physicians prescribing medication to themselves for diagnosis or drug-related reasons. This situation may increase the risk of suicide both in relation to self-treating inadequately and in relation to

Table 3. Comparison of the participants, who were divided into groups based on a number of parameters, depending on their SOSS subscale scores.

	Stigma				Isolation/depression				Glorification/normalization			
	Mean–SD	f	t	p	Mean–SD	f	t	p	Mean–SD	f	t	p
Gender												
Female	1,82–0,48	1,947	-0,821	0,413	3,56– 0,55	0,282	0,205	0,838	2,25– 0,53	1,365	1,104	0,272
Male	1,89–0,58				3,54–0,55				2,16– 0,60			
Experience												
Residents (n=68)	1,89– 0,50	0,555	0,870	0,386	3,65–0,56	0,002	1,754	0,082	2,35–0,53	0,373	2,403	0,018
Specialists (n=157)	1,83–0,53				3,51–0,54				2,16–0,56			
Religious												
No (n=114)	1,76–0,49	0,040	-2,777	0,006	3,44–0,58	2,695	-3,053	0,003	2,17–0,55	0,050	-1,456	0,147
Yes (n=109)	1,95–0,52				3,66–0,50				2,28–0,55			
Sucidial ideation												
Yes (n=101)	1,77–0,51	1,352	-2,922	0,004	3,54–0,59	3,360	-2,242	0,809	2,24–0,64	9,341	0,563	0,547
No(n=124)	2,00–0,63				3,56–0,52				2,20–0,48			
Self-medication												
Yes (n=99)	1,85–0,54	0,788	0,175	0,861	3,57–0,57	0,054	0,488	0,626	2,18–0,58	1,385	-1,040	0,300
No (n=126)	1,84–0,50				3,53–0,53				2,26–0,53			

SD= Standard Deviation

increased suicide risk associated with the use of stimulating/sedative substances.

Mental disorders, burnout, and suicidal thoughts pose higher risks for psychiatrists than other healthcare professionals (12). Interacting with patients who may experience trauma, suicidal tendencies, homicidal tendencies, hostility, or lack of appreciation can cause psychiatrists to feel helpless and mentally exhausted (13). Burnout, combined with other risk factors for suicide, may seem like the only way out. Like all doctors in Turkey, psychiatrists also work under intense pressure. Dealing with around 1000 patients per month can lead to burnout, and encountering traumatic experiences may cause them to ignore their own problems. Failure to take note of symptoms or simply treating them symptomatically can lead to mental disorders and related suicides.

When looking at the personality traits of doctors, qualities such as ambitious, perseverative, hard-working, and perfectionism come to mind. Throughout medical education, doctors are seen as warriors who can overcome difficulties, gain practical skills, and discipline themselves. "They can stay awake, work without food or water, and stand for hours" because they are doctors; that's why they became doctors. This perspective actually leads to doctors internalizing chronic stress. Along with physical exertion, the population served by psychiatrists, the pace of work, and the resulting decrease in social activities and events may also play a role in the increase of mental disorders and associated suicides.

Suicidal attempts are frequently seen in personality disorders as well as in serious mental illnesses (14-16) . Personality disorders are more stigmatized than other psychiatric diagnoses (17) (18). Both society and physicians believe that individuals with personality disorders need to be controlled in terms of their behavior, and their symptoms and help-seeking are often perceived as manipulation. These individuals receive less sympathy and are less likely to be considered in need of professional help compared to those with other psychiatric disorders (19). Considering that physicians are also part of society, it is not unreasonable to assume that they carry similar stigmas towards individuals with personality disorders. Although it may be possible to control professional stigma, societal stigma and self-stigmatization may have become thought patterns that the individual is not even aware of. From this perspective, a psychiatrist who experiences ongoing symptoms despite self-treatment for their own mental health problems, including suicidal thoughts, may not seek treatment due to their internalized stigma, professional stigma, and societal stigma concerns.

5.8% of the psychiatrists who participated in our study reported a history of suicide attempt, 44.9% reported having had suicidal thoughts in the past, and 7.6% reported seeing death as a viable option within the last week. The levels of stigma related to suicide were generally low, but when evaluated based on sub-scales, it was found that the students in the early years of their psychiatric specialization had higher scores for glorification/normalization, and those who had previously had suicidal thoughts had lower scores for stigmatization related to suicide.

The low levels of stigma scores, despite a low history of suicide attempts, seem to contradict the high suicide rates among psychiatrists. Approximately 10% of the 2,500 psychiatrists invited to participate in the study agreed to participate, and during the study, two psychiatrists died by suicide. However, the low participation rate in the study can be explained by various factors such as fatigue, disinterest, lack of time, or burnout from online work.

As physicians, they may not consciously approach mental disorders and suicide with prejudice, but the lack of insight into their own mental state, influenced by denial and rationalization on the unconscious level, may be one of the underlying reasons for psychiatrist suicides.

It is necessary for psychiatrists who are receiving psychiatric training to also receive supervised psychotherapy training. Supervised psychotherapy training can contribute to the increase and enrichment of insight, as well as enabling the supervisor to observe and guide potential mental health problems of the assistant/ specialist whom they are training. As far as we know, there is no regulation on this issue in specialty training programs in Turkey or in the world. In some countries, it is mandatory to see patients under supervision during specialty training, ensuring that individuals are in constant communication with another mental health professional. However, there is no country that provides regular and controlled supervision after specialization. Making it mandatory for physicians working in the field of mental health to have such a requirement may contribute to early detection of possible mental disorders and consequently to the reduction of suicide rates, as well as the development of insight. On the other hand, psychodynamic-oriented/insight-generating therapies are long-term and costly. Therefore, it may contribute similarly to have every psychiatric candidate have a mentor and mandatory regular meetings, even if there is no regular therapy process during the internship training.

In our study, 28.9% of psychiatrists reported using drugs at least once in their lives, and only 0.9% considered themselves regular drug users. Although 36.4% of physicians do not think they have any mental disorder, they stated that they use psychotropic drugs. Although the stigma scores related to suicide reported by the participating physicians were low, it is noteworthy that the suicide rates among psychiatrists are high. There have been 6 documented cases of suicide by psychiatrists in Turkey in the last 3 years. When these conflicting findings are considered together, it suggests that psychiatrists may hide, deny, and rationalize their feelings, thoughts, and beliefs about suicide.

In conclusion, it should be remembered that the vast majority of doctors do not commit suicide. However, every death is a tragedy that sends ripples through the system and carries the risk of contagion (11). Restricting doctors from self-prescribing may lead to them seeking help from another doctor, earlier detection and treatment of risky situations, and a decrease in suicide risk. Regulations on working conditions for doctors may also lead to a decrease in burnout and related suicides for all doctors. Furthermore, a doctor regularly exposed to chronic stress due to the nature of the patient population they work with could benefit from receiving regular supervision, which may lead to a decrease in burnout and related suicide risk. Initiatives to reduce stigma both at the societal level and among psychiatrists would undoubtedly be useful in reducing suicides related to mental illness. Ensuring that doctors have access to early intervention and confidential support services may also help reduce suicide behavior, even if stigmas cannot be eliminated (20).

There have been no studies on psychiatrist suicides in Turkey. This study may create an agenda and

stimulate broader, more representative research on the subject, initiating a discussion. The findings suggest that the stigma surrounding mental illnesses also exists within the profession, highlighting the importance of clinical training and post-graduate continuous education programs in this area.

However, there are limitations to this study. The number of participants and the online nature of the research are insufficient to draw generalizable conclusions. The variables studied are also not sufficient to determine the risk factors for suicide and psychiatrist/doctor suicides, which are complex phenomena. By asking ourselves "what more could we have done? " after each psychiatrist suicide, and confronting our own denial, we can contribute to reducing suicide rates through more comprehensive and inclusive studies.

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The relationship between the psychological resilience of patients with chronic kidney failure and post-traumatic growth and psychological symptoms

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SUMMARY

Objective: This study aims to investigate the factors that may contribute to post-traumatic growth and resilience in chronic kidney failure (CKF) patients, the role of depression and anxiety symptoms as well as resilience in the emergence of post-traumatic growth.

Method: 64 patients diagnosed with CKF and received dialysis were included in the study. The Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Post-Traumatic Growth Inventory (PTGI) and Resilience Scale for Adults (RSA) were administered to all patients, respectively.

Results: Self-perception of PTGI (r= -0.70, r= -0.65), change in relationships with others (r= -0.57, r= -0.65), change in philosophy of life (r= -0.60, r = -0.57) subscales, and PTGI total score (r= -0.70, r= -0.66) were shown to have a negative moderate and statistically significant relationship with BDI and BAI scores ($p<0.001$). A negative moderate and statistically significant relationship was found between BDI and BAI scores and perception of the future subscale (r= -0.51, r= -0.57), self-perception (r= -0.54, r= -0.59), social resources (r= -0.66, r= -0.60) subscales of RSA and total RSA score (r= -0.68, r= -0.71) ($p<0.001$). A statistically significant and moderately positive (r= 0.69) relationship between PTGI and RSA total scores was also determined ($p<0.001$).

Discussion: Anxiety and depression symptoms observed in CKF patients impact the psychological resilience levels of patients and the development of post-traumatic growth. Post-traumatic growth develops as psychological resilience increases. Thus, psychological interventions should be planned to support the psychological resilience levels and post traumatic growth development of CKF patients.

Key Words: Chronic kidney failure, post-traumatic growth, resilience, depression, anxiety.

INTRODUCTION

As life expectancy increases, chronic diseases have become a principal problem in the field of human health (1). The presence of a chronic disease may constitute a traumatic risk factor. Chronic kidney failure (CKF) is a public health problem that seriously harms human health worldwide and is an irreversible progressive disease that significantly increases morbidity and mortality (2, 3). While its prevalence is 13.4% worldwide (3, 4), it is observed in 15.7% of the general adult population in Turkey (2). CKF is a chronic disease that not only endangers patients' physical health but also their mental health and leads to an increase in the incidence of psychological disorders such as anxiety and depression (6). In addition to the presence of CKF and its complications, hemodialysis severely affects an individual's personal, family, work, and social life (7). Studies have shown that the prevalence of depression in patients undergoing hemodialysis is approximately three times higher than that in other patients (1, 2, 8). Among these patients, one-fourth of patients are affected by depression and anxiety is observed in 12% to 52% of patients, and these rates are much higher than in the general population (9). The presence of depression and anxiety

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symptoms in this patient group is associated with increased mortality, increased hospitalization rate, and non-compliance with hemodialysis treatment (9,10).

Previous research has shown that there can be positive psychological changes in chronic diseases (11); such as chronic kidney failure. Posttraumatic growth (PTG) is defined as a positive psychological change that occurs in response to an extremely challenging life situation (12) and includes positive changes in various aspects of life, such as improvement in social relationships, seeking new ways of living, understanding the value of life, change in belief system and awareness of personal power (13, 14). Previous studies have shown that PTG is associated with numerous positive outcomes, including decreased symptoms of depression and increased feelings of relaxation and interpersonal relationships (14). Moreover, PTG development facilitates adaptation to the challenging disease process with these positive outcomes.

The principal mechanism leading to PTG is resilience (15). Psychological resilience is define as "one's ability to cope with difficult life stressors and return to their former state" (16). Resilience is generally thought to influence the likelihood of PTG in individuals (12). In fact, although psychological resilience has been shown to contribute to the development of posttraumatic growth in previous studies (17), depression and anxiety have been reported to have negative effects on PTG (18).

CKF is a life-threatening long-term disease. Psychological factors that may affect PTG in CKF have not been adequately studied in previous studies. Our hypothesis is that anxiety and depression symptoms in CKF have a negative effect on posttraumatic growth and that resilience favours posttraumatic growth. The aim of this study was to investigate the contributing factors of posttraumatic growth and resilience in patients receiving hemodialysis treatment for CKF, and the role of depression and anxiety symptoms as well as resilience in the emergence of posttraumatic growth.

METHOD

Design and Sampling

A descriptive, observational design was used in this study. Patients diagnosed with CKF and treated by hemodialysis in Karadeniz Technical University Medical Faculty Nephrology Unit. Between September 2016 and September 2017, a total of 86 patients were followed up with hemodialysis treatment in the nephrology unit. Among these patients, 64 patients who met the study criteria and who gave voluntary consent for the study were included in the study. A total of 64 patients diagnosed with CKF, followed by the Nephrology Unit, and receiving hemodialysis treatment 2-3 times a week for at least 6 months, each session lasting an average of 4-5 hours, were included in the study. The inclusion criteria were; age≥ 18 years, adequate the physical, mental and linguistic capacity to answer the scale questions, no diagnosis or treatment history of any psychiatric disease and agree to participate in the study. Patients insufficiently educated to read the scales with clinical conditions too severe to be able to comply with the evaluation, diagnosed with dementia, with histories of either physical disease affecting the central nervous system, head trauma resulting in loss of consciousness, mental disability, or who did not provide informed consent were excluded from the study.

The patients were informed about the research, and their sociodemographic characteristics were recorded once their written consent to take part was received. Other medical diseases of the patients were obtained from their medical records. All patients were administered the Beck Depression Inventory (BDI) for depressive symptoms, followed by the Beck Anxiety Inventory (BAI) to determine anxiety symptoms, the Posttraumatic Growth Inventory (PTGI) and finally the Resilience Scale for Adults (RSA) to determine psychological resilience. Clinical interviews and BDI, BAI, PTGI, and RSA applications were conducted by the physician responsible for the research.

The study commenced after receiving the approval from the Karadeniz Technical University Clinical

Research Ethical Committee (no. 24237859-599).

Assessment Tools

Sociodemographic Data Form: Prepared by the authors, this form was designed to investigate sociodemographic characteristics, such as age, sex, marital status, and employment, and clinical characteristics such as onset age of disease, total disease duration, total number of hospitalizations.

Beck Depression Inventory (BDI): This scale was developed to measure the risk of depression, levels of depressive symptoms and changes in severity in adults (19). The reliability and validity of the Turkish version were confirmed by Hisli (1989) (20). The scale had a cut-off point of 17.

Beck Anxiety Inventory (BAI): Developed by Beck et al. (1988), this self-report scale was used to determine the frequency of anxiety symptoms (21). This Likert-type scale consists of 21 items scored between 0 and 3. Its validity and reliability in Turkey were investigated by Ulusoy et al. (1998) (22).

Post-traumatic Growth Inventory (PTGI): Developed by Tedeschi and Calhoun (1996) (23), this scale measures post-traumatic growth, and it was adapted to Turkish by Dürü (2006) (24). This six-point (0-5) self-report Likert-type scale consists of 21 items. The lowest possible score is 0 and the highest 105. Higher scores indicate a higher level of growth in the face of traumatic experience. The Cronbach's alpha internal consistency value of the original version (23) is 0.90. The internal consistency of the sub-domains ranges between 0.66 and 0.85. Test-retest reliability of r=0.71 was calculated. The original scale has also been reported to exhibit significant positive correlation with variables such as optimism, religious participation, extraversion, openness to experiences, compliance, and conscientiousness. Factor analysis for the reliability study of the original scale revealed five domains–changes in relationships with others, new possibilities, personal strength, spiritual change, and appreciation of life.

Resilience Scale for Adults (RSA): Developed by Friborg et al. (2003), the RSA consists of the dimensions of "personal strength", "structured style", "social competence", "family cohesion", and "social resources" (25). The reliability and validity of the scale in Turkey were investigated by Basım and Çetin (26). The dimensions of "structural style" (3,9,15,21) and "perception of the future" (2,8,14,20) consist of four items each, "family cohesion" (5,11,17,23,26,32), "perception of self" (1,7,13,19,28,31), and "social competence" (4,10,16,22,25,29) of six items each, and "social resources" (6,12,18,24,27,30,33) of seven items. The scale consists of a total of 33 questions. Items 1, 3, 4, 8, 11, 12, 13, 14, 15, 16, 23, 24, 25, 27, 31, and 33 are reverse scored. If the researcher desires psychological resilience to increase in line with scores, then the response boxes must be evaluated as 1, 2, 3, 4, and 5 from left to right. The minimum possible score is 33, and the maximum possible score is 165 (26). The internal consistency coefficients of the subdimensions range between 0.66 and 0.81. The total Cronbach's alpha coefficient for this scale is 0.86.

Statistical Analysis

Data were recorded and analyzed using SPSS (Statistical Package for the Social Sciences) version 23.0. Descriptive statistics were expressed as numbers and percentages for categorical variables and as mean, standard deviation, minimum, and maximum values for continuous variables. Normality of the distribution of continuous variables was evaluated using the One-Sample Kolmogorov-Smirnov test. Independent Samples T Test was applied for continuous variables with normal distribution, and Mann Whitney U Test was applied for continuous variables with non-normal distribution. Relationships between continuous variables were assessed using Pearson's test when normal distribution conditions were met, and with Spearman's test when those conditions were not met. p values <0.05 were considered statistically significant.

The power of the study was calculated using the OpenEpi. The power was calculated %73.85 based on %5 type 1 error, %95 confidence interval.

Table 1. Sociodemographic and clinical characteristics of the patients (n=64)

n= 64	n	%
Gender		
Male	34	53.1
Female	30	46.9
Marital status		
Married	45	70.3
Single	19	29.7
Educational Level		
Illitarete	2	3.1
Literate	8	12.5
Elementary	20	31.3
Middle School	10	15.6
High School	16	25
University	8	12.5
Work Status		
Working	36	56.3
Not working	28	43.8
Another Comorbid Diseases*		
Present	39	60.9
Cardiovascular diseases	25	64.1
Endocrine system diseases	18	46.2
Immune system diseases	6	15.4
Gastrointestinal system diseases	5	12.8
Pulmonary system diseases	4	10.3
Musculoskeletal diseases	1	2.6
Absent	25	39.1
Diagnosis of psychiatric diseases		
None	64	100.0
Suicide History		
None	64	100.0
	Mean – SD	Range (min-max)
Age (year)	49.86 – 11.75	23-75
Disease duration (year)	8.80 – 8.48	1-35

* More than one disease can occur at the same time.

Table 2. Scale scores of the patients

	Mean – SD	Range (min-max)
BDI	7.52 – 6.74	0-33
BAI	7.88 – 6.80	0-27
PTGI		
Perceived change in self	26.75 – 11.79	1-50
A changed philosophy of life	12.59 – 7.63	0-28
A changed sense of relationships with others	11.22 – 6.20	1-25
Total PTGI score	50.56 – 23.13	6-103
RSA		
Personal structure	15.20 – 3.06	10-20
The perception of future	14.94 – 4.09	4-20
Family coherence	25.19 – 4.36	11-30
The perception of self	22.75 – 5.93	11-30
Social competence	23.42 – 4.64	12-30
Social support	28.42 – 5.44	15-35
Total RSA score	129.92 – 20.55	81-165

RESULTS

Sixty-four individuals were included in this study. The participants' mean age was 49.9 ± 11.8 years (min. 23 max. 75), 53.1% were men, 70.3% were married, 31.3% were primary school graduates, 25.0% were high school graduates, 56.3% were in income-generating employment, and 60.9% had an additional medical disease. Mean time elapsed since onset was 8.8 ± 8.5 years (1-35). Participants' sociodemographic characteristics are shown in Table 1.

The participants' mean BDI score was 7.52 ± 6.74, mean BAI was 7.88 ± 6.80, mean PTGI was 50.56 ± 23.13, and mean RSA was 129.92 ± 20.55. The scale scores are presented in Table 2.

The relationship between sociodemographic characteristics and PTGI is shown in Table 3. The mean RSA family cohesion subscale scores were significantly higher among individuals educated to middle school level or lower than those educated to high school or university level (p=0.041). The mean RSA perception of self-subscale scores were significantly higher in men than in women (p=0.012). The relationship between sociodemographic characteristics and RSA is shown in Table 4.

Significant and moderate negative correlation was determined between BDI and BAI scores and the total PTGI scores (r= -0.70, r= -0.66). Significant and moderate negative correlation was determined between BDI and BAI scores and the PTGI changes in perception of self (r= -0.70, r= -0.65) (Table 5, Figure 1). Significant and moderate negative correlation was also observed between BDI and BAI scores and the total RSA scores (r= -0.68, r= -0.71). Significant and moderate negative correlation was also observed between BDI and BAI scores and the RSA perception of the future (r= -0.51, r= -0.57), perception of self (r= -0.54, r= -0.59) and social support (r= -0.65, r= -0.60) subscales (Table 5, Figure 2).

Significant and moderate positive correlation was determined between total PTGI and total RSA

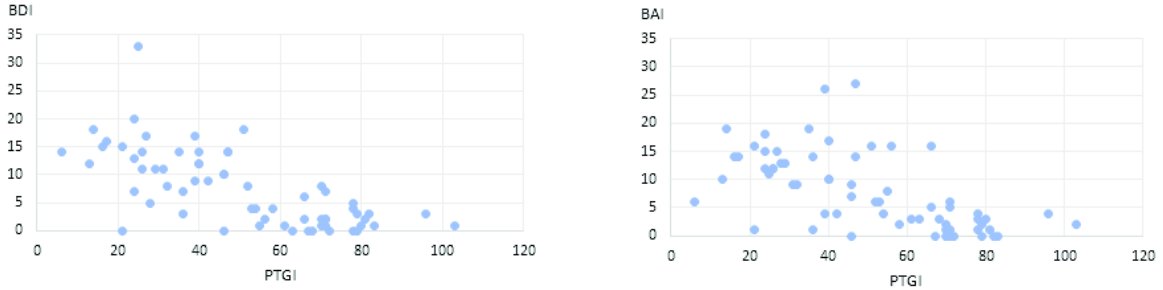

Figure 1. Correlation of BAI and BDI with PTGI

Table 3. Sociodemographic features and PTGI

	PTGI			
	Perceived change in self	A changed philosophy of life	A changed sense of relationships with others	Total PTGI score
	Mean – SD	Mean – SD	Mean – SD	Mean – SD
Gender				
Female	24.57 – 13.52	11.80 – 7.57	10.90 – 5.67	47.27 – 24.25
Male	28.68 – 9.83	13.29 – 7.72	11.50 – 6.72	53.47 – 22.04
Marital status				
Single	24.00 – 11.34	10.53 – 6.81	10.05 – 5.09	44.58 – 20.43
Married	27.91 – 11.91	13.47 – 7.86	11.71 – 6.61	53.09 – 23.94
Educational level				
Middle school and lower	26.00 – 12.03	12.33 – 7.55	11.48 – 6.69	49.80 – 24.01
High school and university	28.00 – 11.53	13.04 – 7.90	10.79 – 5.41	51.83 – 22.02
Work status				
Not working	24.5 – 12.37	12.21 – 7.11	11.36 – 6.42	48.07 – 23.78
Working	28.5 – 11.19	12.89 – 8.10	11.11 – 6.12	52.5 – 22.75
Presence of another comorbid diseases				
Absent	27.48 – 12.00	12.68 – 7.68	10.96 – 6.58	51.12 – 23.30
Present	26.28 – 11.79	12.54 – 7.70	11.38 – 6.03	50.21 – 23.31
Duration of disease (year)*				
≤5 years	25.30 – 12.17	12.27 – 8.00	11.85 – 6.34	49.42 – 24.76
>5 years	28.29 – 11.37	12.94 – 7.33	10.55 – 6.09	51.77 – 21.60

Independent Samples T Test was applied for continuous variables with normal distribution, and Mann Whitney U test was applied for continuous variables with non-normal distribution. In this table, the p values of all tests are above 0.05
*: Categorized from median value

scores (r= -0.69). Significant and moderate positive correlation was determined between total RSA scores and PTGI perceived change in self, changes in philosophy of life, changes sense of relationships (r= 0.67, r= 0.57, r= 0.56) (Table 6, Figure 3).

The correlation analysis age, duration of disease and BDI, BAI, PTGI and RSA is shown in Table 7. No significant correlation is found.

DISCUSSION

The purpose of this study was to identify factors capable of contributing to PTG and psychological resilience in patients with CKF and the role of depressive and anxiety symptoms in addition to resilience in the emergence of PTG. In this study, it was shown that anxiety and depression symptoms observed in CKF patients impact the psychological resilience levels of patients and the development of post-traumatic growth. Post-traumatic growth develops as psychological resilience increases.

Among the demographic variables affecting the development of PTG, the results in the literature on age are inconsistent. Some studies on the subject have reported that the elderly exhibit greater growth than young people (27). In the present study, no significant correlation was found between PGI total score and subscale scores and age and disease duration. Consistent with this finding Maddi et al. (2006) found a positive correlation between age and psychological resilience (28). The literature supports that psychological endurance increases with age (29). Another study reported that experienced acquired over the years may affect the emergence of psychological resilience (30). However, a study investigating the effect of PTG and psychological resilience in CKF patients on quality of life concluded that PTG levels were higher among middle-aged patients compared to

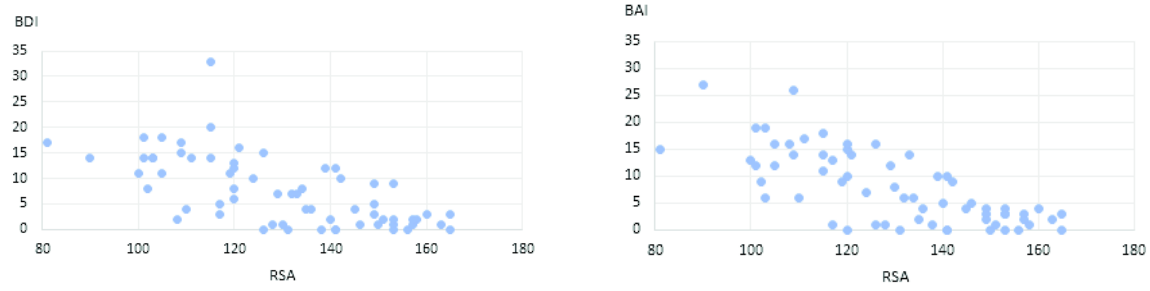

Figure 2. Correlation of BAI and BDI with RSA

Table 4. Sociodemographic features and RSA

	RSA						
	Personal structure	The perception of future	Family coherence	The perception of self	Social competence	Social support	Total RSA score
	Mean – SD	Mean – SD	Mean – SD	Mean – SD	Mean – SD	Mean – SD	Mean – SD
Gender							
Female	14.67 – 2.88	13.83 – 4.18	24.97 – 4.72	20.70 – 6.06*	21.90 – 4.54*	27.53 – 5.97	123.60 – 21.07*
Male	15.68 – 3.18	15.91 – 3.82	25.38 – 4.08	24.56 – 5.26*	24.76 – 4.36*	29.21 – 4.88	135.50 – 18.65*
Marital status							
Single	14.74 – 3.05	13.79 – 3.60	24.32 – 4.27	20.74 – 5.57	21.74 – 4.00	27.79 – 4.49	123.11 – 15.69
Married	15.40 – 3.08	15.42 – 4.23	25.56 – 4.39	23.6 – 5.93	24.13 – 4.75	28.69 – 5.82	132.80 – 21.81
Educational level							
Middle school and lower	15.18 – 3.00	14.98 – 4.25	25.85 – 4.45*	22.20 – 5.87	23.88 – 4.21	28.00 – 5.56	130.07 – 21.01
High school and university	15.25 – 3.25	14.88 – 3.92	24.08 – 4.05*	23.67 – 6.05	22.67 – 5.30	29.13 – 5.27	129.67 – 20.21
Work status							
Not working	14.89 – 3.17	14.32 – 3.99	25.21 – 5.09	21.11 – 6.37	23.07 – 4.25	28.29 – 5.11	126.89 – 20.51
Working	15.44 – 3.00	15.42 – 4.16	25.17 – 3.77	24.03 – 5.31	23.69 – 4.97	28.53 – 5.75	132.28 – 20.56
Presence of another comorbid diseases							
Absent	15.52 – 3.03	15.92 – 3.84	24.92 – 4.76	23.64 – 5.92	23.04 – 5.43	28.76 – 5.25	131.80 – 18.57
Present	15.00 – 3.10	14.31 – 4.17	25.36 – 4.13	22.18 – 5.95	23.67 – 4.12	28.21 – 5.62	128.72 – 21.88
Duration of disease (year)**							
≤5 years	15.52 – 3.02	15.33 – 3.96	25.06 – 4.66	23.27 – 5.94	23.42 – 4.95	29.00 – 5.62	131.61 – 20.04
>5 years	14.87 – 3.12	14.52 – 4.26	25.32 – 4.09	22.19 – 5.96	23.42 – 4.37	27.81 – 5.26	128.13 – 21.27

Independent Samples T Test was applied for continuous variables with normal distribution, and Mann Whitney U test was applied for continuous variables with non-normal distribution.
*: p<0.05 **: Categorized from median value.

young or elderly patients (31). However, there are also studies reporting that the relationship of PTG development with factors such as age, marital status and socioeconomic status is inconsistent (32, 33).

Anxiety and depression are common psychological problems in patients with CKF (6). The presence of anxiety and depression can also affect the physical and mental health of individuals with chronic diseases. In the present study, BDI and BAI scores exhibited negative moderate significant correlations with all the PTGI subscales and total PTGI scores, and an increase in anxiety and depression symptoms adversely impacting on individuals' PTG levels. Consistent with these findings, a previous study of breast cancer patients reported that anxiety and depression exhibited adverse effects on PTG; the greater the severity of their anxiety and depression symptoms, the more negative their PTG development. An extended duration study investigating psychological characteristics representing basic determinants of quality of life in cancer patients described anxiety and depressive symptoms as significant predictors of PTG development and reported that good mental health mediated rapid adaptation to traumatic events and an increase in PTG levels (18).

In previous studies, it has been reported that long-

Table 5. The correlation analysis between scales

	BDI	BAI
	r	r
PTGI		
Perceived change in self	-0.70**	-0.65**
A changed philosophy of life	-0.57**	-0.52**
A changed sense of relationships with others	-0.59**	-0.57**
Total PTGI score	-0.70**	-0.66**
RSA		
Personal structure	-0.29*	-0.39**
The perception of future	-0.51**	-0.57**
Family coherence	-0.44**	-0.53**
The perception of self	-0.54**	-0.59**
Social competence	-0.54**	-0.49**
Social support	-0.65**	-0.60**
Total RSA score	-0.68**	-0.71**

Relationships between continuous variables were assessed using Pearson s test when normal distribution conditions were met, and with Spearman s test when those conditions were not met.
*: p<0.05 **: p<0.001

Table 6. The correlation analysis between PTGI and RSA

	PTGI			
	Perceived change in self	A changed philosophy of life	A changed sense of relationships with others	Total PTGI score
	r	r	r	r
RSA				
Personal structure	0.32*	0.35*	0.32*	0.37*
The perception of future	0.53**	0.41*	0.43**	0.51**
Family coherence	0.44**	0.39*	0.48**	0.49**
The perception of self	0.53**	0.43**	0.40*	0.51**
Social competence	0.50**	0.35*	0.40*	0.47**
Social support	0.66**	0.59**	0.63**	0.70**
Total RSA score	0.67**	0.57**	0.56**	0.69**

Relationships between continuous variables were assessed using Pearson s test when normal distribution conditions were met, and with Spearman s test when those conditions were not met.
*: p<0.05 **: p<0.001

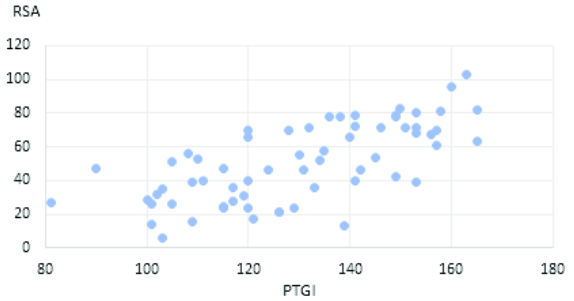

Figure 3. Correlation of PTGI with RSA

Table 7. The correlation analysis age, duration of disease and BDI, BAI, PTGI and RSA

	Age (years)	Duration of disease (years)
	r	r
BDI	-0.03	0.13
BAI	-0.06	0.11
PTGI		
Perceived change in self	0.01	0.12
A changed philosophy of life	0.02	0.05
A changed sense of relationships with others	0.22	-0.09
Total PTGI score	0.12	0.02
RSA		
Personal structure	-0.09	-0.21
The perception of future	-0.12	-0.19
Family coherence	0.07	-0.02
The perception of self	0.04	-0.10
Social competence	0.29*	0.04
Social support	0.05	-0.11
Total RSA score	0.12	-0.11

Relationships between continuous variables were assessed using Pearson s test when normal distribution conditions were met, and with Spearman s test when those conditions were not met.
*: p<0.05

term stressors improve and strengthen the individual's self-perception and resilience capacity (34), however, high levels of perceived stress have negative effects on patient adaptation (35). In this study, psychological resilience, BDI and BAI scores exhibited significant moderate negative correlation with the RSA perception of self and social resources subscales and with total RSA scores. As psychological resilience levels decrease depressive and anxiety symptoms increase. Consistent with these findings, previous studies have reported that the presence of anxiety and depression has a direct and indirect effect PTG by causing a decrease in resilience (36). Indeed, in another recent study conducted in CKF patients receiving hemodialysis treatment, it was shown that increased anxiety levels decreased resilience (37). In the literature, it has been reported that resilience is negatively associated with indicators of mental illness such as depression, anxiety and negative emotions and positively associated with life satisfaction and subjective well-being (37, 38).

Psychological resilience allows PTG to develop by preserving psychological strength in the face of difficulties (17). Some authors who think that psychological resilience and PTG are mutually supportive and who have investigated the subject have determined a significant positive relationship between the two (39). Similarly, significant moderate positive correlation was observed between total PTGI and RSA scores in this study. PTG development increases in line with resilience levels. Previous research investigating the role of resilience and alexithymia in the development of PTG as a response to excessive stress in patients following kidney transplantation reported that resilience levels were positively correlated with PTG, and that resilience was a direct predictor of PTG (15). Another study investigating factors affecting the development of PTG in patients with colorectal cancer also reported a positive correlation with PTG and suggested that clinicians might improve their patients' PTG levels and quality of life by increasing their resilience (40). Individuals who experience a chronic disease can benefit from this through the presence and help of psychological resilience, despite the difficulties caused by the situation in question and can even achieve PTG, which enhances their functionality, plays a role in the development of new and different perspectives and involves a more in-depth evaluation process (41).

There are a few limitations of this study. Firstly, it is a descriptive study without a control group and detailed psychiatric examinations. Secondly, prolonged follow-up at different stages of the disease could not be performed.

Psychological factors that may affect PTG in CKF have not been adequately studied in previous studies. It is thought that this study will contribute to the literature on the investigation of psychological factors that may affect the development of PTG and psychological resilience levels of CKF patients. Further more extensive, prolonged, and prospective studies planned at different stages of the diseases in this field are needed. Other potential psychological factors such as personality traits, stress management, and coping mechanisms capable of mediating the effects of anxiety and depression symptoms on resilience and the development of PTG may also need to be considered in future studies.

CKF is a chronic disease with a severe impact, both as a disease and in terms of hemodialysis, on individuals' personal family, work, and social lives. The presence of psychological resilience and the development of PTG during this process will reduce the psychological problems that frequently accompany the disease, enhance interpersonal relations and increase compliance with the therapeutic process in this difficult disease. In this context, a multidisciplinary approach may be recommended for healthcare professionals to evaluate the mental and physical problems of CKF patients. Attention now needs to be drawn to the importance of planning psychological interventions capable of increasing the ability to cope with diseases and contributing to patients' psychological resilience levels and the development of PTG during the disease process.

Anxiety and depression symptoms seen in patients with CKF have an adverse impact on their PTG and resilience levels. The development of PTG rises in line with psychological resilience.

The presence of psychological resilience and the development of PTG in this process will improve the psychological problems, increase the capacity to cope with the disease and adherence to the therapeutic process. In this context, the mental and physical problems of patients with CKF must be considered with a multidisciplinary approach, and psychological interventions that support psychological resilience levels and the development of PTG must be planned.

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Medical education level's relationship with attitudes toward women and LGBTIQ+ individuals

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SUMMARY

Objective: Dominant ideologies lay the groundwork for the rising prejudices against women and LGBTIQ+ individuals who may be disadvantaged in the hierarchy. These biases exist in medical doctors as well as in the community. Negative attitudes toward women and LGBTIQ+ individuals negatively affect healthcare service quality and lead to inequality and loss of rights. Hence, this study aimed to investigate the attitudes of students and resident physicians in medical school regarding sexism and discrimination based on sexual orientation.

Method: First-grade students (n=112), 6th-grade students (n=68), and resident physicians receiving postgraduate training in medicine (n=41) were included in this study. Sociodemographic data form, Ambivalent Sexism Inventory, and Multidimensional Sexual Orientation Attitude Scale were applied.

Results: Compared to groups based on education levels, scale scores on sexism and discrimination against sexual minorities did not vary between groups ($p>0.05$). The most apparent difference between women and men was the high scores of hostile sexism in male participants ($p<0.001$).

Discussion: Current medical education does not change biased attitudes of physician candidates and physicians based on gender roles and sexual orientation. For all individuals to benefit equally from the health service, it would be helpful to add gender equality and discrimination based on sexual orientation to medical education and make these classes practical if possible.

Key Words: Medical education, sexism, sexual minorities, LGBT, homophobia

INTRODUCTION

Biological sex refers to the changes between males and females; such as physiological and anatomical differences between men and women. Sex is also defined as physical attributes at birth. This biological perspective, however, is often intertwined with societal norms and cultural definitions, leading to complex interactions between "sex" and "gender." The concept of gender is used to express what is expected because society and culture define it as "female" and "male." Gender may cover roles, behaviors, and activities (1). Therefore, understanding the implications of these societal constructs is crucial for comprehending the broader discourse on gender issues.

Sexism is a type of discrimination based on gender stereotypes. It is considered chiefly negative attitudes and behaviors towards women who are disadvantaged in power relations (2). This phenomenon, deeply ingrained in many cultures, often manifests subtly, affecting various aspects of life, including healthcare. With the influence of the women's movement and feminist thought, egalitarian legal regulations, and deterrent penalties developed in some countries, direct sexist attitudes and behaviors have decreased but continue to be exhibited implicitly (1,3). Understanding that traditional attitudes towards women manifest themselves with negative attitudes and stereotypes and with positive ones is an essential indicator of how the process may work implicitly. It is within this context that

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the notion of 'Ambivalent Sexism' becomes pertinent. The theory of "Ambivalent Sexism" that conceptualizes this subject was developed by Glick and Fiske (4). The theory treats sexism as hostile and benevolent sexism in two different dimensions. Hostile sexism includes the power of men, traditional gender roles, men attributing derogatory characteristics to women and seeing them as sexual objects, and legitimizing abuse and discrimination (4). On the other hand, benevolent sexism is a more implicit legitimization of male domination, including romantic sexuality with a woman and, therefore, a man's commitment to a woman, compassion, and protectionist feelings (4).

The right to health as a fundamental right has been brought to the agenda by the World Health Organization (WHO) and defined in the International Convention on Economic, Social, and Cultural Rights (5). This right emphasizes the necessity of universal healthcare accessibility, free from gender-based discrimination. The accessibility principle of the right to health advocates non-discrimination, while the acceptability principle advocates a gender-sensitive approach (5). However, despite these principles, discrimination remains a significant barrier in healthcare, impacting marginalized groups disproportionately (6).

Many adverse effects of stigma and discrimination regarding gender and sexual identity related to mental and physical health have been revealed in the studies in the literature. This underscores the need for a healthcare system that is more inclusive and sensitive to gender and sexual diversity. Discrimination based on sex and sexual orientation and cognitive biases play a negative role in the quality of health care that women and LGBTIQ+ individuals receive adequate and appropriate health care. The evidence from various studies highlights systemic issues in healthcare that disproportionately affect women and LGBTIQ+ individuals (7,8).

The term homophobia defines hatred, fear, negative attitudes and behaviors towards homosexuals, and negative beliefs about homosexuality also include individuals who have other sexual orientations other than heterosexuality in the broad sense (9). This broad definition of homophobia reflects a range of societal attitudes and biases, underscoring the challenges faced by LGBTIQ+ individuals in various spheres of life, including healthcare. These challenges are not just societal but are also deeply embedded in medical practices and policies.

Throughout history, the society's constitution of normal and abnormal transformed. Medicine followed these constitutions by defining healthy and unhealthy in changing ways. This evolution in the medical field reflects a broader societal shift towards greater acceptance and understanding of sexual diversity. Candansayar underlined that not long ago, all trans and non-heterosexual genders were evaluated as a medical disease (10). This historical perspective highlights the drastic changes in how medical science views sexual orientation today.

Homosexuality was removed from the DSM and the International Classification of Diseases (ICD) with the decision that homosexuality is not a mental disorder in the last quartile of 20th century. This removal marked a significant milestone in the journey towards equality and acceptance. Today, WHO defines sexual health as the sexual life of a person continuing without force and with happiness and no harm, not just physically but emotionally and intellectually, as a state of health that ensures social integrity, enriches and increases personality development, communication, and sharing of love positively. Although homosexuality has been excluded from the classification of diseases for over forty years, health workers' knowledge of this issue is inadequate and incomplete (11). However, the gap between these ideal definitions and actual medical practice remains a critical issue to address.

Although homophobia is common in society, many studies have shown that homophobic attitudes and behaviors are pretty high among physicians (12, 13). This indicates a pressing need for educational reforms and awareness in the medical community. LGBTIQ+ individuals face prejudices, negative attitudes and behaviors targeting their gender; it causes chronic stress which is related to physical and mental ill health. Homophobia among healthcare workers negatively affects homosexuals, makes them helpless, and deprives them of the

right to health, which is one of the fundamental human rights (14, 15, 16). The impact of such discrimination on health underscores the importance of inclusive health care practices.

Homophobia alone has not been considered sufficient in understanding attitudes towards homosexuality. In addition to homophobia, three different terms have been proposed: homonegativity, heterosexism, and neutrality to understand discrimination, exclusion, and humiliation faced by homosexuals (17). These concepts provide a nuanced framework for understanding the multifaceted nature of discrimination against LGBTIQ+ individuals (17,18). A web-based study from Turkey demonstrated that almost a quarter of LGBT individuals reported that they were exposed to discriminative behavior in public hospitals (19). Gender bias against women negatively affect women's health and available treatments (20). Such findings reveal the prevalence of discrimination in healthcare settings, further emphasizing the need for this study.

Since discrimination based on gender and sexual orientation may affect the attitudes and behaviors of doctors towards individuals other than heterosexual men, and also the health services to be received by individuals other than heterosexual men, there arises a compelling need for in-depth research to explore these dynamics the need to conduct this research to determine the current situation has arisen. The aim of the present study is to evaluate sexism, homophobia and heterosexism levels of first-grade and sixt-grade medical students, and assistant doctors to see if medical education may give any insight about these common discriminations. This research is crucial for developing strategies to mitigate such biases and promote equality in healthcare.

METHOD

Sampling: This research was cross-sectional and was conduc-ted on first and sixth-grade students who studied medicine at Osmangazi University Faculty of Medicine and assistants who received post-graduation education in Turkiye. There were no classes on gender roles, discrimination, or gender inequality in the Osmangazi University Faculty of Medicine curriculum during data collection. The universe of this study consisted of students who continued their education in the 1st and 6th grades of Osmangazi University Faculty of Medicine in 2018-2019 and the assistants who received postgraduation training. In the aforementioned academic year, Osmangazi University Faculty of Medicine had 287 first-grade students (131 women and 156 men), 183 sixth-grade students (90 women and 93 men), and 412 postgraduate students.

The present study utilized convenience sampling method. Data collection took place in the medical faculty lessons of first grade medical students and psychiatry internship of sixth grade medical students. Assistant doctors participated in the study by snowball sampling method.

Data Collection Tools

Sociodemographic Data Form: It is a 10-question form developed by the researchers to describe the sociodemographic variables of the participants. Data, such as age, gender, marital status, place of birth, educational status of parents, and longest-lived city, were collected with this form.

The Ambivalent Sexism Inventory: The sentences in this scale were prepared by Glick and Fiske to determine the participants' attitudes toward gender roles (21). The Turkish validity and reliability study of the scale was conducted by Nuray Sakallı-Uğurlu (22). In this scale, consisting of 22 substances and a Likert type of 5 (between 1-5), two areas were evaluated: hostile and benevolent sexism. Higher scores mean higher levels of sexist attitudes. In this sample, the scale's Cronbach's Alpha value was 0.889.

Multidimensional Sexual Orientation Attitude Scale: The sentences in this scale were developed by Kaya-Yertutanol et al. to determine the participants' attitudes towards differences in sexual orientation, and a validity and reliability study was conducted (17). Especially four areas were evaluated on this scale, five Likert type (between 1-5) consisting of 43 items: heterosexism (6 items), homophobia (17 items), homonegativity (15 items), and neu-

Table 1. Sociodemographic data of the participants according to their level of medical education

		First- grade students Mean – Standard Deviation Median (Q1, Q3)	Sixth-grade students	Assistant doctors	Statistical values
Age		18.88 – 0.085	24.03 – 0.111	29.49 – 0.578	F=570.044 p<0.001*
		Number, percentage			
Gender	Women	56, 50%	38, 55.9%	22, 53.7%	x^2= 0.615
	Men	56, 50%	30, 44.1%	19, 46.3%	p=0.735**
Marital status	Married or living together	110, 98.2%	67, 98.5%	27, 65.9%	x^2= 49.619 p<0.001**
	Single	2, 1.8%	1, 1.5%	14, 34.1%	
Place of birth	Province	83, 74.1%	52, 76.5%	31, 75.6%	x^2= 0.133
	District or village	29, 25.9%	16, 23.5%	10 24.4%	p=0.936**
Mother's level of education	Secondary school graduates or less	35, 31.3%	24, 35.3%	18, 43.9%	x^2= 3.724 p=0.813**
	High School graduate	33, 29.5%	14, 20.6%	8, 19.5%	
	College graduate or above	44, 39.3%	30, 44.1%	15, 36.6%	
Father's level of education	Secondary school graduates or less	23, 20.5%	13, 19.1%	6, 14.6%	x^2= 1.577 p=0.813**
	High School graduate	23, 20.5%	18, 26.5%	11, 26.8%	
	College graduate or above	66, 58.9%	37, 54.4%	24, 58.5%	

* One-way ANOVA test ** Pearson's chi-square test

trality (5 items). Higher scores of heterosexism, homophobia, and homonegativity reveals higher levels of discriminative behavior toward LGBTQ+ individuals. On the other hand, neutrality dimension is related to being unprejudiced. Cronbach's Alpha value of the scale was 0.889 in the present study.

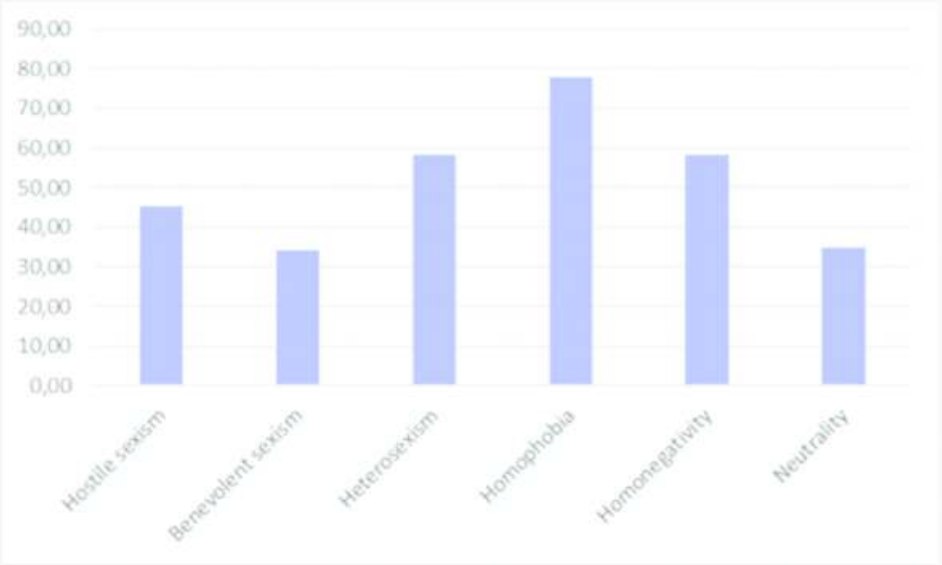
Procedure: The questionnaires were administered to 1st and 6th-grade students by first-grade students after giving prior information to the participants about this study and obtaining their consent. Researchers reached assistant doctors who received post-graduation training. The questionnaires were fully completed by the participants with informed consent. Ethics committee approval was obtained for the present study from Osmangazi University Faculty of Medicine Non-invasive Clinical Research Ethics Committee on 12.03.2019.

Statistical Analysis: In this study, data analysis was performed with the IBM SPSS 22 package program. Summary values of quantitative variables were shown as mean ± standard deviation and median (Q1-Q3), and summary values of categorical variables were shown as frequency and percentage. The Shapiro-Wilk test determined the compliance of quantitative variables to normal distribution. The comparison of two groups with normal distribution was evaluated with the independent samples t-test, and the comparison of two groups that did not comply with normal distribution was evaluated with the Mann-Whitney U test. Comparison of more than two groups that fit the normal distribution was performed by one-way analysis of variance (ANOVA), and the Kruskal-Wallis test was performed for those that did not fit. Paired comparison of the groups for significant results was performed using the Bonferroni test in one-way analysis of variance and the Dunn test for the Kruskal-Wallis test. Pearson's chi-squared analysis examined the relationship between categorical variables. The conditions obtained as $p<0.05$ as a result of the analysis were considered statistically significant.

RESULTS

This study included 221 participants: 112 from first grade, 68 from sixth grade, and 41 from assistant doctors. The sociodemographic data of participants are shown in Table 1. There was no significant dif-

Figure 1. Evaluating the percentiles of median scores



ference between the three groups concerning gender (x^2= 0.615, p=0.735), the place of birth being a province or a district/village (x^2= 0.133, p=0.936), and the education level of the mother (x^2= 3.724, p=0.813) or father (x^2= 1.577, p=0.813).

The utilized Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale have no cut-off scores. Thus, aiming to evaluate median values easily, the median values of their subscale scores were transformed as if the subscale's minimum value was 0 and the maximum value was 100 (percentile). Figure 1 shows the evaluation of percentiles of the median values regarding the Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale. Homophobia, homonegativity, and heterosexism were above the 50 percentile (respectively 77.94, 58.33, 58.33). Hostile sexism had the fourth highest subscore (45.45).

No significant differences in the Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale were found in the three groups: Grade 1 students, Grade 6 students, and assistant doctors (see Table 2). The analyses were repeated while gender-stratifying. Among female students, no significant differences were observed between medical education levels regarding hostile sexism (x^2=0.456, p=0.796), benevolent sexism (x^2=0.174, p=0.917), heterosexism (x^2=1.016, p=0.602), homophobia (x^2=2.463, p=0.292), homonegativity (x^2=3.763, p=0.152), and neutrality (x^2=2.513, p=0.285). Similarly, male students

Table 2. Scale scores by medical education level

Scale- subscale		Mean – Standard Deviation Median (Q1, Q3)			Statistical evaluation
		First- grade students	Sixth-grade students	Assistant doctors	
Ambivalent Sexism Inventory	Hostile Sexism	30.91 – 10.08	30.47 – 8.87	30.20 – 7.88	F=0.104 p=0.901*
	Benevolent Sexism	25.81 – 8.65	26.96 – 7.26	25.90 – 8.09	F=0.446 p=0.641*
Multidimensional Sexual Orientation Attitude Scale	Heterosexism	20.00 (18.00, 26.00)	20.00 (18.00, 24.00)	20.00 (18.00, 23.00)	x^2=0.707 p=0.702**
	Homophobia	70.00 (57.25, 77.00)	66.50 (59.00, 76.00)	73.00 (56.50, 76.00)	x^2=895 p=0.639**
	Homonegativity	52.00 (42.00, 59.00)	47.00 (40.00, 57.75)	49.00 (40.00, 59.00)	x^2=2.381 p=0.304**
	Neutrality	12.00 (8.00, 16.00)	12.50 (9.00, 17.00)	13.00 (9.50, 17.00)	x^2=0.795 p=0.672**

* One-way ANOVA test ** Kruskal-Wallis test

Table 3. Comparison of scale scores by gender and level of medical education

	Scale	Subscale	Women	Men	Statistical value
			Mean – Standard Deviation Median (Q1, Q3)		
First-grade students	Ambivalent Sexism Inventory	Hostile Sexism	26.66 – 1.21	35.16 – 1.23	t=-4.898 p<0.001*
		Benevolent Sexism	25.27 – 1.24	26.36 – 1.07	t=-0.664 p=0.508*
	Multidimensional Sexual Orientation Attitude Scale	Heterosexism	22.00 (18.00, 27.75)	19.00 (17.00, 22.75)	U=1139.00 z=-2.504 p=0.012**
		Homophobia	74.00 (62.00, 80.00)	66.00 (53.50, 74.00)	U=1084.00 z=-2.819 p=0.005**
		Homonegativity	52.07 – 1.51	48.13 – 1.44	t=1.886 p=0.062*
		Neutrality	10.00 (6.00, 16.00)	13.00 (11.00, 16.75)	U=1154.00 z=-2.416 p=0.016**
	Number of participants, percentage		56, 50%	56, 50%	
Sixth-grade students	Ambivalent Sexism Inventory	Hostile Sexism	27.03 – 1.42	34.83 – 1.27	t=-3.982 p<0.001*
		Benevolent Sexism	25.76 – 1.17	28.47 – 1.29	t=-1.539 p=0.128*
	Multidimensional Sexual Orientation Attitude Scale	Heterosexism	21.79 – 0.69	20.53 – 0.79	t=1.195 p=0.236*
		Homophobia	69.50 (59.75, 76.00)	64.00 (57.00, 72.50)	U=478.00 z=-1.137 p=0.255**
		Homonegativity	48.39 – 1.67	46.93 – 2.03	t=0.560 p=0.578*
		Neutrality	12.58 – 0.84	14.00 – 0.93	t=-1.125 p=0.265*
	Number of participants, percentage		38, 55.9%	30, 44.1%	
Postgraduate	Ambivalent Sexism Inventory	Hostile Sexism	27.27 – 1.63	33.58 – 1.57	t=-2.755 p=0.009*
		Benevolent Sexism	24.82 – 1.62	27.16 – 1.98	t=-0.922 p=0.362*
	Multidimensional Sexual Orientation Attitude Scale	Heterosexism	20.00 (18.00, 23.50)	18.00 (16.00, 22.00)	U=151.50 z=-1.517 p=0.129**
		Homophobia	73.00 (56.75, 76.00)	73.00 (56.00, 78.00)	U=199.00 z=-0.262 p=0.794**
		Homonegativity	49.59 – 1.93	48.32 – 2.90	t=0.365 p=0.717*
		Neutrality	12.91 – 0.887	13.32 – 1.41	t=-0.250 p=0.804*
	Number of participants, percentage		22, 53.7%	19, 46.3%	

* T-test in independent samples ** Mann-Whitney U test

did not differ due to medical education levels in terms of hostile sexism (x^2=0.579, p=0.749), benevolent sexism (x^2=1.400, p=0.497), heterosexism (x^2=0.582, p=0.747), homophobia (x^2=1.521, p=0.467), homonegativity (x^2=0.270, p=0.874), and neutrality (x^2=0.255, p=0.880).

Evaluation of subscales of the Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale by education level and gender is seen in Table 3. Female students had lower hostile sexism scores in all medical education levels (first grade: t=-4.898, p<0.001, sixth grade: t=-3.982, p<0.001, postgraduate: t=-2.755, p=0.009). First-grade female medical students also had higher heterosexism (U=1139.00, z=-2.504, p=0.012), higher homophobia (U=1084.00, z=-2.819, p=0.005), and lower neutrality scores (U=1154.00, z=-2.416, p=0.016) compared to their male counterparts.

The educational status of parents was divided into two groups: high school and above, secondary school or less, and data for women and men were analyzed separately. Lower neutrality scores were observed in women when the mother's educational status was high school and above (11.17 vs. 14.03, U=1015.5, z=-2.751, p=0.006). Males whose mothers' educational status was high school and above the high school had lower neutrality scores (12.94 vs. 14.85, t=2.016, p=0.046), higher homonegativity scores (44.46 vs 49.80, t=-2.425,

p=0.017), lower benevolent sexism scores (25.85 vs. 29.23, t=2.163, p=0.033) and higher heterosexism scores (21.00 vs. 18.69, t=-2.571, p=0.012) was found. No significant change in the subscale scores of women related to the father's education level was detected (each p>0.05). Among men, higher homonegativity (49.06 vs. 43.84, U=1275.0, z=2.070, p=0.038) and higher heterosexism (20.65 vs. 18.52, U=1324.0, z=2.447, 0.014) were found in participants whose fathers had higher education.

All participants were divided into two groups based on whether their place of birth was a province or a district/village. Significantly lower Benevolent Sexism subscale scores were found in those whose place of birth was a province (28.58 vs. 25.39, t=-2.560, p=0.011). When analyzed separately according to gender, the subscale scores of males differed in homophobia subscale scores. Males born in a province had higher homophobia scores (68.27 vs. 63.22, t=-2.326, p=0.024). Besides, there were higher benevolent sexism subscale scores in females whose birthplace was district/village (28.61 vs. 24.05, t=-2.746, p=0.007).

DISCUSSION

The present study included first-grade students, sixth-grade students, and assistant doctors at a medical school providing primary medical education and specialty training in Turkey. The attitudes of participants regarding gender and sexual orientation were examined and compared with each other. When the scale scores of the gender groups were evaluated separately according to the education level, there was no significant difference. In other words, there was no difference between the scale scores of female first-grade students, female sixth-grade students, and female assistant doctors. There is no difference between the scale scores of male first-grade students, male sixth-grade students, and male assistant physicians. Primary medical education and specialty training might be insufficient regarding gender inequality and homophobic attitudes for both men and women.

A study by Kan and colleagues in Hong Kong found that homophobia was more common in medical school students than in non-medical schools (23). The social environment of medical school students might be associated with fewer homosexual individuals (23). The negative attitudes of physician candidates and physicians based on sexual orientation will prevent the establishment of a trust-based relationship between the patient and the physician, as well as cause the patient to be unable to express his current ailments or the physician's clinical decisions to be affected by prejudice (24).

In a study conducted on private health workers in Turkey, more than half of the participants stated that they did not know an LGBTIQ+ individual and had not examined LGBTIQ+ individuals before (25). However, the vast majority would be willing to look after LGBTIQ+ individuals. In the same study, homophobia scores and discrimination scores of health workers were high, and a positive relationship between homophobia and discrimination scores was found. Considering the findings obtained in the present study, it can be concluded that medical education in Turkey does not give information about LGBTIQ+ individuals to physician candidates (25). Ertuğrul and colleagues, Akay and colleagues demonstrated similar discriminative attitudes toward LGBTQ+ individuals among medical students (26,27).

First-grade students and sixth-grade students who participated in this study did not have specific lessons on gender inequality and discrimination at the time of this study. Assistant doctors, on the other hand, have received medical education in different universities, it is unknown whether they have received special training on this subject. Limited literature in this area also reveals similar results: studies conducted in two medical schools in Turkey showed no difference between first- and sixth-grade students' attitudes to gender roles in a sample selected from a single faculty (28,29).

Our study showed that the most apparent difference between women and men was the height of hostile sexism scores in male participants. Sexist ideologies ensure the continuity of gender inequality. Hostile sexism is associated with negative behavior, especially toward women (21). In this context, one may conclude that male participants have internalized their advantageous positions in

gender inequality. With age, hostile and benevolent sexism decreases in women, and hostile sexism decreases in men (30). Additionally, levels of benevolent sexism in men remain constant over time (30). Hostile sexism is one of the variables shown to predict transphobic attitudes, intergroup contact, and homophobia in a study of young people aged 18 to 25 who speak Turkish (31). In this context, planning interventions related to hostile sexism can be beneficial not only regarding gender inequality but also in preventing transphobia. Considering violence against women and gender-based discrimination and their health outcomes, it is essential to make interventions, especially targeting young men, regarding hostile and benevolent sexism should be aimed in the second place.

In the gender comparison of first-grade students, more negative attitudes about sexual orientation were found in women. A study by Nieto-Gutierrez and colleagues focused on medical students: homophobia levels were lower in women and big-city education areas and in those who knew or treated a homosexual person (32). In contrast, homophobia was more common in men with traditional gender stereotypes (32). Matharu and colleagues investigated attitudes toward homosexual men among medical students (24). The findings showed that sexual biases were more common in young men, and negative attitudes were associated with heterosexism and adherence to male gender roles (24). In our study, there may have been a discrepancy with the literature because only first-grade medical students were in this comparison, and participants were taken from a single center.

The present study showed that the parents' education level may be associated with medical students' attitudes toward women and LGBTQ+ individuals. Male medical students had less benevolent sexism if their mothers had higher education. That might be because, as the mother reaches higher education, she will hold power positions related to her career or be more autonomous in her relationships. Having an independent female model in their life may change male medical students' attitudes toward women, such as women should be protected. Such relation did not appear in female medical students. The results also demonstrated that male and female participants with mothers with higher education had lower neutrality subscale scores. Additionally, male medical students had higher homonegativity and higher heterosexism when their mothers or their fathers had higher education levels. That is interesting because as the parent's education level increases, discriminative behavior increases, too. On the other hand, few educational facilities have curricula with anti-discrimination content and are frequently where discrimination occurs (33).

The present study found differences in attitudes toward women and LGBTQ+ individuals related to participants' birthplace. In rural areas, males had higher homophobia, and females had higher benevolent sexism. Rural areas are known to be associated with higher homophobia (34). Our sample showed gender differences regarding homophobia in rural areas. Accordingly, Banwari and colleagues found that female medical students had more positive attitudes toward homosexual individuals (35). Masculine culture in rural areas may affect males differently regarding internalizing discriminative attitudes.

Recommendations for Current Applications

The history of medicine is written by heterosexual cis-gender men, and medical education is again predominantly given by them. Medicine gendered in this way with the view of men brings some information to the forefront while covering some of them (36). Thus, some issues related to women and sexual minorities are less researched and less effectively treated compared to their importance regarding health and the strength of the opportunities at hand. A compilation of gender differences in medical students' specialty preferences focused on the possibility of the impact of traditional gender roles when determining students' futures. Thus, managers should take responsibility for education content regarding gender equality and gender roles until societal change exists (37). A qualitative study examining medical students' thoughts on gender roles in Sweden stated that educators need more gender knowledge to prevent strengthening stereotypical ideas about gender (38). Gender problems caused by the patriarchate in medical education and practice can be summarized as sexual harass-

ment, women's lower wages for equal work, gender clustering in specific medical areas, and leadership positions often belonging to men. According to Sharma, feminist theories would significantly contribute to medical education (36). It can help to restructure the medical education curriculum content critically, teach medicine to develop empathy, and frame research questions sensitive to gender and sexual orientation.

LGBTIQ+ individuals have worse physical and mental health than heterosexual cis-gender peers, which is explained by the minority stress they experience (39). Didactic classes and practical classes aimed at skill development are used to integrate LGBTIQ+ sensitive anti-discrimination approaches into medical education. Streed and Davis stated that target-specific classes with small groups, including theoretical knowledge and role-play exercises for skill development, enabled medical students to take anamnesis about sexuality and sexual minorities more comfortably (39).

Limitations

Our work has many limitations. First, the evaluations were conducted with tests completed by participants, and no further evaluation was conducted. In addition, participation rates in this study are close to half is also a disadvantage regarding the representation power of this sample. One of the limitations of our study is that the method used to evaluate the effects of medical education on attitude change regarding gender roles has more than one confounding variable. We did not follow up the participants, instead, we compared tho different groups. Besides, about assistant doctors, we did not include the speciality area of them, which may affect their attitudes on sex and gender.

As stated before, first-grade and sixth-grade medical students were provided with the same curriculum. That curriculum did not contain issues related to gender inequality, gender-based discrimination, or discrimination related to sexual orientation or gender identity. Our results might be related to the deficiency in the mentioned curriculum in the medical faculty. Besides, postgraduate medical students, also known as residents, may have graduated from other medical faculties with the same or different curriculums. Thus having residents in analyses may be confounding.

To our knowledge, this study is the first to show the attitudes of medical school students toward LGBTIQ+ individuals in the literature. In addition to a few studies that have previously shown that medical education does not change attitudes about gender roles, it is the only study that has shown medical education has an insufficient effect on homophobia transphobia attitudes. It is understood that medical education does not transform students' attitudes toward gender roles and LGBTIQ+ individuals. Medical education should include applied classes to increase awareness of gender equality, homophobia, and transphobia.

Current medical education does not change biased attitudes of physician candidates and physicians based on sexism and sexual orientation. Males may be more vulnerable regarding endorsing culturally discriminative attitudes. For all individuals to benefit equally from the health service, it would be helpful to add gender equality and discrimination based on sexual orientation to medical education and make these classes practical if possible.

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Investigation of self-stigmatization and perceptions towards delinguency in inpatient individuals diagnosed with schizophrenia in high-security forensic psychiatry settings in Turkey

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SUMMARY

Objective: Internalized stigmatization indicates the internal acceptance of public stigmatization. Double stigma refers to stigmatization due to more than one personality characteristic. We aimed to investigate the levels of self-stigma and perceptions towards delinquents about both psychiatric disorders and forensic psychiatry hospitalization among male patients hospitalized in the high-security forensic psychiatry service in Turkey.

Method: This cross-sectional study was conducted with 76 male participants. Sociodemographic, clinical, and offense-related variables were defined by interviewing patients and families and examining all records. Perceptions Towards Criminals Scale (PTCS), Self-Stigma Scale (SSS), and Violence Profile of Current Offense Scale were administered to the participants.

Results: The participants' SSS total score was 37.73±16.4, the Internalized Devaluation subdimension score was 17.91±8.19, the Internalized Stereotypes score was 14.77±7.51 and the Social Withdrawal and Concealment Disorder score was 4.77±2.70. The total PTCS score was 32.30±10.38, the Perception of Moral and Personality Traits Subscale score was 21.16±7.23 and the Perceptions of Social Networks subscale score was 11.16±4.03. PTCS social network score was relatively more negative in the patients who received regular antipsychotic treatment before hospitalization compared to those who did not adhere to the treatment (p=0.043).

Discussion: The results of the study are important in terms of examining both internalized stigma and perceptions towards delinquency in male forensic patients diagnosed with schizophrenia. Another result is perceptions of the social networks of delinquency are more negative in the patient group receiving regular treatment. The results of the study do not support high self-stigma levels in the forensic psychiatry population, contrary to the double stigma theory and previous studies conducted in our country. The disparities between the results and the literature could be due to investigating the research with different cultural populations. It will be possible to prevent the effects of stigma on forensic patients and to develop appropriate strategies for the management of self-stigma with stigma studies.

Key Words: Forensic psychiatry, stigmatization, internalized stigmatization, perceptions towards delinquency

INTRODUCTION

The phenomenon of stigmatization has been conceptualized in different ways by various theorists and definitions have varied over the years. However, adults with serious mental disorders experience stigmatization in society for years. People who have impairment in social and cognitive functions in relation to their psychiatric disorders have to cope with social difficulties due to prejudices and stereotypes at the same time like the challenge of making friends, getting married, and not being employed and consequently social defeat in this sense (1,2). Prejudices and negative stereotypes that people with psychiatric patients are dangerous, unpredictable, flawed, or have weak character cause discrimination and alienation from society among mental patients. Furthermore, people may choose not to receive treatment for their psychiatric symptoms to avoid the negative consequences of stigma (2). These attitudes and beliefs may be by the society, patient relatives, patients themselves, or health professionals (3). Internalized stigma is used for the definition of the

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situation of people with mental disorders who are aware of the stigmatization internalize the negative perceptions, and accept their stigmatization as legitimate (4). Internalized stigma is attributed to public stigma. The first stage of self-stigma is the individual's awareness of public stigma (5,6). Internalized stigma is associated with negative outcomes of the disorder. In a review study that evaluated twenty-eight studies was reported that self-stigmatization may related to increased positive symptoms, feelings of discomfort, social anxiety, depression, suicidal thoughts, increased psychiatric hospitalization at follow-up, decreased self-esteem, decreased life satisfaction, non-adaptive coping strategies, low adherence to treatment, and low functionality (7). Moreover, it has been stated that stigma is associated with increased delinquency (8). Since internalized stigma and self-stigma are used as the same concept in the literature, we used both expressions in the continuation of the article.

As a result of the increase in awareness that people who have committed crimes are subject to social stigma and experience various social difficulties due to stigma, stigma-related studies on delinquents have gained importance recently. Studies have reported that public stigmatizing attitudes towards delinquents are often associated with irrational fears of being harmed by these individuals, but paradoxically, social stigma is associated with negative consequences for delinquency (9, 10). In addition, the stigma against delinquents may be more intense in certain groups, such as mentally disordered offenders, and stigma towards mentally disordered offenders is being investigated specifically. In the literature, stigmatizing attitudes towards mentally disordered offenders and offenders without mental disorders were compared, and it was stated that the people with mental disorders encountered more stigmatizing attitudes. This situation is conceptualized as joint stigma/dual stigma (9,11).

The concept of double stigma should not be understood as the stigmatization experienced only by people with mentally disordered offenders. It means that people experience stigmatization in more than one context (being a minority, sexual identity differences, social identity differences, etc.) due to different aspects of their identities generally. In this study, we investigated the double stigma experience in patients with schizophrenia hospitalized in the forensic psychiatry service. Studies indicated mentally disordered offenders may experience double or even triple stigma due to their mental disorders, their offense, forensic service admissions, and/or substance misuse (12-15). Studies have shown that this experience causes difficulties in terms of re-integration into society (13, 16).

There are limited studies on the relationship between stigmatization and receiving treatment in different treatment environments such as general psychiatric units, psychiatric units at different security levels, and forensic psychiatry settings. It is also known that treatment approaches in general psychiatry and forensic psychiatric care must be organized by culture-specific characteristics and even individual differences (17,18). In this context, investigating culture-specific differences in stigma contributes to the specification of treatment goals. In our country, the treatment and protection processes of mentally disordered offenders were managed in mental health hospitals in the past (19). The hospital is the first of the high-secure forensic psychiatry hospitals in our country and opened five years ago. We investigated whether there is a double stigmatization due to their disorders and forensic psychiatry hospitalizations among patients with schizophrenia. In addition, we examined the factors that may be associated with negative perceptions of disorders and delinquency.

METHOD

Participants

In our country, a protocol regulated by the Turkish Penal Code is followed during patient hospitalization in high-secure forensic psychiatry units. An individual who has committed a crime and is suspected of having a psychiatric disorder is referred to hospitals for the evaluation of the offense and their psychiatric disorders. Patients are evaluated by three specialist psychiatrists. During detailed psychiatric evaluations, it is concluded that whether the individual does or not perceive the legal meaning and consequences of the crime committed due

to their mental disorders and/or whether their ability to manage their behavior about this act has significantly decreased, regarding first and second paragraphs of Article 32 of the Turkish Penal Code (TPC). If the consensus occurs about the patients' judgment abilities are decreased, the forensic process starts. As a result, patients are treated and protected within the scope of Turkish Penal Code Article 57/1 (19,20). During the hospitalization process, patients are encouraged to participate in pharmacotherapy, individual psychotherapy, group psychotherapy, and rehabilitation activities. Patients who are deemed to be able to adapt to society and decrease their criminal tendencies during the follow-up process are evaluated by the consensus consisting of three specialist psychiatrists following Article 57/2 of the TPC and the release process is initiated (20). In our hospital, the target is to reduce the severity of the mental disorder, regenerate psychosocial functionality, reintegrate into society, and reduce the risk of re-offending considering the individual characteristics of the patients. Psychopharmacological interventions, individual and group psychotherapy interventions, and psychosocial rehabilitation interventions are performed to achieve the goals. While supportive individual approaches and mostly pharmacological interventions are applied in the acute phase of the mental disorder, following the symptom severity reduction and the patient's social participation improvement, their participation in group therapies and psychosocial rehabilitation activities is ensured. Despite the lack of structured protocols and policies regarding treatments in forensic psychiatry services and deficiencies such as the lack of qualified personnel, our hospital tries to provide the best possible therapeutic environment.

This research is a cross-sectional study examining the mentally disordered offenders who were hospitalized and treated in the high security forensic psychiatry units of the hospital from December 2020 to December 2022, who were being followed up with a diagnosis of schizophrenia according to DSM-5 criteria. The patients between the ages of 18 and 65 who were undergoing inpatient treatment at the hospital to participate in the present study were invited. The interviews took place as part of the study after the decision to release them was planned, following the TPC article 57/2. No remission criteria were used in our hospital during the discharge process, but clinicians considered whether the patient's criminal tendency was reduced. Patients who had verbalization impairments and could not cooperate with the test due to schizophrenia (n=33), patients who had not conducted a standard psychiatric interview and not collected data because they had some auditory and verbal problems (n=12), and those who had intellectual disability comorbidity according to DSM-5 criteria (n=30) were excluded from the study. As a result, 76 male patients diagnosed with schizophrenia were included in this study. Since there is no inpatient service for female patients in the hospital, they were not included in the study.

Procedure

An extended data form prepared by the researchers, including sociodemographic variables, clinical variables (disease onset age, number of hospitalizations, treatment adherence, etc.), and characteristics of the offense committed (age of the current offense, violence type, the existence of past offense, the gender of the target, relation with the target et.) was applied to all participants in the study. In addition, the patient's medical records and judicial files were examined and the information obtained was checked. The patient's adaptation to the hospitalization was evaluated according to clinicians and nurse observation notes. The severity of the offense that caused the current hospitalization was evaluated with the Violence Profile of Current Offence Scale. The presence of comorbid antisocial personality disorder (ASPD) was evaluated considering the DSM-5 criteria. The Self-Stigma Scale and the Perception Towards Criminals Scale were administered. Written and verbal informed consent was obtained from the participants and their legal guardians. The study was accepted by the Hospital Clinical Research Ethics Committee with decision number 1098, dated 21.10.2020.

Instruments

The Self-Stigmatization Scale for Patients (SSS); is a 5-point Likert-type scale consisting of 17 items, based on self-report, developed to evaluate the

thoughts, feelings, and attitudes of patients with schizophrenia about self-stigmatization. The developers stated that this scale, which was translated into Turkish, is culturally sensitive and easy to apply and the Cronbach's alpha coefficient of the scale was 0.93, and the reliability coefficient of the subscales was between 0.60 and 0.93 (21). A high score on the scale indicates a high level of self-stigmatization in the individual. Three sub-dimensions were defined for the scale; internalized devaluation, internalized stereotypes, social withdrawal, and concealment of the disorder. The first eight items of the Turkish translation scale were evaluated in the internalized devaluation sub-dimension, items 9-15 in the internalized stereotypes sub-dimension, and the last 2 items in the social withdrawal and concealment the disorder sub-dimension. The score range for the arithmetic mean values of the scale was calculated as 0.80, taking into account previous research since the scale is a Likert-type scale. Accordingly, the range of 1.00-1.80 is interpreted as completely disagree, the range of 1.81-2.60 as disagree, the range of 2.61-3.40 as neither agree nor disagree, the range of 3.41-4.20 as agree, and the range of 4.21-5.00 as completely agree (22).

The Perceptions Towards Criminals Scale (PTCS); was developed to measure participants' perceptions of offenders in the Turkish language (23). It is a 5-point Likert-type scale consisting of 12 items. A high score was associated with negative perceptions. The scale involves a two-factor structure: perceptions of personality traits/moral characteristics and perceptions of delinquents' social networks. The first eight items of the scale are evaluated in the sub-dimension of perceptions about the perception towards personality traits/moral characteristics of delinquents, and the last four items are evaluated in the dimension of perceptions towards the relationship of offenders with social networks. It was stated that the Kaiser-Meyer-Olkin value was 0.859 and the Cronbach alpha value was 0.82. Although it is seen that the scale is mostly applied to professionals or social worker students in studies, the researchers stated that it would be appropriate to apply it to patients as well. Since the scale is a 5-point Likert-type scale, the score ranges for arithmetic mean values are similar to the SSS.

Violence Profile of Current Offense (VPCO); was developed to determine the crime severity of patients with schizophrenia who committed an offense (24) and a Turkish adaptation study was conducted (25). The scale was used in the current study to evaluate the severity of the current offense within the time of being admitted to a forensic psychiatry hospital. According to the scale, crimes are evaluated at four levels according to their severity. Verbal aggression, carrying a weapon without use, accidental minimal property damage is interpreted as minimal violence, acts causing minor bodily harm, using offensive equipment without causing injury, sexual offense under force, intentional property damage as moderate violence; causing grievous bodily harm, extensive property damage as moderately serious violence; and violence that causes death or life-threatening as serious violence. Although four levels were defined to define offense severity, since the number of participants who committed crimes of serious and moderately serious severity in the present study was quite low, we evaluated two levels, mild and serious, as used in various previous studies. Accordingly, minimal violence was considered mild violence, and moderate and above levels of violence were considered serious violence. While rating the offense severity to ensure inter-reliability, the forensic files were examined in partnership by both researchers.

Statistical analysis

The continuous variables of the research are grouped as follows; current age, age of disease onset, length of hospitalization, age of first offense, and number of offenses. Categorical variables; living environment (village, small town, city) during the development process, marital status at the time of the current offense (single/married), current social life situation (living with family/alone), duration of education (five years or less/more than five years), being under guardianship (yes/no), having a regular job (yes/no), having an occupational profession (yes/no), having a regular income (yes/no), history of drug misuse (yes/no), history of suicide attempt (yes/no), having a history of incarceration in the past (yes/no), whether the family visits regularly during the hospitalization (yes/no), the plan to return to the family home after discharge (yes/no), good adaptation to the service during the hospitalization

In the descriptive statistics of the data, mean, arithmetic mean, standard deviation, lowest and highest values, percentages, and frequency values were calculated. The distribution of variables was evaluated with the Kolmogorov-Smirnov test. Independent Sample t-test and/or Mann-Whitney-U test were used to compare continuous variables, depending on the distribution of the data. Differences between categorical variables were evaluated with the x^2 test. Correlation analyses were evaluated with the Pearson or Spearman Test. All statistical analyses were performed with SPSS (IBM SPSS version 26.0) and the significance level was accepted as $p<0.05$ (two-tailed)

RESULTS

All of the participants were male, their mean age was 40.11±10.13 years, their education period was 3.99±1.14 years, and their disorder duration was 16.80±9.35 years. The average length of stay in the Forensic Psychiatry Unit is 319.42 days. See Table 1 for sociodemographic data and clinical and criminal variables. The percentage value of only one of the binary categorical variables is given in the table.

Tablo1. Descriptive features on sociodemographical- clinical- forensic characteristics of participants

Features	Patient Group (n=76)
Age Mean – STD	40,11–10,13
Living Environment (village/small town /town))	
Village n/(%)	4 (5,3%)
Small Town n/(%)	36 (47,4%)
Town/(%)	36 (47,4%)
Marital status during hospitalization (married/single)	
Married n/(%)	10 (13,2%)
Current social status(Alone/with family)	
Alone	13 (17,1%)
Educational Status (5 years and less/ More than five years)	
5 years and less	30 (40,5 %)
Having an occupational profession (Yes/no)	
Yes* n/(%)	17 (22,4%)
Having a regular job (Yes/no)	
Yes* n/(%)	10 (13,2%)
Disease onset age	23,30–9,51
Duration of hospitalization (day)	319,42 (13-2928)
Substance misuse history (Yes/no)	
Yes* n/(%)	44 (57,9%)
Susbtance misuse during current offense (Yes/no)	
Yes* n/(%)	25 (32,9%)
Existence of ASPD comorbidity (Yes/no)	
Yes* n/(%)	8 (10,5%)
Treatment adherence (Yes/no)	
Yes* n/(%)	11 (14,5%)
Suicide history (Yes/no)	
Yes* n/(%)	6 (7,9%)
History of incarceration (Yes/no)	
Yes* n/(%)	13 (17,1%)
The family visited regularly during hospitalization (Yes/no)	
Yes* n/(%)	13 (17,1%)
Having plan to return to the family home after discharge (Yes/no)	
Yes* n/(%)	50 (65,8%)
Good adaptation to the forensic unit (Yes/no)	
Yes* n/(%)	35 (47,9%)
Number of offense Mean – STD	2,8–2,74
Age of first offense Mean – STD	32,99–9,34
Age of current offense Mean – STD	35,13–9,95

STD: Standard deviation, n: number of participians,
*: percentage of only one of the 2 group categorical variables is given.

Mean scores for SSS were evaluated as follows; the Perceived Devaluation Subscale score was 17.91±8.19, the Internalized Stereotypes subscale score was 14.77±7.51, the Social Withdrawal and Concealment of the Disorder score was 4.77±2.70, SSS total score was 37.73±16,46. The arithmetic mean value for the SSS total score was 2.22, the Perceived Devaluation subscale score was 2.24, the Internalized Stereotypes subscale score was 2.11, Social withdrawal and concealment of illness subscale score was 2.39. This value stated the positive level on a 5-point Likert-type scale. It means that participants disagree with the statement about self-stigma.

Mean scores for PTCS were scored as follows; The Perception towards moral and personality traits of delinquents subscale score was 21.16±7.23, the Perception towards Social Networks of Delinquents subscale score was 11.16±4.03 and the PTCS total score was 32.30±10.38. The arithmetic mean value for the total value of PTCS was 2.69, the Perceptions towards Moral and Personality Traits of Delinquents subscale was 2.65, and The Perceptions towards Social networks of delinquents was 2.70. This value stated the neutral level on a 5-point Likert-type scale. It means that participants neither agree nor disagree with negative perceptions towards delinquents. (Table 2)

Correlation Analysis

According to the results, there is no significant correlation was found between current age, disease onset age, disease duration year, age at the time of offense, age at first offense, number of offenses, severity of offense, length of hospitalization, and SSS total and sub-dimension scores, and PTCS scale and subdimension scores. As expected, there was a significant correlation between PTCS and SSS scale and subscale scores. If it went into

Table 2. Total scores and subscale scores of the self-stigma scale and the perceptions towards criminals scale

	x	Mean	STD	Min	Max
Self-Stigma Scale (SSS)					
Internalized devaluation	2,24	17,91	8,19	8	39
Internalized stereotypes	2,11	14,77	7,5	7	34
Social withdrw. Concealm. of Disord.	2,39	4,77	2,70	2	10
SSS-Total	2,22	37,73	16,46	17	76
Perceptions Towards Criminals Scale (PTCS)					
Moral and Personality traits	2,65	21,16	7,23	8	40
Social Network	2,79	11,16	4,03	4	20
PTCS-Total	2,69	32,30	10,38	12	60

PTCS: Perceptions Towards Delinquents Scale, SSS:Self Stigma Scale, x: Aritmethic Mean, STD: Standard Deviation, Min: Minimum value, Max:Maximum value

details; a significant correlation was found between the PTCS total score and SSS Total score (r:0.355, p<0.003), the perceptions of the PTCS personality/morality sub-dimension and SSS Total score (r:0.287, p:0.019), and the PTCS social networks sub-dimension and SSS Total score (r:0.249, p:0.039). Similarly, there were found significant correlations between the internalized devaluation sub-dimension of the SSS and the PTCS Total score (p:0.000, r:0.411); the SSS internalized stereotype score and the total PTCS score (p:0.015, r:0.289); PTCS personality aspects subdimension score and SSS internalized devaluation (p:0.003, r:0.351), PTCS social network score and SSS internalized devaluation (p:0.008, r:0.306), PTCS total score and SSS internalized devaluation subscale (p:0.000, r: 0.411) and PTCS Total score and SSS internalized stereotype (p:0.015, r:0.289) (Table 3.)

Difference Analysis

In the present study, the relationships between sociodemographic, clinic, and offense-related variables, and the scale and subscale scores of SSS and PTCS were evaluated by difference analysis. A significant relationship was found only between receiving regular treatment before hospitalization and the social network sub-dimension of PTCS (U=217.50, Z=-2.026, p=0.043).

There was no significant relationship between the total scores and subscale scores of the scales and other sociodemographic, clinical, and offense-related variables (Table 3).

DISCUSSION

Studies have shown that individuals with mental disorders are subject to stigmatization, and as a result, this situation is associated with social withdrawal, negative outcomes of disorders, decreased treatment adherence, and lower social skills (26, 27). In studies on stigma in schizophrenia, it is stated that internalized stigma levels are generally high in both outpatients and inpatients, and it is recommended that it should not be overlooked in the management of schizophrenia (28, 29). In a study which is performed in Turkey that enrolled 63 outpatients diagnosed with schizophrenia, it was stated that internalized stigma was associated with low treatment adherence (30). In a study investigating the levels of self-stigma, measured by SSS, in patients with schizophrenia treated in a Community Mental Health Center (CMHC) and psychiatry outpatient clinic, higher scores were obtained compared to the scores measured in this study (31). In another study, all three sub-dimensions of the SSS score were evaluated in members of the Schizophrenia Friends Association and all three sub-dimensions of the SSS score were calculated higher than in this study (32). In this study, self-stigma levels were evaluated with the SSS in 76

Table 3. Examining the relation between sociodemographic, clinical, and offense-related variables with the self-stigma scale and the perceptions towards criminals scale with Spearman Correlation Analysis

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1.Age	CC	1.000	.600**	.926**	.771**	.141	.015	.002	.529**	-.028	-.066	.063	.051	-.007	-.110	-.021
2.Disease onset age	CC	.600**	1.000	.643**	.632**	.078	-.031	-.104	-.232*	-.057	-.078	.016	-.084	-.093	-.097	-.109
3.Age at current offense	CC	.926**	.643**	1.000	.868**	.044	-.011	-.067	.406**	-.050	-.090	.072	.041	.010	-.063	-.004
4.age at first offense	CC	.771**	.632**	.868**	1.000	-.207	.054	-.092	.270*	-.014	-.030	.068	.001	-.026	-.152	-.051
5.Number of offense	CC	.141	.078	.044	-.207	1.000	.119	.194	.070	.036	.035	.090	.077	.010	.236*	.070
6.Duration of hospitalization	CC	.015	-.031	-.011	.054	.119	1.000	.302**	.006	.178	.218	.091	.161	.028	.172	.048
7.Offense severity	CC	.002	-.104	-.067	-.092	.194	.302**	1.000	.106	.060	.116	-.056	.056	-.051	.062	-.071
8.Duration of ilness	CC	.529**	-.232*	.406**	.270*	.070	.006	.106	1.000	-.020	-.045	.041	.069	.001	-.134	-.011
9.PTCS.Tot.	CC	-.028	-.057	-.050	-.014	.036	.178	.060	-.020	1.000	.942**	.826**	.411**	.289*	.219	.355**
10.PTSC-pers-moral.	CC	-.066	-.078	-.090	-.030	.035	.218	.116	-.045	.942**	1.000	.621**	.351**	.234	.177	.287*
11.PTCS-Soc.netw.	CC	.063	.016	.072	.068	.090	.091	-.056	.041	.826**	.621**	1.000	.306**	.206	.155	.249*
12.SSS-int.dev.	CC	.051	-.084	.041	.001	.077	.161	.056	.069	.411**	.351**	.306**	1.000	.712**	.611**	.906**
13.SSS-int. Stere.	CC	-.007	-.093	.010	-.026	.010	.028	-.051	.001	.289*	.234	.206	.712**	1.000	.569**	.905**
14. SSS. Soc. Withd. Conc. dis	CC	-.110	-.097	-.063	-.152	.236*	.172	.062	-.134	.219	.177	.155	.611**	.569**	1.000	.724**
15.SSSTot.	CC	-.021	-.109	-.004	-.051	.070	.048	-.071	-.011	.355**	.287*	.249*	.906**	.905**	.724**	1.000

** Correlation is significant at the 0.01 level (2-tailed). * Correlation is significant at the 0.05 level (2-tailed).
CC: Spearman Correlation Coefficient, p: Significance (2 tailed), PTCS: Perceptions Towards Criminals Scale, PTCS Soc netw.:PTCS-Social Network Subscale,, PTCS Pers. Moral: PTCS, Personality traits and Moral subscale, PTCS Tot.: PTCS Total Score, SSS: Self Stigma Scale, SSS nt. Dev.: SSS Internalize Devaluation Subscale, SSS int. stereo: SSS Internalized Stereotypes Subscale, SSS Soc. Withd. Cons. Dis: SSS Social Withdrawal and Concealment the Disorder Subscale, SSS Tot: SSS Total Score

patients receiving inpatient treatment in a high-security forensic psychiatry service, and lower self-stigma levels were shown compared to those two studies conducted in Turkey.

According to the mean scores of the SSS, it was observed that the patients included in the present study had lower levels of perceptions of devaluation, internalization of stereotypes, social withdrawal and a tendency to concealment the disease and the total level of self-stigma. In the evaluations made for patients receiving inpatient treatment in forensic psychiatry services in our country, it has been stated that the level of internalized stigma was at a neutral level (33, 34). We thought that the low self-stigma tendency in this study might be related to the difference in the research populations. Because the research population is not homogeneous in terms of psychiatric diagnoses in the beforementioned studies, the scales were performed on patients without diagnostic discrimination, and patients diagnosed with schizophrenia constitute a small portion of the sample. The population of the current study, as a more homogeneous group, consists of people diagnosed with schizophrenia and hospitalized in high-secure forensic psychiatric services. In this sense, results may be valuable. The findings are descriptive in terms of double stigma in the group of forensic patients diagnosed with schizophrenia receiving inpatient treatment, that is, due to both their mental disorder and their offensive behavior.

The participants neither agreed nor disagreed with the negative perceptions in the Perceptions Towards Criminals Scale, in all sub-dimensions and the whole scale, considering the arithmetic mean score of the scale total score and subdimension score in the study. There is no other study in the literature investigating the perceptions of the patient group toward making offense. Generally, studies conducted on professionals are available. For example, the average of the total scale scores of the participants in social work students is 3, 2.73 for the personality traits sub-dimension, and 3.5 for the social networks sub-dimension (35). The averages for social work students are similar to the present study but relatively low. When the arithmetic mean of both scales in the current study was evaluated, it was determined that self-stigma was low and perceptions towards criminals were neither positive nor negative in the study population. Our results did not coincide with the double stigma theory. According to double stigma theory, it is expected that experiences of being hospitalized in a forensic psychiatry service, or committing an offense will increase self-stigmatizing tendencies. Contrary to expectations, the tendencies of patients with schizophrenia receiving inpatient treatment in the forensic psychiatry service of our hospital regarding self-stigma are generally positive. In addition, similar to the SSS, it was observed that forensic psychiatry patients did not have negative perceptions about delinquents but they were rather neutral. Although studies in the literature generally support the double stigma theory, there are also studies showing similar results to the current study. The findings are consistent with Wall et al.'s (2017) study results in which the mental disorder perception for schizophrenia was compared in patients hospitalized in the forensic service and the general adult psychiatric service. In this study, it was stated

Table 4. Examination of clinical, sociodemographic and crime-related binary categorical variables in terms of self-stigma and perceptions towards criminals -difference analysis

	PTCS-Pers.	PTCS-Social	PTCS-Tot.	SSS- D	SSS- S	SSS-SW-CD.	SSS Total
Marital Status	.356	.505	.308	.099	.149	.104	.068
Living Enviroment (town/village-small town)	.173	.435	.161	.053	.193	.102	.061
Educational Status (5 years and less/ More than five years)	.486	.978	.631	.208	.782	.921	.467
Having a regular job	.968	.724	.974	.714	.820	.344	.840
Substance Misuse History	.439	.996	.497	.279	.137	.636	.201
Existence of ASPD comorbidity	.916	.736	.993	.803	.908	.162	.985
Treatment adherence	.932	**.043**	.297	.426	.230	.367	.401
Offence severity-(minimal/serious)	.282	.870	.453	.331	.870	.269	.955
Suicide history	.520	.731	.786	.639	.420	.401	.793
History of incarcerations	.371	.368	.308	.449	.473	.969	.503
Having plan to live with family after discharge	.054	.709	.132	.444	.912	.640	.468
Regular meeting with family during hospitalization	.880	.540	.885	.994	.696	.689	.904

Note, PTCS: Perceptions Towards Criminals Scale, PTCS Soc..:PTCS-Social Network Subscale,, PTCS Pers.: PTCS, Personality traits and Moral subscale, PTCS Tot.: PTCS Total Score, SSS: Self Stigma Scale, SSS .D..: SSS Internalized Devaluation Subscale, SSS ID: SSS Internalized Stereotypes Subscale, SSS SW-CD: SSS Social Withdrawal and Concealment the Disorder Subscale, SSS Tot: SSS Total Scorep: Mann Whitney U significance

that the perceptions of patients hospitalized in the forensic service towards schizophrenia were less negative (36). In another study, forensic psychiatry patients and non-forensic patients with schizophrenia were compared. It was found that the levels of shame experienced by the patients regarding their illness were similar (36). In those studies, researchers explained that the lower or similar levels of stigmatization in forensic psychiatry patients compared to the non-forensic group was the longer duration of hospitalization in forensic psychiatry services, and the positive effects of the interventions made during the hospitalization. The participants were enrolled in the study after the clinicians reached the consensus to release the patient and their average length of hospitalization was 319 days. During the hospitalization process, interactive group therapies, individual psychotherapies (psychoeducational interventions and supportive approaches), and psychosocial rehabilitation interventions are applied to the patients. Interventions aimed at management of the stigmatization are implemented through both group and individualized therapeutic modalities within the hospital. These interventions, however, are not explicitly integrated into a structured program. Therefore, although it is very assertive to say that the stigma levels in patients may be lower due to the interventions with the results of the study as highlighted in the literature, it brought this interpretation to mind. Studies evaluating the effectiveness of treatment in forensic psychiatry settings will contribute to clarification of the relationship between stigma and therapeutic interventions.

Disparities in attitudes towards individuals with mental disorders have been documented within the literature across different countries (38). Although there are limited studies on this topic, various cultural factors associated with public stigma have been identified (39). To investigate stigma-related sociocultural factors in order to develop culture-specific interventions for stigma would be beneficial. In our literature review, The study investigating the relationship between the establishment time of forensic psychiatry hospitals and social stigma was not discerned. Nevertheless, it is important to note that investigations observed more negative attitudes towards psychiatric patients who have committed offenses were conducted in countries where the forensic psychiatric care system is well-established (10,15). As an interpretation of this situation, although these countries specialize in the management of forensic psychiatric care, the insufficiency of interventions to prevent public stigmatization may have caused high levels of stigmatization. On this interpretation, we would like to emphasize to the multifactorial structure of public stigmatization rather than the inadequacy of institutions. This study does not constitute a cross-cultural comparison. Despite the heightened stigmatized attitudes towards forensic psychiatry patients reported in the existing literature, our study suggests that such findings may not be applicable to our country. In our country, High-Security Forensic Psychiatry Hospitals have been in the process of institutionalization in our country for five years. For this reason, public stigmatizing attitudes toward the relationship between hospitalizations in forensic psychiatry hospitals and delinquency may be inchoate in our country. As a result, the public stigmatizing effect of delinquency and hospitalizations in forensic psychiatry hospitals may be relatively lower. According to the results of our research, the internalized stigmatization level of patients hospitalized in forensic psychiatry settings is not at a very high level in our country. It should be considered as an opportunity to prevent the internalized stigma of patients and public stigma towards forensic psychiatric patients at an early stage in Turkey.

Although large samples and comparative studies are needed to test the legitimacy of the double stigma hypothesis in forensic psychiatry patients in our country, our results showed that the double stigma hypotheses associated with forensic hospitalizations may not be accurate in our country. We did not compare the forensic schizophrenia patients with non-forensic schizophrenia patients in the study. Nevertheless, the findings of our research are descriptive in terms of double stigma in the group of forensic patients diagnosed with schizophrenia receiving inpatient treatment, that is, due to as well as their stigma experiences about their mental disorder and delinquency. Moreover, considering the knowledge from the literature, while higher stigma was expected, our results that it was scored at lower levels in forensic patients thought that there may be a difference for our

country in terms of the forensic psychiatry population. Our research has previousness for future comparative studies with large samples involving the forensic psychiatry population in our country. The results of the study may be thought that it will contribute to the development of treatment and rehabilitation programs by planning preventive medical approaches and preventing stigmatization specific to the diagnosis group.

Another important result of the study is that it has been shown that perceptions towards delinquents' social networks are more negative in the forensic patient group receiving regular treatment. In other words, the perception that delinquents have poor social relations is higher in the forensic patient group receiving regular treatment. Conversely, current age, age at the time of the offense, age at first offense, duration of disorder, length of status, employment status, marital status, educational status, whether or not living with the family before hospitalization, having a plan to stay with the family or alone after hospitalization, substance misuse history, suicide attempt history, having a history of incarceration in the past, existence of comorbid ASPD, and moderate or serious offense severity did not cause a significant difference in terms of self-stigma and perceptions towards delinquents. In the literature, there are various results in studies investigating stigma-related factors in mental disorders. In a study conducted in a Chinese population, female gender, young age, presence of insight into disorders, and long duration of untreated psychosis were associated with high internalized stigma (40, 41). In a meta-analysis study conducted last year, living outside of urban areas, having a low-income level, being single, unemployment, high-dose antipsychotic use, and low functionality were associated with different dimensions of stigma (42). In this meta-analysis, similar to the current study, sociodemographic variables such as the age of onset of the disease, duration of the disease, age, and education level were not associated with self-stigmatization. The presence of different findings despite extensive studies may be related to the characteristics of the study samples. Since those studies were conducted in different countries participants had different cultural characteristics, the results may affected. In addition, although severe mental disorders are chronic, whether the participants are in the early or late stages of the disease process may affect the results. It has been reported in our country that factors such as being single, occupational status, educational status, marital status, disease onset age, and duration of disorder do not reveal a significant difference in terms of internalized stigma in patients diagnosed with schizophrenia and schizoaffective disorder (21). Similar to this research conducted in our country, no difference was found in terms of sociodemographic variables. We also found that clinical variables such as antisocial personality disorder, suicide attempt history, drug history, and offense-related factors such as age at first offense and offense severity were not associated with self-stigma. It is noteworthy that, receiving regular treatment was associated with more positive perceptions towards criminals. The findings of the study highlight the relationship between stigma and treatment adherence in the literature (2,7,30). However, it cannot be said whether good treatment adherence has a positive effect on stigma with these results. Because these results can also be interpreted as low self-stigma is associated with high treatment compliance. Clarification of this is only possible with comprehensive prospective studies.

The need to investigate stigmatization, especially in specific groups, has been reported in many studies (42). The present study is valuable in that it shows the factors associated with stigmatization in a more specific group of patients with schizophrenia receiving inpatient treatment in forensic psychiatry. Considering the results of the study and literature, it was thought that possible differences may be obvious in studies with large samples and various variables in this study. In this sense, with the findings obtained from comprehensive studies in which the effects of possible variables' effects in preventing self-stigma are investigated in detail, treatment targets can be made more specific, thus stigma can be prevented.

The distinctive value of the study is that there is no other study examining perceptions of delinquents in a group of forensic psychiatry patients diagnosed with schizophrenia receiving inpatient treatment, and that self-stigma towards co-occurring mental disorder has been examined. The fact that the scale assessing the perception towards delinquents scale

was developed in Turkey and that culturally sensitive, easy-to-use inventories developed for patients with schizophrenia in Turkey were used in the study contribute to the sensitivity of the research.

Limitations

The scales we used in this study were marked by the patients themselves. This could have resulted in measurement bias in psychiatric disorders such as schizophrenia which observed verbal function impairment. However, in our study, scales adapted to Turkish were used to prevent other possible limitations related to verbal impairment. This provided for linguistically and culturally sensitive measurement.

As we mentioned before, an important limitation of the study is that there was no control group with which we could compare the study populations. Comparative studies with large samples are needed to clarify the double stigma in forensic psychiatry patients.

Another limitation of the study is that female patients were not included. Considering the studies showing that self-stigma levels are higher in women (40), it is an important limitation that the sample consists of only male patients. However, our hospital has forensic settings only for male patients. So, results can only be generalized to male patients. Additionally, since this study was conducted with a specific group that is patients with schizophrenia hospitalized in forensic settings, the number of people we could reach in the study is small. These situations may have caused existing relationships not to be shown.

In addition, symptom severity was not evaluated. This is a limitation, considering that there is a relationship between symptom severity and internalized stigma (7, 43, 44). However, considering the patients are in the discharge process, which means their symptom severity was reduced enough for the discharging decision, we thought that all of them were in, so it would not make a significant difference in the results.

The research is valuable in terms of both investigating self-stigma and perceptions towards delinquents in patients with schizophrenia receiving inpatient treatment in a high-secure forensic psychiatry service in Turkey. The research differs in that it specifically focused on assessing individuals diagnosed specifically with schizophrenia. Contrary to expectations in the literature, low levels of stigmatization were observed in forensic psychiatry patients. This may be related to the positive effects of the pharmacotherapy and psychotherapy interventions during the hospitalization period and perhaps the experience of observing other forensic psychiatry patients. Another reason may be that forensic psychiatry services have not become widespread in our country yet. Early prevention of public stigma regarding hospitalizations in forensic psychiatry services in our country will be beneficial. In this sense, providing lectures about psychiatric disorders to the general public and monitoring the news in the media may help to prevent the occurrence of public stigma.

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Facial emotion recognition in children with autism spectrum disorder: Are emotional primes effective?

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SUMMARY

Objective: This study investigated the facial emotion recognition problems in children with autism spectrum disorder and how different emotional primes (visual and vocal primes) affected this deficiency.

Method: Two separate experiments using the prime task were conducted in which only the prime modality was differentiated. Visual (Experiment-1) or vocal (Experiment-2) emotion primes were presented in the task. Then the participant decided whether the faces presented after primes had emotion.

Results: In both experiments, children with autism spectrum disorder showed impaired performance compared to healthy peers, and a happy face advantage was seen in both experiments independent of the group. Reaction time increased in autism spectrum disorder when the sad vocal prime was given. However, the priming effect was not seen in any modality in either group.

Discussion: Emotional priming has no effect on the recognition performance of healthy control and children with autism spectrum disorder. Sad vocal prime has a negative impact on children with autism spectrum disorder's ability to recognize faces. Happy and neutral tones as much as possible should be employed in the training and intervention programs for autism spectrum disorder, considering the effects of sad vocals.

Key Words: Autism spectrum disorder, facial emotion recognition, emotional priming, emotional prosody

INTRODUCTION

Diagnostic criteria of Autism Spectrum Disorder (ASD) are mainly explained within two dimensions: social communication-interaction problems and restricted-repetitive behaviors (1). Social communication-interaction problems in ASD include verbal and non-verbal communication deficiencies such as language abnormalities, weak eye contact, lack of social smile, and personal boundaries (2). Facial emotion recognition (FER), which is defined as the ability to distinguish emotions from facial expressions, has been a frequently researched subject for ASD (3) because understanding nonverbal emotional cues is crucial for successful social interaction (4). While the ability to FER in healthy individuals begins to develop in the first months of life (5), the aforementioned ability in individuals with ASD is controversial. Although the deficiency in FER is frequently reported in ASD (6), there are also studies showing that this skill is not impaired (7). However, this study has demonstra-ted that individuals with ASD are negatively affec-ted by the decrease in the intensity of emotion on the face. Also, some researchers have found emotion-specific impairments in FER. According to the study by Jones et al. (2011), individuals with ASD failed to recognize the emotional expression of ‘’surprise” (8). It is thought that contradictory findings related to the FER in ASD arise from methodological problems such as age, intelligence, task selection, and stimulus type. (9).

While facial emotional stimuli were used in the early studies on emotion recognition, emotional human voices have started to be used in current

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studies (10,11). Vocals as speech sounds, like ''photographs'', may convey information such as trust, attraction, dominance, and emotional state (12). Emotional prosody consisting of pseudo-word or pseudo-sentences stimulating language grammar rules and phonotactic restrictions is prominent in emotion recognition studies with vocals (13,14,15).

There are findings indicating that emotional prosody recognition performance is impaired in ASD (16), as well as findings that do not impaired (17). Another study revealed that although children with ASD have no problem in perceiving prosody, they show atypical attention to the emotion in the voice compared to their peers (18). It was shown that based on an examination of distinct emotions, while children with high-function autism (HFA) fail to recognize the neutral and happy prosody compared to their typically developing peers, sad and angry prosody does not have problems in recognition (19).

The ability to recognize emotions is aided by clues from various sources, including the voice and the face (20). It is thought that an information processing system combines clues from various sources in one place to recognize emotions (21). Failure in emotion recognition from the face, vocal, and body movement in children with ASD show a perceptual problem (22), and they have difficulty combining emotional cues from different modalities (23). However, another study revealed that children between the ages of 7-10 have general difficulty in integrating vocals and faces, regardless of ASD (24).

Emotional priming paradigms are an effective tool for studying the interaction between emotional cues. Priming is the facilitating effect of the stimuli (prime) presented earlier on cognitive processes. The congruency effect, which indicates that priming is shown based on emotion, is a shortening reaction time and an increase in accuracy rate when the emotional valence of the prime and the target are similar (25). The emotional congruency effect applies to both the same (uni-modal) (26) and different modalities (cross-modal) (13). The fact that other modalities such as visual, auditory, and odor can create emotional congruency effects supports the view that it is a central system responsible for emotional information processing (21,26,27). A few studies show that emotional priming has less facilitating effect on children with ASD than on their healthy peers (28,29). Pell (2005) has demonstrated the emotional priming effect revealed by the congruence of vocal and face in healthy individuals (13,30). While no emotional priming effect was seen in adults with higher autism-like behaviors in a different study using the same paradigm (Facial Affective Decision Task: FADT), adults with lower autism-like behaviors responded faster to happy faces following a happy prime compared to a neutral prime (31).

This study examines the effects of uni-modal (visual-visual) and cross-modal (auditory-visual) emotional stimulus interactions on FER in children with ASD, with two separate experiments using the FADT. Emojis were used as emotional prime in Experiment 1; vocals were used as emotional prime in Experiment 2. Thus, the effects of prime on emotional face photographs presented as targets in both experiments were separately investigated. It was hypothesized that the effect of uni-modal congruency would be seen in both groups, while cross-modal congruency would only be seen in healthy controls. Thus, the cross-modal emotion recognition skills of children with ASD and with typical development will be examined using a different task. The modality priorities and/or advantages that will be revealed by examining the cross-modal (auditory-facial) skills of ASD characterized by FER deficiencies, will contribute to the literature, especially in terms of regulation the programs to be developed in their education.

METHOD

Participants

Due to the cognitive and behavioral problems associated with ASD and the demands of the task to be performed in the experiments, strict evaluation criteria were applied in the selection of participants. Since most of the children with ASD who are candidates to participate in the research will be eliminated in the screening tests due to strict evaluation criteria, the evaluation was made among 350 child-

ren diagnosed with ASD were educated in special education and rehabilitation centers in the province of Ankara, Turkey. All children with ASD were previously diagnosed with ASD according to DSM 5 and have a medical board report. Healthy controls were reached through social media announcements. The sample of Experiment 1 consists of 34 volunteer children (15 healthy, 19 with ASD) aged between 6 and 12. Six children with ASD were eliminated due to their scores in the following screening tests and were excluded from the analyzes of Experiment 1. The sample of Experiment 2 consists of 38 volunteer children (16 healthy controls, 22 with ASD) aged between 6 and 12 who did not participate in Experiment 1. 10 children with ASD were eliminated from the analysis of Experiment 2 because of their scores of the screening tests. Children with mild to moderate autism symptoms according to Childhood Autism Rating Scale were included in the study. According to the Schedule for Affective Disorders and Schizophrenia for School Aged Children Present and Lifetime Version (KSADS-PL), a semi-structured psychiatric interview applied by a child and adolescent psychiatrist, children who did not have any psychiatric diagnosis other than ASD were included in the study. Participants' general intelligence and receptive language skills were evaluated with the Raven Standard Progressive Matrices and Peabody Picture Vocabulary Test. Participants who scored below the Turkish norms in these tests were not included in the study. No participants have abnormal vision or hearing problem. Participants did not use any psychiatric drugs that could affect cognitive processes in the 48 hours before the experiment.

Diagnostic and descriptive measures

Sociodemographic Questionnaire: It was completed by the parents of the children participating in the study. Information about the participants' age, gender, years of education, socioeconomic level, health status, and other demographic characteristics that may affect the results of the research were obtained.

Schedule for Affective Disorders and Schizophrenia for School-Age Children–Present and Lifetime Version (K-SADS-PL): It is a semi-structured interview developed to determine the past and present psychopathologies of children and adolescents. It was first developed by Kaufman et al. (32). Its Turkish adaptation studies were performed by Gökler et al. in 2004 (33).

Childhood Autism Rating Scale (CARS): It is used to measure the presence and severity of autism (34). It consists of 15 items containing behavioral ratings in categories such as object use, adaptation to change, and imitation. The highest score on the scale is 60. Children with a score of 15-29.5 are thought to have not autistic traits, while those with a score of 30-36.5 are thought to have mild-moderate autistic traits, and those with a score of 37-60 are thought to have severe autistic traits. The reliability and validity study of the Turkish version of the scale were conducted by İncekaş Gassaloğlu, et al. in 2016 (35). In this study, the Cronbach alpha value of the total score of the scale was .95 ($p < .01$), the test-retest reliability correlation coefficient was reported as .98 ($p < .01$), and the inter-rater reliability coefficient was .97 ($p < .01$).

Raven's Standart Progressive Matrices (RSPM): It is a general intelligence test independent of culture and language (36). The test consists of five separate sets, 12 items in each set, a total of 60 items. The items have an increasing difficulty level. The scores are calculated over the total score and the completion time of the test, and the highest score is 60. The norms in the Turkish standardization study of the RSPM for children aged 6-12 were taken as reference (37).

Peabody Picture Vocabulary Test: It was developed by Dunn (1959) to measure the language development of individuals between the ages of 3-17 (38). The test, which is widely used in the world and in our country, includes a total of 100 pictures. In the test, the participant is asked to find and show the most appropriate picture for the word presented orally. Each correct answer is 1 point, and the highest score that can be obtained from the test is 100. The Turkish adaptation of the test was carried out by Katz, et al. (39) (as cited in Oner, 1997).

Figure 1. Examples of target face photos.

Experimental Task

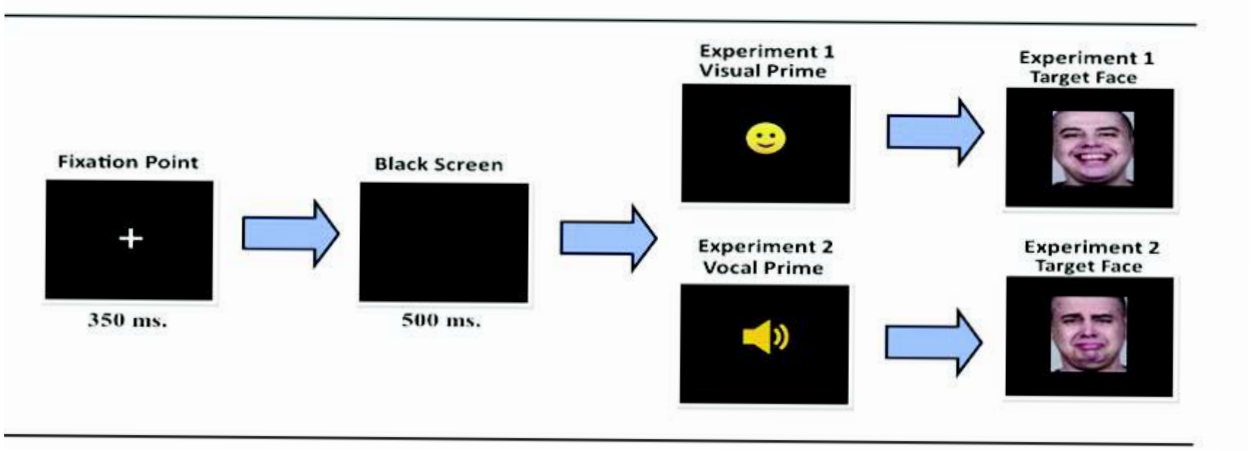
The task in both experiments was prepared with E-Prime 2.0 software (Psychology Software Tools, Pittsburgh, PA). Experiments 1 and 2 differ only in terms of stimuli that are presented as prime (emojis in Experiment 1; vocals in Experiment 2). The FADT consists of a total of 144 trials, 72 of which are "YES" (emotional target face) and 72 of which are "NO" (non-emotional target face). "YES" trials include 24 emotionally congruent (e.g., happy prime-happy target face or sad prime-sad target face), 24 emotionally incongruent (e.g., happy prime-sad target face or sad prime-happy target face), and 24 neutral (neutral prime-happy target face or neutral prime-sad target face) trials. "NO" trials, on the other hand, consist of 72 target faces that do not express emotion, coming after happy (24), sad (24), and neutral (24) prime stimuli. 144 trials were divided into six blocks, and primes and targets were chosen as pseudorandom so that they are not repeated in blocks. In Experiment 2, vocal primes were presented at most four times in all trials and only once in each block. The gender of the model in the target face photograph was matched with the gender of the vocal primes. The order of presentation of the blocks was determined by semi-balancing.

FADT Stimuli

A total of 48 color photographs (383 x 500 pixels) of two white-skinned female and two white-skinned male models, including 3 happy, 3 sad, and 6 non-emotional (not representing a known emotion), were selected from a set of emotional face photographs developed by Pell in 2002 (40) and later used in other studies (13,30,31). According to the procedures in Pell's study, college students aged 19 to 26 (68 females and 15 males; M = 19.9, SD = 1.6) and children aged 7 to 10 (17 girls and 15 males; M = 8.3, SD = .89) independently rated the images in terms of emotion recognition and emotional valence. These volunteers did not take part in the main experiments. In the emotion recognition task has 7 options (anger, disgust, fear, sad, happy, surprised, non-emotional face) accurate recognition rate of over 75% were considered valid. Emotional valence was measured on a 5-point scale ranging from -2 (very negative) to +2 (very positive). Scores between -0.75 and -2 points were considered sad, and scores between +0.75 and +2 were considered happy. According to these evaluations, 3 out of 48 photographs were eliminated. Consequently, 45 face photographs were chosen to serve as targets in FADT (Figure 1). Non-copy-

Figure 2. Visual prime stimuli (emoji primes) used in Experiment 1.

Figure 3. A schematic representation of a trial sequence in Experiment 1 and Experiment 2.



righted emojis were used as primes (Figure 2) in experiment 1. 83 vocal primes which consist of pseudo-sentences in Turkish were used in experiment 2. Vocal primes was developed by following the steps in the study by Pell et al (41).

Procedure

The procedure of Experiments 1 and 2 are identical except for the prime stimuli (emojis in Experiment 1; vocals in Experiment 2). Screening tests, which lasted approximately 90 minutes, were administered to the participants in the first session. and Experiment 1 or 2 was administered in the second session, approximately one week later. Before the experiments, the participants were shown facial emotional cards corresponding to six basic emotions that were not used in the main experiment, and they were asked to recognize them. Participants were seated in a fixed and upright position at approximately 60 cm from the laptop screen (1920x1080 pixels – 15.6 inches). The participants were instructed that they would see some emojis or hearing sounds on the screen, not to focus on them, and then to decide (YES/NO) whether the faces that would appear on the screen contained emotions. In the practice trials, at least 7 out of 12 trials were required to be answered correctly. In FADT, each trial was first presented with a focusing screen (350 ms), then a blank screen (500 ms) and emotional emoji primes in Experiment 1 and emotional vocal primes in Experiment 2 (average 2009 ms). In order that the position where the emojis were presented in Experiment 1 would not be blank while the vocals were presented in Experiment 2, A representative sound sign indivating the vocal, had the same color and size with emojis was used in place of emojis. The average duration of the vocals in Experiment 2 is 2009 ms. In Experiment 1, each emoji presented instead of the vocals in Experiment 2, remained on the screen for the average time of the vocals (2009 ms). Thus, Experiment 1 and 2 were tried to be matched except for the modality of the prime stimuli. In each trial, the target face was presented on the screen after the prime. Target faces are displayed on the screen until the participant reacts or for 5000 ms. (Figure 3).

Statistical Analysis

Power analysis was performed with G-Power (42) to determine an adequate sample size. In order to obtain .80 power as a result of the analysis, the required number of participants was determined as 28 for each experiment at .05 alpha level and medium effect size.

Statistical Package for Social Sciences (SPSS) 23.0 licensed program was used in the analysis of all data. The significance level for all analyzes was determined as $p < .05$. In order to examine whether there is a difference between the groups in the study in terms of the scores they got from the screening tests (RPSM, PPVT, and CARS), independent samples t-test analysis was performed. Trials with reaction times below 300 ms and above 5000 ms were excluded from the data set. Only emotion-expressing face trials (YES trials) were included in the analysis, and reaction time analyzes were conducted on correct trials. To examine the congruency effect for both experiments, two separate 2 (Group: ASD vs Control) x 3 Prime (Happy

Table 1. Comparison of healthy and ASD participants in Experiment 1 in terms of screening test scores with t test

N = 28	Group	n	M – SD	t	df	p	Cohen s d
RPSM*	Control	15	32.33 – 10.11	1.69	26	.102	.64
	ASD	13	26.38 – 8.11				
PPVT*	Control	15	80.66 – 6.28	2.29	17.44	.030	.85
	ASD	13	72.46 – 12.10				
CARS*	Control	15	18.10 – 2.22	-20.83	26	.000	8.06
	ASD	13	33.00 – 1.38				

*RSPM: Raven's Standart Progressive Matrices; PPVT: Peabody Picture Vocabulary Test; CARS: Childhood Autism Rating Scale.

vs Neutral vs Sad) x 2 (Target: Happy vs Sad) ANOVAs were conducted seperately for accuracy rate and reaction time. Post-hoc analyzes (Bonferroni correction) were performed to identify the source of significant differences.

RESULTS

Sociodemographic features and screening tests

Experiment 1

After screening tests and practice trials, 13 children with ASD (12 boys, 1 girl; M = 8.23, SD = 1.87) aged 6-12 years and 15 healthy controls (8 boys, 7 girls; M = 9.00, SD = 1.81) matched for age, intelligence, and receptive language skills, a total of 28 children were included in the analysis. The results of the independent samples t-test, which were conducted to determine whether there is a significant difference between the groups in terms of age, years of education, RPSM, PPVT, and CARS scores, are summarized in Table 1. However, receptive language skills of children with ASD were found to be lower than healthy children, $t(17,44) = 2.29$, $p < .05$, and they had a receptive language age score from PPVT compatible with their biological age.

Experiment 2

After screening tests and practice trials, 12 children with ASD (11 boys, 1 girl; M = 9.25, SD = 1.71) aged 6-12 years and 16 healthy children (8 boys, 8 girls; M = 10.06, SD = 1.73) matched for age, intelligence, and receptive language skills were included in the analyses. There was no difference in terms of age between the ASD and control groups, $t(26) = 1.23$, $p > .05$. The screening test scores of the participants in Experiment 2 are summarized in Table 2.

Reaction time and accuracy rate

Experiment 1

For reaction time, the group variable's main effect is statistically significant, $F(1, 26) = 21.84$, $p < .001$, $\eta p2 = 0.45$. The reaction time of healthy participants (M = 1450, SE = 85) was significantly faster than those with ASD (M = 2031, SE = 91). There is a statistically significant main effect of the target variable on the reaction time, $F(1,26) = 25.02$, $p < .001$, $\eta p2 = 0.49$. In other words, happy faces (M = 1647, SE = 59) were recognized faster than sad faces (M = 1833, SE = 69). However, the main effect of the prime on the reaction time was not statistically significant, $F(2,52) = .07$, $p > .05$, $\eta p2 = 0.003$. None of the interaction effects are statistically significant. Considering the accuracy rates, the

Table 2. Comparison of healthy and ASD participants in Experiment 2 in terms of screening test scores with t test

N = 28	Group	n	M – SD	t	df	p	Cohen s d
RPSM*	Control	15	33.81 – 4.98	1.68	26	.104	.63
	ASD	13	30.33 – 5.92				
PPVT*	Control	15	79.31 – 8.35	2.29	26	.319	.38
	ASD	13	75.75 – 10.18				
CARS*	Control	15	18.37 – 2.32	-20.83	21.09	.000	7.61
	ASD	13	31.87 – 0.95				

*RSPM: Raven's Standart Progressive Matrices; PPVT: Peabody Picture Vocabulary Test; CARS: Childhood Autism Rating Scale.

main effect of the group is statistically significant, $F(1, 26) = 24.49$, $p < .001$, $\eta p2 = 0.48$. The FADT accuracy rate of healthy participants ($M = 92.7$, $SE = 3.3$) was higher than those with ASD ($M = 68.4$, $SE = 3.6$). The main effect of the target on the accuracy rate is statistically significant, $F(1,26) = 4.42$, $p < .05$, $\eta p2 = 0.14$. It is seen that happy faces ($M = 85.3$, $SE = 2.4$) are recognized more accurately than sad ones ($M = 75.7$, $SE = 4.0$). The main effect of the prime on the accuracy rate is not statistically significant, $F(2,52) = .84$, $p > .05$, $\eta p2 = 0.03$. None of the interaction effects are statistically significant.

Experiment 2

The group main effect for reaction time is statistically significant, $F(1, 26) = 16.20$, $p < .001$, $\eta p2 = 0.38$. Healthy participants ($M = 1412$, $SE = 28$) responded faster than those with ASD ($M = 2012$, $SE = 113$). The main effect of prime is also statistically significant, $F(2,52) = .3.57$, $p < .05$, $\eta p2 = 0.12$. According to post-hoc comparisons, while happy primes ($M = 1679$, $SE = 73$) were recognized faster than sad ones ($M = 1760$, $SE = 80$), there was no significant difference between the neutral ($M = 1696$, $SE = 77$) primes and emotional primes (happy and sad).

The main effect of the target is also statistically significant, $F(1,26) = 4.54$, $p < .05$, $\eta p2 = 0.14$. Happy faces ($M = 1658$, $SE = 84$) were recognized faster than sad faces ($M = 1766$, $SE = 73$). None of the interaction effects were statistically significant except for the Group*Prime interaction effect, $F(2,52) = 6.23$, $p < .05$, $\eta p2 = 0.19$. According to the post-hoc comparisons of the Group*Prime interaction effect; happy, sad and neutral primes did not differ in reaction times in the healthy group ($p > .05$). In the group with ASD, happy ($M = 1949$, $SE = 110$) and neutral ($M = 1961$, $SE = 117$) primes were recognized faster than sad ($M = 2126$, $SE = 120$) primes ($p = .003$), while no significant difference was found between happy and neutral primes ($p = 1.00$).

The main effect of the group variable on the accuracy rate is statistically significant, $F(1, 26) = 16.21$, $p < .001$, $\eta p2 = 0.38$. However, the target, $F(1,26) = .58$, $p > .05$, $\eta p2 = 0.02$, and prime, $F(2,52) = .63$, $p > .05$, $\eta p2 = 0.02$, main effects were not statistically significant. None of the interaction effects are statistically significant.

DISCUSSION

In this study, the effects of different types of primes on the facial affective decision in children with ASD and healthy controls were investigated in two separate experiments using uni-modal (Experiment 1; emoji and face) and cross-modal (vocal and face) stimuli. The findings showed that children with ASD detected emotionally expressive human faces less quickly and accurately than healthy children. In the literature, this finding is repeatedly reproduced (6,43). Besides, the existence of problems with emotion recognition in autism was suggested by a meta-analysis that examined the findings of 48 distinct articles (44). Additionally, the impact of various presentation modalities on ASD's difficulty in recognizing emotions is frequently studied. Another recent meta-analysis that compiled studies on human faces, non-human faces (symbolic, animal, etc.), and emotion recognition from speech and music in ASD, showed a general difficulty in correct emotion recognition (45). It is known that this difficulty is not caused by participant characteristics such as the presentation time of the stimulus or IQ. When visual and auditory modalities are examined: general emotion disorders (emotion-general) in emotion recognition from the human face, emotion-specific impairments in speech prosody and emotion recognition from music, and no impairment in non-human faces were observed. Children with ASD are less likely than their healthy peers to identify the emotion in a human face reliably; however, they are more likely to identify the emotion on a dog's face. Since the target stimulus in the task (FADT) was the human face in both experiments, there may have been a difference between the groups. It is insufficient to explain the nature of facial emotion recognition disorder seen in ASD only with behavioral studies. Despite controlling for confounding factors such as age, intelligence, language skills, and co-psychiatric diagnosis, children with ASD performed less successfully in FADT than healthy children (Figure 4). This may be because of aspects of the ASD phenotype that relate to facial recognition.

According to a heuristic model presented by Schultz in 2005 (46), deficiencies in the amygdala and fusiform face region, which mediate the development of social skills in the early years of life, lead to ASD. The failure in FADT can be explained by less activation in the fusiform facial area (47,48) and lower amygdala activation in emotion recognition tasks in ASD (49,50). Additionally, electroencephalography (EEG) and eye-tracking (ET) investigations showed that individuals with ASD had abnormal gaze patterns and brain activity toward facial expressions (51).

In both experiments, children with ASD and healthy controls aged 6-12 years recognized happy human faces faster than sad ones. The fact that happy target faces were recognized faster than sad faces in FADT regardless of group and prime is consistent with the findings of studies using FADT (30,31). Leppänen and Hietanen (52) assert that happy facial expressions can be recognized more quickly than neutral and sad ones due to their perceptual advantages, including requiring more physical changes, being able to be recognized from a single symptom (such as teeth), and not necessarily requiring analysis of the entire face. Electrophysiology studies also supported the perceptual advantage of happy faces. Although faces with negative valence such as sad, fear, and anger were temporally processed in the early stage (enhanced N170), perceptual advantages of happy faces facilitate the categorization (reduced P3b) and decision (reduced slow positive wave) in the later stages (53). These findings are consistent with the hypothesis that faces with negative valance (angry, fearful) should be processed faster than happy expressions due to their adaptive characteristics. Accordingly, negative expression processing is prioritized in the early stage of recognition, while categorization is performed later, including allocating controlled attention resources and decision. Due to the similarity of the perceptual characteristics and emotional valences of the negative faces, discrimination in the categorization stage takes longer than happy faces. This result may be an advantage for happy faces about recognition.

In addition, FADT requires deciding whether the target face contains emotion ("YES/NO"). "YES" is the correct response for emotional faces and "NO" for non-emotional faces. However, it was observed that the participants tended to decide "YES" for happy and "NO" for sad. For this reason, the performance measurement that requires a YES/NO decision should not be preferred in emotion recognition studies using human faces to be conducted with children with ASD.

There are conflicting findings in the literature regarding the priming effect in children with ASD. While Kamio et al. (28) did not find an emotional priming effect in the group with ASD, Prehn-Kristensen et al. (54) found an effect using the eye-tracking approach. Given the abnormal gaze pattern associated with ASD, this effect is crucial for understanding how to interpret the result of the priming study. In our investigation, there was no evidence of a priming effect (prime*target interaction effect) in either group. This finding suggests that the participants may not have paid enough attention to the stimuli presented.

On the other hand, one of the findings that has to be discussed is that the main effect of the prime was not statistically significant in Experiment 1 and was statistically significant in Experiment 2. Emojis may not have been able to enough activate the emotion in Experiment 1 because they were symbolic faces. In addition, the emotions on primes were represented invariably by the same emoji in the trials, unlike vocal primes, which may have caused a decrease in the reaction via affective habituation (55,56,57). In Experiment 2, happy vocal primes may have attracted participants' attention more than sad vocals, causing participants to react more quickly. In other words, children in this age group benefited from natural human voices as cues, while they did not benefit from using unnatural symbolic stimuli (emojis).

Another important finding is that happy and neutral vocals are recognized faster than sad ones (Group*prime interaction effect) in children with ASD. Unlike healthy children, children with ASD were negatively affected by sad human voices. In other words, children with ASD benefited from happy and neutral human voices as cues but not happy symbolic visual stimuli (emojis). Wang and Tsao (19) revealed that children with HFA could

not recognize the happy and neutral prosody compared to healthy peers, but they had no difficulty recognizing the sad and angry prosody. Therefore, while children with ASD participating in this study may not have well recognized the happy and neutral prosody prime presented in Experiment 2, they may have been able to recognize the sad prosody correctly. If the negative effects of sad prosody found in our study related to its accurate recognition, it may imply that sad prosody disrupts FER rather than primes.

Limitations

Although the implementation of strict screening tests and diagnostic criteria for the participants increased the sample quality, the small sample size is a limitation of this study. Comorbid conditions such as intelligence, ADHD, anxiety, and learning disorder in ASD were checked with screening tests and semi-structured interviews. However, although children with ASD scored in line with the norms in the receptive language skill screened by PPVT in Experiment 1, there is a statistically significant difference between them and healthy children. In addition, comorbid conditions (anxiety, ADHD, etc.) screened with KSADS-PL provide information about the presence or absence of the disorder. It should be kept in mind that this semi-structured interview is not functional in determining the level of disorder.

Future goals and clinical applications

The unique contribution of our study is to draw attention to the advantage of happy (cheerful, soft, affectionate, warm) and neutral tones over sad tones when communicating with children with ASD in daily life. Additionally, it is advised that training and intervention programs for children with ASD employ happy and neutral tones as much as possible, considering the effects of sad vocals. Besides, sad prosody disadvantage may have resulted from the efforts of individuals with ASD to direct their attention to positive stimuli to cope with high anxiety. Although these children did not meet the diagnostic criteria for anxiety disorder in our study, they may have experienced more performance anxiety than healthy controls under experimental conditions due to the set shifting and self-regulation difficulties often seen in individuals with ASD. These relations should be further investigated in a larger sample in future studies.

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The intolerance of uncertainty scale for children: Reliability, validity and adaptation study

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SUMMARY

Objective: The aim of this study is to adapt the Intolerance of Uncertainty Scale for Children (IUSC) into Turkish.

Method: The sample of the study consists of 282 children aged 7-12 (M= 9.55, SD = 1.81) and their parents (M= 36.84, SD = 7.04). The Uncertainty Intolerance Scale (IUSC) for Children-Parent Form and Spence Anxiety Scale for Children-Parent (SASC-P) Form were used. The Cronbach Alpha internal consistency and two half test reliability coefficients were calculated for the reliability of the IUSC. Confirmatory Factor Analysis (CFA) was conducted for construct validity and the relationships between the IUSC and the SASC-Parent Form for content validity were evaluated.

Results: The CFA analyzes revealed that the 12-item short form of the IUSC had good fit values, and one-factor and two-factor structure were confirmed. As a result of the analyzes significant correlations were found between the total score of the child and parent forms of IUSC-12 and the sub-factors of the SASC-P form, separation anxiety, panic attack, social phobia, obsessive compulsive disorder and agoraphobia scores (child form respectively, r = .25, r = .37, r = .40, r = .25, r = .25; p < .001; parent form respectively, r = .26 , r = .32, r = .43, r = .31, r = .22; p < .001). The reliability analyzes revealed that Cronbach Alpha coefficient for the child form of the IUSC-12 short form was .91 and for the parent form .91. The two half-test Spearman-Brown correlation coefficients were found to be r = .89 for the child form and r = .90 for the parent.

Discussion: The results show that parent and child form of the IUSC-12 short form provide reliable and valid results in evaluating the intolerance of uncertainty levels of children in Turkey.

Key Words: Intolerance of uncertainty, anxiety, middle and late childhood

INTRODUCTION

Intolerance of uncertainty (IU) refers to a relatively broad concept covering cognitive, emotional and behavioral responses to uncertainty experienced in daily life (1). IU, which is considered as a strong instinct to think, feel and behave negatively when faced with uncertain situations, has been defined in the most general sense as "the inadequacy of an individual's tendency to withstand an undesirable internal emotional state triggered by the lack or absence of significant, basic or sufficient information perceived by the individual in the current situation" (2). According to this definition, IU is the high probability of fear of the unknown when faced with the unknown. While positive thoughts towards uncertainty are associated with low level intolerance of uncertainty, negative thoughts towards uncertainty are thought to be associated with high level intolerance of uncertainty (3).

In individuals with high IU, it is predicted that perceptions of uncertainty may increase avoidance (to reduce discomfort and exposure to uncertain situations), thus creating a vicious cycle of negative perceptions such as uncertainty, avoidance and increased negative emotions and anxiety symptoms (4). Similarly, IU is considered to be an important determinant of trait anxiety level and the tendency to evaluate uncertain scenarios negatively, and

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therefore, one of the important cognitive factors that play a role in the emergence of Generalized Anxiety Disorder (GAD) (5,6). In the literature, IU has been studied as a predictor of anxiety (7,8,9) and intolerance of uncertainty has been found to have significant relationships with social anxiety disorder (10,11), panic disorder (12) and Obsessive Compulsive Disorder (OCD) (13). Similarly, in studies conducted with children and adolescents, it has been reported that IU is one of the main variables predicting the level of excessive anxiety (14,15). In addition, it has been reported that therapies targeting the IU show successful results in the treatment of many types of anxiety disorders (16,17,17,18,19,20,21).

Based on the important role of IU in anxiety disorders, the prevalence of scales developed to assess CT has increased significantly in the literature. It is seen that the first scale developed on this subject was developed by Freeston and colleagues (1) under the name of Intolerance of Uncertainty Scale (IUS) to be used in adults and adapted into Turkish (22). Due to some inconsistencies in the factor structure of this 27-item scale (23), a 12-item shorter form scale was developed based on the IUS (24) and it was observed that this shorter form was also used in subsequent studies (25,26). In Turkey, it has been observed that the Turkish validity and reliability study of this short form, which is used in adults over the age of 16, has been conducted (27). It can be said that other scales other than these scales have been developed in the literature and these scales help to better understand the concept by trying to address the changes in the definition of IU (28,29,30). Among these scales, it is seen that the scale dealing with disorder-specific intolerance of uncertainty (30) has been adapted into Turkish (31).

It is seen that all of the aforementioned scales for the assessment of IU have been conducted on samples of adults or university students and allow the assessment of IU in adults. However, the role of IU in anxiety disorders that also occur in children and adolescents has attracted the attention of researchers. In this context, Comer et al. (32) developed the Intolerance of Uncertainty Scale for Children (IUSC) to contribute to studies with children and adolescents. It consists of 27 items and has two parallel forms: Child and Parent Forms. This scale is used in children and adolescents between the ages of 7-17. The fact that the IU scale for children and adolescents has been developed relatively recently compared to the adult scale reveals that IU research with children and adolescents has increased in recent years. In studies conducted in this context, it has been found that IU is associated with GAD (33,34,35,36), social phobia (37,38,39,40), separation anxiety disorder (39,40), panic disorder, obsessive-compulsive disorder, GAD symptoms and healthy anxiety (40). A meta-analysis of 31 different studies on the relationship between anxiety and IU in children and adolescents revealed a significant relationship between IU and anxiety in both clinical and non-clinical samples (41). However, the fact that the correlations between the child and parent forms of the scale were weak in some studies and that it showed favorable psychometric properties only for children older than 9 years of age has led to some controversies. For example, it has been reported that the 12-item short scale of the IUSC is more appropriate for this age group, as in adults, but the reading levels of the scale items are still high for children aged 7-12 years (42).

In studies conducted to test the construct validity of the scale, it was observed that there were differences between the 27-item long form and the 12-item short form in terms of factor structures. Exploratory Factor Analysis (EFA) for the 27-item long form used for adults revealed five-factor (1), four-factor (43) and two-factor (44) structures. Again, it is noteworthy that 2-factor structures were confirmed in studies using Confirmatory Factor Analysis (CFA) methods for the 12-item short version used for adults (24,45). In a review study in which factor analysis studies related to the IUS scale were reviewed, it was stated that the 12-item scale that emerged in the EFA studies of the scale was suitable for two factors and this was confirmed by CFA. It was suggested that these factors could represent "approach" and "avoidance" responses to uncertainty (46). When the studies examining the construct validity of the IUSC were examined, it was seen that one-factor (42) and two-factor (39,47) constructs were confirmed as a result of the analyses conducted using the CFA method.

It is noteworthy that all these studies conducted with children and adolescents were conducted abroad. As mentioned before, it is seen that all three scales used in Turkey to measure IU are for adults. Therefore, it is seen that there is no existing measurement tool in Turkey for a sample other than adults, namely children and adolescents. Some social events (e.g., economic fluctuations, natural disasters, terrorist incidents) are also reported to have an impact on individuals' uncertainty levels (48). In this context, considering that such events are frequently experienced in Turkey due to its location and that we as a society are often faced with uncertain situations, it is thought that the level of tolerance for uncertainty in society may decrease. It is inevitable that children and adolescents, as well as adults, experience negative emotions caused by uncertainty. Therefore, the lack of a scale evaluating IU in children and adolescents in Turkey is thought to be a deficiency. Therefore, the main purpose of this study is to adapt The Intolerance of Uncertainty for Children (32) developed by Comer et al.

METHOD

Sample

The sample consisted of 282 children between the ages of 7 and 12 (mean = 9.55, SD = 1.81) and their parents between the ages of 20 and 60 (mean = 36.84, SD = 7.04). Of the children, 149 were female (52.8%) and 133 were male (47.2%). Of the parents of the children, 254 were female (90.1%) and 28 were male (9.9%). Detailed information including parents' education levels, children's grade and age levels are presented in Table 1.

Table 1. Characteristics of the Sample Group

Child Class	*n*	%	Child Age	*n*	%
Class 1	45	16.0	7	51	18.1
Class 2	42	14.9	8	52	18.4
Class 3	46	16.3	9	34	12.1
Class 4	26	9.2	10	37	13.1
Class 5	38	13.5	11	51	18.1
Class 6	52	18.4	12	57	20.2
Class 7	24	8.5			
Class 8	9	3.2			
Total	282	100	Total	282	100
Parent Education Level		*n*	%		
Primary School		34	12.1		
Middle School		16	5.7		
High School		81	28.7		
Licence		130	46.1		
Postgraduate		21	7.4		
Total		282	100		

Data Collection Tools

Child Information Form: This is an information form that includes comprehensive information on children's developmental history, social-psychological processes, information on their school success and demographic variables. It is an information form filled out by the parents/caregivers of the children and includes optional, fill-in-the-blank and open-ended questions.

Intolerance of Uncertainty Scale for Children (IUSC): Since there is no scale developed in the Turkish sample or adapted to the Turkish sample to measure the intolerance of uncertainty variable in children, 'The Intolerance of Uncertainty Scale for Children' developed by Comer et al. (32) will be adapted and used in the Turkish sample. The scale consists of 27 5-point Likert-type items and has two separate forms as parent and child form. It was developed for children between the ages of 7-17. The scale has demonstrated acceptable levels of sensitivity and specificity between anxiety disordered and control groups at cut-off scores of 50-54 and 52-55 for the child and parent versions, respectively (73% correctly identifying anxiety disorder; 78% identifying those without disorder). In addition, the internal consistency coefficient Cronbach's alpha was found to be .96 for the parent form and .92 for the child form (32). The internal consistency coefficients of the scales in this study are presented in the findings section.

Spence Anxiety Scale for Children (Parent Report): In order to measure another variable, anxiety, the Spence Anxiety Scale for Children (SASC)-Parent Form (50), which was adapted to Turkish culture by Orbay and Ayvaşık (49), will be used. The 38-item scale was adapted by studying mothers with children aged 7-12 years. The Cronbach's alpha value of the scale was reported as .88 and the two-half reliability was reported as .79 (49). In this study, the Cronbach alpha value of the scale was found to be .90.

Procedure

For the adaptation of the IUSC into Turkish and the validity and reliability studies, J. S. Comer, one

of the developers of the scale, was first contacted via e-mail and the necessary permissions were obtained. Back translation method was used to ensure the linguistic equivalence of the scale. The items of the scale were independently translated into Turkish by two linguistics experts. Then, the most appropriate one of these two translations was selected by the authors and the Turkish form of the scale was created. Afterwards, the Turkish form was translated into English by 2 experts independent of the translation and evaluation team, and the language validity was decided to be appropriate after the relevant controls were made, and the final forms of the scale (child and parent) were created. After the translation process was completed, permission was obtained from the Ethics Committee of Ankara Medipol University (Decision date: 23.01.2021, decision No: 001) and the data collection process started. Parents were reached via an internet-based platform (Google docs) and the scales were presented together with the informed consent form and demographic information form. In the informed consent form, parents were informed about the study, confidentiality conditions, possible risks, etc. and it was stated that they could leave the study at any time. After the parents filled out the form, the necessary instructions were given to the children to fill out the IUSC-Child form. The participants read the consent form, which included information about the issues mentioned, and their consent was considered to have been obtained when they clicked the "I Agree to Participate in the Study" button. After the relevant data were collected, the analysis process started.

Statistical Analysis

In line with the purpose of the study, criterion-dependent validity and confirmatory factor analysis methods were used in the validity analyses of the parent and child forms of the IUSC. For the reliability analysis of the scale, internal consistency coefficients were calculated and two-half test reliabilities were examined.

In order to test the factor structure of the IUSC, several CFA models were tested separately for both forms. These models were based on previous studies on the long and short forms of the scale. In this context, single factor, related two, four and five factor models were tested for the 27-item long form (24,43,44,45). On the other hand, for the short form consisting of 12 items, one-factor and related two-factor models were tested (39,42,47). In all confirmatory factor analyses, the AMOS (Analysis of Moment Structures; Version 21) statistical package program was used and these analyses were conducted using the maximum likelihood estimation method and covariance matrices. In CFA studies, the fit index values used to determine how well the tested or proposed models fit the data are as follows: The ratio of the chi-square value to the degrees of freedom (x^2/df) should be less than 5; CFI (Comparative Fit Index), GFI (Goodness of Fit Index) and RMSEA (Root Mean Square Error of Approximation) and SRMR (Standardized Root Mean Square Residual) values should be .08 or less (51). In addition, the BIC (Bayesian Information Criteria) value was calculated as another fit index criterion. According to this criterion, the model with the lowest BIC value is accepted as the best-fitting model (52).

RESULTS

Validity

Criterion-dependent validity method was used to test the construct validity of the IUSC. Within the scope of construct validity, the relationships between the scores obtained from the IUSC and the scores of the SASC-Parent Form were examined. In this context, Pearson Correlation Coefficients were calculated and compared and the related findings are presented in Table 2. As a result of the findings obtained, the correlation coefficients between the total scores of the parent and child forms of the IUSC and the sub-factors of the SASC-Parent Form were significant and their values ranged between .22 and .60.

Factor Analysis Findings

Before the factor analysis of the IUSC, the suitability of the data for the analysis was examined through Kaiser-Meyer-Olkin (KMO) coefficient and Barlett's test of sphericity. As a result of the analyses conducted separately for the parent and

Table 2. Pearson correlation coefficients between IUSC-Parent and Child Forms and SASC-Parent Form subtest factors

Variables	Mean	SS	1	2	3	4	5	6	7	8	9	10	11
IUSC-Parent	70.19 (30.86)	21.57 (10.16)	-(.97**)	.60** (.54**)	.93**	.52**	.55**	.51**	.26** (.26**)	.33** (.32**)	.45** (.43**)	.31** (.31**)	.22** (.22**)
IUSC-Child	65.67 (31.08)	20.96 (9.93)	(.26**)	- (.96**)	.52**	.60**	.93**	.90**	.28** (.25**)	.41** (.37**)	.44** (.40**)	.28** (.25**)	.30** (.25**)
IUSC-Parent-Forward	18.57	5.83			-	.84**	.48**	.46**	.24**	.29**	.42**	.32**	.21**
IUSC-Parent Inhibitor	12.51	4.51				-	.57**	.50**	.25**	.33**	.40**	.27**	.21**
IUSC-Child Forward	19.22	6.06					-	.81**	.21**	.36**	.36**	.26**	.25**
IUSC-Child Inhibitor	11.63	4.62						-	.26**	.35**	.40**	.23**	.23**
SASC-Seperation anxiety	16.88	4.65							-	.40**	.54**	.40**	.55**
SASC-Panic attack	11.94	3.24								-	.54**	.67**	.54**
SASC-Social Phobia	17.96	4.34									-	.48**	.40**
SASC-OCD	8.49	2.69										-	.54**
SASC-Agoraphobia	8.56	2.39											-

**P< .01 IUSC: Intolerance of Uncertainty Scale for Children, SASC: Spence Anxiety Scale for Children (Parent) OCD: Obsessive Compulsive Disorder
Note: The values in parentheses are the correlation values of the total score of the 12-item short form.

child forms, the KMO coefficient for the IUSC - Parent form was .94 and the x^2 value of Barlett's Test of Sphericity was 5116.83 (SD= 351, p = .000), while the KMO coefficient for the CBCL-Child form was .95 and the x^2 value of Barlett's Test of Sphericity was 9047.330 (SD= 351, p =.000). These values indicate that the data for both forms were normally distributed and thus suitable for factor analysis. In order to test the factor structure of the IUSC, six CFAs were conducted separately for the 27 and 12-item forms of both parent and child reports. While constructing these models, the models previously tested in the literature were used.

CFA Findings of the Parent Form

For the 27-item IUSC parent form, CFA findings revealed that one-factor, two-factor, four-factor, and five-factor models did not have adequate fit (Table 3).

CFA findings for the 12-item IUSC parent form revealed that one-factor [$x^2(54) = 248.707$, $x^2/df = 4.61$, CFI = .88, GFI = .87, RMSEA = .11; SRMR = .06, BIC = 384. 113] and two-factor [x^2 (53)= 247.065, $x^2/df = 4.66$, CFI = .88, GFI = .87, RMSEA = .11; SRMR = .06, BIC = 388.112] models did not have adequate fit. On the other hand, considering that these two models could be further improved, the error indices of the items

Table 3. Fit Index Values for the Models Tested

Models	x^2/df	CFI	GFI	RMSEA	SRMR	BIC
Parent form						
27 items single factor	4.32	.78	.70	.11	.07	1703.665
27 items two factors	4.32	.78	.70	.11	.07	1705.083
27 items four factors	4.22	.80	.73	.11	.07	1690.304
27 items five factors	4.83	.76	.71	.12	.14	1878.287
12 items single factor	4.61	.88	.87	.11	.06	384.113
12 items single factor modified	2.82	.95	.93	.08	.04	304.461
12 items two factors	4.66	.88	.87	.11	.06	388.112
12 items two factors modified	2.92	.95	.93	.08	.04	312.169
Child form						
27 items single factor	3.70	.80	.74	.10	.07	1502.332
27 items two factors	3.68	.80	.74	.10	.07	1311.017
27 items four factors	3.37	.83	.76	.10	.06	1426.605
27 items five factors	3.97	.79	.75	.10	.13	1608.968
12 items single factor	3.27	.92	.91	.07	.05	312.044
12 items single factor modified	2.48	.95	.93	.07	.04	278.991
12 items two factors	3.24	.92	.91	.09	.05	312.716
12 items two factors modified	2.47	.95	.93	.07	.04	281.501

CFI: Comparative Fit Index, GFI: Goodness of Fit Index, RMSEA: Root Mean Square Error of Approximation, SRMR: Standardized Root Mean Square Residual, BIC: Bayesian Information Criteria

Table 4. Standardized factor loadings and standard errors for tested models

		Child form N= 282		Parent form N=282	
IUSC factors	Items	Factor loading	SH	Factor loading	SH
Forward	7	0.58(0.60)	0.070(0.069)	0.56(0.55)	0.071(0.072)
	8	0.65(0.72)	0.062(0.061)	0.64(0.64)	0.065(0.065)
	10	0.58(0.51)	0.071(0.070)	0.55(0.57)	0.066(0.065)
	11	0.70(0.69)	0.063(0.062)	0.68(0.69)	0.066(0.066)
	18	0.65(0.69)	0.075(0.075)	0.63(0.65)	0.063(0.063)
	19	0.68(0.61)	0.069(0.069)	0.71(0.66)	0.061(0.062)
	21	0.71(0.61)	0.066(0.065)	0.68(0.71)	0.057(0.057)
Inhibitor	9	0.74(0.75)	0.061(0.060)	0.77(0.78)	0.060(0.061)
	12	0.66(0.80)	0.058(0.058)	0.66(0.63)	0.060(0.061)
	15	0.75(0.70)	0.061(0.061)	0.76(0.77)	0.061(0.061)
	20	0.76(0.77)	0.062(0.062)	0.76(0.80)	0.059(0.058)
	25	0.64(0.68)	0.064(0.064)	0.63(0.64)	0.065(0.065)

IUSC: Intolerance of Uncertainty Scale for Children,
Note: The values in parentheses are the values of the single-factor model.

predicted to provide a high change in the x^2 score were correlated. Accordingly, when the six highest error variances as a result of the correction indices (modification indices) suggested after the analysis for the one-factor model were associated respectively (items with associated error variance; m7-m10, m7-m8, m11-m12, m12-m19, m21-m25, m9-m25), it was seen that the changes in the x^2 value were significant, the final model was better and had acceptable values in terms of fit indices [$x^2(48)$= 135. 204, x^2/df = 2.82, CFI = .95, GFI = .93, RMSEA = .08; SRMR = .04, BIC = 304.461]. Similarly, when six error variances were associated for the two-factor model of the 12-item IUSC Parent form respectively (items with associated error variance; m7-m10, m7-m8, m11-m12, m10-m18, m21-m25, m9-m19), it was observed that the changes in x^2 values were significant, the final model was better and had acceptable values in terms of fit indices [$x^2(47)$= 137. 270, x^2/df = 2.92, CFI = .95, GFI = .93, RMSEA = .08; SRMR = .04, BIC = 312.169]. In this 12-item form, one-factor and two-factor models were compared with the chi-square difference test and it was found that the models compared did not differ significantly from each other in terms of fit ($p > .05$ for $\Delta x^2(1)$ = 2.066). All items loaded on the factors were found to be significant (Table 4).

CFA Findings of the Child Form

The 27-item CFA results for the child form of the IUSC revealed that the one-factor, two-factor, four-factor and five-factor models did not have adequate fit (Table 3).

The CFA findings for the 12-item child version of the 12-item IUSC showed a one-factor [x^2 (54) = 176.763807, x^2/df = 3.27, CFI = .92, GFI = .91, RMSEA = .07; SRMR = .05, BIC = 312. 044] and two-factor [x^2 (53)= 171.668, x^2/df = 3.24, CFI = .92, GFI = .91, RMSEA = .09; SRMR = .05, BIC = 312.716] models had an acceptable fit. Considering that these two models obtained in the child form as well as in the parent form could be further improved, the error indices of the items predicted to provide a high change in the x^2 score were correlated. Accordingly, when the three highest error variances as a result of the correction indices (modification indices) suggested after the analysis for the one-factor model were associated respectively (items with associated error variance; m9-m25, m19-m21, m9-m15), it was seen that the changes in the x^2 value were significant, the final model was better and had acceptable values in terms of fit indices [x^2 (51)= 126. 664, x^2/df = 2.48, CFI = .95, GFI = .93, RMSEA = .07; SRMR = .04, BIC = 278.991]. Similarly, when the three error variances were associated for the two-factor model of the 12-item Child version of the 12-item IUSC (items with associated error variance; m9-m25, m19-m21, m10-m12), it was observed that the changes in the x^2 values were significant, the final model was better and had acceptable values in terms of fit indices [x^2 (47)= 123. 527, x^2/df = 2.47, CFI = .95, GFI = .93, RMSEA = .07; SRMR = .04, BIC = 281.501]. In this 12-item form, one-factor and two-factor models were compared with the chi-square difference test and it was found that the models compared did not differ significantly from each other in terms of fit ($p > .05$ for $\Delta x^2(1)$ = 3.137). All items loaded on the factors were also

found to be significant (Table 4).

As a result, it was found that the 12-item short form had better fit indices than the long form in both parent and child forms and that there were no significant differences between single-factor and two-factor models in both forms (Table 3).

Reliability

Cronbach's alpha internal consistency coefficient and two-half test reliability coefficient were used to evaluate the reliability of the parent and child forms of the IUSC. The 27-item internal consistency coefficient for the parent form of the IUSC was .96 and the internal consistency coefficient for the child form of the IUSC was .95. When the two-half test reliabilities were evaluated, the reliability coefficient of the scale was .90 for the parent form and .92 for the child form. The internal consistency coefficient for the parent form of the IUSC-12 was .91 and for the child form of the IUSC-12 was .91. When the two-half test reliabilities were evaluated, the reliability coefficient of the scale was .90 for the parent form of IUSC-12 and .89 for the child form of IUSC-12.

DISCUSSION

It is important to use a valid scale in the evaluation of IU, which is an important factor that is studied in the evaluation of anxiety disorders and sometimes in the intervention programs of anxiety disorders. Although adaptation studies have been conducted in Turkey (22,27), the lack of such a scale in children and adolescents has been considered as a deficiency. Therefore, in this study, the adaptation of the IUSC, which is used to assess the IU levels of children and adolescents, was conducted in the Turkish sample. As a result of the reliability and validity analyses conducted in this context, it was found that the IUSC is a reliable and valid scale for use with children and adolescents in the Turkish sample.

Factor analyses were conducted separately on both parent and child forms of the scale to assess the construct validity of the IUSC. Similarly, considering the findings in the literature, CFA analyses were conducted on the 27-item long form and the 12-item short form. The analyses revealed that the 12-item short form had better fit index values in both parent and child forms (Table 2). When previous studies conducted with the IU scales were examined, it was reported that the 12-item short form (39,42,47) also yielded valid and reliable results in both adult (23) and child forms. In this study, the low concordance index scores of the form consisting of 27 items were consistent with the literature. As previously mentioned, due to some inconsistencies in the factor structure of the first 27-item IUS developed by Freeston et al. (1) (46), Carleton et al. (24) developed a 12-item shorter form scale based on the IUS and it was observed that this shorter form was started to be used in adults in subsequent studies (25,26). Similarly, it has been observed that the 12-item short form of the scales developed to assess IU in children (IUSC-12) yielded more valid results (39,42,47).

When the studies examining the construct validity of the IUSC were examined, it was seen that one-factor (42) and two-factor (39, 47) constructs were confirmed as a result of the analyses conducted using the CFA method. In this study, consistent with the aforementioned findings, it was found that the single-factor and two-factor structure of the IUSC-12 was confirmed in both child and parent forms (Table 2). In line with the findings, the validity of the one-factor model reveals that evaluations over the total raw score will give an idea about the level of intolerance of uncertainty in children. When the studies on the two factors of the IUS in both adult and child forms are examined, it is seen that these two factors are considered as "prospective" IU and "inhibitory" IU (24,26,39,46,53). In this study, the first factor, which included prospective items (m7, m8, m10, m11, m18, m19, m21) related to the beliefs that future events should be predictable and therefore uncertainty about the future is upsetting or disappointing, was named as "prospective/prospective" IU in parallel with the literature (Sample item 7: "Unexpected events upset me greatly"). This future-oriented factor has been reported to be associated with anxiety, GAD and OCD (26,39,53). The second factor, which includes items related to the present (m9, m12, m15, m20, m25) and is mostly discussed in the context of

uncertainty negatively affecting one's performance and including restrictive or inhibitory features, was named as "inhibitory" IU in line with the literature (Example item 15: "I cannot work very well when I am not sure about something"). The second factor, which is present-focused, has been reported to be mostly associated with disorders such as social anxiety (11), panic (24) and depression (20).

In the present study, in the evaluations conducted within the scope of content validity of the IUSC, it was observed that the relationships (r = .22 to .60) between the total scores of the parent and child forms of the IUSC-27 and IUSC-12 and all sub-factors of the SASC-Parent Form were significant. The relationships between the prospective and inhibitory sub-dimensions of the parent form of the IUSC-12 and the separation anxiety, panic attacks, social phobia, obsessive-compulsive disorder and agoraphobia sub-dimensions of the SASC-Parent Form (r = .21 to .42) were also significant. Similarly, the prospective and inhibitory sub-dimensions of the child form of the IUSC-12 were found to have significant relationships (r = .21 to .40) with all sub-dimensions of the SASC-Parent Form (Table 2). However, the coefficients of these relationships were found to be relatively low and moderate. In particular, the highest correlation coefficients in both parent and child forms were observed in the relationships with social phobia, panic disorder and obsessive-compulsive disorder, respectively. In the context of "prospective" and "inhibitory", which are the sub-dimensions of the IUSC-12, it was observed that no differentiation emerged according to the sub-factors of the SASC-Parent Form. In other words, both prospective and inhibitory sub-dimensions were found to have higher correlation coefficients with social phobia, panic disorder and obsessive-compulsive disorder than the other sub-dimensions of the SASC-Parent Form. Although some studies in the literature have reported that the sub-dimensions of the IUSC-12 are associated with different disorders (11, 28, 39), there are also studies with similar results to the findings of this study (32, 47). As a matter of fact, in the study of Comer et al. (32), it was found that the scores of the child form of the IUSC were most highly associated with physical symptoms, social anxiety, separation/panic and harm avoidance scales, respectively. Similarly, Zemestani et al. (47) found that the scores of the IUSC-child form were highly correlated with GAD, social phobia, panic disorder and OCD, respectively. All findings suggest that the content validity of the Turkish version of the IUSC-12 is supported in assessing anxiety and related problems in addition to assessing IU in children.

When the compatibility of the child and parent forms of the IUSC was examined, it was found that the correlation coefficient was at average values (long form r = .60; short form r = 54) in both the short and long forms over the total scores, unlike previous studies. When the studies in the literature are examined, it is seen that parent-child adjustment was found to be poor in many studies (32,42,47,54). Researchers have reported that a possible reason for this may be that some features of IU may not be observable by parents and that children may be in a better position to provide information about their own IU (32). In this study, it was found that parent-child adjustment was at an average level at the level of sub-factors of the IUSC-12. Especially the agreement in the "inhibitory" sub-dimension was found to be better than the "prospective" sub-dimension. This finding was consistent with previous studies reporting that parent-child adjustment is likely to be higher on observable symptoms because the "inhibitory" subscale refers to present-oriented symptoms and the "prospective" subscale refers to more future-oriented and abstract symptoms (47,54). In conclusion, both forms of the IUSC analyzed in this study provide consistent information on parents' and children's assessment of IU.

As a result of the evaluations made within the scope of the reliability of the IUSC, it was observed that the internal consistency coefficients were quite high in all versions (long and short) in both child (long form α = .95; short form α = .89) and parent (long form α = .96; short form α = .90) forms. Similarly, when the two-half test reliabilities were evaluated, it was found that the coefficients of both parent (α = .90) and child forms (α = .92) in the long version and parent (α = .91) and child (α = .91) forms in the short version were high. These findings reveal that the reliability of the IUSC is consistent with previous studies (32,39,42,47). All these findings reveal that the reliability of the

IUSC-12 is also high.

Considering the findings in the literature that IU is considered as an important transdiagnostic factor not only in anxiety disorders but also in other internalizing disorders (18,30,41,36), it is predicted that evaluations made on both the total score and the two factors of the IUSC-12 will provide useful information about the IU levels of children and adolescents with internalizing problems. Therefore, it can be said that researchers who want to use this scale in Turkey can make evaluations on both scores according to their own study protocols. In addition, it has been reported that approaches that reduce IU in intervention programs for anxiety disorders yield successful results (16,21). This suggests that assessing IU in children and adolescents may also contribute to the intervention process. However, it has also been reported that the 12-item short scale of the IUSC is suitable for children aged 7-12 years, but the scale items are too high for the reading levels of children in this age group (42). Similarly, although the present study revealed a moderate level of agreement in parent-child reports, it should not be ignored that studies in the literature have also shown poor agreement between parent-child reports of IUSC. Therefore, it should be kept in mind that the use of clinical observation and other behavioral assessment tools (including teacher and parent observations) in addition to self-report scales such as the IUSC in the process of evaluating IU in children will yield more useful results.

This study has a limitation in terms of its findings, primarily because it was conducted with a non-clinical sample. In other words, since data were collected from children without any anxiety disorder and other psychiatric diagnoses, generalizability to clinical samples will be limited. However, it should be emphasized that the period in which the study data were collected also has its own characteristics. The period in which the study data were collected coincided with the COVID-19 pandemic period, which affected Turkey as well as the rest of the world and had various restrictions. As a result of this, it is seen that the mean total scores of the parent and child forms of the IUSC were much higher compared to previous studies (32,39,42,47). Considering the finding that there was an acceptable level of sensitivity and specificity between the anxiety disordered and control groups (73% correctly identifying anxiety disorder; 78% identifying those without disorder) at cut-off scores of 50-54 and 52-55 for the child and parent versions, respectively, in the original form of the scale (32), it was thought that the intense uncertainties during the pandemic period were the possible reason for the high IU in the data collected in Turkey in this study. The fact that this situation emerged in both parent and child forms reveals that the uncertainty experienced during the COVID-19 pandemic reveals that IU is experienced intensely in children. As a result, the findings of this study are thought to contribute to the literature in terms of showing that IU also increases during periods of such uncertainties. Considering that IU is considered as a transdiagnostic factor in the context of its relationship with many internalizing disorders (18,30,36,41), it is thought that IU should also be considered in the increase of internalizing disorders in children during and after the pandemic process. The fact that the majority of the sample consisted of mothers should not be ignored when filling out the parent form. Considering the fact that mothers are generally responsible for the care of children in our country, it is thought that this limitation can be tolerated. Finally, it is thought that evaluating IU in future studies in both clinical and non-clinical samples and in a period when uncertainties are not common in the society will reveal more comprehensive results.

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Readability levels of package leaflets of psychotropic drugs

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SUMMARY

Objective: The readability of a text can be measured objectively using a series of mathematical formulas. Patients' proper understanding of a drug's effects and side effects is essential for treatment compliance in psychiatry. This study aimed to measure the readability level of the package leaflets of psychotropic drugs currently used in Turkey and to determine at what average age and education level were appropriate.

Method: Four main psychotropic drug groups, which are thought to be used more frequently in adult psychiatry, were included in this study. The most recent package leaflets of the drugs in these groups were obtained from the official websites of the Ministry of Health, the Turkish Medicines and Medical Devices Agency (https://www.titck.gov.tr/kubkt) and the relevant companies in the market, and their readability level was determined. The formulas developed by Ateşman and Bezirci-Yılmaz were used to evaluate readability levels in this study.

Results: The average Ateşman readability points were determined to be 48.2. From this, it was understood that an education at the level of the 13th-15th grade was necessary for the readability of the package leaflets. The average Bezirci-Yilmaz readability points were determined to be 13.2, indicating that an education at the level of 13th grade, or further education, was necessary for the readability of the package leaflets.

Discussion: The level of education required for readability of the psychotropic drug package leaflets was seen to be extremely high when the average level of education in Turkey was considered. Improving package leaflets' readability can reduce patients' concerns about psychotropic drugs by facilitating their understanding of the treatment. It can increase treatment compliance, thereby helping the recovery of mental health.

Key Words: Psychotropic drugs, package leaflet, readability

INTRODUCTION

Readability first emerged as a concept in the USA at the beginning of the 19th century (1). Unlike legibility, which is determined by the stylistic features of a text such as a font and a page shape, readability is defined as whether the text can be easily followed and understood by the reader. The readability of a text can be measured objectively using a series of mathematical formulas based on the relationships between the number of syllables, words, and sentences (2). Many studies in literature have been conducted to determine the readability of scientific texts (3). Some of these studies have been about the readability of consent forms, drug package leaflets and patient information texts, which are essential for patients to have the correct information (4).

Package leaflets, in other words, instructions for use, are explanatory-informative texts (5). When a package leaflet is read without consulting a doctor, patients can change the drug dose themselves or stop taking it. Although package leaflets are used

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as a natural part of psychoeducation, some of the information in package leaflets (expected side-effects of the drug, manner of use, etc.) is known to be given to patients and their relatives in the form of a brochure in various clinics. Therefore, if package leaflets are written in simple and understandable language, they can potentially be used in the future as a part of psychoeducation, which is a crucial component of non-pharmacological treatments in the mental health field. In psychiatry, giving information about the drug's effects and side effects is vital in the content of psychoeducation interventions directed at the patient and their family (6). It should be said that even in psychotic disorders, now considered neurodevelopmental disorders and whose treatment is primarily mediated by drugs at every stage, the physician's duty does not end with the proper drug selection because non-compliance with drug therapy is a common problem in these patients. For example, previous studies in this field have reported that in schizophrenia and other psychotic disorders, non-compliance with antipsychotic drugs varies between 11% and 80% (7). In more comprehensive studies, the reasons for drug non-compliance, not only in psychotic disorders but also generally in patients with psychiatric disorders, are fears associated with drug use, side effects related to the drugs, problems experienced in adhering to the drug regimen, being insufficiently informed about the treatment or misinterpretation of the treatment, attitudes of the patient and those close to them about mental health diseases and drug treatment, and difficulties thought to be created in societal life by drug use (8).

In the "2016 Education at a Glance" report of the Organisation for Economic Co-Operation and Development (OECD), Turkey was ranked 35 out of the 38 OECD member countries (9). According to the research entitled "Average and Expected Years of Schooling by Provinces in Turkey", conducted in 2016 by TOBB Economics and Technology University Social Policies Application and Research Centre and Pamukkale University, the average years of education was determined as 6.51 for the population aged ≥25 years (10). When these data are considered, it can be considered even more important that public information texts in Turkey are written to be as readable as possible.

This study aimed to measure the readability level of psychotropic drug package leaflets currently used in Turkey and determine at what average age and educational level is appropriate.

METHODS

Ethical approval: Approval for this study was granted by the Non-Interventional Clinical Research Ethics Committee of Sivas Cumhuriyet University (decision no: 2022-02/01).

Information on readability formulas: Parameters such as the number of syllables, words, and sentences in the text play a role in the basis of the formulas providing objective measurement of readability which are accepted in the scientific world. More than two hundred formulas and thousands of studies have been published in this field, especially for English (1). Flesch developed the first essential readability formula accepted in literature in 1948 (11). In the following years, different indexes were developed, such as the Flesch-Kincaid, Klare, Dale Cale, Gunning Fog, and Fry (12) and McLaughlin (13) readability formulas. For the evaluation of readability levels in the current study, the formulas developed by Ateşman (14) and Bezirci-Yılmaz (2) were used.

Ateşman Readability Formula: Readability score = 198.825 – 40.175 x word length (total syllables / total words) – 2.610 x sentence length (total words / total sentences).

This formula, calculated as stated above, provides a readability score of 0-100 points. The scores are evaluated as text readability is "very difficult":1-29 points, "difficult":30-49 points, "moderately difficult":50-69 points, "easy":70-89 points, and "very easy":90-100 points (14). In other words, unlike the Bezirci-Yılmaz formula, the higher the score, the easier the readability. The points obtained can also be determined at what education level the text can be read (Table 1).

Bezirci–Yılmaz Readability Formula: Readability score = √AWC x [(S3 x 0.84) + (S4x1.5) + (S5x3.5) + (S6x26.25)].

Table 1. The education level corresponding to the points obtained with the Atesman readability formula

Points	Education level
90- 100	Readable by an individual with education in primary school 4th grade and below
80- 89	Readable by an individual with education in 5th or 6th grade
70- 79	Readable by an individual with education in 7th or 8th grade
60- 69	Readable by an individual with education in 9th or 10th grade
50- 59	Readable by an individual with education in 11th or 12th grade
40- 49	Readable by an individual with education in 13th -15th grade
30- 39	Readable by an individual with education at the undergraduate level
≤29	Readable by an individual with education at the postgraduate level

AWC: Average Word Count

H3: average number of 3-syllable words, H4: average number of 4-syllable words, H5: average number of 5-syllable words, H6: average number of 6-syllable words.

In the formula calculated as stated above, a readability score is obtained according to the number of words in sentences and syllables in words. Increased points in this formula indicate more difficult readability. In addition, it can be determined that the readability of a text examined according to this formula corresponds to which education level in Turkey (2) (Table 2).

Table 2. The education level corresponding to the class/points obtained with the Bezirci-Yilmaz readability formula

Grade	Education level
1- 8	Primary school
9- 12	Middle school (High school)
12- 16	Further education
16+	Academic level education

Drug groups and package leaflets: In all drug packaging, there is a package leaflet stating what the drug is, how it should be used, what should be considered before use, potential side effects, how it should be stored, and licence information. Package leaflets in Turkey are used in two ways, as brief product information and instructions for use. The brief product information represents the basis of the information given to healthcare professionals about how the medical product is to be used safely and effectively. The instructions for use are prepared for the patients. Therefore, all the package leaflets used in this study were examined based on the instructions for use.

Four main psychotropic drug groups, which are thought to be used more frequently in adult psychiatry, were included in this study. The most recent package leaflets of the drugs in these groups were accessed from the official websites of the Ministry of Health, Turkish Medicines and Medical Devices Agency (https://www.titck.gov.tr/kubkt) and the official websites of the relevant companies in the market (15,16). The readability level of all these package leaflets was determined. Different doses or forms (tablet, suspension, injection) of the same drug were examined as different package leaflets. In contrast, package leaflets with different numbers of tablets in the same form and dose would have the same readability, so only one was included in the study.

A total of 616 package leaflets were included in the study, separated into four groups of psychotropic drug groups antidepressants (n:176), antipsychotics (n:264), mood stabilizers (n:84), and anxiolytics and hypnotics (n:92).

The package leaflets were uploaded to the Microsoft Notepad program in an electronic medium. Before evaluation, the headings and the licence information were removed from the package leaflets to avoid these affecting the readability level. In addition to the formulas in the evaluations, the computer program produced by Bezirci-Yilmaz was used to calculate the average Bezirci-Yilmaz readability points and the average Ateşman readability points. The fractional points related to the education level were rounded to the nearest whole number.

RESULTS

The average Ateşman readability points were determined to be 48.2 (Table 3). From this, it was understood that an education at the level of the 13th-15th grade was necessary for the readability of the package leaflets (Table 1). The average Bezirci-

Table 3. Average readability points for the psychotropic drugs

Drug groups (n= 616)	Atesman average readability points	Bezirci- Yilmaz average readability points
Antidepressants (n= 176)	48.5	13.0
Antipsychotics (n= 264)	48.4	13.4
Mood stabilizers (n= 84)	46.8	13.5
Anxiolytics-Hypnotics (n= 92)	48.9	12.8
Total average readability level	48.2	13.2

n: Count of package leaflets

Yilmaz readability points were determined to be 13.2 (Table 3). From this, it was understood that an education at the level of 13th grade, or further education, was necessary for the readability of the package leaflets (Table 2). According to these findings, the results obtained with the two readability formulas were consistent with each other. The easiest readability of all the package leaflets was determined to be an anxiolytic-hypnotic with the highest point of 63.9 according to the Ateşman readability formula. An education level of 9th or 10th grade was necessary for this readability. The same package leaflet was determined with the lowest point of 7.3 in the Bezirci-Yilmaz readability formula. Thus, according to these formulas, it was understood that for the easiest readability of the psychotropic drug package leaflets examined in this study, education of at least seven years was required. The most difficult readability of the package leaflets was determined to be a depot antipsychotic drug with the lowest point of 39.1 according to the Ateşman readability formula, for which university-level education was required. The same package leaflet scored the highest point of 17.1 in the Bezirci-Yilmaz readability formula. Therefore, it was understood that the most difficult readability of the psychotropic drug package leaflets required an academic level of education. The average points of the psychotropic drug groups and the Ateşman and Bezirci-Yilmaz readability points are shown in Tables 3 and 4.

DISCUSSION

In medicine, informing patients correctly about drug treatment is a fundamental deontological principle regarding patient rights and proper treatment process management. This principle is regularly applied in clinical practice and is perhaps more important in mental health than in other medical specialities. Providing correct information in this field strengthens the therapeutic collaboration between patient and physician by establishing trust, which is the basis of the mental health of every individual. Moreover, it seriously affects the whole treatment process, especially in mental health disorders in which impaired treatment compliance can impair the patient's ability to evaluate reality.

There are few studies related to readability in the international literature on mental health. In a 2007 study by Christopher et al., which examined the readability of consent forms used in the mental health field to provide information, the general average readability points of the consent forms were reported to be at the level of 12-14.5 grades.

Table 4. Distribution of the package leaflets according to the Atesman and Bezirci-Yilmaz readability levels

	Primary school (1 -8) n (%)	Middle school (9 -12) n (%)	Further education (13 -15) n (%)	Academic (?16) n (%)
Atesman formula				
Antidepressants (n= 176)	0 (0)	63 (36)	113 (64)	0 (0)
Antipsychotics (n= 264)	0 (0)	86 (33)	172 (65)	6 (2)
Mood stabilizers (n= 84)	0 (0)	21 (25)	58 (69)	5 (6)
Anxiolytics-Hypnotics (n= 92)	0 (0)	22 (24)	70 (76)	0 (0)
Total (n=616)	0 (0)	192 (31)	413 (67)	11 (2)
Bezirci- Yilmaz formula				
Antidepressants (n= 176)	7 (4)	57 (32)	98 (56)	14 (8)
Antipsychotics (n= 264)	3 (1)	54 (21)	183 (69)	24 (9)
Mood stabilizers (n= 84)	2 (2)	19 (23)	54 (64)	9 (11)
Anxiolytics-Hypnotics (n= 92)	6 (6)	18 (20)	68 (74)	0 (0)
Total (n=616)	18 (3)	148(24)	403 (65)	47 (8)

The duration of the education is given as years.
n: Count of package leaflets.

In addition, studies have determined that as the risk level increased, so the average readability points increased, in other words, readability became more difficult. In a study approved by the Massachusetts Mental Health Department, in which approximately 35% of the participants had not attended high school, 37% had attended high school, and 28% had further education beyond 12th grade, it was stated that the readability of consent forms used to provide information was low. Thus it was emphasized that there was an incompatibility between the readability of the consent forms and the predicted education level of potential participants, and there was stated to be a great need for methods to reduce the complexity of the forms (17).

In 2011, Shiffman et al. conducted a study measuring what consumers understood after reading an antidepressant leaflet. Of the 52 participants, 45 were high school graduates, and 7 had less than high school graduates. It was found that the participants understood only 40% of the information that could be considered significant, and most of them needed help understanding the warnings and instructions about severe medical consequences in 24 minutes (18).

The average readability of smartphone applications used in mental health was determined by Robillard J.M. et al. in 2019 to be at the level of 13.8 grade (13.8 iOS, 13.7 Android) for privacy policies and 15.2 (15.5 iOS, 13.9 Android) for contract conditions. In other words, an education of approximately 14 years was necessary to read the text related to privacy policies, and an education of approximately 15 years to read the text related to the contract conditions. Therefore, it was emphasized that as most privacy policy and contract conditions texts were written at a reading level beyond high school, it would take more work for users to understand these legal documents fully. Previous studies in this field have also reported that the average readability level of privacy policies used in health applications is very much beyond the reading level of the typical user (19).

In a 2021 study by Jilka S. et al., the readability was investigated of a smartphone mental health application related to depression, and the readability of the application was determined to be consistent with the 8th grade reading level recommended by the FDA. However, the same study also stated that the National Adult Literacy Research had determined that approximately one in four adults in the USA could not read or understand written material above the level of 5th grade. It was also stated that approximately 15%, or 5.1 million adults in the United Kingdom, had a literacy level expected in a child aged 11 years or younger (20).

There are some recent studies in literature related to the use of Turkish language readability formulas in medical texts. In a 2021 study by Ay and Duranoğlu, the readability level of 80 eye drop package leaflets was evaluated, and the average readability was found to be at the level of 13 years of education (university-level). When the average education level in Turkey is considered, this was found to be very high (4).

In a 2011 study conducted by Tonbuloğlu in which a total of 780 pages of approximately 300 package leaflets, which predominantly contain words of French origin, were analyzed in terms of the terms used, the package leaflets were also analyzed phonetically, morphologically and semantically. As a result of the study, it was found that although some of the medical terms used in the package leaflets have meaningful equivalents in Turkish, more complex expressions were used. A comparative study was also carried out in the same study. It was comparatively demonstrated that in package leaflets published in France, French terms were predominantly used instead of Latin terms; almost no terms from foreign languages other than French were used. Simple sentence types were preferred in short and plain language, which made it easier for people outside the field to understand the package leaflets. The same study also considered officials' opinions from some well-known pharmaceutical companies in Turkey. One of the officials stated that they also had difficulty understanding the package leaflets of some drugs and that the subjects written in the package leaflets (even those intended for the general public) require a deep knowledge of medicine and pharmacy (21).

In our study, the most hard-to-read package leaflet to read was a depot (long-acting injectable) antipsychotic drug, which requires an undergraduate-level education according to the Ateşman readability formula and an academic level education according to the Bezirci-Yılmaz readability formula. Although there are debates about the extent to which depot antipsychotics are associated with fewer relapses and rehospitalizations, the most significant advantage of this medication over oral medication is that it facilitates adherence to medication intake. Treatment nonadherence is very common in patients with schizophrenia and is frequently the cause of relapse (22). Studies have emphasized that treatment nonadherence is also an essential problem in patients with bipolar affective disorder, and it is reported that treatment nonadherence is observed between 20-60% of the patients (23). Some systematic reviews have reported that second-generation long-acting antipsychotics, especially risperidone and aripiprazole LAI, may be a safe and effective alternative to oral drugs in treating bipolar disorder (24). Based on all this information, the readability of depot antipsychotics should be expected to be much easier since the patient groups in which these drugs are preferred are those with whom clinicians have the most difficulty regarding insight and treatment compliance. If patients, especially those with psychotic disorders and bipolar affective disorder, who have more difficulty in achieving insight and treatment adherence, can simply and accurately understand information such as what the medications prescribed to them are, how to use them, what should be considered before use, possible side effects and how they should be stored, this may have a positive impact on the patient-physician relationship.

When we look at the historical development of the patient-physician relationship, we see that the paternalistic understanding of medicine, which was dominant from Ancient Egypt, i.e. 4000 BC, until the Greek Enlightenment, i.e. 100 BC, has been replaced by egalitarian approaches that centre the patient today (25). Although psychotherapy is not performed in every clinical interview in psychiatry, it is evident that psychotherapeutic interventions, including psychoeducation under ideal conditions, have an essential place in treatment success. Whether this is from the dynamically oriented or cognitive-behavioural school, the existing literature and our clinical experiences show us that concepts such as therapeutic alliance and working alliance constitute the basis for the success of today's psychotherapies (26,27). On the other hand, as our study reveals, unlike the short product information prepared for healthcare professionals, the difficult readability of the package leaflets prepared for patients does not seem to be compatible with the nature of the egalitarian relationship between patient and physician.

According to the results of the current study obtained with both the Ateşman and the Bezirci-Yilmaz formulas, at least 7 years of education, and an average of 13 years, in other words, university-level, was determined to be necessary to be able to read the 616 package leaflets examined. When it is considered that the average level of education in Turkey is 6.5 years (10), it can be thought that it would be more appropriate for package leaflets to be written at a primary school level.

Strengths and limitations of the study

According to our literature review, our study is the first study in Turkey and in the international literature to evaluate all psychotropic drug package leaflets in four main groups such as antipsychotics, antidepressants, anxiolytics/hypnotics and mood stabilizers with readability formula.

However, there were also some limitations to this study. The formulas used for readability focus on quantitative aspects (such as the number of words, syllables, and sentences) rather than qualitative features, such as the meanings of words or sentences and their usability in that language. Therefore, a quantitative calculation alone cannot be expected to evaluate all the dimensions of readability of a text in that language. In addition to the formulas accepted in the literature for this purpose, a qualitative analysis by having patient populations read the relevant texts would enable a more comprehensive evaluation to be carried out. Finally, although a significant number of psychotropic drug package leaflets in a broad spectrum were examined in this study, there may have been a small

number of package leaflets that could not be accessed with an internet search.

In the literature, methods are also developed to overcome the difficulties experienced with the readability of package leaflets. In 2017, Segura-Bedmar et al. developed the EasyDPL (Easy Drug Package Leaflets) corpus to improve the readability of package leaflets written in Spanish. This corpus comprises 1400 adverse drug effects, their simplest synonyms, and 306 manually explained leaflets (28).

Improving package leaflets' readability can reduce patients' concerns about psychotropic drugs by facilitating their understanding of the treatment. It can increase treatment compliance, thereby helping the recovery of mental health. It would also decrease the legal problems that mental health providers may encounter because of misunderstandings by patients and their families and may reduce some repeated presentations of patients.

Although hard-to-read package leaflets prepared for patients are a general problem in many countries, there are methods developed to facilitate readability. Therefore, we think that the development and use of applications for both semantic and syntactic simplification of these texts is a necessity for public health.

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Peer support in mental health services: Familiar and brand new

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SUMMARY

In recent years, it is widely accepted that the experiences of individuals who benefit from mental health services are reflected in the treatment and rehabilitation process in the field of mental health. Transferring the experiences of individuals to the treatment process has put the concept of peer support at the forefront. Peer support means that individuals with personal experience in mental health use this experiential expertise to help other individuals with mental health problems during the recovery process. Peer support is a system that allows individuals with mental health problems to partner, feel understood by each other, and build emotional intimacy. It is known that peer support contributes in a positive direction to both those who provide peer support and those who benefit from this support Peer support is handled in a wide framework ranging from individual friendship relations to employment of support service providers in institutions. In many countries, peer support practices are used as a component of mental health services. It is recommended to use peer support during treatment throughout the world. This article discusses the birth, definition, types and contributions that the concept of peer support can make to the healing process.

Key Words: Peer support, mental health, social support, mental health services

INTRODUCTION

Peer support is a contemporary approach used in the provision of mental health services, especially in developed countries. The approach is based on individuals with mental health problems providing support to each other. Peer support emerged in the field of mental health in the 1970s and has been widely used in the last two decades. Peer support constitutes an important component of the treatment system. Since individuals with mental health problems often feel that they are not understood by others, peer support gains particular importance.

In general terms, peer support is defined as a process in which people who share common experiences and face similar difficulties come together as equals to give and receive help based on information coming through common experience (1). Peer support, which finds its equivalent in Turkish in the expression "He who falls from the roof knows the condition of the one who falls from the roof" (2), is a useful method used in many fields. In the field of mental health, the concept stands out especially in two aspects: (a) people who share similar experiences can share a common understanding about these experiences and help each other in this regard, and (b) they feel mutually understood (3).

Peer support is a system of giving and receiving help based on the basic principles of respect, shared responsibility and mutual agreement about what is helpful to them. Thus, it is not based on psychiatric models and diagnostic criteria, but is more about empathic understanding of another's situation through the shared experience of mental suffering. Individuals feel an emotional closeness to the other person by identifying with others they feel are similar to themselves. This closeness involves a deep, holistic understanding based on mutual expe-

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rience, where people can be with each other without the constraints of traditional (expert/patient) relationships (4).

Basset et al. (5) state the 12 principles of peer support as reciprocity, solidarity, synergy, building trust and sharing, comradeship, optimism, focusing on strengths and potential, equality and empowerment, being oneself, independence and reducing volatility. With these aspects, peer support is a unique experience for individuals with mental health problems. Unlike traditional treatment approaches that emphasize the symptoms and findings of individuals, it is an orientation that prioritizes the individual, takes into account their positive aspects, their ability to function effectively and supportively, allows the individual to recognize themselves, and focuses on strengths and recovery (6). The use of peer support in the field of mental health functions as a process of offering and receiving help based on shared understanding, respect and mutual empowerment among individuals with similar mental illness (4). In this article, what peer support is, its history, types and benefits will be discussed.

History of Peer Support

Peer support has an important history for individuals with mental health problems (7). Although it was officially included in community-based mental health services in the 1990s, as Shalaby and Agyapong (8) pointed out, the origin of peer support dates back even earlier than mental health hospitals. The first examples of peer support were found in France at the end of the eighteenth century in some practices under "moral treatment". The Lunatic Friends' Society, founded in England in the mid-nineteenth century, is known as the oldest peer support group in the field of mental health. It is known that some peer-led groups were established in Germany in the late nineteenth century and protested against involuntary hospitalization laws (8).

The concept of peer support came to public attention in 1969 and 1970s with the human rights movement of African Americans, women and homosexuals and individuals with mental health problems started to find each other (9). It was also influenced by the Independent Living (IL) movement of people with physical, sensory and cognitive disabilities (10).

In the nineteen seventies, especially with the closure of large mental hospitals, which were known as warehouse institutions, individuals with mental health problems started to live in the community, which brought many problems to the agenda. Due to lack of resources, there have been problems in providing social support to these individuals. Since the level of stigmatization of individuals with mental health problems was quite high, people did not want these individuals to live in their neighborhoods, towns or cities. Individuals with mental health problems who had been released from hospitals, i.e. "ex-patients", were seen as dangerous, unstable members of society.

The peer support movement was formed when "ex-patients" found each other, built relationships and started to support each other by sharing experiences. After finding each other, "ex-patients" started to raise their voices, voiced the mistreatment of individuals, human rights violations and advocated for individuals with mental health problems (9). Although the mental health world has been slow to adopt the idea of peer support, both in the community and in professional mental health settings, "ex-patients" have easily adapted to the philosophy of peers supporting each other.

Peer support emerged in a political context in response to negative experiences with mental health treatment and dissatisfaction with the boundaries of the "mentally ill" role (7). Peer support, commonly referred to as "self-help" in the nineteen nineteen seventies, was generally conducted in an informal and unstructured manner. Individuals met in informal settings such as apartments, church basements and libraries. Peer support groups rarely met in spaces connected to the mental health system (11).

In the nineteen eighties and nineties, independent, non-profit mental health organizations emerged (12). Many of these organizations began to offer more structured peer support services, often with

some government support. With government funding of peer support, the vision, principles and practices of peer support needed to be more clearly defined. Shery Mead has been a pioneer in this field by developing an approach called Intentional Peer Support (IPS), which she has been working on for over 20 years. Intentional Peer Support has evolved from informal peer support practices. However, unlike them, it is theoretically based, structured, has clear goals and is a guide for practitioners (13).

In the nineteen nineties, peer support found its place in traditional mental health treatment services under different names such as peerspecialist, mentor, peermentor, or supportspecialist, and found its place as a job or profession. Individuals in this job are defined as workers with a history of psychiatric disorders, working in paraprofessional roles in traditional mental health programs, and often performing the same tasks as non-peer staff. Peer support workers could serve as clerical staff or van drivers, or have undefined roles depending on the individual's ability or skill (7). These peer workers in traditional programs generally did not provide peer support and rarely received training on the principles and practices of peer support (14). They were generally expected to openly disclose their psychiatric background and be role models for the people they served. Relationships between peers were generally hierarchical, similar to professional-service user relationships within the mental health system (14, 15, 16).

Over the last two decades, the practice of peer support has become widespread around the world, with many people in recovery being hired to provide peer support more than ever before. The number of peer support staff employed is now estimated to be over ten thousand in the United States of America (USA) alone, and this number continues to grow at an astonishing rate despite the global recession and high unemployment rates (15). Today, the service system in continental Europe and the USA supports the engagement of 'expatients' in the treatment process, both through civil society and the public sector. Although there is less evidence on the use of peer support in low- and middle-income countries, there are several examples of countries where peer support programs are used (17). For example, Brain Gain projects in Uganda developed a peer support program serving urban and semi-urban communities (17, 18). In India, the Quality Rights Gujarat project funded by Grand Challenges Canada trained peer support workers as part of a broader package of mental health system reform aimed at improving compliance with the Convention on the Rights of Persons with Disabilities (17, 19).

The concept of peer support, which gained momentum with the human rights movement in the nineteen seventies, has gradually become an integral part of the treatment system, especially in developed countries. With the widespread acceptance of the recovery-oriented approach, peer support will find more place in the provision of mental health services in the coming years.

Types of Peer Support

The types of peer support range from informal support provided by acquaintances to structured or formally defined (formal) peer support in an institutional setting. However, one of the key factors determining whether a support offered is peer support or not is the principle of mutual benefit resulting from an equal and sharing relationship. Another key factor is the intention or plan to make some conscious preparation for peer support (Figure 1). At one end of the spectrum is 'informal peer support', where acquaintances recognize the similarity of their experiences with mental health problems and therefore listen and support each other. This kind of interaction is more than a typical friendship can be. At the other end of the spectrum is structured peer support, where peer support workers in a clinical setting connect with diagnosed individuals based on the similarity of their experiences and offer the opportunity for a supportive, empowering relationship (20).

Although peer support can be considered in a wide range of contexts as described in Figure 1, three main models are mentioned in the literature. The first model is informal and ad hoc support, which many service users consider as important as, or even more valuable than, support from health staff. The second is organized, but unpaid, peer support, often undertaken by volunteers acting as 'mentors'

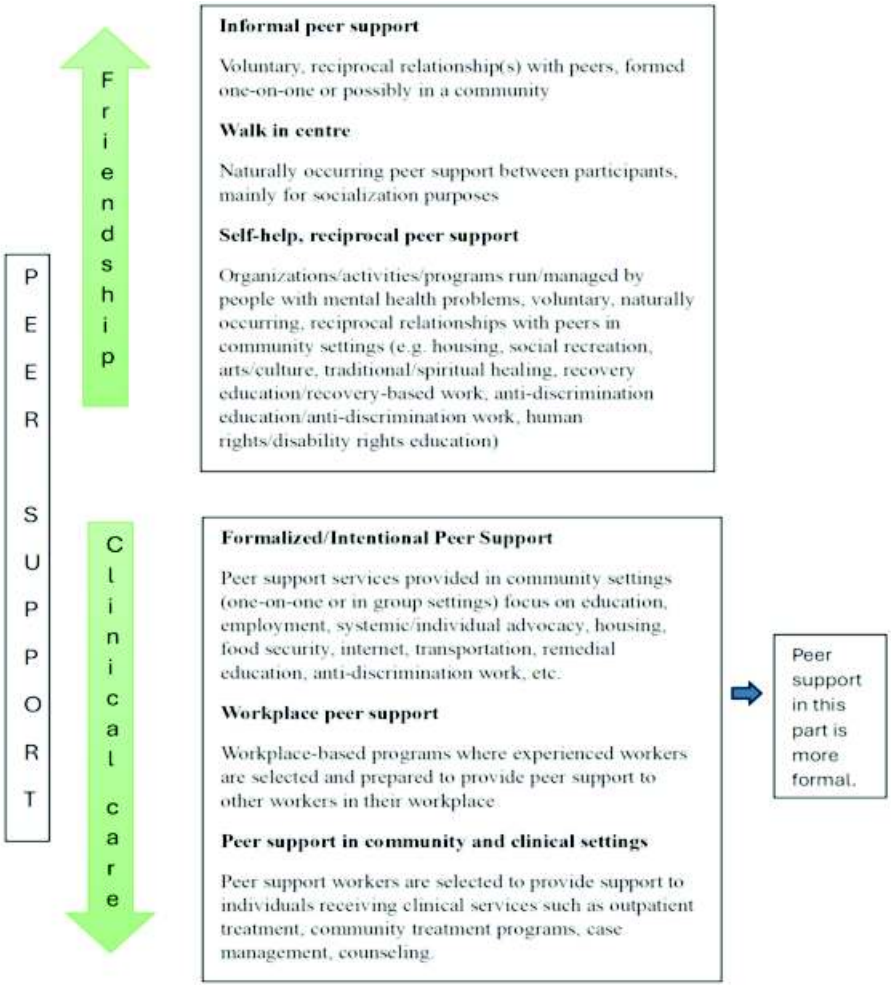

Figure 1. Types of peer support (Ref: 20, p.16)

or 'peer buddies'. The third is paid peer support offered as part of a structured team. The focus of these peers is on sharing their experiences to help each other, although in some cases they may be professionals (21).

Although peer support is offered in treatment settings and face-to-face, it has moved to new environments with the development of technology. Social media (22, 23), video games (24), asynchronous technologies (i.e., peers with technologies) (25), avatars (26) and chatbots (27) are examples of these new environments.

Social media represents a user-oriented environment where individuals with internet access via mobile devices or computers can have the opportunity to express themselves and connect to a larger online community (28). In this respect, social media is an environment where problems experienced in interpersonal relationships such as interpreting social cues or non-verbal communication experienced in face-to-face communication are less common, especially for individuals diagnosed with severe mental illness (29, 30). As a result, through social media, individuals diagnosed with severe mental illness had the opportunity to meet more with individuals who had similar problems with them, and they could feel that they belonged to a group.

Today, social media has increasingly become a platform for individuals diagnosed with severe mental illnesses such as schizophrenia, schizoaffective disorder or bipolar disorder to seek advice and support each other (8). It has been reported that popular social media tools such as YouTube help individuals diagnosed with a severe mental illness to feel less lonely, find hope, support each other, share personal experiences, and cope with daily life difficulties.

Video games, another technological method for providing peer support in the virtual environment, provide opportunities for interpersonal interactions by encouraging voice and text exchange between players in different geographical locations and time zones (24). Short message correspondence, chat programs such as Whatsapp, video conferences, computer programs such as CommonGround (25), and smartphone applications such as "PeerTECH" (31) have also provided important opportunities in peer support with different synchronous and asynchronous technology applications (31).

Virtual reality applications are also utilized in the provision of peer support. Virtual peer support can be particularly useful for individuals with limited mobility, limited access to mental health services or living in rural environments. Geographically isolated individuals with mental health problems have been able to share their experiences in a virtual environment and offer hope and support to each other (31). Today, computer programs using artificial intelligence are also used for peer support applications. Computer-generated text messages and avatars are used to provide artificial peer support (31). In the future, peer support and the use of technology will most likely be on the agenda more and technological applications will be utilized more frequently. However, the effects of technology use on individuals and the mental health system need to be scientifically proven through research.

In our country, there does not seem to be a peer support model that includes individuals with mental problems, except for alcoholics anonymous and family-to-family support model. (32, 33, 34). The practices in the clubhouses affiliated to the Federation of Schizophrenia Associations and Mavi At Kafe Culture-Life Environment can be accepted within the scope of peer support to different extents (35, 36). Alcoholics Anonymous, which was first established in the mid-1930s with the idea that individuals with alcohol problems could be helped by starting from the experiences of individuals who also had alcohol problems and by providing unity, was established and became widespread in Turkey in 1988. It is known that there are 28 Alcoholics Anonymous groups in Turkey, including more than one in cities such as Ankara, Istanbul, Izmir, Muğla and Bursa. Although it is the most well-known self-help group in the world with its positive effects, it can be said that the process of acceptance of Alcoholics Anonymous in Turkey was difficult and these difficulties continue today (34).

In the family-to-family support model, the aim is to train the families of individuals with mental problems by healthcare professionals and to ensure that families with similar problems support each other by training other family members (37). Studies have proven that the family-to-family support program reduces the care burden of the beneficiary families and is effective in developing coping and self-efficacy skills (32, 37). In this respect, it is thought that although this program addresses an important deficiency in the treatment system, it cannot be sufficient with the family dimension and that individuals with mental problems should also benefit from peer support. However, in the Mental Health Law planned to be enacted, peer support is only included under the title of protecting children and young people from addictions as "providing parent and peer education, strengthening personal and social skills, disseminating peer support and volunteering programs" (38). This suggests that peer support in the field of mental health is limited to the field of addiction. The use of different types of peer support systems in our country will make a significant contribution to the development of mental health services.

Contribution of Peer Support to Mental Health Services

Although peer support is offered in different types and with different structures, it provides significant benefits for individuals with mental health problems and the health system with the principles of mutual support and empowerment. Peer support provides a personal understanding of the frustrations that individuals with mental health problems experience with the mental health system and serves the healing process by making sense of what is happening and moving on, rather than identifying and eliminating symptoms. Both peer support workers and mental health service users feel empowered in their recovery journeys, have more

self-esteem and a more positive sense of identity; thus, they feel less stigmatized and more valuable, and tend to acquire more skills. Through this trusting relationship that offers friendship, empathy and empowerment, feelings of isolation and rejection are replaced by hope, a sense of usefulness and a belief in personal control (39).

Trachtenberg, Parsonage, Shepherd, and Boardman (40), in their study examining the relationship between the employment of peers and the use of beds in psychiatric hospitals, found that peer support workers reduced the length of hospitalization of the individuals they supported and led to financial savings for the health system well above the costs of additional wages. In another study (41) comparing peer-assisted treatment with usual treatment, it was reported that one-to-one peer support provided by trained peers and according to a defined role specification in addition to usual treatment for six months significantly increased the quality of life, social functioning and self-efficacy of individuals compared to usual treatment alone.

In a recent study comparing peer support and traditional clinical care in community-based inpatient mental health services, it was found that there was an improvement in disease symptoms and functionality as well as a decrease in negative symptoms (42). Again, a recent meta-analysis study revealed that peer support contributes to the recovery process of individuals with mental health problems; peer support is a potentially cost-effective and relatively easy to implement intervention and can complement the professional treatment process (43).

Providing peer support as well as receiving peer support has a positive effect on the well-being of individuals with mental health problems. In a qualitative meta-synthesis study in which twenty-seven studies were examined (44), the experiences of peer support workers, non-peer colleagues and peer support service recipients were examined. In this study, negative experiences of peer support workers included discriminatory and prejudiced attitudes from non-peer support staff, low pay, long working hours, and difficulty in managing the transition from patient role to peer support worker. Positive experiences included collegial relationships with non-peer staff and other peers, and increased well-being during the working process. It was reported that the social support networks and well-being of individuals receiving peer support services increased.

Repper and Carter (45) listed the benefits of peer support for individuals with mental health problems as a decrease in hospitalization rates, empowerment, reduction in social isolation, development of empathy and acceptance, reduction of stigmatization and instilling hope. The benefits for peer support workers were as follows: increased self-esteem and confidence, feeling valued, increased ability to cope with their own mental health problems and increased employment opportunities. Contributions to the health system as a whole include a potential reduction in hospitalizations of people receiving peer support, a reduction in the workload of overstretched staff, and the opportunity to interact with people who might otherwise be difficult to engage (46).

It is stated that peer support has benefits such as providing the opportunity to reach hard-to-reach population groups such as individuals with severe mental illness within the health system. Evidence-based research confirms that peer support is a widely applicable, sustainable and cost-effective approach (47).

On the one hand, the fact that providing peer support has a significant potential to increase the well-being of individuals with mental health problems; on the other hand, the fact that peer support providers make significant gains in improving their own knowledge, skills and mental health status emphasizes the importance of employing appropriately trained and supported peer workers within mental health teams.

CONCLUSION

The practice of peer support in mental health services, which emerged in the 1970s on the basis of individuals with mental health problems supporting each other, has an important potential to increase the well-being of both the people who receive peer

support and those who provide peer support services. The types of peer support range from informal support from acquaintances to structured and formally defined peer support in an institutional setting. Today, as a component of a more inclusive and recovery-oriented approach, it is practiced as an integral part of treatment, especially in developed countries. In this respect, the employment of appropriately trained and supported peer workers in mental health teams is very important.

In Turkey, there is a significant need to develop such a service for the needs of individuals with mental health problems in mental health services. In particular, the use of different types of peer support systems in Turkey will make a significant contribution to the development of mental health services. In the implementation of peer support, it may be possible to benefit from the experiences of "former patients" in different psychiatric settings such as psychiatric hospitals, psychiatric clinics, community mental health centers. In addition to matching "former patients" with individuals as new peers, experience sharing meetings and self-help groups can be organized. Peer support workers can be hired at the institutional level, and these workers can carry out regular work in coordination with the treatment team. For this purpose, cooperation can be made with the Federation of Schizophrenia Associations.

In our country, there is a need to make mental health services individual-oriented, inclusive and empowering. In order to do this, a comprehensive mental health law should be enacted, different disciplines should be allowed to work together, the experiences of individuals and families with mental health problems should be utilized, and services should be created to meet their needs. In addition, feedback should be obtained from previously implemented models such as family-to-family support programs or family trainings and from the practices of non-governmental organizations, and scientifically proven effective methods should be put into practice. In this way, mental health services will undergo a comprehensive transformation and the whole society will be positively affected by this transformation.

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Provocative repetitive transcranial magnetic stimulation to reduce craving in methamphetamine use disorder

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Dear Editor,

The global use of methamphetamine (METH), a highly addictive substance, is increasing (1). Initially, METH use produces feelings of euphoria, heightened alertness, and increased physical abilities (2). However, long-term use of METH can result in negative effects such as anxiety, agitation, decreased appetite, impaired cognitive function, paranoid delusions, hallucinations, and sleep disturbances (2–5). Furthermore, prolonged use of METH often leads to the need for higher doses as tolerance develops rapidly (6, 7). The craving for METH is a strong emotional state that can lead to an uncontrollable urge to obtain and use the substance (6). Triggers related to previous METH use can intensify this craving and contribute to the recurrence of substance use, playing a pivotal role in the development of METH dependence (7). METH is associated with high relapse rates, making the recognition and effective treatment of relapse crucial for successful outcomes. Craving is a complex concept that includes behavioral, cognitive, and emotional aspects and is closely linked to addiction and relapse. The natural cycle of craving plays a crucial role in precipitating relapse. Hence, the implementation of craving reduction techniques may serve as a viable approach to mitigating the risk of relapse with METH use disorder (MUD) (8).

In Turkey, the most common treatment for addiction rehabilitation takes place in alcohol and substance rehabilitation clinics. The clinical interventions include pharmacological and psychological therapy but do not incorporate specific neuroscientific procedures. When it comes to treating MUD, non-invasive methods such as repetitive transcranial magnetic stimulation (rTMS) have been suggested as a potentially supported alternative treatment (9). rTMS involves converting magnetic field impulses into electrical signals, which are then transmitted through the skull to exert an effect on the cortex. rTMS is a non-invasive therapeutic method with notable safety. It can either increase synaptic activity in specific brain regions (in high-frequency mode, defined as >5 Hz) or inhibit it (in low-frequency mode, defined as <1 Hz) (10).

The U.S. Food and Drug Administration (FDA) has approved rTMS for the treatment of major depression and obsessive-compulsive disorder (11). It has also been widely tried in the treatment of various psychiatric diseases, including MUD (9). Studies have shown that targeting the left dorsolateral prefrontal cortex (LDLPFC) with rTMS can be effective and safe for treating patients with MUD (9, 12). Craving is associated with the brain's reward circuitry, and METH use leads to excessive dopamine release in the limbic system, particularly in the nucleus accumbens, contributing to addiction. The DLPFC plays a role in inhibiting the reward circuit through mesofrontolimbic connections (13, 14). Research has demonstrated that rTMS stimulation of the DLPFC can reduce craving by increasing dopamine release and glutamate levels (15, 16). These findings support the use of rTMS in treating MUD, as it has been shown to reduce craving, improve cognitive functions, and alleviate withdrawal symptoms (12). In a recent study, MUD patients were shown pictures related to METH and asked to recall memories of their

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last METH use. Following this, rTMS and sham rTMS were randomly applied to different brain regions, and it was found that real rTMS significantly reduced craving compared to sham rTMS (9). Here, we aimed to present the provocative (craving after clues about METH) rTMS protocol in an MUD patient.

A 24-year-old male patient has been using METH for five years. When he first started using 1 gram of METH, he gradually increased this amount and consumed 3-4 grams of METH almost daily. The patient MET is used through a glass pipe. When he quit the substance, he complained of weakness, pain, fatigue, unhappiness, and increased appetite. The patient spends most of his time on substance use and has impaired functionality. Clues such as where he used the substance and the people he used with it caused him to crave it. When he wasn't using his METH, he was having dreams about METH. He tried to quit methamphetamine 3-4 times to date but was unsuccessful. The patient's cue-related craving visual analog scale (VAS) score at the first clinic examination was 9 out of 10 (representing severe craving). We diagnosed the patient with MUD according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, diagnostic criteria in the outpatient clinic. The patient stated that although he had used different antidepressant medications before, he experienced a MET relapse and wanted a different treatment. We chose rTMS treatment because of the patient's preference and the growing body of supportive evidence in the literature about the efficacy of rTMS in treating cravings. We created 30 pictures related to METH. These pictures are METH use sites, METH paraphernalia, METH powder, and METH use scenarios. We showed the patient these pictures for 5 minutes and had them tell their memories of the last METH use. After the pictures, we evaluated the craving score with the VAS. After the pictures, rTMS was applied to the patient. The patient marked the VAS before and after every rTMS session on a scale of 0 = no craving to 10 = excessive craving. We applied ten seasons (one session per day) of rTMS to the LDLPFC via a neuro-MSX TMS device. One session was implemented as follows: rTMS session with the figure eight coil at 110% motor threshold, 10 Hz, 5 seconds on, 10 seconds off interval for 10 minutes (1,000 pulses). No side effects were detected during or after rTMS sessions. The patient's craving (VAS) scores after pictures are 8,9 in the first three rTMS sessions. The patient's (VAS) scores after rTMS decreased to 3,4 in three rTMS sessions. The patient's craving (VAS) scores after pictures are 4,5 in the fourth and fifth rTMS sessions. The patient's (VAS) scores after rTMS decreased to 2,3 in the fourth and fifth rTMS sessions. The patient's craving (VAS) scores after pictures were 2,3 in the sixth, seventh, and eighth rTMS sessions. The patient's (VAS) scores after rTMS decreased to 1,0 and 0 in the sixth, seventh, and eighth rTMS sessions. The patient's craving scores after pictures and after the last rTMS session were 0.The patient stated that the pictures related to METH did not cause him cravings and that METH no longer entered his dreams. This report proposed a promising treatment protocol for treating MUD. It provided additional support for studies showing that rTMS reduces craving in MUD patients. rTMS significantly reduced craving scores in our MUD patient.

MUD is a chronic, relapsing disorder and has emerged as one of the most quickly expanding novel psychoactive substances globally in the last few years (8). MUD patients frequently report craving METH, which may increase the risk of relapse (17). Vanoxerine (GBR12909) is considered one of the most promising agents for MUD treatments (18). It exhibits a potency that is 50-fold greater in inhibiting dopamine reuptake compared to cocaine. Vanoxerin consta is the injectable formulation of vanoxerine, a substance that helps maintain sobriety in individuals addicted to cocaine (19). Vanoxerine might be useful as a medication for MUD (18). Another treatment is bupropion and naltrexone combination therapy in MUD (20). Bupropion and naltrexone have demonstrated promising efficacy in clinical trials for treating MUD. Bupropion is an antidepressant with stimulant properties that works by affecting the norepinephrine and dopamine systems (21). Naltrexone is a pharmacological agent that acts as an antagonist to the opioid receptors, making it a useful treatment option for individuals with opioid use disorder (21). A small, open-label pilot trial suggested that the combination of naltrexone and bupropion could effectively treat severe MUD

(21). Unfortunately, there is no FDA-approved drug treatment for MUD (14). In addition, patients with MUD do not want to use drugs such as antidepressants and antipsychotics that we can use to treat substance use disorders (22). When substance-related cues hit the limbic circuit in patients with MUD, dopaminergic neurons in the ventral tegmental area send dopamine impulses to the ventral striatum (9). In addition, the executive control network also affects this process (9). Substance-related cues either overstimulate the limbic system, make the executive control network weak, or make cognitive control weak, all of which make people want to use substances again. Therefore, the application of rTMS to the DLPFC, which serves as a central component of the executive control network, or the ventromedial prefrontal cortex (VMPFC), which serves as a significant component of the limbic neural circuit, in patients diagnosed with MUD has the potential of reducing the recurrence of cravings associated with substance misuse (9). In previous rTMS studies in MUD patients, high-frequency rTMS of the LDLPFC reduced craving and impulsivity and improved decision-making ability. Furthermore, the application of 10 Hz rTMS on the LDLPFC has been found to have the potential to mitigate cravings in individuals diagnosed with substance use disorder, ease symptoms of depression, and enhance their cognitive abilities and quality of sleep (8,9). The advantages of TMS, such as not having serious side effects and being an alternative treatment for MUD patients with frequent medication noncompliance, suggest that it may be included in the treatment of MUD. However, there is uncertainty about the specific TMS protocol to be used, the frequency and duration of treatment, and the need for maintenance therapy. TMS alone may not be adequate for these patients, and drug therapy may still be necessary.

Our report had several limitations. Firstly, the patient subjectively scored the craving scores and scored them under the supervision of the doctor. As with other substance use disorders, MUD patients may want to make themselves look good. Because of this, he may have shown lower scores. Second, the lack of functional neuroimaging in this report led to changes in activity that can be shown to be related to cravings. Thirdly, the placebo effect of rTMS may have caused a decrease in craving scores. Finally, the patient may have gotten used to the METH-related pictures we have shown for cravings and may not have sufficiently triggered the craving.

In conclusion, high-frequency rTMS to the LDLPFC reduced craving in the MUD patient and showed no side effects. However, more research needs to be done that compares the effect of rTMS on reducing cravings in sham, provocative, and non-provocative rTMS applications on large groups of patients.

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