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Aims and Scope

Turkish Journal of Psychiatry (Türk Psikiyatri Derg) is the scientific journal of Turkish Association of Nervous and Mental Health. The journal has been published four times a year in March, June, September and December, on a subscription bases since 1990. Turkish Journal of Psychiatry is indexed in PubMed, Index Medicus, TUBITAK Tıp, Psych-Info, Türkiye Atıf Dizini and has been ranked in Social Science Citation Index (SSCI) since 2005.

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Winokur G, Tsuang MT, Crowe RR (1982) The Iowa 500: affective disorder in relatives of manic and depressed patients. *Am J Psychiatry* 139: 209-12.

- b) If the reference is from the supplement of a journal;

Kozkas HG, Homberg LK, Freed GD et al. (1987) A pilot study of MAOIs. *Acta Psychiatr Scand* 63 (Suppl. 290): 320-8.

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Mark IMJ (1987) *Fears, Phobias and Rituals*. New York, Oxford University Press, p. 97.

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Meltzer HY, Lowy MT (1986) Neuroendocrine function in psychiatric disorders. *American Handbook of Psychiatry*, 2nd ed., vol. 8, PA Berger, HKH Brodie (Ed), New York . Basic Books Inc, p. 110-117.

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The Principles and Rules of Professional Ethics in Psychiatry



Gonca AŞUT 

Since its establishment in 1995, the Psychiatric Association of Turkey (TPD) which operates on the principles of “Science, Ethics, and Solidarity”, diligently maintained the observance of ethical boundaries in psychiatric professional practices. In the 21st General Assembly held on April 21, 2024, TPD has accepted the new Ethical Principles Text that has been worked on for a long time. This was the first time the Ethical Principles was updated since the 1st General Assembly of our Association on June 22, 2002, after twenty-two years and nearly two years of work.

Recently, the texts defining the ethical principles established by international psychiatric associations such as the World Psychiatric Association (WPA), the European Psychiatric Association (EPA), the Royal Australian and New Zealand College of Psychiatrists (RANZCP), the Royal College of Psychiatrists (RCPsych), and the International Association of Mental Health Professionals Japan (IMPHJ) had been updated to adapt to the requirements of our time and the changes experienced in professional practice. In our country, there was a need to update the text of the Rules of Ethics of Psychiatry accepted by the TPD in 2002 to reflect the constantly changing characteristics of professional practice, interpersonal interactions, and societal norms. For this purpose, the TPD Working Group on Human Rights and Ethics in Psychiatry began working in 2021 to update the Rules of Ethics in Psychiatry, and the TPD Ethics Principles Update Task Force (Ayşe Ceren Kaya, Ayşegül Yay, Berna Diclener Uluğ, Gonca Aşut, İbrahim Fuat Akgül, Raşit Tükel, and Simavi Vahip) was formed.

The TPD Ethics Principles Update Task Force commenced the process by planning a webinar on March 1, 2022,

with Rutger van der Gaag and Jan Wise from the Ethics Committee of the EPA, followed by a workshop on March 27, 2022, involving seven working groups. The workshop, facilitated by the contributions from Abdullah Yıldız, Berna Arda, Cemal Güvercin, Cumhur İzgi, Gürkan Sert, Şükrü Keleş, and Neyyire Yasemin Yalım from the field of Medical Ethics, began with constructive and enriching discussions which continued for over a month after the initial workshop. The subgroups, defined by seven headings, were as follows: 1. ‘Relationships between patients and their families and physicians’, 2. ‘Telepsychiatry and psychotherapies’, 3. ‘Relationships between colleagues, psychiatrists, and mental health workers from other disciplines’, 4. ‘Relationships with the health industry’, 5. ‘The psychiatrist’s conduct of research and the process of publishing research findings’, 6. ‘Communication and promotional activities and public awareness in psychiatry on the internet, social media, and all publishing platforms (TV, newspaper, magazine, book, etc.)’, and 7. ‘Psychiatry and human rights’. These working groups examined the ethical rules of international psychiatric associations regarding the updating of ethical principles and each prepared their texts.

These drafts provided by the groups were meticulously evaluated by the TPD Ethics Principles Update Task Force starting from June 27, 2022 in terms of both form and content. The Task Force brought together the subjects and headings to create a unified text. After a year of monthly meetings, the first combined version was presented at the TPD Ethics Principles Update Meeting on June 18, 2023, in a meeting attended by participants from the initial workshop. There, the second draft of the updated Ethics Rules was created and

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was shared with the colleagues at the TPD Forum held at the 59th National Psychiatry Congress in October 2023. The contributions in the Forum and from the colleagues externally further enriched this second draft. Through examinations of language, form, and content; the Ethics Principles and Rules text was ensured to have linguistic consistency, to cover practitioners at all levels, and to thoroughly express the essence of ethical responsibilities. Then the final version was presented in the General Assembly for the approval. The text of Professional Ethics Principles and Rules begins with the following statements:

“TPD works for the continuous education and professional development of its members, the improvement and development of the quality of psychiatric services, advocacy for patients and their families, and providing support in all aspects and informing the public. It assumes the responsibility to participate in the work carried out jointly with local and central decision-makers and managers in line with all these purposes.

TPD conducts all these activities with the highest ethical standards. The Principles and Rules of Psychiatry Professional Ethics are a notification of these standards to psychiatrists and the society. Psychiatry Professional Ethics Principles and Rules are based on international agreements, declarations, and national and international ethical principles and rules, including medical ethical principles. The Rules and the Principles are regularly reviewed and updated.”

The TPD Professional Ethics Principles and Rules cover five sections following this introductory section: 1. General Principles, 2. Patient Rights and Physician-Patient Relations, 3. Intercollegiate Relations, 4. Human Rights, and 5. Medical Research and Publication Ethics. The updated text includes subheadings that were not included in the previous text but have become important due to changing conditions in the last twenty years and should not be overlooked, and they are explained in detail. These newly added areas are: ‘Psychotherapies’, ‘Telepsychiatry’, ‘When a colleague has mental illness’, ‘Education and Supervision- Oversight

Responsibility’, ‘Respecting Human Rights, Opposing Discrimination and Stigmatization’, ‘Gender Sensitivity’, ‘Qualified and Accessible Right to Health for Everyone’, and ‘Right to Die with Dignity’.

Significant updates have been made to the contents of some articles included in our previous Ethical Rules document. In the context of this forewords, we would like to give an example from the field of ‘Publication Ethics’. With changing conditions, we stated that new issues have emerged in publication ethics, and there was a need to define new principles and rules. Although the single article on this topic in the 2002 statutory text remains valid today, it has required expansion: “The physician must reflect scientific facts when evaluating research data and preparing for publication. Names of persons who have not actually participated in the study cannot be included in that publication. Data, cases, and written works belonging to others should not be used without citation and permission.” The previous article has been expanded in the new text to include responsibilities such as being aware of predatory journals and not publishing in them, and the responsibility for announcing research results in mass media or new media. Similarly, significant changes and additions have been made under the title of ‘Education and Supervision-Oversight Responsibility’ to suit present-day conditions.

As announced by the Psychiatric Association of Turkey, the updated ‘Psychiatry Professional Ethics Principles and Rules’ text is now presented on our association’s website. It will serve as a basis for maintaining and improving the standards of our professional and scientific practices, our relationships with colleagues, and the health services we provide to patients.

REFERENCE

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Barriers to Accessing Mental Health Services Among Syrian Refugees: A Mixed-Method Study



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ABSTRACT

Objective: Although Syrian refugees have high rates of mental health problems due to war trauma, little is known on their degree of need for and contact with mental health services. Using a population sample of Syrian refugees living in Ankara, we assessed the perceived need for and contact with mental health services, as well as the barriers to access these services.

Method: This was a cross-sectional mixed-method study of 420 Syrian refugees living in Ankara city center, using face to face interviews administered at the respondents' home by trained, Arabic-speaking interviewers. PTSD and depression were assessed using Harvard Trauma Questionnaire and Beck Depression Inventory, respectively.

Results: Of all the refugees in our sample, 14,8% (N=62) stated that they felt the need for mental healthcare since arriving in Turkey. The actual number contacting any mental health service was very low (1,4%, N=6). The most important barriers to accessing mental health services were reported by the respondents to be language problems and lack of information on available mental health services. Service providers and policymakers also reported similar topics as the most important barriers: low awareness about mental health problems, daily living difficulties, and language and cultural barriers. Multivariate analyses revealed that presence of medical or mental disorders and female gender predicted the perceived need for contacting services.

Conclusion: Our results show that, although refugees report high rates of mental health problems, the perceived need for and actual contact with services are very low. To address this treatment gap, and to provide adequate care for refugees with mental health problems, common barriers (language and awareness) should be identified and dealt with.

Keywords: Refugee, Mental Health, Healthcare Utilization, Syria

INTRODUCTION

According to the data of the United Nations High Commissioner for Refugees (UNHCR 2021), 6.6 million refugees took shelter in other countries as a result of the war in Syria. As of today, Syria ranks first among the countries where refugees originate. Turkey, which hosts more than 3.6 million Syrian refugees, is still the country with the highest number of refugees in the world. Mental health problems, especially depression and posttraumatic stress disorder (PTSD), are common among Syrian refugees due to conflicts in their country (Tekeli-Yesil et al. 2018, Kaya et al. 2019). However, studies conducted in host countries show that 80-90 percent of refugees with PTSD and other mental disorders

do not contact mental health services at all (Sijbrandij et al. 2017, El Chammay et al. 2013, Laban et al. 2007). In a study conducted among Syrian refugees living in Istanbul, Fuhr et al. (2019) showed that only 9% of those in need of mental help sought help. In a study conducted in Germany, it was found that only 5% of refugees who need mental health services can receive these services (Sijbrandij et al. 2017). Similarly, in the study conducted with Iraqi refugees in the Netherlands, it was found that only 8.8% of refugees with mental illness contacted mental health services (Laban et al. 2007). In the study conducted with Syrian refugees in Lebanon, the rate of refugees who could access mental health services was only 1% (Rabih El Chammay et al. 2013). Not being able to speak the language of the host country, lack of

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information about available services, low awareness of mental health problems, fear of stigma, feeling unsafe, transportation problems, financial difficulties, and cultural factors were the most frequently mentioned obstacles in studies (Hassan et al. 2016, de Anstiss et al. 2009, Maier et al. 2011, M'Zah et al. 2019). Inadequacy or cost of mental health services in the host country, long waiting times, stigmatizing and discriminatory attitudes, and strict policies towards refugees were also reported to reduce access to mental health services (Satinsky et al. 2019, Hendrickx et al. 2020, Fenta et al. 2006, Nadeau and Measham 2006).

In our study, we aimed to investigate the subjective mental health service needs of Syrian refugees living in Ankara and the objective and perceived predictors of the barriers to contacting those services. Based on the existing literature, we predicted that the need for and contact with mental health services will be predicted by factors such as the severity of mental health problems, female gender, and education. A more detailed description of the results and methods regarding the prevalence and predictors of mental illness in refugees can be found in Kaya et al. (2019) and Karadağ et al. (2021).

METHOD

Our research is a cross-sectional, mixed-method study conducted with Syrian refugees living in the city center of Ankara. Quantitative data were collected in face-to-face interviews at participants' homes by trained Arabic-speaking interviewers using an assessment battery. Qualitative data were obtained from 10 health care providers (6 doctors, 2 midwives and 2 nurses) and 10 health administrators (9 doctors, 1 social worker) using an interview conducted by the second author (EK).

The Sample

In October-November 2016, 420 Syrian refugees over the age of 18 were interviewed face-to-face in two neighborhoods in Ankara where Syrian refugees are concentrated. At the time the data were collected, an estimated 88,000 Syrian refugees were living in Ankara, according to data from the Directorate of Migration Management (2016). Since there was no reliable sampling frame for refugees, we decided to visit the households in these neighborhoods and include all those who volunteered to participate in the study. The only exclusion criterion was the presence of any condition that impeded understanding or communication. Qualitative data were collected through in-depth interviews with 10 health service providers and 10 administrators. In-depth interviews were conducted with service providers at the health centers where they provide service, and with managers at their workplaces. The interviews were recorded using a voice recorder; they were recorded manually for two managers who did not agree

to recording. Each interview lasted between 30-45 minutes. Service providers including five general practitioners, two midwives, two nurses, and a psychiatrist working at Ankara Training and Research Hospital were interviewed at Ulubeý (Altundağ), Gülveren (Mamak) and Yenimahalle Immigrant Health Centers. Five of the 10 managers interviewed were from Ankara Provincial Public Health Directorate (current Public Health Services Directorate affiliated with Ankara Provincial Health Directorate), and five were from the Ministry of Health Turkish Public Health Institution (now General Directorate of Public Health). All of the managers from the General Directorate of Public Health were department heads. The administrators interviewed at the Provincial Directorate of Public Health were two Community Health Center heads, two branch managers, and a deputy director.

Measures

Services use: In this section, there were sociodemographic variables, perceived physical and mental health status, and factors preventing access to and contact with general and mental health services. Current or past physical and mental disorders, history of alcohol/drug use, and current psychotropic drug use were also evaluated.

Harvard Trauma Questionnaire (HTQ): The Arabic version of the self-report scale developed to evaluate DSM-IV PTSD symptoms was used (Mollica et al. 1992, Shoeb et al. 2007). The scale consists of five parts. The first part used in this study consists of a list of 43 different traumatic events that participants answered as "yes" or "no". In the fourth part, which measures traumatic stress, participants are asked to rate each item on a four-point Likert scale (1=not at all, 2=a little, 3=quite a lot, and 4=a lot). Since there is no cut-off point for the Arabic version, the probable prevalence of PTSD was calculated using the algorithm proposed in the original study (Mollica et al. 1992). The internal consistency (Cronbach alpha) value for 16 PTSD symptoms in this study was found to be 0.82.

Beck Depression Inventory (BDI): The BDI is a commonly used 21-item self-report scale; it measures the level of depressive symptoms in the previous week (Beck et al. 1961). All questions are coded from 0 to 3; higher scores indicate more severe depression. Its validity and reliability for Arabic has been demonstrated by West (1985) and Abdel-Khalek (1998). Both the BDI total score (range: 0-63) and probable depression prevalence (using 19 as cut-off) were used in the analyses. The Cronbach's alpha value for the present sample was found to be 0.85.

Qualitative Interviewing Guide: A qualitative interview guide prepared by the researchers was used to collect qualitative data. Two types of interview guides have been prepared: for service providers and for health managers. The interview guide

prepared for service providers consisted of 12 questions, and the one for health administrators consisted of nine questions. Interview guides included the descriptive characteristics of the participants (age, gender, occupation, education level, years of experience with refugees, etc.), mental health services provided to refugees at the country and provincial level, mental health problems of refugees, their views on the adequacy and accessibility of mental health services provided to refugees, as well as their views on refugees. It covered topics such as suggestions for removing barriers to accessing mental health services and for improving mental health services.

Analyses

Marital status (married=1, unmarried=0) and education (primary school graduate or less=0, secondary school or higher=1) were recoded as binary variables. The frequency of those with possible depression or possible PTSD was calculated to be used in the analyses. In the results that describe the general sample, those who need and do not need psychological help were compared using t-test for continuous variables and chi-square test for categorical variables. SPSS 23.0 statistical software package was used for data analyses.

For qualitative data analysis, audio recordings of the interviews were transcribed, and then a content analysis was carried out in which themes and sub-themes were determined. Qualitative findings were given under the main themes, and relevant quotations were presented in a way that would protect the anonymity of the participants. After the analysis of the qualitative data, the findings were evaluated and interpreted together with the quantitative analysis findings.

Procedure

A convenience sample was used to recruit participants. The households in two neighborhoods of Ankara densely populated by Syrian refugees were visited by six interviewers who speak Turkish and Arabic. Every household visited was asked if there were other Syrian families around that they knew of, and the households indicated by the family were visited. If the visited household did not know of any other household of Syrian origin, a random household was visited, and in case they were of Syrian origin, the purpose of the study was explained and they were invited to participate in the study. This was continued until a new suitable household was reached. A sampling frame or a sample size could not be computed; we tried to reach as many refugees as possible during the two-month study period. 15 of the visited households who refused to participate were not included in the study. Contact was made with 431 people from 229 households who agreed to participate in the study. Eleven out of those 431 refused to participate in the

study, and interviews were completed with 420 people. All interviewers were trained in the use of study scales, and the performance of the interview battery and of interviewers was tested by conducting a pilot study before the main study. Each household was visited by teams of two interviewers. In order to reduce the rejection rates, the interviewers and the participants were matched by gender. Since the majority of the respondents had a low level of education, the interviewers were asked to read out the items and record the responses. Ethical approval was obtained from Hacettepe University Ethics Committee, and institutional permissions were obtained from the Ministry of Interior, General Directorate of Migration Management and the Ministry of Health, General Directorate of Public Health for the study; and written informed consent was obtained from the participants.

RESULTS

Sample description: The mean age of the participants in the study was 35.4 (Range: 18-80, SD: 13.0). 56.4% of the participants were women and 84.7% were married. The education level of 70.1% of the participants was primary school level or lower. The rate of those who stated that they work in an income-generating job was 28.2%. Of the participants, 24.1% had at least one Turkish friend, and 11.7% spoke Turkish well. The percentage of participants who reported that they had been diagnosed with a mental disorder in the past was 2.9% and 2.1% reported that they still use medication for their mental problems. Reported need for their mental problems during their stay in Turkey was 14.8% (N=62). The ratio of those who had any physical disease was 43.9%, and the ratio of those who contacted any carer with a general health problem in the last year was 46.3%. The average number of traumatic events experienced by refugees was found to be 13.8, out of 43 traumatic events asked to the participants. 88.8% of the refugees stated that they were in a war and conflict environment, 44.0% of them reported that they lost a family member (child, spouse, etc.) due to war or violence, and 31.0% of them witnessed murder. The prevalence of probable PTSD and depression, measured by the cut-off point of the scores obtained from the HTQ and BDI scales, was 36.5% (N=152) and 47.7% (N=198), respectively. Presence of either possible PTSD or probable depression was also calculated (56.7%, N=238).

Need for mental treatment and contact with services: Need for mental health services was higher in women ($p=0.009$), those who contacted mental health services ($p=0.001$), and those who contacted general health services ($p=0.03$). On the other hand, the need for mental health services was not found to be associated with age, length of stay in Turkey, marital status, employment status or education (Table 1).

Table 1. Factors Associated with the Subjective Need for Mental Health Care (n=420)

Sociodemographic Variables		Need present N (%)	Need absent N (%)	Total N (%)
Gender**	Male	17 (9.3)	165	182
	Female	45 (19.0)	192 (81.0)	237
Education	Primary school or lower	45 (15.4)	248 (84.6)	293
	Middle school or higher	16 (12.9)	108 (87.1)	124
Marital status	Married	50 (14.1)	305 (85.9)	355
	Not married	12 (18.8)	52 (81.2)	64
Paid job	Present	12 (10.2)	106 (89.8)	118
	Absent	50 (16.6)	251 (83.4)	301
General health care contact in the last year*	Present	37 (19.1)	157 (80.9)	194
	Absent	25 (11.1)	200 (88.9)	225
Mental health care contact in the last year**	Present	6 (100)	0	6
	Absent	56 (13.6)	357 (86.4)	413
		Mean (s.d)	Mean (s.d)	
Age		34.84 (11.2)	35.55(13.35)	
Years in Turkey		2.37 (1.11)	2.15 (1.1)	

* P<0.05; ** P<0.01

There were 6 people in total who contacted mental health services in the whole group (9.7% of those who felt they needed help; 1.4% of the total sample). All six people stated that they needed psychological help. Detailed analyses were not carried out because the number of contacts with mental health services was very low.

Regression analyses: Logistic regression analyses were used to determine the independent factors that predicted the need for psychological help in the last year. Literature knowledge was used to determine which variables to include in the analyses; variables that were found to be significant in univariate analyses were also included. Being female, and having a known physical or mental illness (diagnosed by a doctor) predicted the need for psychological help. None of the demographic variables such as age, education, marital status, income level, or length of stay in Turkey were associated with the need for psychological help (Table 2).

Reason for non-contact: Figure 1 compares the most common barriers to accessing general health and mental health services reported by respondents. It is understood that language barrier and lack of information about services were seen as the most important obstacles based on responses to the instruction: “To what extent have the following factors prevented your access to healthcare? Rate using the scale 0=none 5=a lot”. Interestingly, lack of knowledge was perceived as a more important barrier for mental health services than general health services (4.77 vs. 3.28). Another finding was that the fear of stigma was seen as the least obstructing factor in contacting mental health services. Stigma as a barrier was

scored even lower for mental health than for general health (2.03 vs. 2.7).

Results of Qualitative Analyses

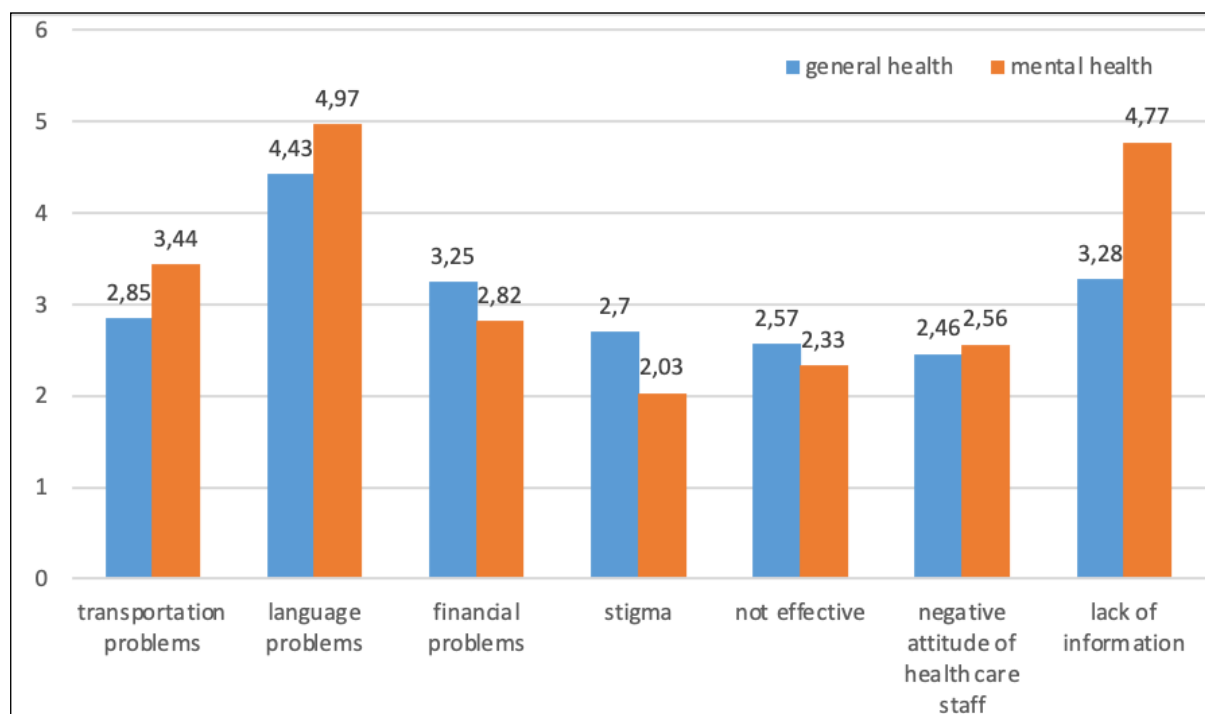
In-depth interviews were held with the health professionals who provide services to refugees and the managers involved in the provision of these services in order to reveal the mental health service needs of refugees, the obstacles to their access to services, and to develop solution proposals. Recommendations of service providers and health administrators regarding service needs, possible barriers to accessing services and solving problems were similar. Both groups reported that mental health problems were very common, but contact was very low.

K7 (Female, 33): “I do not think that refugees with mental health needs contact services. Rate of contact is around 5%. Because many do not even know that this is a reason to contact health care services. There may be domestic violence in general, and there may be complaints related to psychological problems such as incontinence in children. Women complain about lack of support... Insomnia, many have this complaint. They complain of too many diseases. When I start to question those diseases, we see that there are actually psychological reasons behind them. Revealing more through inquiry...”

Service providers and administrators identify barriers to refugees’ access to mental health services as: priorities such as accommodation, nutrition, clinging to life, language barrier and lack of interpreters, low awareness of mental problems and not knowing the system about how and where they will receive mental health services.

Table 2. Predictors of Subjective Need for Mental Health Care (Logistic Regression)

Variables	Subjective Need For Mental Health Care			
	p	OR	(95% CI)	
Gender				
Male	Ref.			
Female	0.026	2.065	1.090	3.913
Education				
Primary school or lower	Ref.			
Middle school or higher	0.973	0.989	0.509	1.922
Marital status				
Not married	Ref.			
Married	0.271	1.548	0.711	3.372
Medical illness diagnosis				
Absent	Ref.			
Present	0.021	2.166	1.126	4.167
Mental illness diagnosis				
Absent	Ref.			
Present	0.000	13.104	3.257	52.728
Health care contact in the last year				
Absent	Ref.			
Present	0.093	1.686	0.917	3.097
Age (years)	0.127	0.980	0.955	1.006
Monthly family income (TL)	0.986	1.000	0.999	1.001
Years in Turkey	0.116	1.244	0.948	1.634

**Figure 1.** Barriers to accessing general and mental health services (participants' own views)

*To what extent did the above factors hinder your access to health services? (0=none 5=a lot)

K13 (F, 46): ...First, they don't know the system very well. Where to start, where to go... Plus, it is not easy for them to reach someone who can understand them, help them, speak the language, but also know the system in this country. ...I mean, at this point, they have postponed the previous trauma right now, or they put their depression aside and because they struggle to survive, I think their mental health has been postponed for now. But I think that this will come before us as a much bigger problem in three or five years...."

In line with their observations, both groups emphasized that the communication problem should be solved urgently in order to improve the mental health of refugees. For this purpose, they recommended employing Arabic-speaking doctors, having more translators in hospitals, providing training to increase mental health awareness, and screening refugees for the presence of mental disorders.

K3 (F, 29): So it is necessary to educate. In other words, awareness should be raised in groups about mental problems and coping. Hospitals only have one translator. Not enough at all. So, this is a main problem; the number of translators should be increased.

K14 (Male, 51): "My suggestion is: First, overcoming the language problem is very important. The second is the need to make use, in the best way possible, of communication resources such as Facebook, WhatsApp, television, and radio; especially the TV channels Syrians watch and the radio they listen to. Another thing is getting support from non-governmental organizations...."

DISCUSSION

Our findings show that, similar to previous research with Syrian refugees and other refugee groups, many refugees need mental health support, but few make use of these services (Bartolomei et al. 2016, Fuhr et al. 2019, Hawkes et al. 2021, Jack- Ide and Uys 2013, Kirmayer et al. 2011). Although the study designs were different, our results on rates of contact with health care services were strikingly similar to those reported by Fuhr et al. (2019) for Syrian refugees in Istanbul. The rate of contact with mental health services of refugees is much lower than it is for the Turkish population (approximately 20%-Turkish Mental Health Profile - Kılıç 1998). Although all of those who contacted mental health services did have mental problems, the vast majority of those with mental problems have never contacted such services. One reason for the low contact with services may be the insufficient awareness of mental health or that mental health does not have priority for participants over general health. Our qualitative data support our conclusions: both service providers and health administrators stated that refugees' awareness of mental health problems was low and that mental problems have lower priority compared to more pressing problems such as loss of relatives, property loss and other

socioeconomic difficulties. On the other hand, the prevalence of depression and PTSD may be over diagnosed because the measurement tools (BDI and HTA) we used were not diagnostic interviews. In a systematic review and meta-analysis study, it was reported that a higher prevalence of depression and PTSD was found in studies using self-rating scales (Steel et al. 2009). There is a need to conduct qualitative studies with refugees in order to better understand the reasons why the need for mental health services remains very low given the high prevalence of mental problems.

Refugees' subjective reports of what they see as the main barriers preventing access to mental health services have been strikingly similar in many studies. The most frequently reported ones are language problems (Doğan et al. 2019, Sijbrandij et al. 2017, Derr 2016, Guarnaccia et al. 2005, Guruge et al. 2018) and lack of information about where and how to reach mental health services (Al-Soleiti et al. . 2021, Bartolomei et al. 2016, Faulk et al. 2021, Jack-Ide and Uys 2013, Kiselev et al. 2020, Maconick et al. 2020); Our findings in this study are also in this direction. The language barrier is particularly important: Except for the study by Fuhr et al. (2019), all studies on the use of mental health services by Syrian refugees have shown that refugees see language barriers as the biggest barrier preventing access to services (Hassan et al. 2016, M'Zah et al. 2019, Kiselev et al. 2020). Many refugees stated that they would go to the hospital if they knew that there was an interpreter or an Arabic speaking doctor/psychologist at the facility. Many stated that they could not read the signs on buses or buildings, indicating that the problem was not only related with a different language but also with a different alphabet. An interesting finding was that stigma was not perceived as a major barrier preventing access to mental health services. This is a welcome finding, because stigma is known to reduce access to mental health care, even in under-resourced countries. However, this may also be due to the fact that refugees are not aware of stigmatization due to their low awareness of mental illness and services. Although we couldn't do further analyses due to the small number of people who contacted services, the role of women needs to be examined in detail. In univariate analyses, both the psychological symptom levels and the need for treatment in women were found to be higher than it is in men. Refugee status may affect female refugees more than men and prevent them from seeking treatment. Finally, it is known that the vast majority of refugees experience serious financial difficulties and have difficulty meeting even their most basic needs (Kirmayer et al. 2011). In our study, the majority of refugees reported their economic situation as bad or very bad. Refugees cite financial and transportation problems as the leading reasons for not seeking treatment; therefore, it is possible that contact with mental health services

is not a priority. In qualitative interviews, both administrators and health service providers emphasized this situation.

Our study has some limitations. Since random sampling was not possible (lack of recorded data and refugee mobility), a convenience sampling method was used. The very low number of treatment contact significantly limited the power of the analyses. For example, mental health service needs were examined in multivariate analyses, but contact with mental health services could not be examined. Finally, although the measurement tools used in the study are clinically valid, the lack of interview tools to provide clinical diagnosis limits the power of the study.

CONCLUSIONS

This study supports the findings of previous studies showing that Syrian refugees rarely contact mental health services despite the presence of many war traumas and common mental problems. The most important barriers preventing access to mental health services are language problems and lack of information about available mental health services. It is understood that the application for mental problems is not a priority for refugees, and the main reason for this is the lack of awareness. Our findings show that there is an urgent need to increase knowledge and awareness about mental health problems and available services in refugees. Finally, future studies on barriers preventing access to mental health services should focus on gender differences in the use of services. While the unmet mental health needs of refugees are generally very high, our findings suggest that this need is even higher among female refugees.

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Referral Network Pathways of Care for Psychiatric Disorders in Kashmir – A Study from India



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ABSTRACT

Objective: Access to psychiatry services in Kashmir is challenging because of active enduring conflict, insecurity and a fundamental role played by the traditional health workers. We aimed to assess the main pathways to mental health services in Kashmir, India.

Methods: This cross-sectional hospital-based study was performed from March 2012 to June 2017 in the outpatient psychiatry department at a psychiatric disease hospital in Kashmir. A convenience sampling method was used to select newly referred patients to the services. A survey was developed to collect information on demographic data and the main pathways for patients when seeking care for mental disorders.

Results: A total of 518 patients were interviewed. About half of the respondents (48.8 %) attended clinical consultation from a general pathway like a physician or a neurologist, while 31.8% were visiting a psychiatrist for a significant psychiatric disorder. For some patients (17.8%), their initial pathway to mental health services is traditional healers.

Conclusion: The current study revealed different pathways to seeking psychiatric care in Kashmir India. Further studies are needed to address the treatment gap and ways to improve access to mental health services for the Kashmiri population.

Keywords: Psychiatric Disorders, Referral, Pathway, Conflict

INTRODUCTION

More than 450 million people across the globe are suffering from mental, psychosocial, and neurological problems (Sagar et al. 2020). In India, almost one in every seven Indians is suffering from some sort of mental distress. Specific to our region, it is estimated that 45% of Kashmir's adult population (1.8 million) were found to have some form of mental distress with a high prevalence of depression (41%), anxiety (26%), post-traumatic stress disorder (PTSD) (19%) (Housen et al. 2017). Another aspect to be considered is that there is a huge treatment gap for mental health disorders worldwide due to an inadequate response to the burden of mental illness. It is estimated that around two-thirds of mentally ill patients go untreated, especially in developing countries (World Health Organization 2013). Globally, psychiatrists remain a rare human resource with the global median number of

psychiatrists remaining at approximately only one psychiatrist for every 100,000 population. High-income countries have approximately 120 times more psychiatrists than in low-income countries (World Health Organization 2021). India has spent 1.30% of the government's total expenditure on health, but the country has only 0.29 psychiatrists per 100,000 people. There is undeniably a shortfall in the quantity and quality of mental health services and their distribution in the country (World Health Organization 2017). India has 0.75 psychiatrists per 100,000 population (Singh Bhandari et al. 2020), as against the desirable number of anything above three psychiatrists per 100,000. Taking three psychiatrists per 100,000 population as the desired number, the study mentions that the number of psychiatrists required to reach the desired ratio in India is 36,000 and the country is currently short of 27,000 psychiatrists based on the current population (Garg et al. 2019).

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There exists a mixed healthcare system in India, inclusive of the public healthcare system and the private healthcare system. Both public and private healthcare systems provide healthcare services to urban and rural India. Most of the private health care services are concentrated in urban areas, and they provide secondary and tertiary care level health services, including professional care for serious cases. The public health care system has been developed as a three-tier system based on the population norms and the kind of services provided includes preventive services, medical treatment, and health care. The three-tier include primary health care systems, including sub-centers and primary health centres. The secondary health care system includes community health centres, and sub-district hospitals, while the tertiary care level includes district hospitals, tertiary hospitals, and medical colleges (Aggarwal 2008). The pathways to care were defined as the path a psychiatric patient travels during his referral process to a mental health professional (MHP). Meanwhile, In Jammu and Kashmir, an integrated mental health system, a two-tier model centered in the public health care system from secondary to the tertiary level system has been gradually developed. Although this two-tier system only exists in a few big districts of the region, most districts in the region does not yet have any community mental health workers of any kind. Mental health institutes in the provinces or major districts constitute the top tier of the system and are responsible for enacting management guidelines and providing guidance and support to all mental health services in the region. The lower tier (town or district level) comprises mental health clinics in district hospitals which have still not been developed much. Over the years, the authorities have been trying to implement this model for the delivery of mental health services. In our region, there lies a disparity of cost between private and public healthcare institutions, and most of the population is financially unstable and dependent on out-of-pocket expenses.

Health care in India has inequality in mental health access and services. It is accessible to only those who can afford high-rated private hospitals or those who can easily access the hospital in their locality/district (Gater et al. 1991). In Kashmir, there is a lack of effective consultation and contact, putting a financial strain on the already precarious healthcare system. For the treatment of mentally ill patients, good inter-departmental coordination and referral are required (Gania et al. 2016). Furthermore, the problem is exacerbated by a significant knowledge gap in mental health literacy among the general public in emerging nations, particularly India. In poorer nations, where mental health facilities are already scarce, poor mental health literacy can take a toll on people and function as a barrier to the treatment and diagnosis of mental diseases (Saxena et al. 2007). In poor nations, both conventional and spiritual healers play an important part in the mental health care system (Mushtaq and Margoob 2006). There is a long

tradition of spiritual and religious healing in Kashmir; people typically seek out these healers for treatment. Pir and Faqirs are a patient's earliest interactions with prior traumatic occurrences (Saldanha 2005). Pir and Faqirs are the spiritual and traditional healers in Kashmir. In light of the aforementioned causes, as well as a lack of or unequal distribution of available resources, Kashmir's mental health services are not adequately systematised to provide excellent mental health care to individuals suffering from any mental health disease.

The goal of our research was to discover what percentage of persons with mental illnesses get assistance, who they seek help from, and whether the time it takes to get therapy varies by problem.

Hence, with the objective to address this gap, we aimed to see the referral dimension of mental health disorders in order to get an insight into the mental health system in Kashmir

METHOD

Study Design

This cross-sectional hospital-based study was conducted from March 2012 to June 2017 in the outpatient psychiatry department at the psychiatric disease hospital of Kashmir. Psychiatric disease hospital Kashmir is open to patients from all over the districts. It has a reputed mental health service, with psychiatrists.

Sample Size

The pathways to care were defined as the path a psychiatric patient travels during his referral process to an MHP. Accounting for feasibility issues in the participating mental health care system and using previous experience with the pathways method (Gupta et al. 2021) which included at least 50 subjects per center, and a total of 518 patients was interviewed. (The SMHS hospital's community center and GPDH) were selected).

Sampling

Using the convenience sampling method, all of those who were newly referred to MHP and agreed to participate in this research were interviewed. Newly referred patients were defined as the general population with mental disorders who first visited the Department of Psychiatry, Psychiatric Disease Hospital Kashmir and had not sought care from mental health services during the previous year. Besides, the patients who were transferred from other departments within the department of psychiatry, psychiatric disease hospital Kashmir were excluded from the sample, as the purpose of this study is to investigate the referral system among the

different institutions of the two-tier health system in India. For subjects who were unable to answer the questions due to a diagnosis of severe mental illness, family members or relatives who had accompanied them to the hospital were interviewed; for respondents under 18 years old, their parents were interviewed.

Study Tool

We used structured questionnaires to collect data. The structured questionnaire was established in line with concepts of other pathway-to-care studies following the methodology of a WHO pathway study and its pathway encounter form. The other questionnaire was composed of sociodemographic and personal characteristics (Gater et al. 1991). The basic demographic and personal characteristics about gender, qualification, marital status were included in the information sheet.

Ethical Aspects

The research protocol was approved by the institutional review board (KU-2019). The informed written consent of the participants was obtained before each interview.

Statistical Analysis

Data was entered in a Microsoft Excel spreadsheet. Continuous variables were summarized as mean and standard deviation. Categorical variables were summarized as percentages. The chi-square test was used to test independence between two categorical variables. A *p*-value of less than 0.05 was considered statistically significant. All statistical analysis was done using SPSS 20.0.

RESULTS

A total of 518 patients participated in the study and most of them were females (68.7%), most of them were in the age group of 31-40 years (35.1%) followed by 24.3% among the 41-50 years age group (Table 1). The mean delay from the onset of the symptoms of the illness and its network pathway to reach a psychiatric physician is shown in Table 2. Most of the patients in our study were diagnosed to have a major depressive disorder (MDD) (26.64%), bipolar affective disorders (BPAD) (16.98%), obsessive-compulsive disorder (OCD) (16.02%), and schizophrenia (14.67%) respectively. It was observed that the mean period of illness was relatively less in possession disorder (5.6 weeks). Mental illnesses like BPAD, dissociation disorder, MDD, OCD, panic disorder and schizophrenia had a mean period of illness ranging from 6.12 to 6.80 weeks respectively. Illnesses like generalized anxiety disorder (GAD) and phobic disorders were found to have a mean period of illness comparatively greater than

Table 1. Age and gender characteristics of the studied population (n=518)

Trait	Sub-group	n	%
Gender	Female	356	68.72
	Male	162	31.27
Age in years	15-20	14	2.70
	21-30	151	29.15
	31-40	185	35.17
	41-50	126	24.32
	51-60	38	7.33
	61-70	4	0.77

others, 7.33 and 8.08 weeks, respectively. In respect to the mean distance travelled, we found those having disorders like dissociation disorder, GAD, panic disorder and schizophrenia have travelled more than 60 km before attending to MHP. Moreover, the association between the type of mental illness and the mean period of illness was found to be statistically significant ($p < 0.001$). The description of all the diagnosed studied participants has been enlisted in Table 3, describing the type of doctor and specialty they consulted for their ailment before consulting a psychiatrist. Most patients who were later diagnosed with MDD (26.64%) had either consulted a physician (5.79%), neurologist (4.05%) or faith healer (1.73%) before attending to an MHP. Many (2.50%) have also self-medicated themselves before arriving at a final diagnosis. Similarly, those diagnosed with BPAD (16.90%) had either visited faith healers (3.47%) or neurologists (27.02%) before coming to an MHP. Those with dissociation disorder (7.72%) had also attended to neurologists (3.86%) or faith healers (2.89%) before they reached an MHP. Patients with panic disorders (11.38%) had mostly reported to cardiologists (2.89%), followed by advised taken by local pharmacists (2.50%) to seek treatment for their mental ailment. The association between the mental disorder and the specialty consulted was found to be statistically significant.

DISCUSSION

The current study revealed some descriptive insight into the pathways of people with mental disorders in Kashmir. The findings reveal that most of the people with mental disorders who went to the public psychiatric facility had initially visited the non-psychiatric treatment centers as their first point of contact before visiting the formal public mental health service center. Although most of the patients had initially been to other non-psychiatric providers, the findings show that only a small percentage of patients with mental disorders (31.8%) initially took them directly to the formal psychiatric facility

Table 2. Distribution of type of mental disorder and first pathway contact with the mean delays from the onset to mental health professional (MHP)

Diagnosis	No of Patients n (%)	First contact n (%)	Second contact n (%)	Third contact n (%)	Fourth contact n (%)	Fifth contact n (%)	Mean Period (Months; (Mean±S.D.)	Mean Distance (SD/Kms; Mean±S.D.)	Sum of Squares (df)	F/ p-value
Overall mean	-	-	-	--	-	-	6.68±1.21	58.31±0.18	25.697 (6)	0.701/ 0.649
Phobic disorder	12(2.31)	2 (16.6)	7 (58.3)	1 (8.3)	1 (8.3)	1(8.3)	8.08±0.82	55.00±9.69		
BPAD	88(16.9)	32(36.3)	39(44.3)	10(11.3)	4(0.0)	3(0.0)	6.34±0.30	57.59±3.58		
Possession disorder	10(1.9)	1(10.0)	9(90.0)	0(0.0)	0(0.0)	0(0.0)	5.6±0.90	53.6±10.61		
Dissociation disorder	40(7.7)	3(7.5)	29(72.5)	3(7.5)	2(5.0)	3(7.5)	6.8±0.45	62.58±5.31		
GAD	12(2.3)	1(8.3)	10(83.3)	0(0.0)	1(8.3)	0(0.0)	7.33±0.82	61.16±9.69		
MDD	138(26.6)	23(16.6)	94(68.1)	5(3.6)	9(3.6)	7(5.0)	6.78±0.24	50.09±2.87		
OCD	83(16.0)	20(24.0)	51(61.4)	9(10.8)	2(2.4)	1(1.2)	6.53±0.31	48.75±3.68		
Panic Disorder	59(11.3)	4(6.7)	45(76.2)	1(1.6)	6(10.1)	3(5.0)	6.12±0.37	63.25±3.67		
Schizophrenia	76(14.6)	27(35.5)	38(50.0)	5(6.5)	5(6.5)	1(1.3)	6.48±0.33	61.74±3.85		
Total	518(100.0)	113(21.8)	322(62.1)	34(6.5)	30(5.7)	19(3.6)	-	-		

BPAD= Bipolar affective disorder; GAD= Generalized anxiety disorder; MDD=Major depressive disorder; OCD= obsessive-compulsive disorder; S.D. = Standard deviation. p < 0.05 is considered significant at 95% confidence interval.

Table 3. Cross-tabulation of disease characteristics and place patients first sought psychiatric treatment

Particulars	Phobic Disorder	BPAD	Possession Disorder	Dissociative disorder	GAD	MDD	OCD	Panic disorder	Schizophrenia	χ^2 (df)	p-value	Total
Psychiatrists	2(1.7)	32(28.3)	1(0.8)	3(2.6)	1(0.8)	23(20.3)	20(17.6)	4(3.5)	27(23.8)	36.606(8)	<0.001*	113(21.8)
Physician	2 (4.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	25(51.0)	14(28.5)	6(12.2)	2(4.0)	45.560 (8)	<0.001*	49(9.4)
Surgeon	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	3(20.0)	6()	6(40.0)	0(0.0)	23.997(8)	0.002*	15((2.8)
Cardiologist	0(0.0)	0(0.0)	0(0.0)	5(14.2)	5(14.2)	3(8.5)	7(20.0)	13(37.1)	2(5.7)	74.181(8)	<0.001*	35(6.7)
ENT Specialist	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(7.6)	10(76.9)	1(7.6)	0(0.0)	1(7.6)	30.588(8)	<0.001*	13(2.5)
Neurologist	0(0.0)	19(23.4)	0(0.0)	20(24.6)	0(0.0)	21(25.9)	6(7.4)	0(0.0)	15(18.5)	62.909(8)	<0.001*	81(15.6)
Endocrinologist	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	10(71.4)	0(0.0)	4(28.5)	0(0.0)	27.409(8)	<0.001*	14(2.7)
Local Medical Shop	2(4.4)	9(20.0)	0(0.0)	0(0.0)	0(0.0)	8(17.7)	5(11.1)	9(20.0)	12(26.6)	26.099(8)	<0.001*	45(8.6)
Self-Medication	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	12(92.3)	0(0.0)	1(7.6)	0(0.0)	32.826(8)	<0.001*	13(2.5)
Non-allopathic treatment	1(5.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	5(25.0)	5(25.0)	4(20.0)	5(25.0)	16.776(8)	0.03*	20(3.8)
Gastroenterology	5(17.8)	6(21.4)	0(0.0)	0(0.0)	4(14.2)	4(14.2)	5(17.8)	0(0.0)	4(21.2)	102.992(8)	<0.001*	28(5.4)
Pulmonologist	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(7.6)	5(38.4)	2(15.3)	5(38.4)	0(0.0)	25.208(8)	<0.001*	13(2.5)
Faith healer	0(0.0)	22(27.8)	9 (11.3)	12(15.1)	0(0.0)	9(11.3)	12(15.1)	7(8.8)	8(10.1)	81.778(8)	<0.001*	79(15.2)
Total	12(2.3)	88(16.9)	10(1.9)	40(7.7)	12(2.3)	138(26.6)	83(16.0)	59(11.3)	76(14.6)	-	-	518(100)

BPAD= Bipolar affective disorder; GAD= Generalised anxiety disorder; MDD=Major depressive disorder; OCD= obsessive-compulsive disorder; ENT Specialist= ear nose and throat. *p < 0.05 is considered significant at 95% confidence interval.

for treatment, which totally contradicts with similar studies conducted all in other parts of the globe (Appiah-Poku et al. 2004, Ngoma et al. 2003). Mental disorders constitute 5.6% of the total disease burden in India. Only 10 % of mental disorders in India are receiving treatment (Hashimoto et al. 2015). The primary care in India is provided by the National Mental Health Program, and India was the first country among developing countries to deliver primary mental health care through community-based mental health care (Venkatesh et al. 2015). The mental health services in Kashmir are primarily limited to two hospitals in Srinagar (GMC Srinagar and SKIMS Hospital), though the National Mental Health Plan and the district mental health program were started in many districts of Kashmir. The district mental health program (DMHP) has been started in various districts of India. The DMHP was started in July 2008 (Shoib et al. 2021a, Shoib et al. 2021b, Shoib and Yasir Arafat 2020).

The number of patients visiting the local chemist shop (8.8%) or taking medicine of their own (2.7%) was also observed. This can be explained due to poor mental health literacy which takes a huge toll on people and acts as a barrier to the treatment and diagnosis of mental disorders in developing countries, where mental health services are already limited (Mushtaq and Margooob 2006).

There are various reasons which are obstacles to delivering mental health services in India. Stigma, scarcity of medical facilities, socio-economic factors, and poor mental health literacy are important factors that hinder the delivery of mental health services. Mental health Stigma is one of the main challenges for delivering mental health services. There is an unmet need to reduce the stigma associated with mental illness, which will improve the delivery of mental health services (Appiah-Poku et al. 2004).

In, Kashmir mental health systems are not fully systematized to provide ideal mental health services to patients suffering from any mental health problems due to either non-existence or unequal distribution of available resources. Therefore, patients chose an accessible pathway according to local convenience and affordability. The number of patients who consulted the non-psychiatric pathway was higher than the patients who consulted the specialist path (48.8% vs 31.8%). Even though less than half of the patients in this study had initially sought care from non-psychiatric providers such as faith-based religious or traditional healers, we know that conventional and spiritual healers play an essential role in the mental health care pathway in developing countries. Studies in other parts of India have reverberated the same finding, and similar observations were made from other parts of the world where religious healers and herbalists were the first points of contact for some patients before they eventually went to the public psychiatric hospital (Girma and Tesfaye 2011). Our study found that only 31.8% were referred to a psychiatrist

on the first contact. This shows the need for proper education regarding mental illness and focuses on reducing the stigma associated with mental health illness.

Furthermore, 17.1% of patients with mental health disorders had their first contact with faith healers. The appointment to faith healers is common across the country, and the rate in this study is similar to that of earlier studies which show a range of 30-80% chance of visiting faith healers. Conventional and spiritual healers play an essential role in the mental health care pathway in developing countries (Jalal et al. 2020, Khoso et al. 2018). In Kashmir, there is a long history of faith healers. People usually go to these healers, especially for treatment. Pir and Faqirs are the first contacts of a patient with trauma. Patients who have mental illness usually seek faith healers and are the first contact with patients as 56% of psychiatric patients attribute mental illness to ghosts, evil spirits, and other invisible forces. Faith healers have special gifted powers to control these evil powers through prayers and rituals (Sethi and Trivedi 1979, Village and Revd 2005).

In developing countries, patients with mental illness are in direct contact with mental health services and this exact same protocol is also followed in Kashmir. The situation is worsened by the fact that primary health care professionals in India are not adequately trained for diagnosing and treating mental disorders as rightly mentioned by Yildiz et al. (2003) in their study in which they stressed the need for training of general physicians in mental health problems for effective diagnosis at the primary care level. Also Ayraanci and Yenilmez (2002) stated some factors responsible for low rates of psychiatric disorders being diagnosed and treated in primary care settings as following: physicians under-recognizing mental disorders despite being educated on the subject, mental screening scales not being used, patients being unaware of their diseases and providing insufficient information to physicians about mental symptoms, and co-occurrence of psychiatric disorders. The Ministry of Health and Family Welfare (MOHFW) is the authority responsible for health and mental health services. Resources are distributed to the states through the state health societies and subsequently to the district health societies. There are separate governances for hospital and primary care services – hospital services being under the Directorate of Health Services, Kashmir and Health, and the Health and Medical Education Department, respectively. Hence, primary mental health services that were introduced later than the hospital services have become separately governed under the private sector. The involvement of private organizations in the delivery of mental health care has been small, largely due to the prohibition of the old stigma associated with mental health issues. These are in the form of private specialist services and local non-governmental organizations (NGOs). Several NGOs, which involved professionals, consumers, and careers, have been established since a decade ago. Interestingly, there

has been a significant rise in the efforts in mental health advocacy by individuals and groups of consumers using social media as a platform. Efforts to form coalitions at the national level and to involve as many stakeholders as possible in the national planning of services delivery have just been revived recently. Mutual collaboration with services from other governmental agencies (NGO), and private and NGO's, are potential outlets for mental health service delivery in the future. Mental health services in Kashmir are still largely based on those inside mental institutions. Efforts have been made to expand services beyond the mental hospitals through decentralization to move services to the general hospitals for many years, and the incorporation of mental health care into the primary health programs. Services currently available in the system can be categorized into three levels – the mental hospitals, the general hospitals, and the primary health centers, as well as specialist services. Being in a state of conflict with limited resources, the main focus had been providing services to the people seeking treatment in those settings. However there is a need to provide coordinated, comprehensive mental health care to cater to the different groups of people with varying levels of mental health needs through within and from outside the health organization. These would include adequate mental health promotion and mental illness prevention activities, services for early detection, and treatment of common mental illnesses and services that provide adequate treatment and aftercare for people with serious mental illnesses. For this purpose, looking at the needs of the population for mental health services is important so that services would be more needs-led and fair.

The study gives us insight into the delay at the beginning of proper psychiatric treatment in people who visit faith healers or other specialties for treatment. The study advocates for improving mental health literacy, reducing the stigma associated with mental illness, enhancing the knowledge regarding psychiatric illness and its management, and guaranteeing good quality management compliance. There is a need for an overall haul of the medical health care system and to develop innovative programs to improve mental health literacy.

Study limitations: The study was conducted at a single location, thus there is a possibility of section bias in the study. . Our study had a limited number of patients which is one of the major limitations of our study. Further, there are chances of recall bias as the study provides and asks the patients about the retrospective pathway.

CONCLUSION

The current study revealed different pathways to seek psychiatric care in Kashmir India that included a direct pathway to a public psychiatric hospital, a direct pathway to

a non-psychiatric general medical practitioner; and a direct pathway to the faith-based or traditional healing centres. Even though the latter points of contact (religious prayer camps, traditional healers or general hospitals) are a preference for most individuals as the initial place to seek mental health treatment. The presence of those smaller number of patients at the public psychiatric facility indicates that there is a need to educate people and eventually a transition to the more formal psychiatric treatment facility for mental health services in Kashmir division is required. The public mental health authorities in Kashmir need to recognize that it is important to increase funding to incorporate these faith-based and traditional healers as well as expand psychiatric care at the general medical health facilities as part of the mental health continuum of care. Doing so will enable people with mental disorders to access mental health treatment regardless of which door they initially choose to access mental health care.

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The Effects of Art Therapy and Psychosocial Skills Training on Symptoms and Social Functioning in Patients with Schizophrenia and Their Relatives



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ABSTRACT

Objective: The effects of antipsychotics on negative symptoms are limited. The most appropriate approach in the treatment of schizophrenia is the integration of drug therapy with psychological and social interventions. The purpose of this study was to evaluate and compare the effects of art therapy and psychosocial skills training (PSST) in the treatment of schizophrenia.

Methods: A total of 15 patients diagnosed with schizophrenia according to the criteria in DSM-5 and 12 patient relatives were included in the study. The patients were randomly divided into 2 groups, 7 were included in the art therapy program and 8 were included in the PSST program for schizophrenia. 90-minute sessions of art therapy and PSST were carried out once a week for 17 weeks. Participants with schizophrenia were evaluated with the Positive and Negative Syndrome Scale (PANSS), Social Functioning Scale (SFS) and the Calgary Depression Scale for Schizophrenia and the relatives were given Beck Depression Inventory, Beck Anxiety Inventory and Zarit Burden Interview.

Results: There was a significant decrease in the PANSS negative symptoms, PANSS general psychopathology, SFS pro-social activities and SFS recreation scores in both groups, while the SFS social withdrawal scores decreased significantly only in the art therapy group. In the PANSS negative symptoms subscale, passive social withdrawal, difficulty in abstract thinking, lack of spontaneity and flow of conversation and stereotyped thinking scores were significantly lower in the art therapy group. In the PSST group only the score for difficulty in abstract thinking declined significantly.

Conclusion: The findings of the present study suggest that art therapy and PSST have positive effects on the improvement of negative symptoms as well as improvements in social and cognitive functionality in schizophrenia.

Keywords: Schizophrenia, Art Therapy, Psychotherapy Group, Psychosocial Skills Training, Social Functioning

INTRODUCTION

Schizophrenia is a life-long chronic disease manifested mainly by positive, negative, cognitive and mood symptoms, heavy social and economic costs and significant deterioration in quality of life and functionality. Although antipsychotics are the first-line treatment in schizophrenia, their effects on the residual type and negative symptoms are very limited. Even patients responding well to drug therapy are at risk of impaired social adaptation and functionality, and poor quality of life. Integration of drug therapy with various psychosocial interventions in schizophrenia helps prevent the recurrence

of symptoms and improve functionality in schizophrenia patients (Schooler 2006).

Addition of Psychosocial Skills Training (PSST) to drug therapy in the treatment of schizophrenia is a structured, interactive and systematic training approach applied individually or in groups. PSST is a program that allows patients to become aware of their disease and condition, facilitates coping with the disease, prevents exacerbations and relapses of the disease, increases their insight into the disease, adherence to medication, social functionality, personal and social life skills, and quality of life (Yıldız et al. 2005). The

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PSST program for schizophrenia was designed by Yıldız (2011) to improve the psychological and social skills of patients based on the cognitive and behavioral treatment techniques in some modules of the Social Skills Training implemented by Liberman (1986, 1987, 1988). Studies with PSST in schizophrenia patients and their relatives found that there was a decrease in clinical symptoms and depressive symptoms, and an increase in quality of life and social functionality in the patient group (Yıldız et al. 2002, Üçok et al. 2002, Deveci et al. 2008).

Art therapy is a psychotherapy method applied by making and using art in many visual, auditory and physical means. The American Art Therapy Association defines art therapy as “an integrative mental health and human services profession that enriches the lives of individuals, families, and communities through active art-making, creative process, applied psychological theory, and human experience within a psychotherapeutic relationship” (American Art Therapy Association AATA, 2017). The purpose of art therapy is to improve an individual’s creativity, emotional expression, communication, and ability to relate to oneself and others. Art therapy is an effective therapy, especially for those who have difficulty expressing their feelings and thoughts verbally, such as individuals with schizophrenia. It facilitates the connection between conscious and unconscious processes and allows individuals to become aware of and reveal themselves (Patterson 2007). The use of artistic elements such as painting, music, clay and drama helps to externalize unspoken feelings and thoughts (Killick and Schaverien 2003). Art is considered a medium that offers patients a secure and indirect way of connecting with themselves and others. Creating artworks and sharing this process has an inherent therapeutic effect (Sarandöl et al. 2013). Some studies on the effectiveness of art therapy in the treatment of schizophrenia patients showed its positive effects on positive and negative symptoms, social functionality, interpersonal communication, depressive symptoms and medication management (Patterson 2007).

Families of patients with schizophrenia have important roles in the treatment, follow-up and social adaptation of patients. Yıldız et al. (2003) applied a rehabilitation program to schizophrenia outpatients with the participation of volunteers and their families, and observed that there was an improvement in the clinical condition and social functionality of the patients at the end of the program. Considering the chronic course of schizophrenia and its consequential difficulties, it is important that families as the caregivers of the patients are informed about the nature of the disease and coping methods and able to choose treatment. In addition, the mental status of families should be monitored to maintain their well-being, and appropriate interventions should be made when necessary. It is known

that family functionality is impaired when the functionality of schizophrenia patients is impaired, which affects the clinical course of the patient (Danacı et al. 2005, Friedmann et al. 1997). Therefore, it is necessary to include the families in the treatment plan.

Sarandöl et al. (2013) applied art therapy methods in schizophrenia patients and their relatives in group works in their study and achieved significant improvements in the symptoms of the disease, as well as personal and social skills. The researchers focused on whether these changes are associated with art therapy practices or involvement in a group psychotherapy process. They suggested that it would be beneficial to compare the methods through group works using different psychotherapy techniques and to evaluate the differences in psychotherapy methods for schizophrenia patients (Sarandöl et al. 2013). From this point of view, this study investigated the effects of the PSST and art therapy group works added to drug therapy on the symptoms and personal and social skills of the randomized schizophrenia patients, and whether there were differences in the effects observed on patients between the groups. Relatives of patients were also included in the study due to the importance and positive effect of family members’ participation in the treatment of schizophrenia patients. Thus, we aimed to inform the relatives of patients about schizophrenia, raise awareness about the factors affecting the course of the disease and its individual and social consequences, provide a basis for a healthy relationship with patients, and allow them to keep their expectations from the patient at a realistic level, communicate with other patient relatives to share experiences, and monitor the changes in the patient more closely.

METHOD

Forming the Study Groups and Procedure

An approval (no. B.30.ULU.0.20.11.05-604.01.01/1189 dated 01/03/2016) was obtained from Bursa Uludağ University Ethics Committee. Written informed consent was obtained from the patients and their relatives. Study sample consisted of 15 patients diagnosed with schizophrenia according to DSM-5 monitored in the Psychosis Outpatient Clinic of Mental Health and Diseases Department of Faculty of Medicine, Bursa Uludağ University (B.U.Ü.T.F) and 12 patient relatives. The patients were monitored by two physicians in the psychosis outpatient clinic. To eliminate therapist bias, the patients participated in group works with physicians who did not monitor them. The patients were randomized into 2 groups, 7 of them being included in the art therapy group, and 8 of them being included in the PSST program for schizophrenia. Art therapy and

PSST practices consisted of 90-minute sessions once a week for 17 weeks. The PSST program was applied to separate groups of patients and relatives simultaneously, while the patients and relatives in the art therapy group received the first 5 sessions in separate groups and then continued next sessions in the same group. Patients and relatives were gathered in the same group after the fifth session to avoid any methodological differences from the art therapy study we conducted in 2013 (Sarandol et al., 2013). Individual preliminary interviews were conducted with patients and relatives to obtain sociodemographic information and to evaluate psychiatric conditions. The patients and relatives were informed about the group works and the objectives of the study. Sociodemographic and clinical characteristics of 15 patients are shown in Table 1.

The inclusion criteria of the study were to be at the ages of 18 to 65, to be diagnosed with schizophrenia according to DSM-5, to be literate, to have completed the acute therapy and be on maintenance medication, and to give consent to participate in group training after being informed. The exclusion criteria were to be in a psychotic exacerbation period, to have an organic mental disorder or mental retardation, and to have alcohol/substance use disorder.

Art therapy group works were conducted as closed group works and in 17 sessions in total. In the first year, the study lasted 12 weeks, and the next 5 sessions were reserved for theater play rehearsals. Sessions lasted 90 minutes. Each session consisted of 2 parts. In the first five sessions, the patients and relatives studied in separate groups but did the same activities. The intention was to ensure that the patients and relatives get help primarily for themselves in separate groups. For the purposes of the study, the relatives of the patients would be effective in the development of the personal and social skills of the patients, therefore they were included in the patient group after the fifth session, together forming a large group. This allowed for synergy in functionality between the two groups. Group sessions included elements of painting, music, literature, clay and theater. In each session, before the practice, the members shared about the previous practice and their daily life for the last week. It was followed by a practice with an art material, personal and group feedbacks were received about the resulting product of the practice, and they shared feelings and thoughts about the whole process. Finally, the relationship and differences with daily life of the shared experiences were emphasized. Therapists also provided feedback as needed. After the first year, group works were continued in the second year once every 15 days.

The skills that the schizophrenia patients received training in the PSST program were: improving communication skills, improving problem-solving skills, learning to cope with

attention and memory problems, understanding psychosis and schizophrenia, learning about antipsychotic medication, learning about medication side effects, evaluating the treatment, learning to cope with persistent symptoms, recognizing and monitoring warning signs, learning about the negative effects of alcohol and narcotic drugs to avoid them, avoiding seeking useless treatments, learning to cope with stress, increasing self-confidence, recreation and daily activities, improving friendship, and participating in social activities. Skill acquisition was achieved gradually with small steps. The training used active teaching methods such as setting a purpose, informing, being a model, behavioral rehearsing, role playing, supporting the desired response, giving corrective feedback, behavior shaping, sharing experiences, using appropriate social enhancements, reinforcement with exercises and homework, and informing the families.

The patients included in group works continued their routine treatment and monitoring in our psychosis outpatient clinic. During the period of group works and scale evaluations, none of the patients were hospitalized and no changes were made to the current medications.

Scales Used in the Study

The patient group was applied the Positive and Negative Syndrome Scale (PANSS), Calgary Depression Scale for Schizophrenia (CDSS), Social Functioning Scale (SFS), Hinting Task (HT), Unexpected Outcomes Test (UOT), and relatives of the patients were applied Zarit Burden Interview (ZBI), Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI) before the group works, and 3, 6 and 12 months after the end of the group works to measure the long-term effects.

Positive and Negative Syndrome Scale (PANSS): It is used to measure the distribution and severity of positive and negative symptoms in schizophrenia. It was developed by Kay et al. (1987). It consists of 30 items and each item has a severity rating of 1-7. PANSS is a Likert-type scale. The validity and reliability study of the Turkish version of the scale was performed by Kostakoğlu et al. (1999). Concerning the internal consistency, Cronbach's alpha coefficients were high (0.75, 0.77 and 0.71, respectively), similar to the original study. The inter-rater reliability correlation coefficients for the subscales were 0.97, 0.96 and 0.91, respectively. For construct validity, the correlation coefficient between subscales was found to be -0.41, showing that positive and negative subscales measured different symptom clusters, similar to the original study.

Calgary Depression Scale for Schizophrenia (CDSS): This test was developed by Addington et al. (1992) to measure

the level and severity of depressive symptoms in patients with schizophrenia. The validity and reliability study of the Turkish version of the scale was performed by Aydemir et al. (2000). The internal consistency of CDSS was high (Cronbach's alpha coefficient 0.90). Inter-rater reliability coefficient (0.87-1) and test-retest reliability (0.95-1) were statistically significant. CDSS is a four-point Likert scale rated by the interviewees and consists of 9 items. Each item on the scale is scored between 0-3 points and the total score is between 0-27.

Social Functioning Scale (SFS): It was developed by Birchwood et al. (1990), and validity and reliability studies of its Turkish version were performed by Erakay (2001). In the reliability analysis of the scale, Cronbach's alpha internal consistency coefficient was 0.807, and the reliability coefficient between patients and relatives was 0.95. It consists of 7 domains: social withdrawal, interpersonal functioning, pro-social activities, recreation, independence-competence, independence-performance, employment.

Zarit Burden Interview (ZBI): It was developed by Zarit et al. (1980). The validity and reliability studies of its Turkish version were performed by Özlü (2004). The Cronbach's alpha internal consistency coefficient of the scale was 0.83. It is used to determine the level of the social and economic burden on the caregivers. The total score ranges from 22 to 110. The scores are evaluated as 'mild burden' at a score of 22-46, 'moderate burden' at 47-55, and 'severe burden' at 56-110.

Beck Depression Inventory (BDI): It was originally developed by Beck et al. (1961) and adapted into Turkish by Hisli (1989). The split-half test reliability coefficient was 0.74. The criterion validity between the Multidimensional Personality Questionnaire-Depression Scale was 0.63. The person filling out this self-assessment scale marks the sentence that best expresses how they felt in the previous week, including the day of the application. Each item is scored between 0-3. The highest possible score is 63. Scores of 0 to 9 are evaluated as no/minimal depression, 10 to 18 as mild depression, 19 to 29 as moderate depression, and 30 to 63 as severe depression.

Beck Anxiety Inventory (BAI): It was developed by Beck et al. (1988) and adapted into Turkish by Ulusoy et al. (1993). Ulusoy et al. found the Cronbach's alpha internal consistency coefficient of the scale to be 0.93. BAI is a self-assessment scale used to determine the level of anxiety, symptom distribution and severity. It is scored is between 0-63. Scores of 8 to 15 are considered as mild anxiety, 16 to 25 as moderate anxiety, and 26 to 63 as severe anxiety.

Hinting Task (HT): It is one of the advanced theory of mind tests developed by Corcoran et al. (1995). The test consists of

10 short stories between two characters and these stories are read out by the researcher. Every story ends with one of the characters hinting something to the other. The participant is asked what the character really meant to say. An appropriate response in the first step takes 2 points. If the correct meaning is not inferred, the story continues and a more obvious hint is given. If the participant gives a correct answer at this stage, he/she gets 1 point, if he/she does not answer correctly, he/she gets 0 points and goes on to the next story. The total points range from 0 to 20. The test is used to evaluate theory of mind deficits in patients with schizophrenia (Bora et al. 2008, Tas et al. 2012).

Unexpected Outcomes Test (UOT): This test, consisting of 12 questions, was developed by Dyck et al. (2001) to measure the ability to think logically, the emotions elicited by the overall situation, and the ability to understand the inconsistency between the emotion and the emotion-eliciting situation. UOT items describe a situation that can cause an ordinary emotional response in the character and indicate the character's emotional response. In each question, the emotion is something unexpected arising in these situations. The person being tested is asked to provide additional information about the context to explain the apparent discrepancy. Answers are recorded in the test booklet and scored on a three-point (0-2) scale. The test is ended if incorrect answers are given three times consecutively. The total score ranges from 0 to 24. In the pilot study conducted for the Turkish version of the test, the inter-rater reliability was found 0.91 and its validity was also shown (Bora, 2009).

Evaluation

Both groups of patients who received art therapy and PSST were evaluated using PANSS, CDSS, SFS, UOT before the training (0 month) and 3, 6 and 12 months after the training.

Patient relatives who received art therapy and PSST were evaluated using BAI, BDI, and ZBI before the training (0 month) and 3, 6 and 12 months after the training.

Statistical Evaluation

The Shapiro-Wilk test was used to examine whether the data showed a normal distribution. Descriptive statistics were presented as mean and standard deviation or median (minimum-maximum) for quantitative data, and as frequency and percentage for qualitative data. The t-test was used for the comparison of two groups for normally distributed data, and the Mann-Whitney U test was used for the comparison of two groups for data that was not normally distributed. The analysis of the difference between groups for repeated measurements was made over the changes calculated from the initial measurement. Variance analysis of repeated

measurements and Friedman's test were used to compare the time-dependent measurements of the variables within the group. In case of significance, Bonferroni test was used in pairwise comparisons. The significance level was determined as $p \leq 0.05$. Statistical analysis of data was performed using SPSS23.0 (IBM Corp. Released 2015. IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.) statistical package program.

RESULTS

Comparison of both patient groups in sociodemographic characteristics revealed no significant difference in gender,

age, marital status, education level, employment, age of the first episode, number of episodes, number of hospitalizations, suicide history, and family history. The sociodemographic characteristics of the participants are shown in Table 1.

Comparison of the Scales Applied to the Patients Before and After the Group Works

In PSST group, no statistically significant difference was found in the comparison of positive symptoms subscale of PANSS and social withdrawal, interpersonal functionality, recreation, employment subscale scores of CDSS, HT, UOT, and SFS gathered before the group works (0 month) and at 3, 6 and 12 months after the end of the group works.

Table 1. Sociodemographics of Patients

	Art Therapy Group	PSST Group	p
Age (mean $\pm$ SD)	44 $\pm$ 6.92	41.62 $\pm$ 7.28	0.531
Gender (n, %)			0.282
Male	4 (57.2%)	7 (87.5%)	
Woman	3 (42.8%)	1 (12.5%)	
Marital Status (n, %)			-
Married	0 (0%)	0 (0%)	
Single	7 (100%)	8 (100%)	
Education (n, %)			0.569
Primary school	0 (0%)	1 (12.5%)	
Secondary school	1 (14.28%)	1 (12.5%)	
High school	4 (57.14%)	5 (62.5%)	
Higher education	0 (0%)	1 (12.5%)	
University	2 (28.57%)	0 (0%)	
Employment (n, %)			0.467
Employed	1 (14.28%)	0 (0%)	
Retired	0 (0%)	2 (25%)	
Unemployed	6 (85.72%)	6 (75%)	
Suicide history (n, %)			0.467
Yes	0 (0%)	2 (25%)	
No	7 (100%)	6 (100%)	
Family history (n, %)			1
Yes	3 (42.8%)	4 (50%)	
No	4 (57.2%)	4 (50%)	
Age at first episode (mean, SD)	22.71 $\pm$ 5.28	23.62 $\pm$ 6.9	0.781
Number of episodes (mean, SD)	2.42 $\pm$ 1.9	3 $\pm$ 3.09	0.955
Number of hospitalizations (mean, SD)	1.57 $\pm$ 0.78	1.62 $\pm$ 1.50	0.867

PSST: Psychosocial Skills Training

Table 2. Changes in the Scales with Significant Differences for the Art Therapy and PSST Groups

Art Therapy Group	0 month	3 months	6 months	12 months	p
PANSS - Negative Symptoms	20.86±4.30 ^a	19.00±2.71 ^a	16.86±5.46 ^{a,b}	12.29±1.50 ^b	0.001
PANSS - General Psychopathology	28.43±6.24 ^a	29.71±6.58 ^a	25.29±3.09 ^a	19.29±3.15 ^b	0.001
PANSS – Total	60.00±12.40 ^a	60.43±11.82 ^a	52.71±5.71 ^a	40.71±5.44 ^b	<0.001
SFS - Social Withdrawal	10.29±1.60 ^a	10.14±1.46 ^a	11.29±2.06 ^{a,b}	12.43±1.72 ^b	0.008
SFS - Pro-Social Activities	9.14±3.80 ^a	8.57±3.64 ^a	10.29±6.10 ^a	16.86±2.67 ^b	<0.001
SFS – Level of Independence (Competence)	35.00±2.77 ^a	35.29±4.19 ^{a,b}	36.86±1.46 ^{a,b}	38.00±1.53 ^b	0.033
SFS – Level of Independence (Performance)	23.29±4.27 ^a	25.14±6.52 ^a	26.29±7.02 ^a	29.29±5.79 ^a	0.036
PSST Group					
PANSS - Negative Symptoms	20.88±4.85 ^a	21.38±10.80 ^a	17.13±8.20 ^a	15.88±6.96 ^a	0.047
PANSS - General Psychopathology	34.00±6.14 ^a	33.25±6.45 ^a	23.38±6.52 ^b	23.88±5.11 ^b	<0.001
PANSS – Total	67.50±11.31 ^a	67.13±15.72 ^a	53.38±13.32 ^{a,b}	51.25±12.43 ^b	0.001
SFS - Pro-Social Activities	9.50±3.16 ^a	9.50±3.16 ^a	9.50±1.77 ^a	10.00±1.31 ^a	0.021
SFS – Level of Independence (Competence)	33.38±5.34 ^a	34.50±4.99 ^{a,b}	36.25±4.80 ^b	36.38±4.50 ^b	0.005
SFS – Level of Independence (Performance)	18.13±5.67 ^a	19.00±9.17 ^a	21.13±8.98 ^a	22.88±11.52 ^a	0.039

a, b superscripts indicate statistical differences between groups in the same row. There is no statistically significant difference between the months with the same superscripts.

PSST: Psychosocial Skills Training

PANSS: Positive and Negative Syndrome Scale

SFS: Social Functioning Scale

In art therapy group, there was no statistically significant difference in the comparison of positive symptoms subscale of PANSS and interpersonal functionality, recreation, employment subscale scores of CDSS, HT, UOT, and SFS gathered before the group works (0 month) and 3, 6 and 12 months after the end of the group works.

Subscales with significant differences in intra-group comparison of scores for before and after the art therapy and PSST group works with patients are shown in Table 2, Figures 1a and 1b.

There was a significant difference in the total score of the PANSS negative symptoms subscale in intra-group assessment of both the art therapy and PSST groups, therefore the items of the negative symptoms scale were reviewed one by one. The changes in PANSS negative symptoms subscale items for both study groups are shown in Table 3 and Figure 2.

There was no statistically significant difference between art therapy and PSST groups in the comparison of the PANSS, CDSS, SFS, HT, and UOT scores for before the group works (0 month), and 3, 6 and 12 months after the end of the group works. Table 4 presents detailed information.

Comparison of Scales Applied to the Relatives of Patients Before and After the Group Works

There was no significant difference between art therapy and PSST groups of patient relatives upon the examination of the changes in the BAI, BDI, and ZBI scores for before the group works and at 3, 6 and 12 months after the end of the group works. There was also no significant difference in the scale scores between the groups of relatives of patients. Intra-group and inter-group comparison of the scale results of the patient relatives who received art therapy and PSST is shown in Table 5.

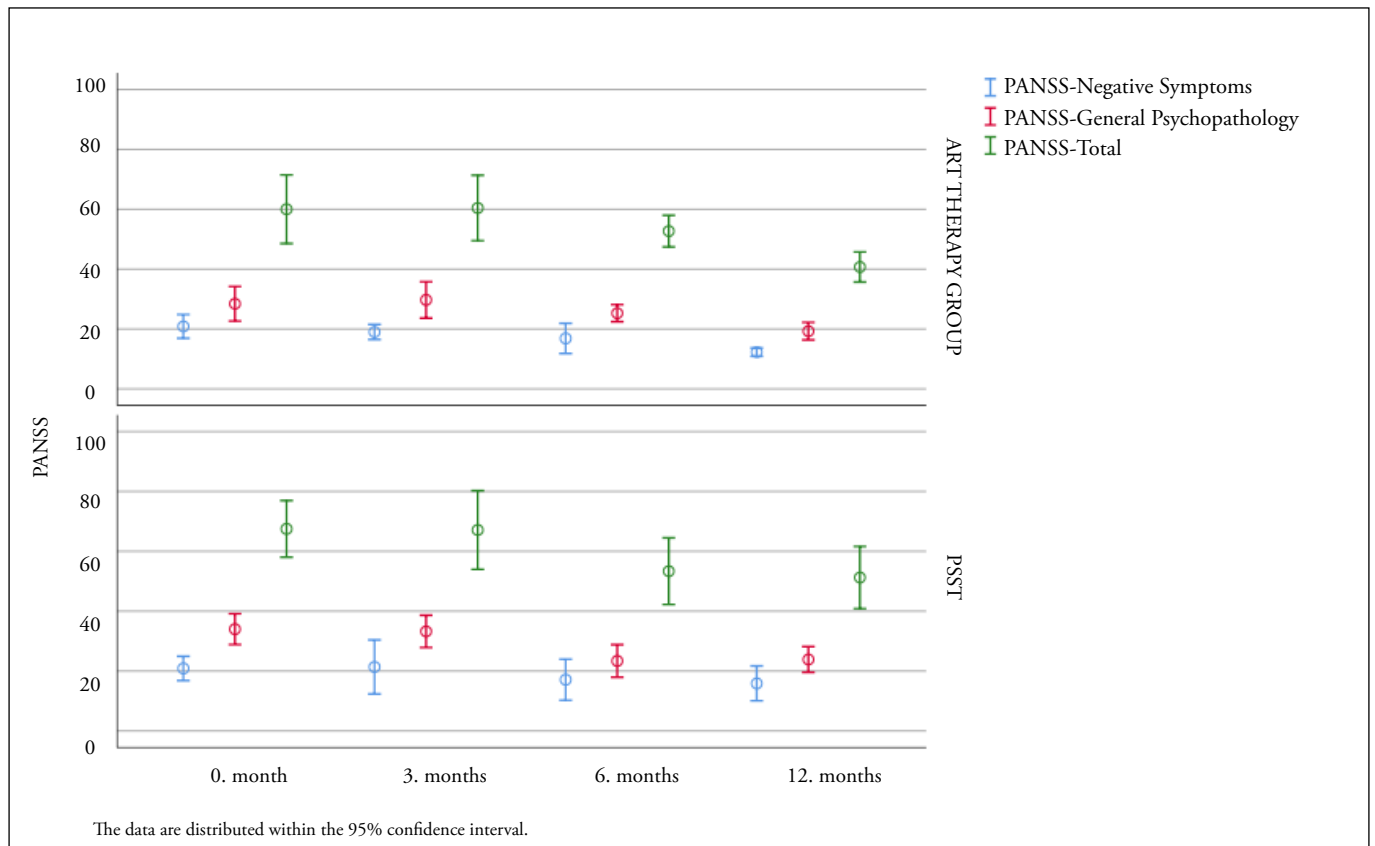


Figure 1a. Changes in the Scales with Significant Differences for the Art Therapy and PSST Groups

PSST: Psychosocial Skills Training

PANSS: Positive and Negative Syndrome Scale

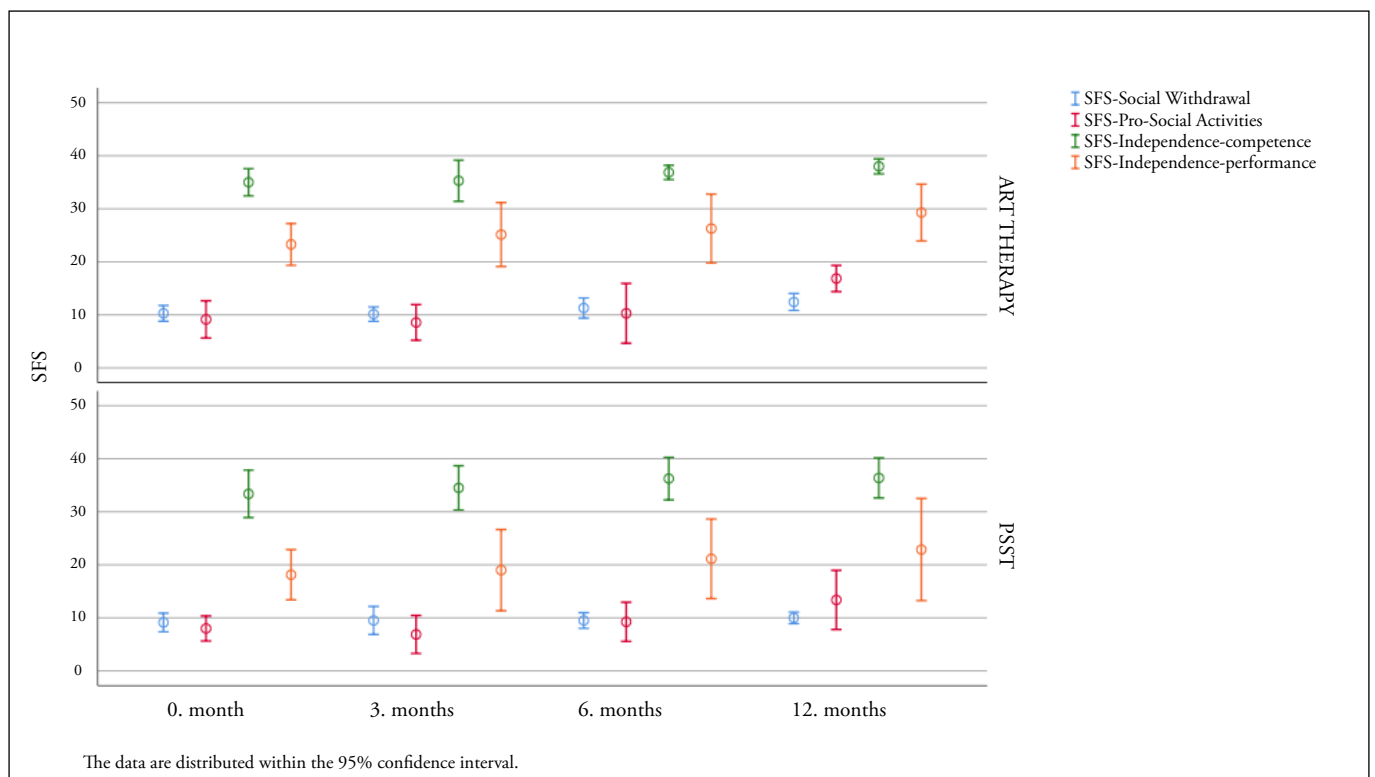


Figure 1b. Changes in the Scales with Significant Differences for the Art Therapy and PSST Groups

PSST: Psychosocial Skills Training

SFS: Social Functioning Scale

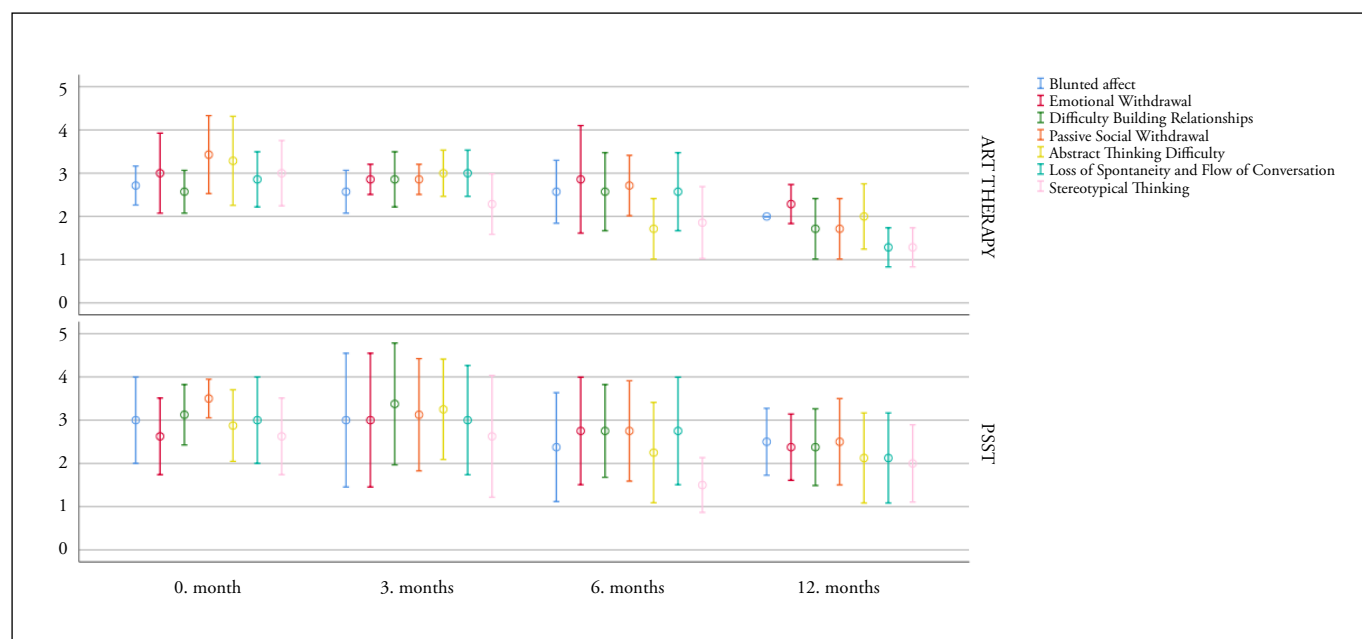
Table 3. Changes in the PANSS Negative Symptoms Subscale Items for Both Study Groups

Art Therapy Group	0 month	3 months	6 months	12 months	p
PANSS - Negative Symptoms					
Blunted Affect	2.71±0.488	2.57±0.535	2.57±0.787	2.00±0.00	0.087
Emotional Withdrawal	3.00±1.00	2.86±0.378	2.86±1.345	2.29±0.488	0.199
Difficulty Building Relationships	2.57±0.535	2.86±0.69	2.57±0.976	1.71±0.756	0.091
Passive Social Withdrawal	3.43±0.976 ^a	2.86±0.378 ^a	2.71±0.756 ^{a,b}	1.71±0.756 ^b	0.004*
Abstract Thinking Difficulty	3.29±1.113 ^a	3.00±0.577 ^a	1.71±0.756 ^b	2.00±0.816 ^{a,b}	0.006*
Loss of Spontaneity and Flow of Conversation	2.86±0.690 ^a	3.00±0.577 ^a	2.57±0.976 ^a	1.29±0.488 ^b	0.005*
Stereotypical Thinking	3.00±0.816 ^a	2.29±0.756 ^{a,b}	1.86±0.9 ^{a,b}	1.29±0.488 ^b	0.012*
PSST Group					
PANSS - Negative Symptoms					
Blunted Affect	3.00±1.195	3.00±1.852	2.38±1.506	2.50±0.926	0.277
Emotional Withdrawal	2.63±1.061	3.00±1.852	2.75±1.488	2.38±0.916	0.753
Difficulty Building Relationships	3.13±0.835	3.38±1.685	2.75±1.282	2.38±1.061	0.069
Passive Social Withdrawal	3.50±0.535	3.13±1.553	2.75±1.389	2.50±1.195	0.222
Abstract Thinking Difficulty	2.88±0.991 ^a	3.25±1.389 ^a	2.25±1.389 ^{a,b}	2.13±1.246 ^{a,b}	0.014*
Loss of Spontaneity and Flow of Conversation	3.00±1.195	3.00±1.512	2.75±1.488	2.13±1.246	0.155
Stereotypical Thinking	2.63±1.061	2.63±1.685	1.50±0.756	2.00±1.069	0.132

a, b superscripts indicate statistical differences between groups in the same row. There is no statistically significant difference between the months with the same superscripts.

PSST: Psychosocial Skills Training

PANSS: Positive and Negative Syndrome Scale

**Figure 2.** Changes in the PANSS Negative Symptoms Subscale Items for Both Study Groups

PANSS: Positive and Negative Syndrome Scale

Table 4. Comparison of Scale Scores Between the Groups of Art Therapy and PSST

		Art Therapy Group	PSST Group	p
PANSS - Positive Symptoms	0 month	10.71 ± 5.61	12.62 ± 6.23	0.546
	3 months Δ	13.14 ± 6.26	12.5 ± 6.8	0.258
		0.29 ± 0.41	0.04 ± 0.39	
	6 months Δ	10.57 ± 3.64	12.88 ± 5.49	0.797
		0.07 ± 0.33	0.11 ± 0.37	
	12 months Δ	9.14 ± 2.48	11.5 ± 5.40	0.795
		0.07 ± 0.17	0.04 ± 0.22	
PANSS - Negative Symptoms	0 month	20.85 ± 4.29	20.87 ± 4.85	0.994
	3 months Δ	19 ± 2.71	21.38 ± 10.8	0.658
		0.069 ± 0.15	0.0009 ± 0.37	
	6 months Δ	16.86 ± 5.46	17.13 ± 8.2	0.914
		0.16 ± 0.307	0.186 ± 0.301	
	12 months Δ	12.29 ± 1.5	15.88 ± 6.86	0.124
		0.393 ± 0.116	0.249 ± 0.203	
PANSS - General Psychopathology	0 month	28.42 ± 6.24	34 ± 6.141	0.106
	3 months Δ	29.71 ± 6.58	33.25 ± 6.45	0.559
		0.758 ± 0.323	0.007 ± 0.21	
	6 months Δ	25.29 ± 3.09	23.28 ± 6.52	0.051
		0.775 ± 0.299	0.204 ± 0.195	
	12 months Δ	19.29 ± 3.15	23.88 ± 5.11	0.856
		0.305 ± 0.11	0.294 ± 0.11	
PANSS – Total	0 month	60 ± 12.39	67.5 ± 11.31	0.242
	3 months Δ	60.43 ± 11.82	67.13 ± 15.72	0.839
		0.023 ± 0.21	0.21 ± 0.215	
	6 months Δ	52.71 ± 5.71	53.38 ± 13.32	0.237
		0.09 ± 0.195	0.206 ± 0.166	
	12 months Δ	40.71 ± 5.44	51.25 ± 12.43	0.281
		0.308 ± 0.096	0.243 ± 0.121	
CDSS	0 month	1.142 ± 1.573	3.13 ± 3.76	0.218
	3 months Δ	1.57 ± 2.15	2.5 ± 3.85	0.609
		0.42 ± 2.93	0.62 ± 4.53	
	6 months Δ	0.86 ± 1.21	1.13 ± 1.73	0.248
		0.28 ± 1.70	2 ± 3.38	
	12 months Δ	1.29 ± 1.6	1.13 ± 1.36	0.104
		0.14 ± 1.57	2 ± 2.87	
SFS - Social Withdrawal	0 month	10.28 ± 1.6	9.12 ± 2.1	0.256
	3 months Δ	10.14 ± 1.46	9.5 ± 3.16	0.748
		0.14 ± 1.77	0.37 ± 3.81	
	6 months Δ	11.29 ± 2.06	9.5 ± 1.77	0.616
		1 ± 2	0.37 ± 2.61	
	12 months Δ	12.43 ± 1.72	10 ± 1.31	0.232
		2.14 ± 1.95	0.87 ± 1.95	
SFS - Interpersonal Relationships	0 month	5 ± 1.82	4 ± 1.77	0.302
	3 months Δ	4.71 ± 1.38	4.38 ± 2.2	0.452
		0.28 ± 1.97	0.37 ± 1.302	
	6 months Δ	5.14 ± 1.68	4.88 ± 2.53	0.499
		0.14 ± 2.03	0.87 ± 2.03	
	12 months Δ	4.71 ± 0.76	5.13 ± 1.81	0.078
		0.28 ± 1.38	1.12 ± 1.45	

Continuation of Table 4

		Art Therapy Group	PSST Group	p
SFS - Pro-Social Activities	0 month	9.14 ± 3.8	8 ± 2.82	0.517
	3 months	8.57 ± 3.64	6.88 ± 4.29	0.803
	Δ	0.57 ± 3.1	1.12 ± 4.94	
	6 months	10.29 ± 6.1	9.25 ± 4.4	0.962
	Δ	1.14 ± 3.23	1.25 ± 5	
	12 months	16.86 ± 2.67	13.38 ± 6.65	0.458
	Δ	7.71 ± 2.42	5.37 ± 7.72	
SFS - Recreation	0 month	14.85 ± 4.63	11 ± 3.33	0.084
	3 months	13.29 ± 3.25	11.38 ± 4.24	0.311
	Δ	1.57 ± 3.9	0.37 ± 3.24	
	6 months	13.29 ± 2.06	11.63 ± 2.92	0.266
	Δ	1.57 ± 3.35	0.62 ± 3.88	
	12 months	14.57 ± 3.41	11.13 ± 3.23	0.819
	Δ	0.28 ± 3.72	0.12 ± 3.09	
SFS - Independence (Competence)	0 month	35 ± 2.76	33.37 ± 5.34	0.483
	3 months	35.29 ± 4.19	34.5 ± 4.99	0.427
	Δ	0.006 ± 0.063	0.041 ± 0.097	
	6 months	36.86 ± 1.46	36.25 ± 4.8	0.420
	Δ	0.05 ± 0.05	0.09 ± 0.12	
	12 months	38 ± 1.53	36.38 ± 4.5	0.820
	Δ	0.08 ± 0.07	0.09 ± 0.06	
SFS - Independence (Performance)	0 month	23.28 ± 4.27	18.12 ± 5.66	0.071
	3 months	25.14 ± 6.52	19 ± 9.17	0.673
	Δ	1.85 ± 4.74	0.87 ± 4.08	
	6 months	26.29 ± 7.02	21.13 ± 8.98	1
	Δ	3 ± 4.96	3 ± 4.5	
	12 months	29.29 ± 5.79	22.88 ± 11.52	0.683
	Δ	6 ± 5.22	4.75 ± 6.2	
SFS - Employment	0 month	1.71 ± 1.7	1.62 ± 1.06	0.903
	3 months	1.14 ± 1.07	1.63 ± 2.39	0.566
	Δ	0.57 ± 1.39	0 ± 2.20	
	6 months	1.43 ± 0.98	1.25 ± 1.39	0.903
	Δ	0.28 ± 1.25	0.37 ± 1.5	
	12 months	1.86 ± 1.46	1.13 ± 1.25	0.449
	Δ	0.14 ± 1.67	0.50 ± 1.51	
Hinting Task	0 month	12.28 ± 6.72	11.75 ± 5.92	0.872
	3 months	13.29 ± 2.29	12 ± 5.01	0.741
	Δ	1 ± 4.96	0.25 ± 3.61	
	6 months	14.86 ± 3.13	11.25 ± 6.23	0.222
	Δ	2.57 ± 5.99	0.50 ± 2.97	
	12 months	16.14 ± 2.79	13.75 ± 5.37	0.416
	Δ	3.85 ± 4.74	2 ± 3.81	
Unexpected Outcomes Test	0 month	15.85 ± 2.11	12.12 ± 7.84	0.232
	3 months	17.14 ± 3.48	13.63 ± 8.53	0.898
	Δ	1.28 ± 3.59	1.5 ± 2.72	
	6 months	18.57 ± 3.21	13.63 ± 8.28	0.241
	Δ	2.71 ± 1.79	1.5 ± 2	
	12 months	17.71 ± 2.36	11.88 ± 7.04	0.228
	Δ	1.85 ± 2.41	0.25 ± 3.77	

“Δ” symbol indicates the change compared to the initial measurement (0 month).

PSST: Psychosocial Skills Training, PANSS: Positive and Negative Syndrome Scale, CDSS: Calgary Depression Scale for Schizophrenia, SFS: Social Functioning Scale

Table 5. Intra-Group and Intergroup Comparison of the Scale Results of the Relatives of the Patients Received Art Therapy and PSST

		Art Therapy Group	PSST Group	p
BECK-D	0 month	8.6 ± 7.16	7.57 ± 4.82	1.0
	3 months	10.4 ± 5.94	8.42 ± 3.90	0.755
	Δ	1.8 ± 2.05	0.86 ± 3.76	
	6 months	9.2 ± 3.76	9 ± 5.44	0.755
	Δ	0.6 ± 6.91	1.43 ± 3.51	
	12 months	12.4 ± 7.7	14.42 ± 13.86	0.876
	Δ	3.8 ± 3.63	6.86 ± 11.28	
BECK-A	0 month	7 ± 6.96	7.42 ± 7.61	1.0
	3 months	10.6 ± 9.2	7.71 ± 5.99	0.106
	Δ	3.6 ± 2.41	0.29 ± 3.59	
	6 months	12.6 ± 11.92	7.85 ± 4.87	0.343
	Δ	5.6 ± 5.37	0.43 ± 6.43	
	12 months	13.4 ± 14.08	7.42 ± 4.42	0.149
	Δ	6.4 ± 7.4	0.0 ± 6.66	
ZBI	0 month	44.8 ± 13.8	46 ± 11.06	0.106
	3 months	44.8 ± 6.97	48.57 ± 18.36	0.755
	Δ	0.0 ± 11.47	2.57 ± 12.46	
	6 months	42.8 ± 10.73	44.14 ± 16.21	0.53
	Δ	-2.0 ± 13.44	-1.86 ± 18.12	
	12 months	47 ± 14.89	43.14 ± 15.88	0.53

“Δ” symbol indicates the change compared to the initial measurement (0 month).

PSST: Psychosocial Skills Training

BECK-D: Beck Depression Inventory

BECK-A: Beck Anxiety Inventory

ZBI: Zarit Burden Interview

DISCUSSION

The most appropriate approach in the treatment of schizophrenia is the integration of drug therapy into various unique psychological and social interventions and methods (Falloon et al. 1998). From this point of view, this study included schizophrenia patients who were monitored regularly in the Psychosis Outpatient Clinic of the Department of Mental Health and Diseases of B.U.Ü.T.F., and they participated in different PSST and art therapy works in two groups, in addition to drug therapy. Evaluation of the scales applied in the art therapy group revealed that positive changes started in PANSS negative symptoms from the 3rd month, and there were significant changes in passive withdrawal, abstract thinking difficulty, loss of spontaneity and flow of conversation. SFS evaluation showed a significant difference in the social withdrawal subscale between the months starting from the 3rd month, as well as in pro-social activities and independence level subscales between the baseline and 12-month scores. In PSST group, there was a significant change in the PANSS general psychopathology score between

all evaluated months and the 12th month, as well as in the independence level subscale of the SFS when the results from baseline, 6 months and 12 months were compared. Only the abstract thinking difficulty subscale of the negative symptoms of the PANSS scale showed a significant difference. In art therapy and PSST groups, there was no significant difference between the groups in the results of all the scales applied to the patients and relatives before the group works and 3, 6 and 12 months after the end of the group works. There are few studies in this area that applied art therapy or PSST in schizophrenia patients in group works. To the best of our knowledge, this is the first study to compare the effects of art therapy and PSST methods in two different groups of schizophrenia patients.

Both programs aimed to reduce the severity of symptoms, improve interpersonal skills, increase their daily functionalities and quality of life, and establish a healthy communication ground with the families. Both programs helped patients express themselves and make sense of their experiences, improve their ability to understand others, and enabled them to become aware of biased thoughts and create alternative

thoughts, and participate in social relationships and increase social functionality (Sarandöl et al. 2013, Yıldız et al. 2019). The improvement observed in scores of negative symptoms subscale of PANSS and SCQ subscales in the members of both therapy and PSST groups was also consistent with previous studies (Deveci et al. 2008, Sarandöl et al. 2013).

Teglbjaerg et al. (2011) applied art therapy to 5 schizophrenia patients for 1 year and showed that psychotic symptoms had decreased, self-esteem had increased, and social functionality had improved when results from before and after therapy, and results from a 1-year follow-up were compared. Another study investigated the effects of motivation interviewing together with art therapy group works on the negative symptoms of schizophrenia patients in which 18 schizophrenia patients received only art therapy and 17 schizophrenia patients received art therapy combined with motivation interviewing for 6 weeks. It was observed that there were significantly more improvements in negative symptoms, motivation and pleasure, interpersonal relationships, personal hygiene, and attendance to the hospital program in the group that had motivation interviewing together with art therapy compared to the art therapy group alone (Cho and Lee 2018).

Meng et al. (2005) randomly divided 86 inpatients into intervention and control groups, applied art therapy twice a week to the intervention group for more than 15 weeks, and reported improvement in quality of life, self-esteem and social functionality at the end of this period compared to the control group. Richardson et al. (2007) randomized outpatient chronic schizophrenia patients into two groups to compare 47 patients who received standard drug therapy and 43 patients who received 12 weeks of art therapy in addition to standard therapy. Among 40 participants who were followed up for another six months after the therapy sessions, art therapy had a statistically significant positive effect on negative symptoms. Sarandöl et al. (2013) investigated the effects of art therapy applied by schizophrenia patients and their relatives on disease symptoms and personal and social skills, and it was found out that according to the scale evaluation before and after group works, the PANSS negative symptoms, PANSS general psychopathology and CDSS scores in the patient group as well as BDI, BAI, ZBI scores in the relatives group were statistically significantly lower after group works.

Deveci et al. (2008) applied PSST to patients with schizophrenia and observed significant decreases in the scores of the Scale for the Assessment of Positive Symptoms (SAPS), Scale for the Assessment of Negative Symptoms (SANS), Schizophrenia Quality of Life Scale (SQLS), and CDSS. Moriana et al. (2006) treated 32 of 64 schizophrenia patients with only medication, and applied PSST to 32 of them in addition to a 6-month drug therapy. The two groups were compared, and it

was determined that the group receiving combination therapy had significantly lower PANSS scale scores.

In our study, positive symptoms and depression scales applied before and after art therapy and PSST group works were compared, and no significant difference was found between them. There was also no significant difference before and after group works in the depression, anxiety and caregiver burden scales applied to the relatives of the patients. These results may be associated with the fact that the patients included in the study were being monitored in a specialized outpatient clinic, so more time was allocated to these patients compared to the general psychiatry outpatient clinic monitoring, and the monitoring and treatment of the patients by the same physician might have allowed the treatment processes of the patients to be well managed. In addition, it may be associated with provision of psycho-education to patients and their relatives, immediate intervention in additional psychiatric conditions such as drug adverse effects and depression, and supportive interviews with patients' relatives.

It was emphasized in previous psychosocial intervention studies with schizophrenia patients that the positive changes observed might be related to the methods used, as well as the participation of patients and their relatives in a regular group psychotherapy process (Sarandöl et al. 2013, Yıldız et al. 2002). Therefore, one of the main objectives of this study was to compare two different psychosocial intervention methods. We found differences in intra-group evaluations although there was no difference between the two groups. In this study, patient relatives in both groups participated in the process. The relatives were in the same group with the patients from the beginning of the practices in the PSST group, while the relatives in the art therapy were in different groups until session 5, and joined the same group with the patients in the next sessions. The reason why the patients and their relatives joined each other after session 5 in the art therapy group was that we also used the same method in the art therapy study in 2013 (Sarandöl et al., 2013), and we tried to allow for no methodological differences between the two studies to ensure continuity. Considering the data obtained, it can be suggested that this method created a significant difference.

This study is important in the evaluation of the effects of art therapy and PSST in the treatment of schizophrenia. The limitations of our study are that it was conducted in a single healthcare center, included a small number of patients, had no control group, and did not compare the drug therapies of the patients, which makes it difficult to generalize the data obtained. Studies with larger samples and involving multiple healthcare centers are needed.

It can be asserted that the patients in both study groups benefited from the therapy methods applied, considering the decrease in the scale scores. Schizophrenia was regarded as a biological disease for a long time, which caused psychotherapeutic practices to be overlooked. However, both the biological basis of the disease and some drugs cause social and cognitive problems in patients. Obviously, it is an overly optimistic approach today to hope that these problems can only be treated with drugs. We think that all of the psychotherapy methods used for this purpose are valuable, and investigated whether there are differences between the methods. The finding that both methods have benefits but there is no difference in terms of benefit between them may have arisen from the limitations of the study, or it may be the truth itself.

In conclusion, this study found that both art therapy and PSST practices allowed patients with schizophrenia to improve the negative symptoms such as decreased social and cognitive functionality. However, there is a need for longer-term studies that compare different mental and social treatment methods with a large number of patients. If these studies provide favorable data accumulation about the structured and easy-to-use methods, we think that more schizophrenia patients can have the chance to receive treatment with such methods in addition to drug therapies, as such training practices in this field become more common in our country.

For more information about the art therapy methods used in the study, the course of the sessions and description of the practices through case examples, please refer to the study conducted by Sarandöl et al. in 2013 which applied the same methodology (Sarandöl et al. 2013).

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The Relationship Between Childhood Trauma and Body Image, Self-Esteem and Eating Attitudes in Patients undergoing Bariatric Surgery



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ABSTRACT

Objective: Psychiatric evaluation of candidate patients before bariatric surgery (BS) has an important place in the success of the treatment. In this study, it was aimed to examine the relationship between childhood trauma (CT) and body image, self-esteem and eating attitudes of individuals who applied for BS.

Method: A total of 87 BS candidate patients with morbid obesity, 57 women and 30 men, were included in the study. Sociodemographic Information Form, Childhood Trauma Questionnaire (CTQ), Body Perception Scale (BPS), Rosenberg Self-Esteem Scale (RSES), and Eating Attitude Test (EAT-40) were used as data collection tools in the study.

Results: CT was detected in 47.1% of the cases. RSES ($t=3.296$; $p<0.01$) and BPS ($t=3.267$; $p<0.01$) scores were found to be significantly higher in those with a history of CT. A positive and significant relationship was found between EAT-40 and CTQ -sexual abuse (SA) sub-dimension ($r=0.570$; $p<0.01$). A significant relationship was found between all sub-dimensions of CTQ and RSES. A significant relationship was found between CTQ physical neglect (PN), emotional neglect (EN), and emotional abuse (EA) sub-dimensions and BPS. In addition, CTQ total score was found to significantly and negatively predict self-esteem ($\beta=-4.432$; $p<0.001$) and body image ($\beta=-3.700$; $p<0.001$).

Conclusion: In our study, it was found that those with CT were dissatisfied with their bodies and had lower self-esteem. Questioning CT in the psychological evaluation of pre-BS cases may contribute to the understanding of the etiology of obesity and may play an important role in planning the follow-up after BS.

Keywords: Bariatric Surgery, Body Image, Self-esteem

INTRODUCTION

Obesity is an important public health problem defined as a disease today. Despite the increasing knowledge about the negative effects of obesity on health and prevention methods, the incidence of obesity continues to increase every year all over the world (Stokes et al. 2017, Chooi et al. 2019). Obesity, which has become a global epidemic, is also an important cause of mortality and morbidity rates (Flegal et al. 2013, Kinlen et al. 2018, Ladhani et al. 2017). There is a complex interaction between genetic predispositions, environmental and psychological factors in the development of obesity (Wright and Aronne 2012). Changing dietary habits, insufficient physical activity and psychosocial factors play an important role in the etiology of

obesity (Fock and Khoo 2013, Asghari et al. 2017, Wu and Berry 2018). Considering the serious physical complications caused by obesity and the increase in healthcare costs, methods related to the treatment and prevention of obesity gain importance. In recent years, bariatric surgery (BS) has been frequently preferred as a treatment option for morbidly obese patients with a body mass index (BMI) of 40 and above (Wolfe et al. 2016, El Abd et al. 2021). BS, which is widely used both in the world and in our country in cases where traditional methods used in the treatment of obesity fail, is an effective treatment method for weight loss and improvement of physical comorbidity (Güler et al. 2018, Xu and Song 2021). However, in addition to the positive results of BS, there are also studies reporting that there are negative consequences such as insufficient weight loss and regaining

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of weight after BS (Athanasiadis et al. 2021, Arterburn et al. 2021, El Ansari et al. 2021). For this reason, the necessity of making comprehensive evaluations before and after BS has been stated in many studies (Kalarchian and Marcus 2015, David et al. 2020). In particular, the importance of detailed psychiatric evaluation before BS was emphasized. In this evaluation, questioning the existence of childhood trauma (CT) has a very important place (Walsh et al. 2017). It is because CTs are accepted as an important risk factor in the etiology of psychiatric disorders (Aktepe 2009).

It is known that negative life experiences during childhood, which have negative effects on the self-perception of children in the developmental period, can cause many lifelong negative consequences on both mental and physical health in adulthood, as well as the problems they cause in childhood (Schneider et al. 2020). The possible interaction between obesity and CTs is not fully known. Although the researchers noted that not everyone with a history of trauma had an eating disorder, they reported that complex traumatic symptoms were more common in morbidly obese individuals presenting for BS (Luo et al. 2020, Wiss et al. 2020). Obesity that starts at an early age affects individuals more, causing psychiatric problems and negative eating behaviors (Ata et al. 2014). Body satisfaction is considered as an individual's own subjective evaluation of their body parts and their functions. It has been reported that morbidly obese individuals are more dissatisfied with their body appearance than the healthy control group (Hamurcu et al. 2015). Self-esteem is a state that emerges as a result of an individual's self-evaluation and self-acceptance. Behavioral motivation has an important place in the integration of personality and the formation of psychological health (Karairmak and Siviş 2011). Self-esteem is a state that is affected by life events. The results of studies examining the relationship between self-esteem and obesity are not consistent. It is debated whether low self-esteem is a consequence or a cause of obesity. In addition to studies showing that obese individuals have lower self-esteem than non-obese individuals, there are also studies reporting the opposite (Deveci et al. 2005, Abiles et al. 2010).

Nutritional style and eating attitude is one of the areas that should be examined in BS candidate patients (Akkayaoglu and Çelik 2020). The rates of binge eating disorder, eating addiction and predisposition to eating behavior disorder are higher in candidates applying for BS compared to the general population (Opolski et al. 2015, Kops et al. 2021). For this reason, it is important to question the eating attitudes and nutritional behaviors before BS. It is because changes in gastrointestinal anatomy with BS may cause differences in eating attitudes with their effects on gut hormones, bile acids and microbiota. It has been reported that individuals who are prone to eating behavior disorder before BS develop eating

attitudes that can cause rapid weight gain after BS (Adler et al. 2018).

To date, studies investigating CT, body satisfaction, self-esteem, and eating attitudes have been conducted on patients who applied for BS. However, as far as we can reach, there is no study that evaluates CT and body satisfaction, self-esteem and eating attitude together. In this study investigating whether morbidly obese individuals who applied for BS had CT or not, it was aimed to investigate whether there was a difference between the groups with and without CT in terms of body satisfaction, self-esteem and eating attitude, and to examine the relationship of these variables with each other, with age and with BMI. In this view, it is aimed to contribute to the literature and clinical practices in terms of which markers should be considered in the process of determining suitable candidates before BS, addressing risky groups and reducing possible risks in the post-BS period.

METHOD

Sample

Our study, which was carried out between 18 March 2019 and 31 December 2019 using the cross-sectional research method and the relational screening model, included 87 morbidly obese patients who were referred to Recep Tayyip Erdoğan University Rize Training and Research Hospital Psychiatry Outpatient Clinic for consultation before BS. Cases older than 18 years of age, who could read and who did not have a history of psychiatric treatment in the last 6 months were included in the study. Those who were illiterate, younger than 18 years of age, did not want to participate in the study, had mental retardation, a psychotic disorder and an organic mental disorder, and had speech and communication difficulties were excluded from the study. Psychiatric evaluation was requested for a total of 104 morbid obese cases, BS candidates, within the specified dates. 17 cases who did not meet the inclusion criteria were excluded from the study. 8 of these cases were not included in the study because they still used psychiatric drugs, 3 cases did not fill out and submit the questionnaires, 4 cases were illiterate, and 2 cases did not volunteer to participate in the study.

This study was initiated after the approval of the Istanbul Okan University Non-Invasive Clinical Research Ethics Committee at the meeting dated 13.03.2019 and the permission obtained from the Rize Provincial Health Directorate and the Chief Physician of Rize Training and Research Hospital (decision numbered 40986104-799). Before the study, all participants were informed about the study and their written informed consent was obtained. All practices in this study were made in accordance with the ethical standards of the institutional and/or national research committee and the 1964 Declaration

of Helsinki and its later revisions or comparable ethical standards.

Data Collection Tools

Sociodemographic Data Form: It was created by the researchers and filled in by asking questions to the participants during the pre-interview. There are questions that include basic information such as age, education level, marital status, occupation, socioeconomic level, height and weight of the participants, questions about family and genealogical histories, and questions about detecting physical and psychiatric diseases.

Childhood Trauma Questionnaire (CTQ): This scale was developed by Bernstein et al. (2003) to quantitatively screen abuse and neglect experiences before the age of 20 years. The Turkish validity and reliability study of the scale was performed by Şar et al. (2012). The scale consists of 28 items, 3 of which measure the minimization of trauma, and it is a 5-point Likert-type self-report scale. The scale measures 5 subtypes of CTs. These are emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect. The Cronbach's alpha value indicating the internal consistency of the scale was 0.93, and the Guttman half test coefficient was found to be 0.97. In our study, the methods used by Sar et al. and the cut-off scores they reported were taken into account in the application of the scale.

Body Perception Scale (BPS): The BPS, developed by Secord and Jourdan in 1953, was used to determine the body image levels of the participants in the study. The Turkish validity and reliability study of the scale was performed by Hovardaoğlu in 1992. It is a self-report scale consisting of 40 items in total. Each item is related to an organ of the body, a part of the body or their functions. Each item is a 5-point Likert-type item. For each item in the scale, there are answer options such as "I don't like it at all", "I don't like it", "I am undecided", "I like it" and "I like it very much". The total score of BPS is between 40 and 200. The cut-off point of the scale is 135. Individuals who score below this score are evaluated as dissatisfied with their bodies, and the high score obtained from the scale is related to high body satisfaction. The Cronbach Alpha coefficient has been reported as .91 (Hovardaoğlu and Özdemir 1990; Hovardaoğlu 1992).

Rosenberg Self-Esteem Scale (RSES): The RSES, which was used to determine the self-esteem levels of the participants in the study, was developed by Rosenberg (1965). The validity and reliability study in our country was carried out by Çuhadaroglu (1986). While the validity coefficient was reported as 0.71, the test-retest reliability coefficient was reported as 0.89. The scale is a self-report scale consisting of 63 questions in total. The score range of the scale is 0-30. While a score between 15 and 25 indicates that the level

of self-esteem is sufficient, a score below 15 indicates low self-esteem.

Eating Attitude Test (EAT-40): In the study, the Eating Attitude Test developed by Garner and Garfinkel (1979) was used to evaluate the eating attitudes of the participants and to detect the eating behavior disorders. The validity and reliability study of the test in our country was conducted by Savaşır and Erol (1989). While the Cronbach alpha coefficient of the test was reported as 0.70, the test-retest reliability coefficient was reported as 0.65. The EAT consists of 40 items and 6-point Likert-type response options. The cut-off point of the test is 30. It is accepted that people who score above 30 points may have problems in their eating attitudes.

Statistical Analysis

SPSS for Windows 18.0 program was used for statistical evaluation in our study. In the study, before the analysis, it was evaluated whether the data provided by the sample showed a normal distribution, and the Independent Sample t-Test was applied in paired groups for the variables with normal distribution and homogeneous distribution of the groups. If the distribution of the sample in the groups did not show homogeneity, the Mann Whitney U Test was applied for the paired groups. Pearson correlation was applied to examine the relationship between the research variables, eating attitude, childhood traumas, self-esteem and body image. Linear Regression Analysis was applied to examine the predictive relationship of the correlated variables. The significance value was taken at the 0.05 level.

RESULTS

65.5% of the cases included in the study were women (57 people) and 34.5% (30 people) were men. The mean age was 36.15±9.19 years for women and 45.23±13.45 years for men. The mean age of all participants was 39.28±11.61 years. When the average BMI was examined, it was 46.16±5.27 for women and 45.59±4.20 for men. The mean total BMI was determined as 45.96±4.92. The sociodemographic characteristics of the cases included in the study are given in Table 1. When the variables related to the health status were examined, the rate of those with a family history of obesity was 72.4% (63 people). The rate of people with physical illness was 43.7% (38 people). The rate of those who had previously received psychiatric treatment is 39.1% (34 people).

When the frequency distributions of whether or not there was a traumatic history according to CTQ total and sub-dimension scores were examined, the number of participants who stated that they had CT was 47.1% (41 people). Of the participants, 24.1% (21 people) were with physical abuse trauma, 16.1% (14 people) were with sexual abuse trauma,

Table1. Demographic Characteristics of the Sample Group

Demographic Variables		N	%
Gender	Female	57	65.5
	Male	30	34.5
Education	Primary school	26	29.9
	Middle School	13	14.9
	High school	30	34.5
	License	18	20.6
Marital status	married	69	79.3
	single	9	11.5
	divorced	5	5.7
	widow	3	3.4
Number of children	has no children	26	29.9
	1	14	16.1
	2	22	25.3
	3 and above	25	28.7
Income	1600 TL and below	12	13.8
	Between 1600-2500 TL	28	32.3
	Between 2500-5000 TL	39	44.8
	5000 TL and above	8	9.2
Living place	Center / City	38	43.7
	District	36	41.4
	Rural / Village	13	14.9

40.2% (35 people) were with history of physical neglect, 37.9% (33 people) were with emotional abuse trauma, and 28.7% (25 people) were with emotional neglect trauma. When their self-esteem levels were examined, 25.3% (22 people) received scores corresponding to low self-esteem, while 74.7% (65 people) had sufficient self-esteem. When the level of satisfaction with body image was evaluated, it was seen that while 59.8% (52 people) had low body image satisfaction, 40.2% (35 people) had high body image satisfaction. When EAT-40 scores were examined, it was seen that while 64.4% (56 people) had normal eating attitudes, 35.6% (31 people) were prone to eating behavior disorder. The comparison of the scale scores used in the study according to the CT history variable is given in Table 2. RSES ($t=3.296$; $p<0.01$) and BPS ($t=3.267$; $p<0.01$) scores were significantly higher in those

with a history of CT. The comparison of the scale scores used in the study with the CTQ subscales is given in Table 3. When the RSES, BPS and EAT-40 scores were compared according to the CTQ-Physical abuse (PA) and CTQ-Sexual abuse (SA) trauma history variables, it was seen that RSES scores were significantly higher in participants without a history of CTQ-PA, CTQ-SA. ($U=476.000$; $p=0.031$, $U=274.000$; $p=0.006$). When the RSES, BPS and EAT-40 scores were compared according to the CTQ-Physical neglect (PN), CTQ-Emotional abuse (EA) and CTQ-Emotional neglect (EN) trauma history variables; RSES scores ($U=2.521$; $p=0.014$; $U=2.638$; $p=0.010$; $U=552.000$; $p=0.036$) and BPS scores ($U=2.795$; $p=0.006$; $U=2.766$; $p=0.007$; $U=477.000$); $p=0.005$) CTQ-FN, CTQ-EA, and CTQ-EN were found to be significantly higher in those without a history.

The relationship between age, BMI, CTQ, BPS, RSES, and EAT-40 of the subjects included in the study was analyzed by Pearson Correlation Analysis and is given in Table 4. Accordingly, a positive and significant relationship was found between the age variable and the CTQ-PA scores ($r=0.211$; $p<0.05$). There was also a negative and significant relationship between CTQ total scores and RSES ($r=-0.433$; $p<0.01$) and BPS ($r=-0.372$; $p<0.01$). It was determined that there was a positive and significant relationship between RSES and BPS ($r=0.624$; $p<0.01$). The relationship between the BMI, CTQ, BPS, RSES and EAT-40 scores of the participants who were found to be prone to eating behavior disorder in line with the EAT-40 cut-off score was examined by Pearson Correlation Analysis and is given in Table 5. Accordingly, a positive and significant relationship was found between EAT-40 and CTQ-SA sub-dimension ($r=0.570$; $p<0.01$).

According to the findings of linear regression analysis, in which the predictor of RSES by CTQ total scores was examined, age, BMI, CTQ total score ($\beta=-4.432$; $p<0.001$) predicted self-esteem significantly and negatively. In line with the findings, the high CTQ scores of the participants explained their low self-esteem. The explanatory level of the predictive relationship was found to be 18% (Adjusted $R^2=0.178$). According to the results of linear regression analysis, in which the perception of body satisfaction was

Table 2. Comparison of Participants' Scale Scores Used in the Study According to CT History

	CT History	N	X	ss	t	p
RSES	yes	41	140.20	24.868	3.296	0.001**
	no	46	121.59	27.485		
BPS	yes	41	21.34	4.597	3.267	0.002**
	no	46	18.09	4.675		
EAT-40	yes	41	26.39	9.977	0.200	0.842
	no	46	25.91	12.033		

t Test; CT: Childhood Trauma, RSES: Rosenberg Self-Esteem Scale, BPS: Body Perception Scale, EAT-40: Eating Attitude Test

** $p<0.01$

Table 3. Comparison of Scale Scores Used in the Study and CTQ Sub-Dimensions

Scales	CTQ -EA				CTQ -EN				CTQ -PA			
RSES	Yes n(%)	No n(%)	U	p	Yes n (%)	No n (%)	U	p	Yes n (%)	No n (%)	U	p
mean (SS)	33 (37.9)	54 (62.1)			25 (28.7)	62(71.3)			21 (24)	66 (76)		
	17.91 (4.75)	20.67 (4.71)	2.638	0.010*	877.00 (35.08)	2951.00 (47.60)	552.000	0.036*	707.00 (33.67)	3121.00 (47.29)	476.000	0.031*
BPS	Yes n (%)	No n (%)			Yes n (%)	No n (%)			Yes n (%)	No n (%)		
mean(SS)	33 (37.9)	54 (62.1)			25 (28.7)	62(71.3)			21 (24)	66 (76)		
	120.21 (29.021)	136.56 (25.258)	2.766	0.007**	802.00 (32.08)	3026.00 (48.81)	477.000	0.005**	873.50 (41.60)	2954.50 (44.77)	642.500	0.616
EAT-40	Yes n (%)	No n (%)			Yes n (%)	No n (%)			Yes n (%)	No n (%)		
mean(SS)	33 (37.9)	54 (62.1)		0.261	25 (28.7)	62(71.3)		0.866	21 (24)	66 (76)		0.402
	27.85 (11.909)	25.09 (10.469)	-1.130		1118.00 (44.72)	2710.00 (43.71)	757.000		1008.50 (48.02)	2819.50 (42.72)	608.500	
Scales	CTQ-PN				CTQ-SA							
RSES	Yes n (%)	No n (%)	U	p	Yes n (%)	No n (%)	U	p				
mean (SS)	35 (40.2)	52 (59.8)			20 (16.1)	65(83.9)						
	18.06 (4.491)	20.67(4.910)	2.521	0.014*	14.00(27.07)	73.00(47.25)	274.000	0.006**				
BPS	Yes n (%)	No n (%)			Yes n (%)	No n (%)						
mean (SS)	35 (40.2)	52 (59.8)			20 (16.1)	65(83.9)						
	120.60(27.450)	136.92 (26.213)	2.795	0.006**	14.00 (37.79)	73.00 (45.19)	424.000	0.315				
EAT-40	Yes n (%)	Yok n (%)			Yes n (%)	No n (%)						
mean (SS)	35 (40.2)	52 (59.8)		0.286	20 (16.1)	65(83.9)		0.587				
	27.69 (11.517)	25.10(10.712)	-1.073		14.00(40.64)	73.00 (44.64)	464.000					

Mann Whitney U test; CTQ -EA: CTQ - Emotional abuse, CTQ -EN: CTQ - Emotional neglect, CTQ -PA: CTQ - Physical abuse, CTQ-PN: CTQ -Physical neglect, CTQ-SA: CTQ - Sexual abuse

*p<0.05 ** p<0.01

predicted by the total score of CTQ, age, BMI, total score of CTQ ($\beta=-3.700$; $p<0.001$) predicted the perception of body satisfaction significantly and negatively. In line with the findings, the high CTQ scores of the participants explained the low level of satisfaction with their body. The explanatory level of the predictive relationship was found to be 13%. (Adjusted $R^2=0.129$). Predictive Linear Regression Analysis of BPS, RSES scores by CTQ is given in Table 6.

According to the variable of gender, the BPS ($t=-3.950$; $p<0.01$) scores were found to be higher in male participants, according to the comparison of the participants' CTQ total and sub-dimension scores, RSES, BPS and EAT-40 scores. According to the variable of having previously received psychiatric treatment, the CTQ total and sub-dimension scores, RSES, BPS and EAT-40 scores of the participants were compared. CTQ-EA ($t=2.134$; $p<0.05$) and BPS ($t=-2.744$; $p<0.01$) scores were higher in those who did not receive psychiatric treatment.

DISCUSSION

Regarding the criterion of success in BS applications, it is now accepted that weight loss alone is not sufficient, and the psychiatric and psychosocial status of the cases plays an important role in the success of the treatment. For this

reason, psychiatric evaluation is frequently used in patient selection before BS. The presence of a psychiatric diagnosis in BS candidates, although not considered an absolute contraindication, may lead to the postponement or failure of the surgery. It is due to the fact that the presence of a psychiatric diagnosis can affect the treatment compliance and clinical course of the patient after BS is a situation that often causes concern. However, although attention has been drawn to the importance of pre-BS psychiatric evaluation, which has been a more widely-used treatment method for the last 10 years, there is no consensus and no specific standard regarding the general approach (Bauchowitz et al. 2005, Grothe et al. 2006, Snyder 2009, Poyraz and Savrun 2012). In this study, the effects of CTs on body satisfaction, self-esteem and eating attitudes in BS candidates were examined, and it was found that those who reported having CT had significantly lower self-esteems and were more dissatisfied with their bodies. In addition, it was concluded that those with a history of sexual abuse were prone to eating behavior disorder.

All of the cases included in our study were in the morbid obesity group, and a significant part of them were women. The high rate of female participants in our study was considered to be compatible with the results of other studies on the subject (Kolotkin et al. 2008, Villa-González et al. 2019, Farup and Valeur 2020, Soriano-Maldonado et al. 2020, Vieira et al. 2020). Compared to men, women are more interested in

Table 4. Correlation Between the Scales Used in the Study and the Clinical Parameters in the All Participants (Pearson Correlation Analysis)

Variables (n=87)		Age	BMI	CTQ – Total	CTQ – EA	CTQ – PA	CTQ PN	CTQ – EN	CTQ – SA	RSES	BPS	EAT-40
Age	r	1										
	p											
BMI	r	-0.164	1									
	p	0.128										
CTQ-Total	r	0.159	-0.125	1								
	p	0.142	0.248									
CTQ-EA	r	0.132	-0.103	0.797**	1							
	p	0.221	0.341	0.000								
CTQ-PA	r	0.211*	-0.112	0.674**	0.632**	1						
	p	0.050	0.300	0.000	0.000							
CTQ-PN	r	0.152	0.063	0.683**	0.286**	0.312**	1					
	p	0.159	0.560	0.000	0.007	0.003						
CTQ-EN	r	0.158	-0.117	0.882**	0.590**	0.396**	0.638**	1				
	p	0.143	0.279	0.000	0.000	0.000	0.000					
CTQ-SA	r	-0.057	-0.183	0.565**	0.449**	0.435**	0.125	0.328**	1			
	p	0.601	0.089	0.000	0.000	0.000	0.250	0.002				
RSES	r	-0.142	0.161	-0.433**	-0.382**	-0.273*	-0.270*	-0.343**	-0.292**	1		
	p	0.190	0.136	0.000	0.000	0.010	0.012	0.001	0.006			
BPS	r	-0.087	0.195	-0.372**	-0.330**	-0.120	-0.337**	-0.379**	-0.009	0.624**	1	
	p	0.424	0.070	0.000	0.002	0.266	0.001	0.000	0.934	0.000		
EAT-40	r	0.085	0.074	0.091	0.158	0.190	0.063	-0.030	0.067	-0.136	-0.169	1
	p	0.434	0.495	0.399	0.144	0.078	0.561	0.782	0.540	0.209	0.117	

*p<0.05, **p<0.01

BMI: Body mass index, CT: Childhood Trauma, CTQ -EA: CTQ - Emotional abuse, CTQ -EN: CTQ - Emotional neglect, CTQ -PA: CTQ - Physical abuse, CTQ-PN: CTQ -Physical neglect, CTQ-SA: CTQ - Sexual abuse RSES: Rosenberg Self-Esteem Scale, BPS: Body Perception Scale, EAT-40: Eating Attitude Test

body appearance and health-related issues and seek more health services. When the marital status, educational status and average age of the cases were examined in our study, it was found that they were similar to the results of other studies on the subject (Riva-Moscoso et al. 2021, Villa-González et al.2019, Vieira et al. 2020).

Obesity is a chronic disease that increases the risk of mortality and morbidity with its negative effects on many body systems. There are studies that draw attention to the presence of many physical diseases such as diabetes mellitus, respiratory distress, coronary heart disease, peripheral artery disease, venous insufficiency, hypertension, and heart failure in morbidly obese individuals and BS candidates (Wei and Wu 2012, Stewart et al. 2020, Marco and Marco 2021). The fact that the diagnosis of physical disease was detected in 43.7% of the cases in our study supports these results. BS may be an appropriate treatment option for morbidly obese patients with cardiovascular disease and severe respiratory distress who cannot reach normal blood sugar levels despite diet, exercise and multi-drug therapy.

It has been reported in many studies that the prevalence of psychiatric disorders at admission and throughout the life of

candidate patients admitted for BS is high (de Zwaan et al. 2011, Hawkins et al. 2019, Giulietti et al. 2021). Especially depression, anxiety disorders and binge eating disorder are the most frequently reported psychiatric diagnoses (de Zwaan et al. 2011, Wrzosek et al. 2018). In our study, it was determined that 39.1% of the cases had previously received psychiatric treatment.

In our study, 41 people reported that they had CT. Studies on the subject also examined the relationship between the presence of CT and psychiatric symptoms in cases who applied for BC, and it was reported that the majority of the participants were maltreated during their childhood (Wildes et al. 2005, Martínez et al. 2013, Walsh et al. 2017, Federico et al. 2019). In our study, the ratios of participants who reported CT and those who reported that they did not have CT were very close to each other. There are several possible reasons why the CT ratio was not higher. First of all, it is known that the CT reporting rate is low and individuals have difficulty in declaring these situations. It can be thought that the traditional way of thinking, lifestyles of individuals, moral value understanding of the society, stigma anxiety, guilt and shame, which are common in our country, also

Table 5. Correlation Between the Scales Used in the Study and the Clinical Parameters in the Participants Predisposed to Eating Behavior Disorder (Pearson Correlation Analysis)

Variables (n=31)	Age	BMI	BPS	RSES	EAT-40.	CTQ-EA	CTQ-PA	CTQ-PN	CTQ-EN	CTQ-SA	CTQ-total
Age	1										
BMI	-0.208 0.262	1									
BPS	0.126 0.501	0.279 0.129	1								
RESS	-0.152 0.413	0.309 0.090	0.518** 0.003	1							
EAT-40	0.300 0.101	-0.285 0.120	0.314 0.085	-0.021 0.909	1						
CTQ-EA	0.036 0.847	-0.065 0.730	-0.291 0.113	-0.529** 0.002	0.085 0.648	1					
CTQ-PA	0.204 0.272	-0.189 0.308	-0.189 0.310	-0.428* 0.016	0.308 0.092	0.708** 0.000	1				
CTQ-PN	0.020 0.915	0.061 0.743	-0.136 0.464	-0.123 0.509	0.110 0.554	0.186 0.317	0.331 0.069	1			
CTQ-EN	0.028 0.882	-0.145 0.436	-0.373* 0.039	-0.367* 0.042	0.125 0.503	0.636** 0.000	0.418* 0.019	0.449* 0.011	1		
CTQ-SA	-0.024 0.897	-0.095 0.612	0.036 0.848	-0.233 0.207	0.570** 0.001	0.536** 0.002	0.480** 0.006	0.197 0.288	0.434* 0.015	1	
CTQ-total	0.056 0.764	-0.123 0.509	-0.300 0.101	-0.469** 0.008	0.273 0.137	0.862** 0.000	0.764** 0.000	0.530** 0.002	0.845** 0.000	0.677** 0.000	1

BMI: Body mass index, CT: Childhood Trauma, CTQ -EA: CTQ - Emotional abuse, CTQ -EN: CTQ - Emotional neglect, CTQ -PA: CTQ - Physical abuse, CTQ-PN: CTQ -Physical neglect, CTQ-SA: CTQ - Sexual abuse RSES: Rosenberg Self-Esteem Scale, BPS: Body Perception Scale, EAT-40: Eating Attitude Test

*p<0.05 **p<0.01

Table 6 . Predictive Linear Regression Analysis of All Participants' RSES, BPS Scores by CTQ

Model	B	SH	β	t	p
1 (constant)	26.938	1.718		15.679	0.000
CTQ Total	-0.198	0.045	-0.433	-4.432	<0.001***
2 (constant)	166.034	10.035		16.545	0.000
CTQ Total	-0.965	0.261	-0.372	-3.700	<0.001***

1Dependent Variable: RSES

2 Dependent Variables: BPS

***p<0.001

act as an obstacle in front of reporting trauma. As another possible cause, all of the participants in our study were hospital admissions for BC and volunteered for surgery. For this reason, they may tend to pretend they are well in order to avoid any psychiatric disabilities. In our study, BPS and RSES scores were found to be significantly higher in those without CT. When we look at our correlation findings, there is a negative correlation between CTQ total scores and self-esteem and body satisfaction. Since high BPS and RSES scores are considered positive, it is concluded that individuals with CT have lower body satisfaction and self-esteem levels. In studies dealing with the effect of CT on self-esteem, it has been reported that trauma has a corrosive effect on the selves of

individuals with traumatic experiences (Oflozoğlu and Sabah 2016). In a study conducted with patients who applied to the psychiatry outpatient clinic in our country, it was reported that the clinical group had more traumatic experiences than the healthy control group, and their self-esteem levels were lower than the healthy control group (Ataoğlu et al. 2019). In another study, it was reported that physical abuse experienced in childhood is an important factor in the development of dissatisfaction with one's body in adult life (Treuer et al. 2005). These reported studies show the negative effects of CTs on self-esteem and body satisfaction. The findings of these studies with clinical and non-clinical groups are consistent with our findings. Therefore, it can be concluded that this relationship

seen in the general population also applies to morbidly obese individuals. There are a limited number of studies on BC and obesity in our country. Different results have been obtained in studies examining the relationship between CT experiences and body satisfaction in obese individuals. While it was reported in a study on the subject that there was a relationship between the presence of CT and dissatisfaction with one's body, another study reported no relationship (Capoccia et al. 2015, Bianciardi et al. 2019). In our study, it was determined that there was a positive and significant relationship between RSES and BPS scores. These findings are consistent with the results of two studies conducted in our country (Tekdemir 2014, Kocakaya, 2019). Similarly, another study reported a significant relationship between body dissatisfaction and low self-esteem (Green et al. 2009).

When we evaluated the relationship between CTQ sub-dimensions and BPS, RSES and EAT-40 in our study, the level of self-esteem was found to be lower in participants with a history of physical abuse, sexual abuse, physical neglect, emotional neglect and emotional abuse. According to Aktepe (2009), studies in the field of sexual abuse and self-esteem indicate that sexual abuse negatively affects the self-esteem of the individual. The effects of sexual abuse on children are encountered both at the time of the traumatic event and in the long term. It is known that depression in children who are victims of sexual abuse causes low self-esteem and harms their interpersonal and social relationships in their later life (Taner and Gökler 2004). Studies reporting the relationship between body satisfaction, self-esteem and eating attitude of CTQ sub-dimensions in obese individuals seem to be limited. Studies have generally focused on the impact of CT experiences on the development of obesity. Therefore, it is thought that this finding in our study is valuable. In a study conducted with university students, it was reported that those with a history of emotional and physical neglect had lower self-esteem (Onat et al. 2016). It is seen that detailed studies on obese individuals according to CTQ sub-dimensions are limited. In our study, it was concluded that all CTQ sub-dimensions had a negative effect on self-esteem in morbidly obese individuals.

In our study, the level of body satisfaction was found to be lower in participants with a history of physical neglect, emotional abuse and emotional neglect. In the literature, there are studies that mainly show the relationship between CTQ sub-dimensions and self-esteem. It is seen that studies on body satisfaction are very limited. In addition, no study evaluating CTQ sub-dimensions and body satisfaction in obese individuals was found. As a result of a study conducted with obese women who were subjected to violence, it was reported that the mean score of women in BAI was below the cut-off point (Tortamış 2009). It can be said that this relationship, which we determined in our study, is valuable for the literature.

In our study, the rate of participants with normal eating attitudes is higher than the rate of participants who are prone to eating behavior disorder. In a study conducted with obese individuals, similar to the results of our study, the rate of participants prone to eating behavior disorder was reported to be low (Kaya et al. 2016). However, it was also stated in the same study that there was a positive correlation between EAT-40 scores and BMI. In our study, however, no significant relationship was found between BMI and any of the variables, including EAT-40. Because all of our participants are in the morbid obesity group, their BMI values are very close to each other. There are studies reporting that obese individuals and BS candidate patients are prone to eating behavior disorder (Eroğlu et al. 2018, Ünde 2017, Eroğlu et al. 2018, Akduman et al. 2021). The findings of our study are not compatible with the results of these studies. This may be related to the patients' tendency to present themselves as healthy before being evaluated for BS. It is because our participants who were willing and voluntarily for BS did not report an eating attitude problem in order to avoid any problems, and therefore the number of cases prone to eating behavior disorder may have been found to be lower.

In our study, no significant correlation was found between the sub-dimensions and total scores, BPS and RSES scores of the participants who were found to be prone to eating behavior disorder, except for the EAT-40 and CTQ-SA sub-dimension. In a study that overlaps with our finding, it was reported that there was no relationship between eating attitude, body satisfaction and self-esteem (Kocakaya 2019). This may be because the sample size of our study was not large enough to detect the relationship between EAT-40 and other variables. There are also studies in the literature stating that there is a relationship between having a history of CT and a predisposition to eating behavior disorder (Gürcan and Kolburan 2018, Belli et al. 2019, Akduman et al. 2021). It has also been reported that there is a relationship between self-esteem and eating attitude (Değirmenci 2006). In our study, only a positive and significant correlation was found between CTQ-SA sub-dimension and EAT-40. This result shows that our participants with a history of sexual abuse are prone to eating behavior disorder. There are studies showing a relationship between having a history of sexual abuse and susceptibility to eating behavior disorder (Opydo-Szymaczek 2018, Williams and Gleaves 2008). According to a study conducted in our country, it was reported that there was a positive and significant relationship between history of sexual abuse and emotional eating in obese individuals (Akduman et al. 2021). Similarly, in another study conducted in our country, it was reported that there was a relationship between sexual abuse and physical neglect and susceptibility to eating behavior disorder (Tunç 2019). However, in another study conducted in our country, it was stated that there was no

significant relationship between CTQ sub-dimensions and eating attitudes (Kocakaya 2019). The presence of a history of sexual abuse is one of the important factors affecting weight loss after BS (Steining et al. 2012). In our study, it was determined that there was a significant relationship between body satisfaction and gender. In addition, male participants have higher body satisfaction scores. Accordingly, it has been determined that women's body satisfaction levels are lower and men's satisfaction levels are higher. Studies that overlap with our findings have also reported that obese women have lower body satisfaction levels (Kurt 2010, Küçük et al. 2018). There are also studies reporting that there is no difference between the genders in terms of body satisfaction variable (Akman 2019, Ata et al. 2014). It is thought that expressing satisfaction with the body may be affected by cultural factors. In our study, we can explain the higher level of body satisfaction in men with cultural differences. Gender difference has an important impact on expressing emotions. Women and men differ in expressing emotions in that women express their feelings more than men (Akan and Barışkın 2015). The higher level of body satisfaction in men may be related to the fact that men express their dissatisfaction less.

This study has some limitations. Our study is cross-sectional in nature. Another limitation is that the sample was small and carried out in a single center. Therefore, it is not possible to generalize or establish a cause-effect relationship with our results. The strengths of our study are that all of our participants were evaluated by researchers through face-to-face interviews.

CONCLUSION

In our study, lower self-esteem and high body dissatisfaction were found in BS candidates with CT, and those with a history of sexual abuse were found to be prone to eating behavior disorder. Questioning CT in the psychiatric evaluation of pre-BC cases may help to identify risky groups in terms of psychiatric symptoms and to understand possible psychological factors in the etiology of obesity. In addition, it may play an important role in planning the follow-up of possible psychiatric symptoms and disorders after BS. Because CT is involved in the etiology of many psychiatric symptoms and disorders, it may also be associated with the development of obesity for obese individuals and the emergence of psychiatric symptoms in these individuals. For this reason, it is seen that it is important to question CT while evaluating the cases admitted for BS. We think that the results of our study will contribute to the current literature and clinical applications. We believe that the relationship between CT and psychiatric symptoms in morbidly obese patients will be examined in detail, and this issue will be better understood, in the future, with larger sample studies, including those after BS.

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The Adaptation, Validity and Reliability Study of Turkish Metacognitive Beliefs about Health Anxiety Questionnaire (MCQ-HA)



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ABSTRACT

Objective: The aim of the present study was to adapt the Metacognitive Beliefs about Health Anxiety Questionnaire (MCQ-HA) to Turkish, and to evaluate its psychometric properties.

Method: The study consisted of 631 participants, 146 of whom were diagnosed with a physical illness, while 485 of whom did not have any physical illness.

Results: As similar to its original form, factor analysis results confirmed a three-factor structure in samples with and without physical illness, as well as in the total sample. Results of composite reliability, item-total correlation and test-retest analyses revealed acceptable reliability coefficients for the MCQ-HA. Convergent validity of the MCQ-HA was supported with significant correlations with health anxiety symptoms and somatosensory amplification both in physical illness and healthy samples. Result of discriminant validity analysis revealed that the MCQ-HA was able to differentiate individuals with high and low levels of health anxiety. Incremental validity examinations showed that the MCQ-HA accounted for additional variance in health anxiety after controlling for neuroticism.

Conclusion: The Turkish form of the MCQ-HA has similar psychometric properties to its original form, and a valid and reliable assessment device to be used in studies focusing on health anxiety.

Keywords: Health Anxiety, Metacognition, Metacognitive Beliefs About Health Anxiety Questionnaire, Validity, Reliability

INTRODUCTION

Health anxiety is defined as the belief that a person has a serious illness based on their misinterpretation of harmless physical sensations, despite the fact that they do not have any medical illnesses (Abramowitz et al. 2007). Anxiety about one's health, taken as a dimensional structure rather than categorical, can range from mild and transient anxiety to severe and chronic health anxiety (Ferguson 2009). Mild and transient levels of health anxiety are common in society, whereas severe and chronic levels are more common in clinical settings. (Taylor 2004). According to the latest edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), while the presence of physical symptoms along with severe health anxiety indicates Somatic Symptom Disorder; diagnostic features in which this anxiety is not accompanied by physical symptoms or is accompanied by

mild symptoms refer to Illness Anxiety Disorder (American Psychiatric Association 2013).

Studies examining health anxiety from a developmental perspective consistently show that neuroticism personality trait is a strong predictor of health-oriented anxiety (Cox et al. 2000, Ferguson 2004, Noyes et al. 2005). It is also known that neuroticism is associated with many psychological disorders and is not specific to health anxiety (Weinstock and Whisman 2006, Kotov et al. 2007). In the relevant literature, there are integrative approaches that examine the factors causing and maintaining health anxiety. Cognitive-perceptual theories, one of the approaches explaining health anxiety, have suggested that individuals with health anxiety have a pattern defined as a tendency to exaggerate physical sensations (somatosensory amplification), which causes them to experience their physical sensations as intense, detrimental, and disturbing (Barsky 1992). Studies show that in particular, the cognitive model plays a critical role in explaining and

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treating health anxiety (Marcus and Church 2003, Fulton et al. 2011, Alberts and Hadjistavropoulos 2014). At the heart of the cognitive model for health anxiety are irrational beliefs such as physical symptoms always pointing to a serious and detrimental condition, and exaggerated thoughts about the likelihood of contracting an illness and the severity of this illness (Warwick and Salkovskis 1990). On the other hand, Wells (2000) argues that the focus lies only on the content of thoughts in the cognitive approach, however, metacognitions that include thoughts about thoughts also play a key role in psychological disorders. In other words, metacognition is defined as psychological structures, knowledge, events, and processes that involve the control, modification, and interpretation of thoughts (Wells and Cartwright-Hatton 2004).

Metacognitive model for health anxiety (Bailey and Wells 2015b) argues that health anxiety stems from assessments of the thoughts itself about the illness instead of the evaluations of somatic symptoms, the likelihood of developing the disease, and the consequences of it. Accordingly, individuals who are prone to health anxiety have positive metacognitive beliefs about the benefits of worrying about a disease, such as "Thinking the worst about somatic symptoms will keep me safe" (Bailey and Wells 2015b). These beliefs may cause individuals to ruminate about their health, control their body obsessively, or seek reassurance from various sources (Buwalda 2008). On the other hand, individuals can also develop negative metacognitive beliefs about the uncontrollability and dangerousness of thinking about disease, such as "I have no control over thinking about my health.", "Worrying about my health will damage my body." (Bailey and Wells 2015b). Such negative metacognitive beliefs cause the individual to use dysfunctional coping strategies such as trying not to think about the disease or avoiding the stimuli related to the disease, thus increasing the anxiety experienced in health-oriented issues (Buwalda 2008).

Since such metacognitive structures specific to health concerns have been introduced relatively recently (Bailey and Wells 2015a), the validity of the model has been demonstrated by a limited number of studies in the international literature (Bailey and Wells 2015b, Bailey and Wells 2016, Melli et al. 2017). In Turkey, as far as is known, there is no study examining the role of metacognitive beliefs on health anxiety yet. The Turkish version of the Meta-Cognitions Questionnaire-30 (MCQ-30; Tosun and Irak 2008, Yilmaz et al. 2008) is used to evaluate metacognitive beliefs independently from psychopathologies in our country. However, since each psychological disorder has a unique cognitive content, different measurement tools have been developed to evaluate metacognitions specific to different psychological disorders in the relevant literature. In this context, the Metacognitive Beliefs about Health Anxiety Questionnaire (MCQ-HA, Bailey and Wells 2015a) is an

up-to-date instrument developed to evaluate metacognitions about health anxiety.

The main purpose of this study is to adapt the MCQ-HA to Turkish and to examine the psychometric properties of the scale comprehensively on groups with and without a physical illness that may show different characteristics in terms of susceptibility to health anxiety. This study will therefore set out the basis for future theoretical and applied studies on health anxiety, and thereby contribute to a better understanding of the related concept in our country. In accordance with this purpose, the Turkish MCQ-HA will be examined to determine whether it has a factorial structure identical to its original form, acceptable reliability, and the ability to provide consistent measurements over time in groups with and without a physical illness. Then, the degree to which the Turkish MCQ-HA can evaluate metacognitions specific to health anxiety will be examined in terms of the validity measures such as the relationship between health anxiety and related constructs such as the tendency to exaggerate physical sensations, and whether it makes a significant contribution to the explanation of health anxiety beyond the neuroticism that is a general predisposition to anxiety.

METHOD

Participants

The sample of the study consisted of a total of 631 participants, 410 (65%) females, 213 (33.8%) males, and 8 (1.3%) participants from other gender groups, aged 18-64, with a mean of 27.93 ± 9.26 . Participants were reached by using the convenience sampling method. Data were collected from different provinces, hospitals, universities, and workplaces using the internet and first-hand collection method. Participants with and without a chronic illness were determined by questions concerning physical illnesses in the Demographic Information Form. 59.7% of the sample were university graduates and 68.8% were single. While 146 (23.1%) of the participants were diagnosed with a chronic physical disease (eg, asthma, cardiac and blood pressure diseases), 485 (76.9%) participants did not have any chronic physical diseases. The mean age of the physical illness group ($X=29.9$, $S=10.84$) was found to be significantly higher than that of ($X=27.35$, $SD=8.67$) the healthy group ($t(624)=2.914$, $p<0.05$). In the group with physical illnesses, there were 75 (51.4%) female and 71 (48.6%) male participants; and in the healthy group, there were 335 (69.1%) women, 142 (29.3%) men, and 8 (1.6%) participants from other gender groups. While the groups differed in terms of gender ($\chi^2=20.27$, $p<0.01$), there was no significant difference between the group with physical illnesses (53.4%) and the healthy group (61.7%) in terms of university or higher education level ($\chi^2=10.45$, $p>0.05$).

Data Collection Tools

The Metacognition Beliefs about Health Anxiety Questionnaire (MCQ-HA, Bailey and Wells 2015a). It is a 14-item scale that evaluates metacognitive beliefs about health anxiety. It has three subscales: (1) “beliefs about biased thinking” (MCQ-HA-BT), which evaluates beliefs that thinking about symptoms in a certain way can prevent or cause illnesses, (2) “the belief that thoughts can cause illnesses” (MCQ-HA-C), which includes beliefs about having thoughts about the illness can lead to negative health outcomes, and (3) “belief that thoughts are uncontrollable” (MCQ-HA-U), which refers to the belief that thinking about the illness is not under one’s control. Items are scored between “1” (do not disagree) and “4” (agree very much), and the increase in scores indicates an increase in metacognitive beliefs about health. The internal consistency coefficients of the scale were reported to be 0.90, 0.83, 0.78, and 0.81 for the whole scale and the subscales of MCQ-HA-BT, MCQ-HA-C, and MCQ-HA-U, respectively. Supporting the convergent validity of the scale, the correlations of the total score of the MCQ-HA and its subscales with the Whiteley Index, which evaluates health anxiety, were found to be between 0.49 and 0.71; and between 0.42 and 0.54 with the Body and Health Cognitions Scale. In order to evaluate the discriminant validity of the scale, scores obtained from the neuroticism subscale of the Eysenck Personality Questionnaire Revised-Short Form were used. Accordingly, it was found that the relationship between MCQ-HA and health anxiety ($r=0.69$) was significantly higher than the relationship between neuroticism, which is defined as an overall tendency for anxiety, and health anxiety ($r=0.37$).

The Short Health Anxiety Inventory (SHAI, Salkovskis et al. 2002). The 18-item SHAI which evaluates the severity of health anxiety symptoms consists of two subscales, “hypersensitivity to physical symptoms and anxiety” and “negative consequences of the illness”. High scores indicate an increase in health anxiety. The internal consistency coefficient of the Turkish SHAI was 0.92, and the test-retest reliability was found to be 0.57 (Aydemir et al. 2013). ‘The negative consequences of the illness’ subscale focuses on how a person feels when they “presume” to have a serious illness such as heart disease and cancer, and thus is not used for people with a physical illness (Tang et al. 2007, Hadjistavropoulos et al. 2012, Yılmaz and Dirik 2018).

Neuroticism scale of Eysenck Personality Questionnaire-Revised: Short Form (EPQ-R-N, Francis et al. 1992). It is a self-report scale consisting of 24 items and four subscales, including extraversion, neuroticism, psychoticism, and lie, which is used in the assessment of personality. Each item is answered as “yes” or “no”. In the EPQ-R-N Turkish adaptation study (Karancı et al. 2007), the internal consistency of the neuroticism scale was found to be 0.65.

Somatosensory Amplification Scale (SSAS, Barsky et al. 1990). It is a 10-item self-report scale developed to evaluate the tendency of individuals to exaggerate their physical sensations. In the Turkish adaptation study of the scale, the internal consistency coefficient was found to be 0.62 for the healthy control group, 0.76 for the patient group, and 0.68 when both groups were examined together (Güleç et al. 2007).

Procedure

At the beginning, necessary permissions were obtained from the researchers who developed the original form of the scale and from the Ethics Committee of Dokuz Eylül University in order to adapt the MCQ-HA to Turkish. The traditional translation-back translation method (Brislin 1970) was used for adapting the scale into Turkish language. Initially, the scale was translated into Turkish by two authors and then sent to three judges who are fluent in both languages and are experts in clinical psychology to be evaluated. The scale was finalized by taking the evaluations of the judges into consideration and without adding any new items to the scale. The corrected Turkish form of the scale was back-translated by a non-field linguist. The back-translated scale and the original scale were compared by the team in terms of content and format. After evaluating the suitability of the translation, the scale took its final form. The data of the study were collected between May 2019 and October 2019 with an online survey and hand-delivered surveys. Before the application, the participants were informed about the research and their consent was obtained. The administration of the scales took an average of 20 minutes. For test-retest reliability, 95 people who stated that they volunteered were reached via their e-mail addresses, and MCQ-HA was applied again at 3-4 weeks intervals.

Statistical Analyses

Psychometric analyses in this study were conducted using SPSS 24. Initially, the scores of the sample groups with and without a physical illness were compared with the independent t-test analysis. The construct validity of the MCQ-HA was examined throughout the entire sample by means of Exploratory Factor Analysis (EFA). Then, in order to verify the factor structure derived from EFA, Confirmatory Factor Analysis (CFA) was applied to the data set obtained from the whole sample using AMOS 22.0 program. Multiple Group CFA was used to evaluate whether the factor structure confirmed in the whole group had measurement invariance according to health status (in groups with and without a physical illness). Composite reliability, item-total correlation, and test-retest coefficients were calculated within the scope of the reliability examinations of the scale. In order to examine the convergent validity of the MCQ-HA, the relationship between health anxiety and the tendency to exaggerate

physical sensations were examined by calculating Pearson Correlation coefficients. As the Turkish version of the 14-item Whiteley Index (Pilowsky 1967), which was used to evaluate health anxiety symptoms in the original study, did not have a validity and reliability study, SHAI was used instead. In order to evaluate the discriminant validity of MCQ-HA, one-way MANOVA was used to examine whether there was a difference in the scores of the participants with low and high health anxiety regarding the three subscales of MCQ-HA (MCQ-HA-BT, MCQ-HA-C, and MCQ-HA-U). Finally, the incremental validity of the scale was examined by carrying out a Hierarchical Multiple Regression Analysis to evaluate whether the scores obtained from the subscales of the MCQ-HA made a significant contribution to the explanation of health anxiety after checking for the effect of neuroticism.

RESULTS

Descriptive Statistics

In this MCQ-HA adaptation study, the majority of the sample is composed of the participants who do not have a physical illness (76.9%). Thus, an independent t-test analysis was performed to evaluate whether there was a significant difference between the groups with and without a physical illness. It was found that the participants did not show a significant difference in terms of neuroticism and the tendency to exaggerate physical sensations. However, it was found that physical illness group had significantly higher health anxiety scores and metacognitive beliefs about health anxiety than the group without a physical illness (See Table 1).

Factor Analysis

Exploratory Factor Analysis (EFA): Principal Component Analysis was used as the factorization technique for the EFA conducted, in accordance with the original study. When the suitability of the data for factor analysis was examined, the Kaiser-Meyer-Olkin (KMO) coefficient ($0.84 > 0.6$) was found to be sufficient and the Barlett Sphericity test result [$\chi^2=2205.360$, $p<0.001$] was found to be significant. The first EFA conducted without using any rotation method indicated

that the scale exhibited a two-factor structure and the items were not loaded under their specific factors. Repeated EFAs showed that significant factor design emerged as a result of forcing items to load on three factors. However, since item 13 (“Only if I have a diagnosis will I be able to stop worrying”) was loaded on another factor other than the factor on which it should have been loaded, and it was not suitable for the factor it was loaded on in terms of meaning and did not contribute to the reliability of this factor, it was decided to be excluded from the scale. As a result of the EFA repeated with the remaining 13 items, a three-factor structure explaining 53.36% of the total variance was obtained. In accordance with its original form, the Promax rotation procedure, one of the oblique rotation types, revealed that the items collected under the first factor (5, 4, 6, 9, and 1) were the items belonging to the “belief that thoughts can cause illness”, the items collected under the second factor (11, 14, 10, 8 and 3) were the items belonging to the “beliefs about biased thinking” and the items collected under the third factor (2, 7 and 12) were the items belonging to the “belief that thoughts are uncontrollable” aspects in the original scale. The factor loadings of the items vary between 0.60 and 0.92 for the MCQ-HA-C subscale, 0.45 and 0.74 for the MCQ-HA-BT subscale, and 0.50 and 0.80 for the MCQ-HA-U subscale.

Confirmatory Factor Analysis (CFA): The fit index values obtained as a result of CFA conducted to test the construct validity of MCQ-HA showed that the model fits the data acceptably well ($\chi^2=157.608$, $N=631$, $sd=62$, $\chi^2/sd=2.542$, $RMSEA=0.05$, $GFI=0.96$, $AGFI=0.95$, $CFI=0.96$, $NFI=0.93$). The results support the three-factor structure extracted from the EFA without any modification. The mean and standard deviation values of each item, as well as the factor loadings obtained from the CFA, are presented in Table 2.

Multiple Group Confirmatory Factor Analysis Findings: The validity of the models tested in order to examine the measurement invariance of MCQ-HA in samples with and without a physical illness was determined by calculating the differences between the CFI values of the two nested models (ΔCFI). Accordingly, a ΔCFI value of .01 or less ($\Delta CFI \leq 0.01$) indicates that measurement invariance is achieved (Milfont and Fischer 2010). Confirmation of the configural invariance

Table 1. Comparison of Variables in terms of Groups with and without Physical Illness

Variables	With Physical Illness (N = 146)	Without Physical Illness (N = 485)	t
	Mean. $\pm$ SD	Mean. $\pm$ SD	
MCQ-HA	26.34 $\pm$ 6.81	25.01 $\pm$ 6.01	2.27**
SHAI	17.26 $\pm$ 8.14	15.14 $\pm$ 7.66	2.89*
EPQ-R-N	3.65 $\pm$ 2.04	3.32 $\pm$ 1.93	1.81
SSAS	30.37 $\pm$ 7.61	29.04 $\pm$ 6.94	1.98

$p<0.05$ ** $p<0.01$

MCQ-HA: Metacognitive Beliefs about Health Anxiety Questionnaire, SHAI: Short Health Anxiety Inventory, SSAS: Somatosensory Amplification Scale

Table 2. Results of Confirmatory Factor Analysis and Descriptive Statistical Analysis of Items

Items	MCQ-HA-C	MCQ-HA-BT	MCQ-HA-U	Mean	SD				
5. Worrying about illness is likely to make it happen.	0.88			2.61	1.02				
4.Thinking about illness is likely to make it happen.	0.84			2.81	0.96				
6. Some thought have the power to make me ill.	0.69			2.38	1.06				
9.Worrying about my health will damage my body.	0.59			2.30	1.02				
1. Thinking of illness could change my health.	0.58			2.44	1.02				
10. If I think positively about physical symptoms I will be caught off guard.		0.66		1.52	0.82				
14. Thinking positively about my health will make me take risks and I will get ill.		0.59		1.29	0.63				
8. Thinking the worst about symptoms will keep me safe.		0.51		1.52	0.86				
11. Worrying about my health will help me cope.		0.49		1.72	0.87				
3. I will be punished for thinking I am in good health.		0.41		1.11	0.44				
12. I have no control over thinking about my health.			0.70	1.53	0.80				
7. Dwelling on thoughts of illness is uncontrollable.			0.64	1.71	0.90				
2. I cannot have peace of mind so long as I have physical symptoms.			0.36	2.39	0.94				
Model Fit									
χ^2	Sd	χ^2/sd	RMSA	GFI	AGFI	CFI	RMR	SMR	NFI
157.61	62	2.54	0.05	0.96	0.95	0.96	0.04	0.05	0.93

model indicates that the factor structure of the scale and the items creating these factors were not significantly different; confirmation of the weak/metric invariance model indicates that the strength of the factor loadings of the items were not significantly different; and the confirmation of the strong/scalar invariance model indicates that the means from the subscales were not significantly different between the examined groups. Although it is not necessary for the validation of the measurement invariance, strict invariance indicates that the measurement errors of the items do not show a significant difference between the groups (Byrne 2010).

As can be seen from Table 3, the results showed that configural invariance model was confirmed in groups with and without a physical illness. It is also observed that the CFI difference values meet the measurement invariance criteria when the configural invariance model is compared with other models. Thus, the weak/metric invariance model, the strong/scalar invariance model, and the strict invariance model were validated. When all the findings are evaluated together, it is seen that the factor structure of MCQ-HA does not vary between the mixed group

of people with or without a physical illness and the groups of people with and without a physical illness.

Reliability Analyses

Since it was observed that MCQ-HA exhibited the same factor structure in groups of people with and without a physical illness, reliability analyses were conducted separately on the total sample, the sample with a physical illness, and the sample without a physical illness (See Table 4). As stated by Hair et al. (2009), values higher than .70 for the composite reliability coefficient indicate good, and values between 0.60 and 0.70 indicate an acceptable level of reliability. In this respect, it was seen that the whole scale and the MCQ-HA-C and MCQ-HA-BT subscales had good and acceptable reliabilities in all three groups. As for the reliability values of the MCQ-HA-U subscale, they were below the acceptable level for only the group without a physical illness. When examined according to the Kline (1986) criterion (≥ 0.20 "acceptable"), item-total score correlations were found to be at an acceptable level for all three groups. The test-retest results obtained after the MCQ-HA was applied to 95 participants twice at 3-4 weeks

Table 3. Results of Measurement Invariance for the MCQ-HA

Model	Model Fit					Model Comparison			
	χ^2	Df	χ^2/df	CFI	RMSA	ΔM	$\Delta\chi^2$	Δdf	ΔCFI
M1: Configural invariance	255.92*	124	2.06	0.939	0.041		-	-	-
M2: Weak invariance	263.40*	134	1.97	0.940	0.039	M2-M1	7.49	10	0.001
M3: Scalar invariance	274.62*	140	1.96	0.937	0.039	M3-M2	11.22	6	-0.003
M4: Strict invariance	304.26*	153	1.99	0.930	0.040	M4-M3	29.64	13	-0.007

*p<0.01

Table 4. Results of Internal Consistency (Cronbach α), Item-Total Correlations, and Test-Retest of MCQ-HA

	Composite Reliability			Range of Item-Total Correlation Coefficients			Test-Retest
	Total Sample	Sample with a Physical Illness	Sample without a Physical Illness	Total Sample	Sample with a Physical Illness	Sample without a Physical Illness	Total Sample
MCQ-HA	0.89	0.90	0.88	0.24-0.60	0.26-0.58	0.21-0.62	0.79
MCQ-HA-C	0.84	0.84	0.84	0.53-0.77	0.52-0.74	0.52-0.78	0.72
MCQ-HA-BT	0.67	0.71	0.63	0.33-0.50	0.38-0.56	0.29-0.46	0.75
MCQ-HA-U	0.60	0.67	0.56	0.28-0.43	0.39-0.55	0.23-0.41	0.70

MCQ-HA: Metacognitive Beliefs about Health Anxiety Questionnaire-Total, MCQ-HA-C: Beliefs that thoughts can cause illness, MCQ-HA-BT: Beliefs about biased thinking, MCQ-HA-U: Beliefs that thought are uncontrollable

intervals showed that the test-retest reliability of the whole scale and its subscales was at an acceptable level for all three groups.

Validity Analyses

Convergent Validity: MCQ-HA total score and its subscales demonstrated positive and significant correlations with health anxiety symptoms and the tendency to exaggerate physical sensations in both samples. As can be seen in Table 5, the relationships of the MCQ-HA total score and its subscales with health anxiety symptoms and the tendency to exaggerate physical sensations vary between low and moderate levels according to the Cohen (1988) criteria ($r > 0.10$ to < 0.29 “low”, $r > 0.30$ to < 0.49 “moderate”, $r > 0.50$ “high”). It stands out that the MCQ-HA subscale, which shows the strongest correlation with all variables, is the belief that thoughts are uncontrollable.

Discriminant Validity: The discriminant validity of the scale was examined in the sample without a diagnosis of a physical illness, as it was heterogeneous in terms of health anxiety and was large enough for the analysis to be made. Before the analysis, the lower and upper quartiles of the SHAI scores were calculated, and those who scored 14 or lower constituted the group with low health anxiety symptoms ($n=146$), and those who scored 20 and above constituted the group with high health anxiety symptoms ($n=125$). When the MANOVA assumptions were examined, it was seen that the condition of

homogeneity of covariance matrices was not met, so Pillai's Trace criterion was used in the interpretation of the analysis (Tabachnick and Fidell 2007). The MANOVA findings showed that there was a significant difference between the groups with low and high health anxiety symptoms in terms of the scores derived from the metacognitive beliefs (Pillai Trace (λ)=0.243, $F(3,267)=28.61$ $p < 0.01$). One-way ANOVA results based on the subscales of MCQ-HA indicated that the group with high health anxiety symptoms had significantly higher scores on all health-related metacognition scales compared to the group with low health anxiety symptoms (See Table 6).

Incremental Validity: In hierarchical regression analysis conducted on the group with a physical illness, neuroticism, the effect of which was controlled in the first step, explained 17% of the variance in health anxiety symptoms ($\beta=0.29$, $R^2=0.17$, $p < 0.01$). The variance explained by the entry of the MCQ-HA subscale in the second step increased to 32% ($R^2=0.32$, $p < 0.01$), and it was seen that the MCQ-HA-U scale of metacognitive beliefs was a significant predictor of health anxiety ($\beta=0.30$, $p < 0.01$). In the group without any physical illnesses, neuroticism explained 12% of the health anxiety symptoms ($\beta=0.23$, $R^2=0.12$, $p < 0.01$), while the metacognitive beliefs entered in the second step contributed another 18% to the explained variance ($R^2=0.30$, $p < 0.01$). In this group, it was found that the metacognitive belief subscales of MCQ-HA-U ($\beta=0.34$, $p < 0.01$), MCQ-HA-C ($\beta=0.11$,

Table 5. Intercorrelations Among MCQ-HA Total Score and its Subscales Health Anxiety Somatosensory Amplification

Sample with a Physical Illness (N = 146)						Sample without a Physical Illness (N = 485)							
Scales	2	3	4	5	6	Scales	2	3	4	5	6		
1.MCA-HA	1					1.MCA-HA	1						
2.MCQ-HA-C	0.82**	1				2.MCQ-HA-C	0.84**	1					
3.MCQ-HA-BT	0.69**	0.24**	1			3.MCQ-HA-BT	0.62**	0.19**	1				
4.MCQ-HA-U	0.79**	0.49**	0.48**	1		4.MCQ-HA-U	0.70**	0.37**	0.39**	1			
5.SHA1	0.45**	0.29**	0.34**	0.47**	1	5.SHA1	0.44**	0.29**	0.28**	0.48**	1		
6.SSAS	0.30**	0.29**	0.26**	0.47**	0.54**	1	6.SSAS	0.26**	0.18**	0.16**	0.28**	0.40**	0.1

** $p < 0.01$

MCQ-HA: Metacognitive Beliefs about Health Anxiety Questionnaire-Total, MCQ-HA-C: Beliefs that thoughts can cause illness, MCQ-HA-BT: Beliefs about biased thinking, MCQ-HA-U: Beliefs that thought are uncontrollable, SHA1: The Short Health Anxiety Inventory, SSAS: Somatosensory Amplification Scale

Table 6. MANOVA Results on Health Anxiety Symptoms of MCQ-HA Subscales

Dependent Variables	Health Vnxiety Symptoms	n	Mean	SD	df	F	p	η^2
MCQ-HA-C	Low	146	11.58	4.10	1.269	33.82	0.000	0.11
	High	125	14.30	3.55				
MCQ-HA-BT	Low	146	6.49	1.92	1.269	21.26	0.000	0.07
	High	125	7.78	2.67				
MCQ-HA-U	Low	146	4.88	1.47	1.269	73.01	0.000	0.21
	High	125	6.78	2.16				

MCQ-HA-C: Beliefs that thoughts can cause illness, MCQ-HA-BT: Beliefs about biased thinking, MCQ-HA-U: Beliefs that thought are uncontrollable

$p < 0.01$) and MCQ-HA-BT ($\beta = 0.10$, $p < 0.01$) predicted the increase in health anxiety symptoms significantly.

DISCUSSION

This study aims to adapt the MCQ-HA to Turkish and to examine its validity and reliability in community samples with and without a physical illness. The construct validity of the Turkish scale was first examined by exploratory factor analysis, and similar to other studies (Bailey and Wells 2015a, Dai et al. 2018, Melli et al. 2017), a three-factor structure, being the belief that thoughts can cause illness, beliefs about biased thinking, and the belief that thoughts are uncontrollable, was obtained. However, item 13 (“Only if I have a diagnosis will I be able to stop worrying”) in the Turkish MCQ-HA was not loaded on its original uncontrollability of thoughts subscale. The content of this item has an indirect meaning indicating that thoughts about the symptoms cannot be controlled unless the cause of the physical symptoms is learned, and thus not loading it to its original uncontrollability factor was deemed understandable. In addition, it was determined that this item did not correspond to the content of the beliefs about biased thinking factor on which it was loaded in the existing data and did not contribute to the reliability of this factor, due to which it was decided to exclude item 13 from the scale. Apart from that, the distribution of the other items to their corresponding factors was seen to be completely consistent with the original factorial structure. As a result of the confirmatory factor analysis performed on the whole sample, it can also be seen that the original factor structure of the MCQ-HA was preserved in the Turkish sample. When the descriptive data of the scale items were examined, it was observed that the participants generally tended to disagree with the statements in the scales of beliefs about biased thinking and the belief that thoughts are uncontrollable, and this might have caused the reliability values of these two scales to be low.

The results of measurement invariance indicated that the factor structure and factor loadings of the MCQ-HA, average scores taken from the subscales, and measurement errors of

the items did not change across the mixed groups of people with or without a physical illness, the group with a physical illness and the group without a physical illness, approving that MCQ-HA measures the same feature across these three groups. Thus, the Metacognitive Beliefs about Health Anxiety Questionnaire can be used for groups with these characteristics and the results can be compared among them. The fact that the scale takes similar measures in homogeneous and heterogeneous groups in terms of health anxiety indicates that it can be easily used in studies to be carried out in clinical and non-clinical samples.

MCQ-HA has good and acceptable reliability values for both the whole scale and the ‘belief that thoughts can cause illness’ and ‘beliefs about biased thinking’ subscales. Although the ‘belief that thoughts are uncontrollable’ subscale has a lower reliability compared to the other subscales, this factor exhibits an acceptable level of reliability both in the mixed and physical illness groups. The results of this study are consistent with the findings indicating that the reliability of the ‘belief that thoughts are uncontrollable’ subscale was lower but acceptable in comparison to the other subscales in the Chinese (Dai et al. 2018) and Italian (Melli et al. 2017) versions of the MCQ-HA. At this point, it can be inferred that this control-related aspect might be culturally sensitive. In addition, considering that reliability increases as the number of items increases (Kline 2011, Baştürk et al. 2013), the small number of items constituting the uncontrollability aspect may explain the level of reliability it has.

Although the correlation of the items with the total score was acceptable in all three samples, the correlation between the whole scale and item 3 (I will be punished for thinking I am in good health) and item 11 (Worrying about my health help me cope) was relatively low. Considering that these two items pertain to the ‘beliefs about biased thinking’ aspect, it might be inferred that some expressions of the belief in question may not have coincided with our cultural structure. For example, Dai et al. (2018) asserted that the word “to be punished” in the third item may have a religious connotation, which also applies to our culture. However, the health anxiety focused on in this study varies from mild to severe, and if the psychometric

properties of the scale are evaluated on clinical samples, the coherence of these items with the scale can be found to be higher. In addition to these reliability analyses, examination of the test-retest findings demonstrates that the relevant coefficients ranged from acceptable to good, as similar to those obtained in Chinese adaptation study (Dai et al. 2018). The test-retest results of the present study indicate that the scale is able to provide consistent measurements over time and that metacognitions about health anxiety is a robust structure.

When the reliability of the MCQ-HA is evaluated in general, it is noteworthy that the studies conducted in China (Dai et al. 2018, Dai et al. 2019, Carciofo 2019) and the current study revealed lower, however sufficient levels of reliability compared to the studies conducted in the West (Bailey and Wells 2015a, Bailey and Wells 2015b, Melli et al. 2017). This finding suggests that language and cultural differences between the country where the MCQ-HA was developed and the countries in which the adaptation study was conducted may affect the evaluation of metacognitive beliefs about health anxiety. As a support to this interpretation, the measurement invariance models apart from the configural and weak/metric invariance were not properly confirmed in a study evaluating the cross-cultural measurement invariance of the MCQ-HA (Dai et al. 2019). To conclude, the findings of the current study suggest that people's metacognitive beliefs about health anxiety can be shaped by their cultural context, and therefore, interpretation and generalization of the findings obtained from cross-cultural comparisons should be made with caution.

While the convergent and incremental validity of the scale was examined in the groups with and without a physical illness, the discriminant validity was examined in the group without a physical illness. Analyses of convergent validity showed that an increase in metacognitive beliefs is related to an increase in health anxiety symptoms and the tendency to exaggerate physical sensations in both samples. The significant correlations found between health anxiety and MCQ-HA provide further support to the previous findings (Bailey and Wells 2013, Kaur et al. 2013, Melli et al. 2016) demonstrating that people who have positive or negative metacognitive beliefs about their health anxiety may be more prone to have anxiety about their health. In addition, the significant correlations between the tendency to exaggerate physical sensations and MCQ-HA seem to be consistent with the metacognitive model. Accordingly, individuals may exaggerate their physical symptoms since they believe that worrying about them is beneficial, and a functional way of keeping their sense of safety. Similarly, Kaur et al. (2013) suggested that people with dysfunctional metacognitive beliefs may believe that thinking positively about their health causes them to ignore the important symptoms. As a support to this idea, in their study examining the role of metacognitive beliefs on attentional bias in the context of health anxiety,

they found that participants with dysfunctional metacognitive beliefs paid more attention to negative health-related words despite receiving reassuring feedbacks.

The discriminant validity analyses showed that the MCQ-HA has the ability to distinguish people with high health anxiety symptoms from those with lower symptoms. In the original study of the scale, discriminant validity was supported by significantly higher correlation of the MCQ-HA than neuroticism with health anxiety. Analyses to examine the incremental validity of the scale revealed that the increase in metacognitive beliefs significantly predicted the increase in health anxiety symptoms, even when neuroticism, which is closely related to health anxiety, was examined. A remarkable finding of this study was that while the three subscales of the MCQ-HA predicted health anxiety symptoms in the group without a physical illness, only the 'belief that thoughts are uncontrollable' was a significant predictor of health anxiety in the group with physical disease. This is an expected finding when previous studies (Bailey and Wells 2013, Bailey and Wells 2015b, Bailey and Wells 2016) revealing that the strongest predictor of health anxiety is the belief that thoughts are uncontrollable are taken into account. On the other hand, since this aspect has the lowest reliability, further work in different samples is required to re-examine its correlation to health anxiety. Considering all findings together, we may conclude that MCQ-HA is a potentially significant predictor of health anxiety symptoms. Future studies are needed in order to establish more robust and generalizable findings.

Several limitations to this study, in which the MCQ-HA was adapted into Turkish, need to be acknowledged. Firstly, the findings were obtained from non-clinical, mostly women subjects without any physical illnesses. In addition, it was found that the groups with and without physical illness differed in terms of age and gender. Considering the similar prevalence rates of health anxiety for men and women (APA 2013), it can be thought that the gender difference does not generate a potential confounding effect. In order to increase the generalizability of the findings, future studies should include samples from clinical settings and with more balanced participant characteristics. Another limitation of the study was the use of self-report instruments as the data collection procedure. In particular, the participants may have given different answers to the questions about their diagnoses in the demographic information form than the actual ones. In future studies, data collected from people who were diagnosed in the hospital environment, instead of depending self-reports, would provide much more reliable information about the physical illness condition. On the other hand, although the reliability of the scale was found to be sufficient in general, it is noteworthy that the reliability of the 'belief that thoughts are uncontrollable' was low, and the findings should be interpreted with caution in terms of this subscale.

Despite these limitations, the findings of the study revealed that MCQ-HA can be used as a valid and reliable assessment tool in studies to be conducted in our country. It can be asserted that this study brings our literature an instrument to be used in studies on health anxiety and provide a basis for metacognitive studies to be carried out on health anxiety.

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Etiopathogenesis in the Development of Borderline Personality Characteristics in Children and Adolescents



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ABSTRACT

The validity and clinical significance of the characteristics of borderline personality disorder (BPD) in adolescents are increasingly being recognized. The persistence of BPD characteristics in adolescence is high and is associated with negative interpersonal, academic, professional, and financial outcomes. In the literature, BPD characteristics observed in children and adolescents are explained with psychodynamic theories, developmental models, and evolutionary approaches. Emotional dysregulation, interpersonal dysfunction, impulsivity, and self-harming behavior, negative life events, temperament characteristics, neuropsychological dysfunctions, neuroanatomical, genetic, hormonal, and immunological factors may play a role in BPD etiopathogenesis. This review aims to address different approaches and relevant factors for the development of BPD. The articles published between 1968-2021 in the PubMed database were reviewed, and prominent studies were selected for evaluation. The importance of invalidating environment, epistemic freezing and hypermentalization, complex or attachment trauma is emphasized in psychodynamic and developmental literature. In the evolutionary approach, on the other hand, romantic relationships and the onset of reproduction are emphasized as the reason for the emergence of symptoms during adolescence, and it is argued that BPD is related to the rapid life history strategy. It is stated that a decrease in volume in the orbitofrontal cortex and anterior cingulate cortex, which are involved in top-down emotional processing, and an increase in the activity of thalamus and hippocampus regions, which are involved in bottom-up emotional processing are observed in adolescents with BPD characteristics when compared to healthy controls. It is thought that the increase in activation in the superior temporal gyrus and precuneus observed in adolescents with BPD features is a neural indicator of hypermentalization, and the increase in activation in the insula is a neural indicator of social pain. It has been reported that the decrease in resting heart rate and the increase in heart rate variability observed in adolescents with BPD symptoms are associated with the activation of the parasympathetic system. BPD in adolescents is a disorder that challenges clinicians in terms of diagnosis, differential diagnosis, and treatment. It is crucial to evaluate the factors related to etiopathogenesis in BPD in a multifaceted and detailed manner.

Keywords: Borderline Personality Disorder, Difficulty in Emotion Regulation, Mentalization, Trauma, Self-harming Behavior, Temperamental Characteristics

INTRODUCTION

Borderline personality disorder (BPD) has been determined to be a common mental disorder with rates varying between 0.7% and 1.8% in adults in population-based studies (Lieb et al. 2004, Winsper et al. 2020). The validity and clinical importance of BPD characteristics in adolescents is increasingly recognized (Sharp and Fonagy 2015, Winsper et al. 2016). Approximately 1% to 4% of adolescents meet the diagnostic criteria for BPD (Kaess et al. 2014). It is observed at a higher rate in girls during adolescence, especially in clinical samples (Grilo et al. 1996, Sharp et al. 2018). Prodromal features for BPD and features of BPD appear in early adolescence and their incidence gradually decreases after young adulthood. Therefore, BPD is thought to be a disorder

with neurodevelopmental aspects (Chanen and Kaess 2012, Chanen et al. 2014, Kaess et al. 2014, Sharp et al. 2018).

Studies in adults and adolescents show that the descriptive features of BPD are best characterized by a phenotype that includes difficulty in emotion regulation, affective instability, interpersonal dysfunction, emotional interoception-sensation problems, hyper-reactive emotional activity, attachment problems, hypersensitivity to abandonment-rejection, acting out, self-harming behavior (SIB), suicide attempts and threats, chronic anxiety, decision-making and choice disorders, predisposition to psychotic and dissociative reactions, identity and selfhood problems, sexual problems, aggression and impulsivity (Gunderson 2007, McCloskey et al. 2009).

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Despite strong evidence supporting the benefits of diagnosing BPD during adolescence (Zanarini et al. 2018), stigmatization concerns still pose an obstacle to early diagnosis in clinical practice (Chanen et al. 2008a, Griffiths 2011, Kaess et al. 2014, Laurensen et al. 2013). Among the debates about the diagnosis of BPD during adolescence are the developmental characteristics of adolescence and the problems of diagnostic continuity (Laurensen et al. 2013). However, not being diagnosed brings the risks of misdiagnosis of adolescents with BPD features (Paris 2013) and missed early intervention opportunities. In addition, the “Diagnostic and Statistical Manual of Mental Disorders” (DSM-5) facilitated the diagnosis of personality disorder for those under the age of 18 (Newton-Howes et al. 2015). Studies have shown that “symptoms continue over time” for adolescents with BPD characteristics; He proposes three different trajectories in which “symptoms fade over time” and “other psychiatric disorders develop” (Winsper et al. 2015b). It is stated that the diagnostic continuity of BPD in adolescence is similar to that in adulthood, and that BPD symptoms continue to be seen in a significant portion of adolescents even after 20 years (Winsper et al. 2015a, 2015b). In a twin follow-up study of 10 years, young people with BPD features were evaluated 4 times at the ages of 14, 17, 20 and 24, and rank order stability was found to be 0.53-0.73 in this study (Bornovalova et al. 2009). It is stated that personality disorder characteristics of adolescents also show moderate continuity over time, as in adult samples (Sharp et al. 2018).

The aim of this study is to review the theoretical approaches and empirical findings for the explanation of the characteristics associated with borderline personality disorder features, which are becoming increasingly important in children and adolescents. For this purpose, studies related to borderline personality disorder were searched in PubMed index between 1968-2021. In this review, priority was given to studies aimed at children and adolescents.

Psychodynamic Theories

It is stated that the main developmental task of adolescence is the emergence of a “consistent sense of identity”, which can be defined as “internal and interpersonal continuity”, along with the existence of an autonomous and self-directing personality (Erikson 1968, McAdams, Olson 2010). The formation process of this identity and sense of self is characterized by inconsistency and confusion in some adolescents, in which case symptoms of personality disorder may occur (Gunderson et al. 2018).

Kernberg’s (1984) model has common features with current developmental models. In addition, considering the severity of the symptoms, BPD stands between internalizing / externalizing disorders and psychotic disorders. Kernberg (1976) argues that the hallmark of BPD is the lack of

integration in object representations. In borderline personality organization, patients use primitive and maladaptive defense mechanisms, such as splitting, for emotional regulation, and thus are unable to form holistic object representations. Kernberg (1976) argues that the split defense mechanism develops as a result of avoiding relational conflict with the caregiver.

Kohut (1977), the founder of selfhood psychology, focused more on the inadequacy of the caregiver. In Kohut’s definition of “restoration of the self”, it is stated that in the development of the sense of self, the individual develops the feelings of “self-worth”, “self-consistency” and “self-continuity” by relying mainly on others (self-objects). However, when caregivers respond to their babies with anger or fear instead of mirroring, children internalize a foreign self - the “False Self” (Fonagy and Luyten 2009). Emotions conveyed by the caregiver through mirroring play an important role in the development of an integrated self.

Erikson (1986) draws attention to the mutual interaction of two dynamic elements (“identity synthesis” and “identity confusion”) in the process of identity development. Contrary to identity synthesis in identity confusion, a consistent and functional sense of self is not formed and different identity-related features cannot be brought into a coherent whole. The widely accepted ground for the self in young people with BPD features is “identity confusion” (Kernberg 1983, Westen and Cohen 1993). Identity is generally assessed by self-narratives, which are indicative of people’s ability to consistently integrate their autobiographical past and imagined future (McAdams and Mclean 2013). The causal and thematic coherence skills that develop during adolescence lead to the linking and integration of events in life, enabling self-narratives (Bluck and Habermas 2001). In adolescents with “identity confusion” and BPD characteristics, inconsistencies in self-narratives, fear of abandonment and insecurity are observed (Lind et al. 2019).

As a result, within the framework of psychodynamic theories, the importance of self and identity problems is revealed in the development of BPD in adolescents. Among these problems, “formation of holistic object representations”, “development of sense of self and its integrity”, “negative effects of caregivers on the self”, “identity confusion” stand out.

Temperament Traits and Associated Neurobiological Factors

Inherited biology-based differences contribute to individuals’ emotional and behavioral response tendencies, in short, to temperament (Bates et al. 2014, Davidson et al. 2000). When exposed to environmental risks, these reaction tendencies can turn into symptoms of psychopathology (Kagan 2013). In a twin follow-up study with 1116 children, low self-control

and high impulsivity levels at the age of 5 were found to be predictors of BPD characteristics at the age of 12 (Belsky et al. 2012). Children with persistent high impulsivity generally display a reactive, rapid, uncontrolled approach to rewarding stimuli without appropriately considering the potential negative consequences (Eisenberg et al. 2010, Martel 2013). Studies show that the interaction between temperamental characteristics such as impulsivity, which is persistent in the development of BPD, and environmental risks, such as parental maltreatment, stands out (Sharp et al. 2015). Children with problematic temperaments are more likely to be abandoned, neglected or abused by attachment figures who are also impulsive and hypersensitive to social stimuli (Crawford et al. 2009, Lyons-Ruth and Jacobvitz 2008).

In a follow-up study conducted with 2282 children and adolescents, it was found that high levels of negative affect, shyness and impulsivity, which are temperament traits, predicted the development of BPD (Stepp et al. 2014a). Persistent impulsivity temperament trait in children with “low level of responsibility-compatibility” personality traits; shyness and negative affect temperament traits are associated with “high level of neuroticism” (Sharp et al. 2015). In studies conducted with adults with BPD, a combination of “five-factor personality” features with “high level of neuroticism” and “low level of agreeableness and responsibility” is observed (Trull et al. 2003). It has been reported that there are significant correlations between BPD characteristics and “disinhibition” and “antagonism” temperament dimensions in adolescents (Jovev et al. 2013). Disinhibition is, like impulsivity, associated with “low level of responsibility” in adolescents; and antagonism is associated with “low level of compatibility”. Among the five-factor personality traits, “low level of responsibility” reported in BPD includes impatient, impulsive individuals who have difficulty in organizing; on the other hand, “low level of compatibility” defines individuals who are insecure, utilitarian-Machiavellian or ruthless in interpersonal relationships (Stepp et al. 2014a). Temperament features such as impulsivity and anxiety are associated with individual differences in the functioning of two basic motivational systems in the brain. These systems, called the “behavioral activation system” (BAS) and “behavioral inhibition system” (BIS), regulate approaching and avoiding environmental stimuli (Barros-Loscertales et al. 2010, Fowles 1980). BIS is supported by neural structures including the amygdala and septo-hippocampal system and is mainly stimulated by serotonergic (5-HT) pathways. It is believed that this system prevents approaching-under-threat behaviors and mediates the anxious temperament characteristics (McNaughton and Corr 2004). It is stated that anxious temperament characteristics in childhood may reflect an internalizing trajectory towards self-harming

behavior and BPD in adolescence in connection with depression and anxiety disorder (Beauchaine 2015, Neuhaus and Beauchaine 2013). BAS is supported by the mesolimbic dopamine system, which includes the ventral tegmental area, nucleus accumbens, and ventral striatum. It is thought that hypodopaminergic state and low-level BAS activation are associated with impulsive and irritable temperament features (Laakso et al. 2003, Sagvolden et al. 2005). The heterotypic comorbidity in BPD is thought to be related to the hypodopaminergic state (Beauchaine 2012). In a study, it was suggested that the temperament dimensions of harm avoidance and novelty seeking being high while reward dependence is low constitutes a biological vulnerability in terms of BPD development (Kaess et al. 2013). Harm avoidance is thought to be related to the serotonergic system (BIS), and novelty seeking is thought to be related to the dopaminergic (BAS) system (Cloninger et al. 1993).

As a result, it is observed that some temperamental characteristics of children and adolescents stand out in BPD. Among these, high impulsivity, high neuroticism, disinhibition and antagonism are the general characteristics emphasized in research.

Parental Attitudes and BPD Characteristics

The individuals with whom children and adolescents interact play an important role in reinforcing the negative affect of children. These established relationships are characterized by emotional devaluation, in which the emotional needs of the child are ignored or rejected (Crowell et al. 2009, Linehan 1993a). Linehan emphasizes the effect of the “invalidating environment”, in which the infant’s emotional experiences are not approved and supported by the caregiver, on the development of BPD characteristics (Linehan 1993a). The devaluing environment, compulsive and traumatic behaviors of parents and negative reinforcement processes contribute to the continuity of emotion regulation difficulties in vulnerable youth (Beauchaine et al. 2019, Crowell et al. 2009). Negativity in the family environment and maladaptive parental behaviors predict BPD characteristics in 11-year-old children (Winsper et al. 2012). In population-based follow-up studies, it was determined that maternal BPD diagnosis predicted BPD characteristics in adolescents (Barnow et al. 2013, Reinelt et al. 2014, Zalewski et al. 2014). Negative mother-child interactions such as rejection of the child or the parent’s overprotective attitudes, the mother’s oscillation between not caring for the child and clinging to the child, separation-individuation being perceived as a threat by the mother, not allowing/punishing separation-individuation/exploitation of feelings (intergenerational transmission of separation-individuation pathologies), taking normal developmental difficulties personally contribute to the transition of BPD symptoms from the mother to the

adolescent. It is possible that these mothers also experienced traumatic separation-individuation processes with their own mothers (Reinelt et al. 2014). However, the negative attitude of parents to children is mutual in nature. (El-Sheikh and Erath 2011). In studies on the development and parental attitudes of children with difficult temperaments, it has been found that difficult temperament has a reinforcing effect on negative parental attitudes and that these children have a high sensitivity towards caregivers and the environment (Boyce and Ellis 2005, Burt et al. 2005). It is thought that mutually negative and inconsistent behaviors may be effective in ending the conflict temporarily (Crowell et al. 2014a). However, these behaviors, which are reinforced over time, contribute to interpersonal problems, emotional regulation difficulties and the development of psychopathologies.

Cognition and Neuropsychological Findings in BPD

Individuals with BPD use more negative attitudes about themselves and others, blame themselves and others more in interpersonal relationships and show resentment, perceive the environment more hostile, and use non-adaptive regulation strategies. These findings are associated with difficulty in emotion regulation and impulsivity as a general attitude. According to neuropsychological studies; cognitive flexibility, changing the setup, shifting attention, making decisions/choices, sustained and selective attention, problem solving, self-suppression/inhibition skills, planning, strategy development, working memory are among the cognitive functions reported to be impaired in individuals with BPD (Massó Rodríguez et al. 2021). These neuropsychological impairments are associated with low stress coping skills, susceptibility to ruminative thoughts, impulsivity, and poor emotion regulation skills.

Social Cognition, Mentalization and Its Neurobiology in BPD

Mentalization is defined as the ability to understand the mental states of others (for example, emotions, intentions, attitudes and goals) (Han and Northoff 2009, Northoff et al. 2006). Hypermentalization mediates the relationship between attachment style and BPD characteristics in adolescents (Sharp et al. 2016). “Hypermentalization” is a social-cognitive process that involves making assumptions about other people’s mental states that go beyond observable data (Sharp 2014). It therefore involves overloading mental states and misinterpreting them. Early onset, repetitive, chronic, namely cumulative trauma causes the child to be constantly alert and hypermentalization to occur in developmental process. Hypermentalization has a significant effect on individuals with BPD who have serious problems in maintaining continuity and consistency, especially in interpersonal relationships. “Epistemic freezing”, on

the other hand, refers to the tendency to defend existing knowledge structures even if they are false or misleading (Fiske and Taylor 1991). Such a defensive strategy, also called “cognitive closure”, is observed especially in individuals who grew up in a traumatic environment (ie, high-risk environment for cumulative trauma). Current psychodynamic approaches, for example Fonagy et al.’s (2017) psychodynamic, socially oriented BPD model, places “epistemic freezing” and “mentalization” at the center of early-developing BPD characteristics. The development of the self is closely related to the capacity for reflective functioning or mentalization.

Theory of mind skills are necessary for correct empathy in childhood and for an abstract, symbolic social thinking in adolescence (Baron-Cohen et al. 2008, Frith 2007). Activation of the fronto-temporo-parietal regions and mirror neurons during childhood supports the understanding of the emotions and behaviors of others (Satpute and Lieberman 2006). Socially sensitive and consistent parental attitudes in the relationship between the child and the caregiver ensure that children have a high social processing capacity (Bornstein and Bornstein 2007). Neural development supported by these positive experiences in early childhood paves the way for secure attachment and healthy social communication behaviors (Malenka and Siegelbaum 2001). Negativities in the relationship with the caregiver in early childhood and subsequent relational traumas negatively affect the ability to perceive and respond to social cues (Fonagy et al. 2011). In a study related to theory of mind, a significant negative correlation was found between the ability to attribute first-degree and second-degree false beliefs at a 5-year-old and BPD characteristics at a 12-year-old (Belsky et al. 2012). Midline structures of the brain such as anterior cingulate cortex, dorsomedial prefrontal cortex, precuneus, posterior cingulate cortex, superior temporal gyrus, and temporoparietal regions play a role in an individual’s understanding of themselves and others’ mental states (Herpertz et al. 2017). The increase in activation in the superior temporal gyrus and precuneus in the mentalization network in adolescents with BPD features may be a neural indicator of hypermentalization (Sharp et al. 2011). The superior temporal gyrus is involved in perceiving the gestures and mimics of others, while the precuneus and insula are involved in establishing emotional empathy. In adolescents with BPD characteristics, an activity increase is observed in the insula pertaining to negativities in interpersonal relationships (Krauch et al. 2018). Adolescents with BPD characteristics have more emotional empathy and less cognitive empathy. While emotion regulation difficulties in adolescents with BPD were associated with an increase in emotional empathy; hypermentalization is associated with a decrease in cognitive empathy (Kalpakci et al. 2016).

In addition, social functioning problems are accompanied by white matter abnormalities in adolescents with BPD features. There is evidence that the developmental peak cannot be reached in white matter structure in adolescents with BPD features (New et al. 2013). Attention bias towards negative emotional stimuli can be observed in the presence of depressed mood in adolescents with BPD characteristics. Adolescents with BPD characteristics need more intense expressions in order to perceive emotions accurately.

Attachment and BPD Features

In a “good enough” environment, the infant’s experiences are properly understood by the caregiver and the infant’s needs are sensitively responded to. Parents’ sensitivity towards their children is shown through a non-verbal communication that includes a clear reflection of the baby’s emotions and ostensive cues (Fonagy et al. 2000). It is suggested that the use of demonstrative-observable cues (eg eye contact) initiates epistemic openness to knowledge in the infant (Csibra and Gergely 2009). There is a similar emphasis on “epistemic freezing” in both contemporary interpersonal theories (Benjamin 2005, Horowitz et al. 2006) and attachment theory (Mikulincer and Shaver 2007).

In attachment theory, it is emphasized that individuals with insecure attachment patterns continue their past patterns with a prominent rigidity in new attachment relations. The reason for this is the fear of loss of autonomy (loss of self) or loss of love of the attachment figure (loss of relatedness) (Mikulincer and Shaver 2007). Individuals with insecure attachment patterns have a strong tendency to maintain these patterns even if they are not approved by others. This shows the loss of the information flow that new attachment relationships provide to the individual, namely “epistemic freezing”. In cross-sectional studies with adults, it is already known that there is a significant correlation between insecure attachment style and BPD (Levy 2005). In follow-up studies, it was determined that insecure attachment style in infancy and adolescence predicted the development of BPD (Carlson et al. 2009, Lyons-Ruth 2008). Adolescents with insecure attachment patterns are more prone to interpersonal hostility (Allen et al. 2007). Insecure attachment style is observed in 92-96% of individuals with BPD, and separation anxiety symptoms can be observed in childhood as a result of intergenerational transmission in both attachment and separation-individuation in individuals who develop BPD later on (Levy 2005). BPD features are more common in adolescents with an anxious-resistant-preoccupied attachment style (Rosenstein and Horowitz 1996). Studies have emphasized the findings that the correlation between insecure attachment patterns and BPD begins in childhood and continues into adulthood.

Childhood Adverse Life Events and BPD Characteristics

A history of physical, sexual abuse and emotional neglect was found to be more common in adults and adolescents with BPD than in psychiatric controls (Horeh et al. 2008, Ogata et al. 1990, Salzman et al. 1993, Stepp et al. 2014b, Zanarini et al. 1997). Studies have found that patients with BPD have a high rate of “early attachment trauma” or “complex trauma” (Ball and Links 2009, Chanen and Kaess 2012). “Complex trauma” describes long-term and cumulative childhood traumatic experiences, often involving neglect and/or abuse. (Asnes and Leventhal 2011). “Complex trauma”; it is often referred to as “Type II trauma”, “attachment trauma”, “relational trauma” or “developmental trauma”. (Herman 1992 and Terr 1991).

Some researchers emphasized similar aspects of BPD with the diagnosis of “complex post-traumatic stress disorder” and suggested that complex trauma plays a role in the persistence of emotion dysregulation and causes the development of BPD (Ford and Courtois 2014, Trippany et al. 2006, van der Kolk et al. 1996). It is recommended to establish “Developmental Trauma Disorder” as a separate psychiatric diagnosis for the developmental effects of complex trauma in children and adolescents. The definition of trauma in “developmental trauma disorder” is limited as interpersonal and attachment trauma and the importance of attachment patterns in children and adolescents is emphasized. Diagnostic criteria in “developmental trauma disorder” are evaluated under 3 different categories. These are “somatic symptoms and difficulty in emotion regulation”, “attention and behavioral problems”, “self-regulation and interpersonal dysfunctions” (D’Andrea et al. 2012, Ford 2009). Diagnostic criteria for “developmental trauma disorder” in children and adolescents are highly correlated with BPD characteristics (Schmid et al. 2008). In line with the proposed diagnosis, insecure and disorganized attachment patterns are observed in a significant number of children exposed to abuse or neglect (Hipwell et al. 2000, Kim and Cicchetti 2004, Van Ijzendoorn et al. 1999, Weinfield et al. 2000).

It is believed that exposure to sexual abuse during childhood is one of the most important factors in the etiology of BPD (Westen et al. 1990). Exposure to both abuse and emotional neglect during childhood is associated with BPD characteristics observed in adolescents; however, it is stated that the relationship between exposure to emotional neglect and BPD characteristics is stronger compared to abuse (Zanarini et al. 2020).

“Complex trauma” does not usually occur in isolation; it is typically part of the broader ‘risk environment’ (Cicchetti, Toth 2005). A recent review of thirty-nine follow-up studies found that exposure to different types of traumas

such as emotional abuse and neglect, physical and sexual abuse; typically occurs in a broad context such as parental maltreatment, parental psychopathology, low socioeconomic status, domestic violence. This risky environment is closely related to the development of BPD (Stepp et al. 2016).

Studies on negative life events and their developmental effects in children reveal the importance of developmental timing (APA 2010). The first years of life, when rapid and important changes in brain development are experienced, are considered to be a sensitive period (Gee and Casey 2015). The caregiver-child interaction in this sensitive early childhood period is very important for the development of BPD. It is stated that the effect of maternal absence in early childhood on BPD symptoms cannot be explained by exposure to abuse alone (Lyons-Ruth et al. 2013). In a study, it was determined that 84% of individuals with BPD were exposed to neglect and emotional abuse by their parents before the age of 18 (Zanarini 2000). The chronicity of caregiver maltreatment is thought to be associated with developing BPD features. (Hecht et al. 2014). In addition, it was found that maltreatment in twins who were followed up from birth to 12 years of age strongly predicted BPD characteristics at the age of 12 in children with a family history of psychiatric disorders (Belsky et al. 2012).

Being bullied in childhood poses a risk for the development of BPD in early adolescence (Antila et al. 2017). In a 12-year follow-up study involving 6050 mothers and children, it was determined that continuous exposure to peer bullying during childhood was a risk factor for the development of BPD symptoms at the age of 12 (Wolke et al. 2012). In addition, broader environmental and sociocultural factors such as social inequality are thought to play an important role in explaining vulnerability for BPD. In societies with the highest levels of economic inequality, problems that may be associated with BPD, such as substance use disorder and adolescence pregnancies, are more common (Wilkinson and Pickett 2009). Studies have found that poverty requiring public assistance predicts BPD characteristics in adolescence (Stepp et al. 2014a, 2016).

“Trauma spectrum disorders” such as BPD in particular, attention deficit hyperactivity disorder (ADHD), dissociative experiences, aggression, post-traumatic stress disorder (PTSD), anorexia nervosa, bulimia nervosa, anxiety disorders, depression and substance use disorder, disinhibited social engagement disorder, reactive attachment disorder; the development of SIB which are associated with childhood traumatic experiences (Yildiz et al. 2020a, 2020b); are related to the interaction of many genetic, neurobiological, psychosocial and environmental factors, and they play an important role in the intergenerational transmission of trauma-related experiences and psychopathologies.

Evolutionary Approach

An important “behavioral theory of ecology” called the “life history theory” emphasizes the differential allocation of the organism’s resources to physical growth and reproduction. Life history strategies are generally conceptualized as a slow or fast continuum (Grisevicius et al. 2011, Promislow and Harvey 1990). Each strategy manifests itself with different sexual, psychological and behavioral characteristics (Del Giudice 2009, Kaplan and Gangestad, 2005). “Slow life history strategies” are defined by a greater allocation of resources to growth, development, and parenting. In a slow life history, individuals begin to reproduce at a later age, establish consistent and long-lasting romantic relationships, and invest more in their children. “Fast life history strategies”, on the other hand, are characterized by a greater allocation of resources to mate-finding efforts. In the rapid life history, individuals start to reproduce at a younger age, establish many and short-term romantic relationships, and invest less in their children (Egan et al. 2005, Weiss et al. 2004).

Studies have shown that there is a significant correlation between early environmental risk and rapid life history strategies. For example, individuals who are exposed to environmental risks have early sexual experiences, a tendency to have multiple and short-term romantic relationships, and impulsive behaviors (Belsky et al. 2012, Simpson et al. 2012). Children exposed to environmental cues such as harsh parenting attitudes, violence or abuse are more likely to develop an ‘internal working model’ in which future resource availability is unpredictable (Brüne 2016). This leads to a tendency to maximize short-term benefits in interpersonal relationships, namely the rapid life history strategy (Belsky et al. 1991).

It has been suggested that BPD characteristics are associated with the rapid life history strategy. The high rate of association of BPD symptoms such as impulsivity, difficulty in emotion regulation and self-harming behavior with negative childhood life events supports this view (Brüne 2016). Self-harming behavior in a devaluing environment is thought to be a strong signal to increase parental care (Fonagy et al. 2000). Threats to end children’s lives are also a danger to the parents’ own biological fitness and to the continuation of the lineage. However, psychiatric comorbidities associated with rapid life history strategies such as ADHD, substance use disorder and bulimia nervosa are observed at a high rate in individuals with BPD (Del Giudice 2014). Studies have shown that women with BPD have earlier sexual experiences and have more sexual partners than controls (Sansone et al. 2008, 2011). In addition, unplanned pregnancies are more common in adolescents with BPD features (De Genna et al. 2012). It is thought that the internalization symptoms observed in young people with BPD features may serve to decrease the metabolic rate, increase the fat ratio, and thus lead to earlier

menarche (Belsky et al. 1991). However, there is not enough evidence for physical maturation such as early menarche age in adolescents with BPD features (Brüne et al. 2010). However, symptoms that are indicators of a rapid life history strategy such as risky behaviors, impulsivity and self-harm in BPD gradually decrease with age (Morgan et al. 2013). Rapid strategies aiming to maximize reproductive success early in life, such as in adolescence, become dysfunctional with age, and both symptoms and rapid strategies decrease considerably in the postmenopausal period.

In evolutionary approaches, attention is drawn to the onset of romantic relationships and reproduction with sexual maturation as the reason for the emergence of BPD symptoms during adolescence (Brüne 2016). It is stated that individuals with BPD have sexual experiences at an earlier age and tend to have short-term romantic relationships (Sansone et al. 2008, 2011). These findings are thought to be related to the negative attitudes or absence of the opposite sex parent. It was determined that the transition to puberty and sexual maturation were earlier in girls who grew up in a house without male caregivers (Belsky et al. 1991). Early menarche age, which is observed as a result of environmental risks such as the absence of the opposite sex parent, means more resources are allocated to mate selection together with the ability to start reproduction (Belsky et al. 1991, Ellis 2004). Thus, young people may tend to have many and short-term romantic relationships (Egan et al. 2005, Weiss et al. 2004).

Biosocial Development Model

The “biosocial development model” (Crowell et al. 2009), which is the developmental model for BPD, is based on Linehan’s (1993a) biosocial theory, which emphasizes biologically based emotional vulnerability. Biosocial theory together with dialectical behavioral theory forms the basis of a cognitive-behavioral therapy approach that emphasizes the role of emotion regulation difficulties in the development and persistence of BPD (Linehan 1993a, 1993b). In the biosocial theory, it is stated that difficulty in emotion regulation is at the center of BPD-related symptoms such as SIB, suicidal behavior and impulsive behaviors (i.e. substance use, risky sexual behavior). In addition, Linehan (1993a) emphasizes the “invalidating environment” effect on the development of BPD characteristics, in which the infant’s emotional experiences are not approved and supported by the caregiver. In the biosocial theory, it is stated that the temperament characteristics of the child and the devaluing environment mutually affect each other (Chapman 2019). For example, when children with high impulsivity are exposed to devaluing parental attitudes, they are under a high risk of developing emotional dysregulation (Winsper et al. 2017).

Difficulty in Emotion Regulation in BPD, Neurobiology, Neuroimaging Findings

In individuals with BPD, exaggerated emotional reactions to interpersonal difficulties, frequently experiencing feelings of guilt-shame, experiencing extreme positive and negative emotions, decreased emotional awareness, tendency to blame oneself and others, catastrophizing, inability to exhibit appropriate individual/autonomous coping skills, and ability to compromise and adapt. Emotional dysregulation is common due to retardation (Rodriguez et al. 2021). Emotion regulation capacity depends on the gradual development of the fronto-striatal circuit from early childhood to young adulthood (Rubia 2013, Silvers et al. 2014). This development is strongly influenced by environmental factors such as cultural socialization processes, quality of interaction with caregivers and peers (Baarendse et al. 2013, Whittle et al. 2016). Stressful life events and exposure to trauma in childhood negatively affect the development of neural regions responsible for emotion regulation. It is thought that exposure to stressful life events causes gray matter volume loss in the amygdala and thus increases amygdala activation (Schulze et al. 2016). Areas that may be associated with difficulty in emotion regulation in BPD include amygdala, hippocampus, insula, rostral anterior cingulate cortex (emotion regulation difficulties) / dorsal anterior cingulate cortex, orbitofrontal cortex, ventrolateral and dorsolateral prefrontal cortex, thalamus, and hippocampus (emotion regulation, emotion recognition, impulsivity, sensitivity to immediate and late rewards, decision making) / inferior frontal gyrus (anger and aggression) / uncinate and occipito-frontal fascicles (fibers connecting the limbic system to the frontal cortex-decreased top-down control of emotional and aggressive responses) (Buchheim et al. 2013, Chanen et al. 2008b, Goodman et al. 2011, Guyer et al. 2016, Jovev et al. 2013, Krauch et al. 2018, Leichsenring et al. 2011, Mühlberger et al. 2010, New et al. 2013, Schmahl et al. 2003, Schulze et al. 2016, Stanley et al. 2018, Tabibnia et al. 2011, Takahashi et al. 2009, Whittle et al. 2009).

A decrease in volume was detected in the anterior cingulate cortex region in adolescents with BPD characteristics compared to healthy controls (Goodman et al. 2011, Whittle et al. 2009). This decrease in volume, which leads to a decrease in top-down control, was found to be significantly associated with parasuicidal behaviors (Whittle et al. 2009). A decrease in orbitofrontal cortex volume was found in adolescents with BPD characteristics compared to healthy controls (Chanen et al. 2008b). However, contrary to the adult literature (Schmahl et al., 2003), volume differences in the hippocampus and amygdala were not detected in adolescents with BPD characteristics compared to controls. Findings suggest that changes in these regions may occur in the later stages of the disorder due to decreased volume in the orbitofrontal cortex

(Chanen et al. 2008b). Decreased volume in the orbitofrontal cortex negatively affects emotion regulation and learning skills for socially appropriate behaviors (Buchheim et al. 2013). Contrary to studies conducted with adults with BPD (Schulze et al. 2016), no increase in amygdala activation was observed in case of interpersonal rejection in adolescents with BPD characteristics (Krauch et al. 2018). However, similar to studies conducted with adults with BPD (Schulze et al. 2016), an increase in activation in the left posterior insula was found in case of interpersonal rejection in adolescents with BPD features (Krauch et al. 2018). These neurobiological factors may also be involved in ADHD and specific learning disability, which pose a risk for the development of BPD.

Impulsivity-Self-Injurious Behavior and Associated Neurobiological Factors in BPD

The high level of psychiatric symptoms in adolescents with SIB is associated with BPD characteristics and exposure to trauma (Slavin-Stewart et al. 2018). In developmental approaches, it is suggested that self-harming behavior is a precursor of BPD (Homan et al. 2017, Gratz et al. 2014). Similar to studies conducted with adults (Silbersweig et al. 2007), both gray and white matter abnormalities are observed in the fronto-limbic areas involved in impulse control in adolescents with BPD features (Bozzatello et al. 2019). In studies on SIB, it was found that the pain threshold values of adult and adolescent patients with BPD were higher than those of healthy controls (Ludäscher et al. 2015, Schmahl et al. 2004). Nociceptive stimulation leads to a decrease in stress levels in individuals with BPD (Willis et al. 2017). This increased pain threshold is explained by two mechanisms. In the first of these, it is emphasized that the functional connection between the amygdala and the superior temporal gyrus is impaired as a result of amygdala deactivation (increased top-down inhibition) observed together with the activation of the medial prefrontal cortex. In individuals with BPD, this impaired connection improves after self-harming behavior (Reitz et al. 2015). In the second mechanism, it is stated that the increased functional connection between the posterior insula (pain-hurt associated with emotion) and the dorsolateral prefrontal cortex observed in individuals with BPD leads to hypoalgesia (Niedtfeld et al. 2012). Endogenous opioid system disorders may also be associated with depersonalization, hypoalgesia and dissociation during SIB (Fossati 2012, Herpertz and Bertsch 2015, Stanley and Siever 2010).

According to a recent review, the decreased connectivity between the precuneus and right fronto-parietal regions observed in BPD may lead to problems in self-referencing and self-seeing/evaluation skills. According to some researchers, this situation disrupts the integration of internal representations with stimuli from the environment, which may be related to impulsivity and SIB (Rodriguez et al. 2021).

Recently, the number of studies on “Heart Rate Variability” (HRV) in BPD and self-harming behavior has been increasing. The “Polyvagal Theory Model” provides important information about the neurobiology of social behavior (Porges 2009). In this model, vagal tone represents the functioning of the neurovegetative system based on the parasympathetic/sympathetic system balance. Increasing vagal tone both slows down the heart and makes the heart rate more variable (i.e., there is more beat variation between heartbeats) (Bourvis et al. 2017). Increased activation of the parasympathetic system is observed in adolescents with BPD features (Koenig et al. 2017).

BPD and Genetics

An average heritability of 49% is estimated for personality traits (Polderman et al. 2015). In passive gene-environment correlation, it is emphasized that parents both present their children with an environment related to their own genotype and transmit their own genotypes (Kendler and Baker 2007). Genes that cause vulnerability for BPD development also increase the possibility of exposure to environmental risk factors (Stanley et al. 2018). It has been reported that there is a higher correlation in monozygotic twins (0.66) than dizygotic twins (0.29) in terms of BPD characteristics, and genetic factors are responsible for 66% of the variance in BPD symptoms (Belsky et al. 2012). Among the aforementioned genes associated with BPD; oxytocin receptor gene (OXTR), HPA axis-related FK 506 binding protein gene (FKBP5), 5-HTTLPR serotonin transporter gene stand out. In addition, dopamine-related genes, brain-derived neurotrophic factor (BDNF), vasopressin receptor 1A gene, sodium channel voltage-gated type IX alpha subunit gene, dihydropyrimidine dehydrogenase (DPYD) gene 1, Plakophilin-4 (PKP4) gene, serine incorporator 5 The (SERINC5) gene and the mu-opioid receptor gene (OPRM177G), which is also involved in the regulation of attachment and separation behaviors, may also be associated with the development of BPD (Cicchetti et al. 2014, Plomin 2013, Hankin et al. 2011, Perez-Rodriguez et al. 2018), Sela and Barbaro 2018).

Hormones, Neuropeptides, Immunological Responses and BKB

An increase in pituitary gland volume and changes in plasma dehydroepiandrosterone sulfate (DHEA-S) levels have been reported among hormonal, immunological and neuropeptide-related changes pertaining to BPD characteristics (Conti et al. 2013, Jovev et al. 2008). In BPD, chronic stress in childhood and adolescence initially causes HPA axis hyperactivity; however, it is thought to cause HPA axis hypoactivation (low cortisol response) in the stress response later in life (Miller et al. 2007). In the neuropeptide model of BPD, it is suggested that abnormalities in attachment and affiliative

systems modulated by neuropeptides such as oxytocin and endogenous opioids related to interpersonal relationships may be the cause of impulsive behaviors after social rejection or abandonment (Fossati 2012, Herpertz and Bertsch 2015, Stanley and Siever 2010).

CONCLUSION

Broad spectrum features such as parent-child relationship pattern, parental psychopathology, child psychopathologies, psychodynamic and attachment-related factors, environmental factors, temperamental characteristics, neurobiological processes, genetic factors, emotion regulation difficulties, childhood traumas and negative life events, exposure to sexual abuse, impulsivity related features, theory of mind deficiencies and hypermentalization, hormonal causes, neurotransmitter and neuropeptide function problems, and epigenetic processes play a role in the development of BPD.

In psychodynamic and developmental approaches to BPD, emphasis is put on interpersonal dysfunction, difficulty in emotion regulation and impulsivity. The invalidating environment (Linehan 1993a), epistemic freezing and mentalization (Fonagy et al., 2017), complex or attachment trauma (van der Kolk et al., 2009) play a role in the development of BPD. The diagnosis of Developmental Trauma Disorder is recommended as a separate psychiatric diagnosis for the developmental effects of complex trauma in children and adolescents (van der Kolk et al., 2009).

In the evolutionary approach, the onset of romantic relationships and reproduction with sexual maturation is emphasized as the reason for the emergence of BPD symptoms during adolescence, and it is argued that BPD is associated with the strategy of rapid life history (Brüne 2016). Rapid strategies aiming to maximize reproductive success early in life, such as in adolescence, become dysfunctional with age, and both symptoms and rapid strategies decrease considerably in the postmenopausal period.

Adolescents with BPD characteristics have decreased volume in the orbitofrontal cortex (Chanen et al. 2008b) and anterior cingulate cortex (Whittle et al. 2009), which are involved in top-down emotional processing compared to healthy controls; an increase in activation is observed in the thalamus and hippocampus regions, which are involved in bottom-up emotional processing (Krauch et al. 2018). However, contrary to the adult literature (Schmahl et al. 2003), volume differences in the hippocampus and amygdala are not observed in adolescents with BPD characteristics compared to controls (Brunner et al. 2010). It is thought that changes in these regions occur in the later stages of the disorder due

to decreased volume in the orbitofrontal cortex (Chanen et al. 2008b).

Since our study is limited to a review of BPD, conducting studies that reveal the importance of the findings we have discussed in applied clinical contexts will guide clinicians in terms of diagnosis, differential diagnosis and treatment of BPD. Especially mental health experts working in the field of adolescents should handle the problem considering its different dimensions. Since studies focusing on childhood are important in terms of their effects in predicting BPD during adolescence and young adulthood, it would be beneficial to increase studies for this age group. Experimental studies on various features of BPD and comparisons to be made between samples of adolescents with and without BPD features will help clarify the distinctive features of BPD.

Longitudinal studies following the long-term effects of developmental trauma will contribute to understanding the relationship between trauma and BPD characteristics. This study is based on a review of studies conducted among child and adolescent population in the field of BPD in the last 50 years. Most of the studies we have discussed are of a relational nature. Therefore, the generalizability and effect size of the findings are limited. Studies conducted in the field of BPD in our country will contribute to the literature while supporting the validity of the findings.

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Catatonia Due to Lithium Neurotoxicity: A Case Report



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ABSTRACT

Lithium may cause toxicity as it has a narrow therapeutic range. Lithium intoxication may manifest in the form of acute, acute on chronic and chronic intoxication. Neurotoxicity is a common component of chronic lithium intoxication and the symptoms include tremor, ataxia, dysarthria, extrapyramidal symptoms, hyperreflexia, seizures and status epilepticus. Although rare, catatonia could as a manifestation of lithium neurotoxicity. In this report, we present a patient with bipolar disorder presenting with catatonic symptoms secondary to lithium intoxication. We will discuss the risk factors, differential diagnosis and the treatment of catatonic symptoms. Lithium neurotoxicity may present with various clinical symptoms including catatonia, and differential diagnosis should be made well in such cases. If lithium neurotoxicity is suspected, rapid and appropriate intervention is required to prevent permanent neurological damage.

Keywords: Lithium, Neurotoxicity, Catatonia

INTRODUCTION

Lithium is an effective drug widely used in the maintenance treatment of recurrent depression and bipolar disorder (Malhi et al. 2017). Due to its narrow therapeutic range, it should be used carefully to prevent lithium intoxication (Decker et al. 2015). Lithium intoxication is classified as acute, chronic intoxication and acute on chronic intoxication (Baird-Gunning et al. 2017). In addition to frequent gastrointestinal symptoms, neurological, nephrological, cardiovascular and endocrine symptoms can be seen in acute lithium intoxication; nephrotoxicity and neurotoxicity are more common in chronic lithium intoxication. The most common clinical findings of chronic lithium intoxication are ataxia, coarse tremor, dysarthria, dyskinesia, extrapyramidal symptoms and hyperreflexia (El Balkhi and Mégarbane 2017). Although many neurological symptoms associated with lithium neurotoxicity have been described, there are few reports of catatonia (Desarkar et al. 2007, Medda et al. 2018).

The differential diagnosis, risk factors and treatment of catatonia occurring during lithium intoxication will be discussed in this case report.

CASE

A 60-year-old female patient presented with depressed mood, insomnia, loss of appetite, suicidal thoughts and delusions of persecution. Her first complaints started in 1990 as talking and spending more than usual, hyperactivity, and a distinct decrease in sleep duration and need. She was hospitalized with a diagnosis of bipolar disorder manic episode, and lithium treatment was started. The patient, who continued lithium treatment regularly until 2019, started using lithium irregularly in early 2019 due to a diagnosis of hypertension and edema in her legs. Shortly after she started using lithium irregularly, depression, social withdrawal, insomnia, restlessness, suspiciousness, auditory hallucinations, and persecutory delusions began; she was hospitalized in a psychiatry ward with a diagnosis of bipolar disorder depressive episode accompanied by psychotic symptoms and was discharged after her symptoms improved with lithium 1200 mg/d and quetiapine 100 mg/d. Due to the high plasma creatinine level and low glomerular filtration rate (GFR) in the control visits, the lithium dose was reduced to 600 mg/d. The patient did not attend to the follow-up

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visits regularly and she was observed to display depressive and psychotic symptoms at the outpatient clinic in 2020. In laboratory tests, plasma creatinine level was 1.47 mg/dL (reference range: 0.51-0.95) and GFR value was measured as 38 ml/min/1.73m². The treatment was adjusted as lithium 300 mg on alternate days, quetiapine 100 mg/d, alprazolam 1 mg/d, mirtazapine 15 mg/d, and trifluoperazine 1 mg/d. The patient was hospitalized in our inpatient clinic due to lack of improvement in her depressive symptoms and suicidal thoughts.

In her physical examination at her admission to the inpatient clinic, bilateral pretibial +1 pitting edema was observed. In her neurological examination, bilateral cogwheel rigidity, which was more prominent on the left, was present. Her mood was depressed, her affect was blunted and she had delusions of persecution and reference, together with suicidal ideation in the mental state examination. In addition, she had auditory hallucinations and lacked insight regarding her psychiatric illness. No signs of catatonia were detected. She was diagnosed with Bipolar Disorder Depressive Episode with Psychotic Features. The Hamilton Depression Rating Scale (HAM-D) score was calculated as 35 (Akdemir et al. 1996). Complete blood count (CBC) and liver function tests (LFT) results were normal, and blood electrolyte levels were in normal range. In kidney function tests (KFT), creatinine was 1.49 mg/dL and GFR was 37.5 ml/min/1.73m². Serum lithium level was 0.56 mmol/L. Routine urinalysis and posteroanterior chest X-ray were normal.

Olanzapine 5 mg/d and sertraline 25 mg/d treatments were started for the treatment of depressive and psychotic symptoms. Lithium was discontinued due to irregularities in the KFT. After increasing the dose of olanzapine treatment to 10 mg/d, neurologic examination revealed bradykinesia, Myerson's sign, tremor and ataxic gait, and an increase in cogwheel rigidity. The severity of parkinsonism symptoms increased in the follow-up, and disorientation appeared. The patient's temperature was 37.8°C, other vital signs were normal. Serum lithium level was measured as 0.37 mmol/L, creatinine as 1.34 mg/dL, GFR as 46 ml/min/1.73m². In addition to CBC, LFT, and blood electrolyte levels, creatinine kinase (CK) and myoglobin levels, which can be supportive laboratory findings for the differential diagnosis of neuroleptic malignant syndrome (NMS), were studied. These were within the normal range. In the physical examination, no findings regarding an infection could be detected. C-reactive protein (CRP), sedimentation, procalcitonin, Covid-19 PCR (Polymerase Chain Reaction) test, complete urinalysis, urine culture and posteroanterior chest X-ray tests were requested for the patient for whom the department of infectious diseases was consulted. CRP value was 0.454 mg/dL (reference range: 0-0.8), sedimentation value was 8 mm/hour (reference range: 0-25). With these findings, the department of the infectious

diseases concluded that there was no sign of an infectious clinical process. Brain magnetic resonance imaging (MRI) was performed but did not reveal any pathological findings other than mild cerebral atrophy. Her electroencephalography (EEG) was normal. In the follow-up of the patient, it was observed that ataxic gait intensified, truncal ataxia appeared, her speech was dysarthric, and intentional tremor accompanied postural tremor. With the newly emerging cerebellar findings, lithium neurotoxicity was considered in the differential diagnosis. All psychotropic drugs including olanzapine were discontinued on the confirmation of lithium intoxication diagnosis by the neurology department.

Four haemodialysis sessions, one lasting four hours and the other three lasting six hours, were conducted to accelerate lithium excretion, until the serum lithium level was zero. After haemodialysis, tremor, bradykinesia, postural instability, dysarthria and disorientation improved, Myerson's sign disappeared. The severity of ataxia, tremor and cogwheel rigidity continued to decrease.

Neurocognitive tests were performed as soon as the clinical condition of the patient allowed testing, following the improvement of acutely developed neurological findings after haemodialysis treatment. In the neuropsychological examination of the patient; mini mental test and modified mini mental test were performed to evaluate general cognitive performance; trail making A & B test and digit span test to evaluate attention and executive functions; verbal and semantic fluency tests to evaluate the flow and speed of verbal production and working memory; clock drawing test to evaluate visual-motor functions and planning and abstract thinking skills. It was determined that the patient had mild impairment in general cognitive performance and executive functions.

Lorazepam 2 mg/d treatment was started as concomitant symptoms of catatonia were observed including mutism, echopraxia, mannerism, negativism and withdrawal, while the lithium-related neurotoxicity findings continued. Electroconvulsive therapy (ECT) was planned for both depressive and catatonic symptoms. The Bush-Francis Catatonia Rating Scale (BFCRS), which is widely used in practice as a screening scale for catatonia symptoms (Aandi Subraniyam et al. 2020, Erdoğan et al. 2021), the maximum score of which is 69, was applied and the score was 10. Meanwhile, The HAM-D score was 25. After the symptoms of catatonia were observed, investigations were performed to exclude various probable medical causes of catatonia such as autoimmune encephalitis and rheumatological diseases. In line with this aim, limbic encephalitis panel including plasma anti-NMDA antibody, anti-nuclear antigen (ANA), anti-cyclic citrated peptide (anti-CCP), rheumatoid factor (RF), anti-double stranded DNA (anti-dsDNA), anti-neutrophilic cytoplasmic antibody (ANCA), C3 and C4 complement levels, anti-Ro, anti-La, anti-Smith, anti-ribonucleotide

phosphorylase, anti-SCL70, HLA-B27, HLA-B51 tests were performed. No pathological value was detected in the laboratory tests.

After eleven sessions of bitemporal ECT, both depression and catatonia symptoms improved. The scores of HAM-D and BFCRS were calculated as 1 and 0, respectively. After ECT sessions were terminated, lamotrigine treatment was started and the dose was increased up to 200 mg/d. While the patient was discharged with complete remission of depressive symptoms, ataxic gait and tremor in both hands continued in a less severe form. In her examination four months after her discharge, it was observed that her mood was euthymic, her neurological examination was normal, and the impairment in her neuropsychological tests had improved.

The results of the neuropsychological tests applied to the patient during the clinical follow-up period, along with the score, Z-score and evaluation interpretation are shown in Table-1.

DISCUSSION

This article presents a case with catatonia symptoms occurring during neurotoxicity due to chronic lithium use. On the third day of hospitalization, disorientation, severe extrapyramidal and cerebellar symptoms emerged while using olanzapine 10 mg/d, sertraline 25 mg/d and lithium 300 mg on alternate days.

Infectious diseases, idiopathic normal pressure hydrocephalus (NPH), neuroleptic malignant syndrome (NMS), and lithium neurotoxicity were considered in the differential diagnosis of the condition in which delirium and neurological symptoms appeared together, along with a fever of 37.8°C. Infectious factors were excluded because no abnormal findings were detected in laboratory tests, the physical examination was normal, and the Covid-19 PCR test was negative. The diagnosis of lithium neurotoxicity was confirmed, moving away from the diagnosis of NMS due to the absence of any laboratory findings to support NMS, the spontaneous improvement of fever in a short time, the absence of lead pipe rigidity, and autonomic instability symptoms, and emergence and persistence of cerebellar symptoms.

Normal Pressure Hydrocephalus (NPH) had also been considered in the differential diagnosis, taking into account the presence of the ataxic gait and cognitive dysfunction in neurological examination. Normal-pressure hydrocephalus, also known as Hakim-Adams syndrome, is a clinical condition presenting with symptoms such as enlargement of the ventricles, urinary incontinence, gait disturbance and cognitive impairment (Oliveira et al. 2019) and named as idiopathic NPH, if it does not develop secondary to any underlying cause. The patient's ataxic gait was not observed

at the time of admission to the inpatient clinic. It occurred simultaneously with other neurological symptoms during the course, and was not in the magnetic gait style that is usually characteristic of normal pressure hydrocephalus (Fraser and Fraser 2007). Besides the observations presented above, the ventricles were found to be normal in width in the brain MRI, there was no accompanying urinary incontinence, and neuropsychological tests and other neurological findings completely resolved after lithium was discontinued and did not reappear.

In the clinical condition of lithium neurotoxicity, changes in consciousness; cerebellar symptoms such as ataxia, dysarthria, dysmetria, intentional tremor; neuromuscular excitability in the form of extrapyramidal manifestations, irregular and coarse tremor, fasciculations, myoclonic beats; impairment in cognitive and executive functions, prolonged seizures and status epilepticus can be seen (Baird-Gunning et al. 2017, El Balkhi and Mégarbane 2017). Catatonia, albeit rarely, can be seen as a manifestation of lithium neurotoxicity. When the literature is reviewed, it is seen that two catatonia cases related to lithium neurotoxicity have been reported so far (Desarkar et al. 2007, Medda et al. 2018). The first case report is about a 16-year-old female patient diagnosed with bipolar disorder and followed up with lithium treatment, who developed neurotoxicity with a serum lithium level of 2.22 mmol/L, and had catatonia symptoms such as mutism, staring, negativism, catalepsy, and stupor. In that case, it was reported that lithium treatment was discontinued. Electroconvulsive treatment was started when the serum lithium level was 2.22 mmol/L, catatonia symptoms were completely resolved with five sessions of ECT, and other neurotoxicity symptoms were completely resolved in the course (Desarkar et al. 2007). The second case is a 68-year-old female patient with bipolar disorder who developed neurotoxicity symptoms with a serum lithium level of 2.6 mmol/L. In that case, upon observing catatonia symptoms such as catalepsy, rigidity, waxy flexibility, staring, stereotypical movements, excitement and negativism, the patient's lithium treatment was discontinued and ECT was started after the serum lithium level dropped to zero. After twelve sessions of ECT, the symptoms of catatonia completely resolved, but dysarthria, ataxia, and cognitive dysfunction remained as sequelae symptoms in the following years (Medda et al. 2018). In both of these cases, signs of neurotoxicity occurred when the serum lithium level was above the therapeutic range. It has been reported that symptoms of lithium neurotoxicity may occur even when the serum lithium level is in the therapeutic range, as in our case (Arya 1996, Emilien and Maloteaux 1996, Grueneberger et al. 2009, Baird-Gunning et al. 2017, Soni 2019). The improvement of tremor, bradykinesia, postural instability, Myerson's signs, and decrease in the severity of ataxia and cogwheel rigidity after haemodialysis support the view that

Table 1. The results of the first and last neuropsychological tests, which were performed on the patient with an interval of four months, are shown together with the test score, z-score and interpretation

	First Assessment		Last Assessment	
	Score	Z-score/Standard Deviation (SD)	Score	Z-score/Standard Deviation (SD)
Neuropsychological Test				
Mini Mental-State Examination	24		28	
Modified Mini Mental-State Examination (3MS)	82	-1.28	91	-0.18
Clock Drawing Test	4	0.0	4	0.0
Trail Tests				
Trail-Making A Test	139	-4.05	46	-0.6
Trail-Making A Correction Number	1	-5.88	0	0.0
Trail-Making B Test	259	-4.56	114	0.1
Trail-Making B Correction Number	0	0.0	0	0.0
Trail Making B+A Score	398	-4.46	160	-0.17
Trail Making B-A Score	120	-2.44	68	0.5
Digit Span Memory Tests				
Digit Span Test: Total	8	Between -1 SD and -2 SD	9	Between 0 SD and -1 SD
Digit Span Test: Forward	5	Between 0 SD and -1 SD	5	Between 0 SD and -1 SD
Digit Span Test: Backward	3	Between 0 SD and -1 SD	4	Between 0 SD and -1 SD
Verbal Fluency Tests				
Verbal Fluency Test (Letter-S)	8	-1.45	17	1.11
Verbal Fluency Test (Letter-A)	6	-1.45	12	0.05
Verbal Fluency Test (Letter-Z)	8	-0.14	9	0.28
Semantic Fluency Tests				
Semantic Fluency Test (animal)	11	-1.95	15	-1.23
Semantic Fluency Test (human)	16	-1.84	21	-1.06
Semantic Fluency Test (animal-human)	16	-0.79	17	-0.54

Overall, the mild impairment in the general cognitive performance, executive functions and complex attention of the patient, which was detected in the first evaluation, have improved in the final evaluation (Ayhan et al. 2022).

the neurological symptoms seen in this patient are related to lithium neurotoxicity.

Although catatonia is a syndrome that may occur during mood episodes, no signs of catatonia were detected during any mood episode in the past course of this patient and during her last depressive episode. Catatonic symptoms emerged in our patient for the first time just after the development of lithium neurotoxicity. The timing of the onset of catatonia symptoms in this depressive episode and the absence of catatonia in past mood episodes support that new-emergent catatonia may be associated with lithium neurotoxicity rather than with the mood episode. However, mood disorder may have contributed to the emergence of catatonia during lithium neurotoxicity, and this condition cannot be completely excluded. As stated

in another case report, catatonic symptoms were treated with lorazepam and ECT in this case as well (Medda et al. 2018). The administration of ECT while serum lithium levels are high in the central nervous system (CNS) can lead to delirium and prolonged seizures (Baird-Gunning et al. 2017, Medda et al. 2018). Therefore, in our case, the serum lithium level was dropped to zero through haemodialysis before initiating ECT.

Female gender and older age are risk factors for the development of lithium neurotoxicity (Adityanjee et al. 2005, D'Souza et al. 2011). Other risk factors are epilepsy, cognitive impairment, abnormal EEG findings (Kores and Ladder 1997), psychotic symptoms and anxiety symptoms accompanying mood symptoms in the pre-intoxication period, and the use of lithium for schizoaffective disorder

and bipolar disorder (West and Meltzer 1979). The combined use of lithium and antipsychotics increases the risk of neurotoxicity, since lithium reduces presynaptic dopamine release and antipsychotics block dopamine-2 receptors (Boora et al. 2008). In our case, the addition of olanzapine to lithium treatment was one of the risk factors that may have triggered neurotoxicity. It would be an appropriate approach to evaluate this case as acute lithium neurotoxicity developing on the basis of chronic lithium nephrotoxicity due to long-term lithium use. In our case, advanced age, female gender, diagnosis of bipolar disorder, presence of psychotic symptoms, co-diagnosis of chronic kidney disease and concomitant olanzapine use facilitated the development of lithium neurotoxicity. In this patient, haemodialysis method was used in the treatment to improve the clinical course of lithium neurotoxicity. There was a significant improvement in neurological symptoms following four haemodialysis sessions, three of which lasted six hours. In the literature, it is recommended that the duration of haemodialysis sessions be at least six hours in lithium intoxication cases (Decker et al. 2015). The approaches recommended in the literature were followed in the haemodialysis application of this case.

Serum lithium level is another determinant of lithium neurotoxicity, but it should be kept in mind that lithium neurotoxicity can also be seen in the therapeutic range. Lithium may accumulate in the brain tissue in long-term treatment, and its transition to the cerebrospinal fluid may be delayed and slow (Baird-Gunning et al. 2017). In this case, the emergence and persistence of neurotoxicity despite the discontinuation of lithium and olanzapine treatments might be related to the slow and delayed transition of lithium to the cerebrospinal fluid.

While fever may be a component of lithium neurotoxicity, it may also pose a risk for the development of neurotoxicity by stimulating protein coagulation in different parts of the CNS (Adityanjee et al. 2005). When neurotoxicity developed, there was a short-term fever response, and the accompanying confusion led to the necessity of considering infection, rheumatological diseases and NMS in the differential diagnosis. For this reason, consultations concerning the patient were conducted with the relevant departments. Infectious diseases and rheumatological diseases were excluded due to the normal results of the tests detailed in the case report section, lack of abnormal findings in the examination, and lack of family history of rheumatological diseases. The diagnosis of NMS was also excluded because the creatine kinase and leukocyte values were normal, the subfebrile fever seen in the patient spontaneously regressed within hours and was not observed again; signs of autonomic instability and lead pipe rigidity were never observed. The only type of rigidity observed in the patient was cogwheel rigidity.

The persistence of symptoms of lithium neurotoxicity two months after the discontinuation of lithium is defined as The Syndrome of Irreversible Lithium Effectuated Neurotoxicity (SILENT) in the literature (Adityanjee et al. 2005). In the review in which ninety SILENT cases were evaluated, it was reported that the number of patients whose SILENT improved within the first year after lithium discontinuation was quite low (Adityanjee et al. 2005). Ataxic gait, tremor, and cognitive impairment, which are the symptoms of neurotoxicity seen in the presented case, continued until six months after the discontinuation of lithium. It was observed that they completely recovered in the follow-up examination six months later, and thus, the presented case is one of the few SILENT cases which improved during follow-up.

In conclusion, it should be kept in mind that catatonia can be seen as one of the clinical findings of lithium neurotoxicity, albeit rarely, and that in patients on lithium therapy, if neurological symptoms that may be associated with lithium neurotoxicity, including catatonia, occur, prompt and appropriate intervention should be sought to avoid permanent neurological damage.

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Case Report: Second-order Contrast Sensitivity in Tourette Syndrome



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ABSTRACT

Gilles de la Tourette Syndrome (GTS) is a neuropsychiatric developmental disease, characterized by motor and vocal tics with no changes in the ocular structures in the ophthalmological evaluations. The visual field evaluations suggest a reduction in central visual field sensitivity. The studies on visual function in this population is scarce. In this case report we present a patient with GTS who has significant alterations in the measure of contrast sensitivity for second order vision without any vision complaints. This reduction occurred in the measure of contrast sensitivity with a white noise carrier for practically all tested space frequencies. The mean contrast sensitivity for first and second-order stimuli with a pink-noise carrier was normal. The second order contrast sensitivity with a white noise carrier is dependent on local and lateral inhibition since it includes many local luminance components. The existence of this sensitivity suggests that specific visual processing mechanisms are affected.

Keywords: Tourette Syndrome, Contrast Sensitivity, Contrast Psychophysical Channels, Second-Order Perception

INTRODUCTION

Gilles de la Tourette Syndrome (GTS) is a neuropsychiatric developmental disease, the clinical characteristic of which is multiple motor or vocal behaviors without self-control, such as repetitive but non-rhythmic patterned stereotyped movements in a single part or multiple parts of the body, motor and vocalizations called tics, occurring for at least 1 year, with the age of onset before 18 years of age (Dale 2017). The clinical spectrum, in which the severity, frequency, fluctuation, and localization of vocal tics and motor tics are highly individual, is extremely complex. Gilles de la Tourette Syndrome is more prevalent in men than in women, with a ratio of 3:1 (Cavanna et al. 2020). In addition to compulsions and motor tics, there is often the presence of coprophenema (inappropriate verbal gestures and expressions) and ecophonema (imitation of gestures and phrases) and other socially inappropriate non-obscene behaviors (Cox et al. 2018).

In the cortical area, we have the striatum, it is a ganglia base (controlling the motion) that is the junction of caudate nucleus and putamen (both a part of dorsal striatum)

localized between anterior perforated substance and anterior commissure and it is responsible for functional controls, such as leading impaired sensory integration and motor planning, execution and reward system (Beste et al. 2016, Dale 2017). Sensory changes are poorly reported in GTS and these studies were centered on the somatosensory aspect. GTS patients often report premonitory hypersensitivity in other sensorial domains as visual or olfactory, which occurs before motor movement (Beste et al. 2016).

Clinical ophthalmological evaluations do not find changes in the ocular structures or the visual acuity recognition measures (Tatlipinar et al. 2001, Kovacich 2008) as well as the light detection measure in the visual field (Whitefield et al. 1995, Enoch et al. 1989), being classified as normal from the medical-ophthalmological perspective. However, functional visual perceptual measurements, besides visual acuity, have found different results.

A study showed that chromatic discrimination measures in a hue ordering task show that adults and children with GTS have reduced specific discrimination for the blue-yellow axis, but normal discrimination for the green-red axis (Melun et

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al. 2001). These authors suggested a relationship between the changes found in color vision and changes in the retinal dopamine pathway. Other visual functions, such as face perception, are also altered in patients with TS (Rae et al. 2018). In that study, the authors found no differences in the perception of emotion in neutral and angry faces, in addition to correlating with the adequate activity of the amygdala in a measure of Functional Magnetic Resonance. However, the authors report a high positive correlation between the severity of GTS with the measure of functional connectivity of the insular cortex with the visual areas V1, V2, V4, and V5/MT. A few studies showed that functional changes in the visual system can occur both for simple sensory functions (V1 and V2), and for complex functions (V4 and V5/MT). The visual changes can help us understand the pathophysiological mechanisms of the disease. Therefore, we present in this study a case report of a young patient with GTS, in which we evaluated the spatial contrast sensitivity of first and second-order luminance contrast. The choice of these measures is due to the fact that pathophysiological mechanisms are well defined and the sensitivity to first-order contrast is related to the processing of the Magnocellular and Parvocellular groups of the visual pathway, primarily V1 (Campbell et al. 1968, Baker et al. 2001). Recent studies in cannabis users suggest the reduction in first-order contrast sensitivity measured was due to an impairment in glutamatergic neurotransmission, including glutamate and GABA neurons (Lalanne et al. 2017). Second-order contrast sensitivity measurements, whether modulated by white noise or pink noise carriers, are processed in distinct visual areas, V2 and V4, respectively (Schofield et al. 2003, Callaway 2004, Yang et al. 2019). Besides, these measures have been established as efficient biomarkers to identify specific changes in various neurological and psychiatric diseases such as Alzheimer's disease (Crow et al. 2003), Duchenne Muscular Dystrophy (Costa et al. 2005, Costa et al. 2011), occupational mercury vapor intoxication (Costa et al. 2008), and Autism Spectrum Disorder (Svetozarskiy 2019).

To put in a real world example: When you are searching for a mosquito in a clean room with a white wall, finding the mosquito is going to be quite simple, however, assume that you are in the Amazon forest and you have to find the same mosquito, which is going to be harder than in the clean room.

White noise is a binary noise, which means it is created using a binary function, such as (0,1,0), to generate a stimulus that resembles the appearance of a TV without a signal. In this type of noise, the visual system is more sensitive to low frequencies (0.5-1cpG). To create pink noise, the stimulus is subjected to a Fourier transformation, resulting in a 1/f distribution. This gives the noise a textured appearance. This noise is more sensitive to high frequencies (4-8cpG) (Schofield et al. 2003).

CASE

Patient History

20 year-old female patient CMSM is a psychology student diagnosed with Gilles de La Tourette's Syndrome in childhood, does not use any medicaments (due to her refusal), presents with normal visual acuity, visual field, and an absence of ophthalmic complaints. In the Yale Global Tic Severity Scale (YGTSS), current motor and vocal tics are rated on 5 dimensions: number, frequency, intensity, complexity, and interference, with scores ranging from 0 to 5 each. Those results are summed to yield separate motor and vocal tic severity scores (ranging 0-25) and a combined total tic severity score (ranging 0-50). An associated impairment scale (ranging 0-50) assesses tic-related disability during the last week.

The patient's YGTSS result was 13 for motor tic severity and 7 for vocal tic severity, with a combined total tic severity score of 20. The auto-reported impairment was rated as a minimum. Reported simple motor tics occurred in the previous week were blinking, eye movements, facial grimace, mouth movements, head, hand, shoulder, arm and leg movements, and abdominal tensing. Reported complex motor tics were only writing tics, body bending and gyrating. Current simple phonic symptoms were production of sounds and noises. No complex symptoms were related to occur recently.

The study belongs to the Research Project for the Development of Psychophysical Measures, approved by the Human Research Ethics Committee of the Psychology Institute (CAAE: 66767317.5.0000.5561). The informed consent was obtained from the participant. The study was conducted in line with the Declaration of Helsinki 1964 and its following updates. The study was also conducted based on the case report guidelines – CARE protocol (Gagnier et al. 2013, Riley et al. 2017).

METHODS

We measured the luminance spatial contrast sensitivity for three different stimulation conditions, 1st-order and 2nd-order, with contrast modulation by white noise and pink noise carriers. The 1st-order measure is seeking the measurement of pure stimuli, enabling the identification of psychophysical spatial functions related to the physiological pathways Parvocellular (8.0cpG) and Magnocellular (0.5 and 1.0cpG) (Niemeyer et al. 2017).

The 2nd-order measures are divided into two conditions: spatial frequencies carried by white noise (interference by high-frequency components) and spatial frequencies carried by pink noise (interference amplitude inversely proportional to the spatial frequency). A critical difference between those

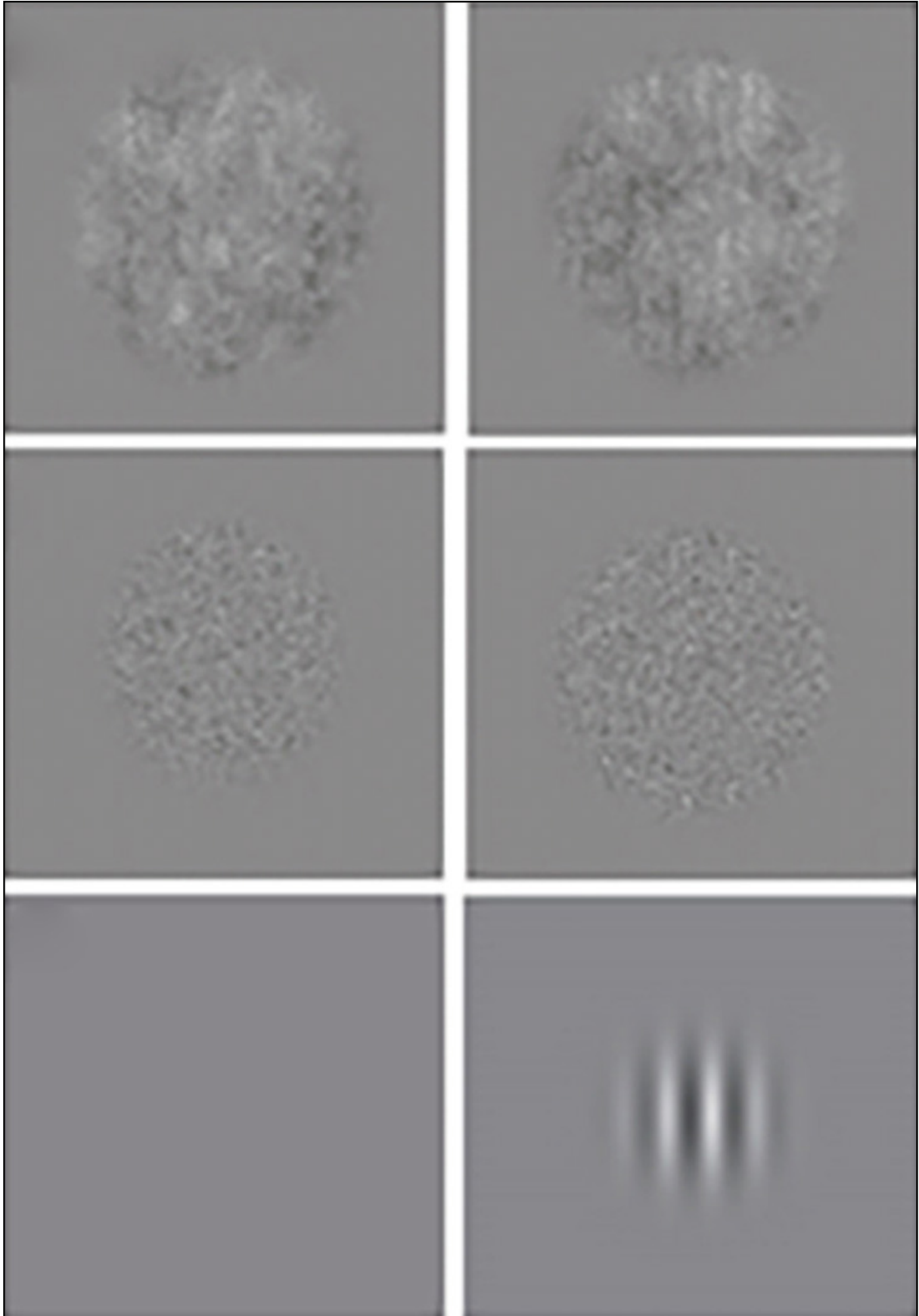


Figure 1. Sample of the stimuli presented in the experiment. In A, low spatial frequency and medium spatial frequency carried by a pink noise, respectively from left to right. In B, low spatial frequency and medium spatial frequency carried by white noise and in C the first-order contrast sensitivity luminance grating and the uniform gray background.

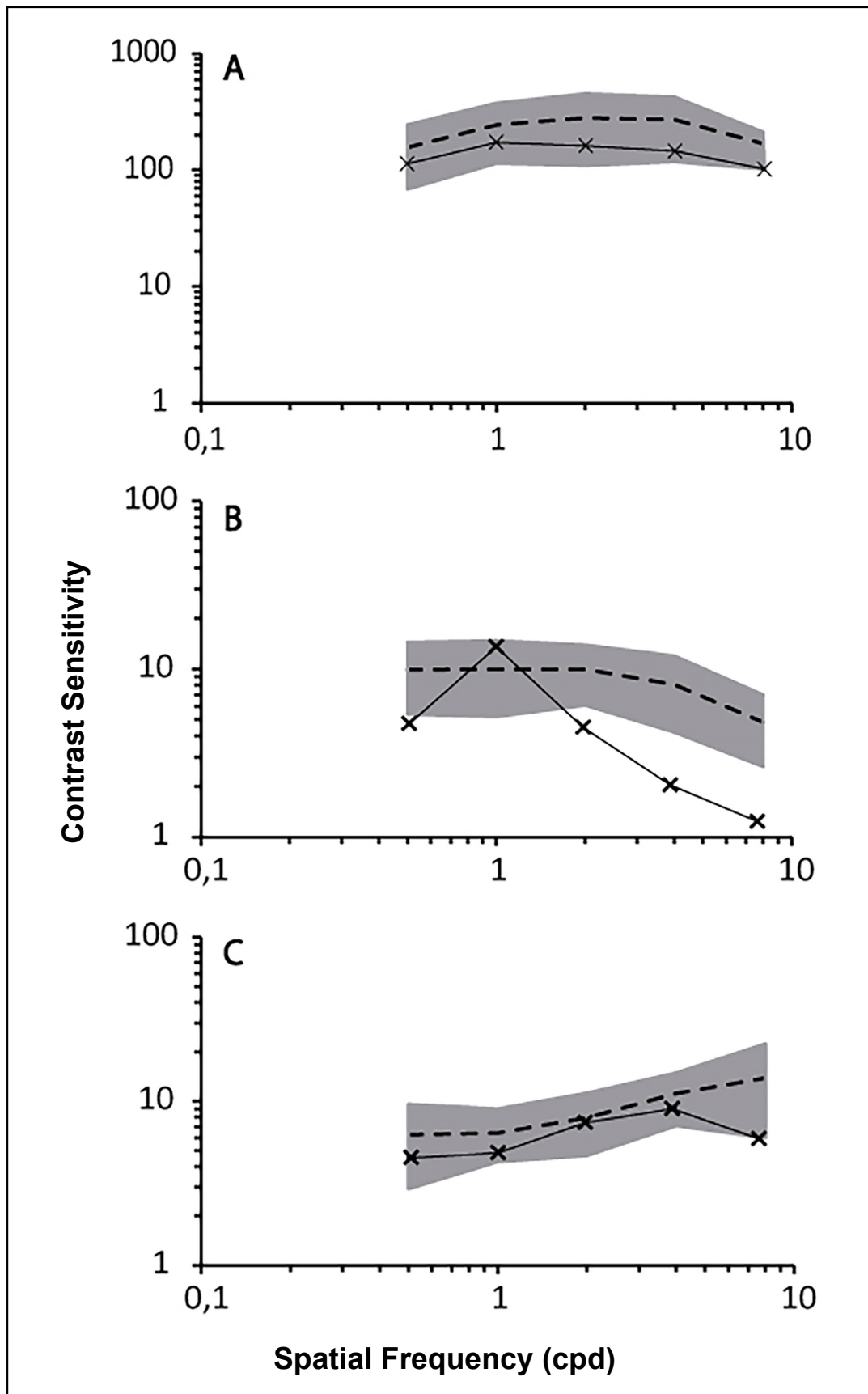


Figure 2. Contrast sensitivity function results. The gray area is the normality range, and the dashed black line is the mean contrast sensitivity for each spatial frequency. The black line with “x” marks are the result of the TS patient. In, A we have the results for the 1st-order contrast sensitivity; in B, the result for the contrast sensitivity using white noise carrier and in C, the result for the contrast sensitivity using white noise carrier. In the white noise carrier condition, almost all spatial frequencies are below the normal limits.

stimuli conditions is that 2nd-order stimuli have carriers that were set to a contrast factor above the threshold, ensuring that any 2nd-order loss in sensitivity is not simply a consequence of a less detectable carrier, which was because of a first-order loss (Spiegel et al. 2016). Different visual areas process these stimuli, with white noise modulation primarily in areas V1 and V2, while pink noise modulation is primarily in V4. We can see the difference among these three stimuli in Figure 2. All those stimuli compromised a visual angle of 6° from the test distance of 60 cm.

The spatial frequencies tested in all three stimulation conditions included low frequencies 0.5 cpd and 1.0 cpd, medium frequencies 2.0 cpd, 4.0 cpd, and high frequency 8.0 cpd (cycles by the degree of visual angle). We measured contrast sensitivity thresholds using a simple staircase psychophysical procedure, 1up:1down, with an asymmetric change in contrast, in which there was a decrease of 12.5% of contrast after a correct response and a 25% increase of contrast following a wrong response. Correct responses correspond to 74.7% of the final contrast. The tests were validated, and the normal limits were defined for the young adult population (in press), shown in the gray areas in Figure 1. The measurements of 1st-order contrast sensitivity were followed by the 2nd-order and performed on the same day, in a binocular viewing condition and a darkened room, with a resting interval of 10 minutes between measurements, amounting to a total testing time of 60 minutes.

RESULTS

The 1st-order measurement and the 2nd-order contrast sensitivity measured with the pink noise carrier were within normal limits (Figure 2A and 2C). However, for 2nd-order contrast sensitivity with white noise carrier, there was a drastic reduction in contrast sensitivity for low (0.5 and 1.0 cpd), medium (2.0 cpd), and high (8.0 cpd) spatial frequencies. Only at 4 cpd, the contrast sensitivity estimated using white noise carrier reached the normal range of the controls. These results are shown as a solid line in Figure 2.

DISCUSSION

Our case report evidenced a specific reduction in second-order contrast sensitivity carried by white noise, despite a normal first-order and second-order contrast sensitivity carried by pink noise in this TS patient. Despite being an individual measure, this is the first work that reports results of contrast sensitivity measures in this population but signals the need to further expand the functional understanding of visual information. The results found in this work point us to specific roles of the organization of visual information and

this can provide insight about the physiological processes underlying the spatial visual function.

Considering the sensory aspects of vision, the patients with Gilles de la Tourette Syndrome have been considered ophthalmologically normal, including visual acuity (Tatlipinar et al. 2001, Kovacich 2008), although, the few functional studies previously carried out identified changes in visual perimetry. According to one of those studies (Enoch et al. 1989), which used manual visual perimetry measurements, the central areas of the visual fields showed evidence of reduced sensitivity for detecting light compared with the periphery of the visual field (over 30° of the visual field). Another study, using automated measurements and performed on the central 24° of the visual field, did not identify a statistical difference between the 12 GTS patients and the 12 age-matched controls tested. However, the authors pointed to a tendency for lower sensitivity in GTS patients (Whitefield et al. 1995).

Color vision was assessed in 11 GTS patients using the Farnsworth-Munsell 100 hue, which is an ordering task of color caps, designed to evaluate the color perception performance (Melun et al. 2001). Scored data were arranged in two color-opponent red-green and blue-yellow axes and compared to healthy controls, they showed significantly higher scores (less performance in ordering color) in the blue-yellow axis. The authors concluded that those findings were due to the retinal dopaminergic mechanisms mediating color vision based on some results found in Parkinson's disease patients. However, it is difficult to consider the simplicity of this conclusion, since dopamine has an important role in the organization of the retinal circuit at the ganglion cell level, but the initial mechanisms of the ON-OFF organization occur at the level of the bipolar cells that are dominated by glycinergic and glutamatergic systems (Beaudoin et al. 2008, Brandies et al. 2008, Archibald et al. 2009).

In our study, we found contrast sensitivity to be between normal ranges for the 1st-order measurement and the 2nd-order contrast modulated and embedded in a pink noise carrier. However, a clear reduction in the wide range of spatial frequencies was measured in the 2nd-order measurement embedded in a white noise carrier. These different results could suggest different levels of spatial contrast processing impairment. The linear filters of the cell circuitry mediate the first-order contrast sensitivity in the primary visual cortex (Campbell et al. 1968). The second-order mechanisms have been recently investigated but they are more complex than the first-orders'. Modeling studies suggest linear filters are differentially combined in second-order contrast modulated stimulation. Also, recent studies have shown that white noise and pink noise carried contrast sensitivity, even if presented different mechanisms could process modulated profile. The evidence for local contrast in white-modulated carrier suggests

that both first and second-order mechanisms are stimulated, instead of only second-order mechanisms are stimulated by pink noise carriers (Schofield et al. 2003, Ellemberg et al. 2004). More recent studies have shown that stimuli using white noise carriers are particularly effective in detecting local luminance changes within images, while stimuli employing pink noise carriers are more closely associated with texture or material surface luminance changes. (Schofield et al. 2010).

Considering those outcomes, white-noise carrier contrast modulated stimuli should be processed by the neural network of V1 and V2 cortical areas whereas the pink-noise carrier contrast modulated stimuli should ideally be processed by neural networks of V4 area (Wong et al. 2001).

If we consider the presented framework for differences between white noise and pink noise carriers, our results showing reduction for that contrast sensitivity carried by white noise in 0.5, 1.0 and 2.0 cpd suggest that the non-linear mechanisms processing the visual input from V1 to V2 should be impaired considering the normal values for the first-order contrast sensitivity (processed by the linear cells in V1) and the contrast sensitivity carried by pink noise stimuli most likely processed in V4 cortical area. The specificity in the contrast sensitivity impairment we found in that patient with GTS, if replicable in a more substantial population, would support new insights regarding the visual processing network across the different cortical areas and also the role of specific neurotransmitters in different visual cortical circuitry.

CONCLUDING REMARKS

The contrast sensitivity impairment for white noise carried stimuli found in a young patient with Gilles de la Tourette syndrome supports the idea of inhibitory circuitry in the earliest stages of the cortical processing of visual information, more luminance mediated and dopaminergic and GABAergic dominated are impaired. The fact that first-order contrast sensitivity and the pink noise carried stimulus for second-order contrast processing was within normal ranges is an intriguing finding to be more profoundly addressed in future studies.

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Letter to the Editor

THE HIDDEN TOLL OF EARTHQUAKES: ADDRESSING THE MENTAL HEALTH NEEDS OF SURVIVORS

Dear Editor,

The recent earthquakes that struck parts of Türkiye and Syria had devastating effects, resulting in more than 50000 casualties and leaving thousands of individuals displaced, affected, and injured. It is essential to recognize that earthquakes can have a significant impact on the mental health of individuals of all ages, including adults, adolescents, and children (Şalcıoğlu and Başoğlu 2008).

Earthquakes can significantly alter the mental health of the affected population, causing short-term and long-term effects. About 20-50% of individuals that have survived natural calamities like earthquakes are at increased risk of developing anxiety triggered by stress, disturbed sleep patterns, discrimination, abandonment at inconvenient places, and other health effects that impact mental health. (Valladares-Garrido et al. 2022) Children are particularly vulnerable to mental health disturbances following natural disasters due to a range of factors, including separation from parents, increased risk of abuse, exposure to child labor, and stay-at-care centers. (Seddighi et al. 2021) These stressors can lead to a variety of mental health complications in the future, with the most significant being Post Traumatic Stress Disorder (PTSD) and Major Depressive Disorder (MDD). Additionally, various forms of phobias and Obsessive-Compulsive Disorder (OCD) have been observed. (Farooqui et al. 2017)

The national and international response to earthquakes usually involves a massive inflow of funds, food, and clothes, and the attempt to reconstruct the lost infrastructure and normalize the working of the affected area, as soon as possible. However, the rehabilitation of the mental health of those affected is often overlooked. To address this, it is crucial to send trained psychologists and establish mental health centers in the affected regions of Türkiye and Syria. Group treatment is an effective strategy for individuals with PTSD and should be offered in these centers. (Martin et al. 2015)

Psychological First Aid (PFA) is a crucial and cost-effective approach, especially in developing countries. Humanitarian organizations providing supplies and medical aid can also be trained to provide PFA to the affected individuals. Educating children in appropriate ways about abuse is also an effective method to protect them. Furthermore, schools in the affected region of Türkiye and Syria can play a crucial role in providing counseling and teaching children how to cope with their emotions.

In terms of intervention, various interventional psychiatric practices can be carried out. After the 2005 earthquake in Pakistan, many national and international psychiatric programs were initiated including a team of professionals from the US to conduct trauma management workshops, which was the courtesy of IBM. (Khan Mrcpsych 2006) Among other international agencies that aided in intervention, WHO helped organize a four-day training workshop for the extensive training of the local psychiatrists. It was also the active member in the planning and management of a wider scale practical program. One of the plans was to establish five separate units for the provision of the required mental health services, in a geographical hierarchy manner: Mental Health Relief Cells (Prime Minister's Secretariat), Mental Health Relief Centers

(Tertiary Care Hospitals), Mental Health Relief Units (more affected districts like Muzzafargarh), Mental Health Relief Teams, and Community Institutions (Schools, Mosques). The Mental Health Relief Cell, having a conspicuous panel of WHO disaster management experts among others, overlooked and planned all the interventional activities being carried out. This included not only at-station PFA provision but also outreach to the nearby areas through teams. The teams consisted of the psychiatrists and associated psychosocial service staff, in the Mental Health Relief Units, and would travel to the affected areas three days of the week to provide the necessary interventions. For the purposes of communication, and management of intense cases, a link was established between the MHRUs and their teams, and the Mental Health Relief Centers. The results were promising, with a total of 1,321 people having consulted the at-station psychiatrists, while many others having benefited from outreach. In order to evaluate the effectiveness of the services, a pilot project of epidemiology of psychiatric morbidity in earthquake affected areas was launched in the three districts of Kashmir. (Rana et al. 2006) 2005 quake put forth a challenge for the whole nation. The authors describe the methods of appraisal of the situation, methods of needs assessment in emergency phase of disaster, organization of mental health relief efforts and implementation strategies of these services for the survivors, keeping in line with local cultural and social needs and consensus of world authorities on trauma psychiatry and disaster management. Needs Assessment: Three specific needs were identified, namely, need for psychosocial services for majority of the population, need for people in psychological distress requiring Psychological first aid and people with severe mental illnesses requiring long term psychiatric management. Objectives: With the objectives of ensuring availability of Psychological first aid to maximum, early detection, intervention and establishing a chain of referral for the severely affected cases, incorporating psychosocial care and rational use of psychotropic in medical and surgical care at all tiers of health services, public mental health education, community mobilization and caring for the relief workers, the Dept of Psychiatry MH Rawalpindi launched the comprehensive plan for the earthquake survivors. The outreach intervention was also the main component and was carried out in the Republic of Armenia following the earthquake of 1988. (Cohen 2002) This was known as the Psychiatric Outreach Program mainly initiated by the Armenian Relief Society of the Western US. It involved provision of the Psychological First Aid, training of the therapists and school teachers to make them able to provide psychiatric help in the earthquake-stricken areas, the establishment of two mental health clinics in those zones, and directing philanthropic and government organizations to initiate relief efforts. The interaction of therapists and head schoolteachers was carried out in order to identify any student that might require intervention. The

next step would be the direct interaction between the therapists and the students, to help point out any student that might have been missed by the teachers. The provision of PFA to the children mainly was in the form of therapeutic booklets, while sessions were also conducted for children who required further help. From the February of 1989 to the December of 1990, forty-five teams of six individuals each (20% psychiatrists, 13% psychologists, social workers, and family counsellors) were sent to the affected areas of Armenia for a period of three weeks each. On the return of the teams, they were evaluated by the central panel. The clinical follow-ups that occurred informally were used to evaluate the effectiveness of the outreach program, and revealed that the program was a building success with the symptoms of PTSD and depression having been improved in the patients. (Goenjian 1993) Similarly in Türkiye, following the August 1999 earthquake, a team of psychologists from the US initiated a multi-step interventional outreach program called the Mental Health Outreach Program (MHOP). (Kowalski, Kalayjian 2001) This outreach program greatly benefited the victims of all age groups, including school-going children, along with the families of the victims. The members spent a week in the camps, and a week in the schools, following these six steps that were the constituents of their program: Assessment, Expression of feelings, Empathy, and validation, Discovery and expression of meaning, Information dissemination, and Diaphragmatic breathing exercises. The results revealed betterment in the psychiatric state of the victims. (Kowalski and Kalayjian 2001)

In response to natural calamities, it is essential to allocate funds not only for the reconstruction of lost infrastructure and provision of physical aid but also for the development of a comprehensive strategy based on available guidelines, the establishment of mental health centers, and the recruitment of qualified medical professionals. Further, there should be a prompt understanding of the major condition of the population post-earthquake and the actions of a psychiatrist accordingly, with the controlled provision of drugs, the right way to counsel, and the proper way of dealing all age groups; especially children. (Yildiz et al. 2023) This approach is crucial for preserving the mental health of individuals affected by such disasters in the long term and as proven through previous instances, even in Türkiye itself, is sure to bring improvement in the mental state of the affected individuals.

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