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## Determinants of psychiatric disorders in children refugees in Turkey's Yazidi refugee camp

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### ABSTRACT

**Objective:** To examine the mental health states of a sample of Yazidi refugee children and adolescents who migrated from war-torn Iraq's Sinjar region and to determine the risk and protective factors for psychiatric disorders among the refugee children and adolescents.

**Method:** The participants of this research were children and adolescents between ages 6 and 17 who live in a refugee camp in Turkey. Their parents/guardians provided written informed consents for the research. The research was approved by the Ethics Council of Sakarya University. Participants with intellectual disabilities and autism spectrum disorders were excluded from the study. Two child and adolescent psychiatrists speaking their native language interviewed and evaluated each of the participants. Collected data included socio-demographic information about previous and current living situations, Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime – Turkish Version (K-SADS-PL).

**Results:** One hundred and thirty-six children and adolescents (76 boys, 63 girls; mean age =  $11.05 \pm 3.11$  (SD)). At the time of the assessment, 43.4% had posttraumatic stress disorder (PTSD) ( $n = 59$ ), 27.9% depression ( $n = 38$ ), 10.3% nocturnal enuresis ( $n = 14$ ), 9.6% behavioural problems ( $n = 7$ ), and 5.1% anxiety disorders ( $n = 13$ ).

**Conclusions:** Many of the refugee children and adolescents had developed psychiatric disorders, or are at risk for PTSD and depression. Also, the ongoing ambiguity regarding their living conditions, interruption of their education, a lack of hope for the future and anxiety regarding the ones they left behind are considered to be risk factors for the development of psychiatric and social problems in the future. Living with family members and not having losses from the immediate family are protective factors.

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### KEYWORDS

Posttraumatic stress disorder; depression; refugees; psychiatric disorder; risk factor; protective factor

## Introduction

Even though refugees have legal rights binding by the Geneva Convention, most of the refugees from war-torn areas in the Middle East and Asia reside at the borders of neighbouring countries and only a small number of individual are able to seek stable living situations in Western countries [1].

Children in refugee camps are exposed to several risk factors for psychopathology as a function of age, gender, and the host country's acceptance of them as refugees, including physical injury, separation from their homeland, torture, killings of family members, and insufficient social support [2,3].

In addition, refugees have to adapt to new belief systems and new cultural values in the country in which they now reside. Adapting to the new environment gets easier with the support of familiar connections from their old culture, friends, and religious values [4]. However, loss of family members leads to new family roles and causes additional challenges [5].

Four phases have been proposed (reference) for refugees, including communication, conflict, crisis, and adaptation [6].



### Risk and protective factors for psychiatric disorders

#### Violence

The association between exposure to violence and psychological problems is common among refugees, both children and adults [7]. The level of fear an individual experiences during traumatic events directly correlates with increasing psychological problems [8,9].

#### Education

Comprehensive examples help us to understand the risk and protective factors regarding mental health while re-settling, thus contribute to mental health positively [10]. They will be vital while developing social

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support models after re-settlement. At the same time, there might be more lucid examples of neighbours, so that the importance of social support for refugees can be understood. In one of the studies, lack of communication with neighbors had been associated with depression [11,12].

### Re-settling

The new environment they reside in is highly significant for refugees. It is a well known fact that refugees experience stressful incidents throughout their re-settlement and this increases the amount of psychological disorders in this population. All studies focusing on evaluating psychological problems ongoing for decades after settling in a new environment underline the risks at various levels, deriving from the phases of settling in a new environment. Based on these studies, we reach to the conclusion that [13] location where they settle in after experiencing horrifying incidents has great importance for refugees. Psychologically, an individual's roots and commitment to ideological responsibilities might also play a protective role [14].

In another study which was carried out with refugee children in Turkey, posttraumatic stress disorder (PTSD) was as prevalent as 36.4%, depression 32.7%, and enuresis 10.9% [15]. Other studies also pointed out higher rates of psychiatric problems such as sleep disturbances (71%), depression (36.8%), enuresis (18.4%), and PTSD (10.5%). Fifty percent of children and adolescents were suffering from at least two psychiatric disorders [16]. In a study about refugee children from Central America and Southeast Asia who were re-settled in Canada; hyperactivity and social isolation, and somatization were significantly associated with learning difficulties, while learning difficulties in Southeast Asian children were significantly associated with aggression, depression, and somatization [17]. In 2002, Rothe et al. indicated that out of 87 Cuban refugee children and adolescents in a U.S.A. camp, 57% showed PTSD symptoms fourth and sixth months after they left the camp [18]. However, the researchers could not relate the effects of the length of their stay in the camp with PTSD symptoms. Recent studies provide practical goals for preventive intervention, which also changed the direction of the significance of re-settling factors. In the following years of re-settling permanently at a third country, a trauma from their past is merely only one side of many problems awaiting the refugees [19]. In fact a trauma, in general, is more than a case from the past, but rather an ongoing phase, where family members and friends could have been left behind back home or in refugee camps or at war zones. In addition, as refugees try to cope with the loss of their homeland, their family, and lifestyles, they would also have to learn a new language, adapt to different cultural systems and learn how to go balance between the two cultures, among a brand new

community. Commonly, mental health of an individual while re-settling shows improvement at the beginning and then slowly decrease in time. Nevertheless, it is most likely that individuals with far worse traumatic experiences tend to be diagnosed with the worst psychological disorders, even after a long time passes over after re-settling [20]. Psychosocial factors such as social support, language adequacy, education, and employment affects either by increasing vulnerability to psychiatric disorders, trauma, and stress in life or by protecting individuals against these traumatic events and stresses through resilience [21].

### Psychopathology

Clinical trials indicate that 4-89% of refugees suffer from depression and over 50% of them suffer from PTSD [22]. Victims of ethnic cleansing among Bosnian children showed high rates of PTSD (65%) and depression (35%) one year after their relocation to the U.S.A. [23]. Similarly, Afghan refugee adolescents were diagnosed with PTSD and depression (34%) [24]. Researchers associate PTSD with war experiences as well as depression with their current living conditions and recent events that were caused by stress [25]. In the light of all these research, we know that certain life conditions which are associated with PTSD and depression contribute to diagnosis of refugee children's mental problems at earlier stages and it helps them to receive more effective treatment [26]. Among children and adolescent refugees who had been subject to war, other common problems are somatic complaints, sleep disorders, behavioural disorders, social withdrawal, attention disorder, anxiety, extreme dependence, restlessness, anger, and difficulties establishing relations with their peers [27].

Due to the ongoing war in the Middle East and more specifically in Syria, Turkey has become the country which received most of refugees in the last seven years. In Turkey, refugees are divided into two groups: those who live at camps of municipalities and those who live in the camps of the AFAD (Disaster and Emergency Management Authority). According to the numbers announced by the AFAD, by 17 April 2015, 258,537 people were staying in these camps. According to the refugee report of Turkish Psychiatry Association published in 2014, there were 4500 Yazidis in Diyarbakır and 3000 Yazidis in Batman in 11 separate centers. They were accommodated in the empty Yazidi homes in Yazidi villages; some were accommodated in the newly built camps. In Mardin, apart from AFAD camps, around 2800 Yazidi refugees were staying at homes, tents, with their relatives, municipal facilities, in Şırnak – an industrial region is allocated to Yazidis and almost 5000 people live there [28].

During the last seven years, not only the number of refugees decreased, but also, as a result of the ongoing war, there are newcomers and numbers of those who

migrated previously increased through childbirth. As a consequence of this, the mental health problems and necessary precautions are vital now more than ever before, especially for children and adolescents, as well as figuring out new socio-political solutions. This research is carried out in order to constitute basic parameters that would lead to more comprehensive studies on the subject and help create the mental health politics regarding the refugee children and adolescents.

## Methods

### Study sample

The research was carried out at the refugee camp in İki Köprü Municipality, in the city of Batman, Turkey. From 583 residents in the camp, there were 212 women, 219 men, and 152 children and adolescents between the ages of 6 and 17. Parents/guardians had given their consent and children with adolescents provided assent. Several children and adolescents did not want to take part in the research ( $n = 9$ ). Children with known Intellectual disability ( $n = 5$ ) and Autism diagnosis ( $n = 2$ ) were not included in the research. Although the KSADS-PL examines the present and lifetime psychopathologies, we limited our findings specifically to post-war-emerged psychopathologies. Thus, the results of this study reflect symptoms that children and families stated to be the symptoms arised after war experiences.

### Measures

Participants' parents/guardians completed a survey consisting of demographic data and life experiences before and after migrating and life in the camp including participants' age, gender, education, whether or not the child or adolescent went to school before and after immigration. There were also questions regarding events that might had an effect on their mental condition, such as relatives or acquaintances were killed at war, being tortured and/or abuse at war or during migrating, seeing deceased or wounded people, witnessing gunfight or bombing, people close to them being injured in war, being homeless/hungry after war/migrating. It also covered questions regarding their parents; age, education and if they were diagnosed with any kind of mental illnesses.

In this study, 136 children and adolescent refugees were evaluated through K-SADSPL-T. Reliability and Validity of Schedule for Affective Disorders and Schizophrenia for School-Age Children-Present and Lifetime Version-Turkish Version (K-SADS-PL) is a half-configured scale, developed by Kaufman and colleagues, in order to screen and evaluate psychiatric disorders among children and adolescents between ages of 6-18 according to DSM-III and DSM-IV. K-SADS-PL

is carried out by interviewing the children and their parents, face-to-face, and in the end, it had been evaluated considering all the gathered information from several sources (parents, children, school, etc.). When the subjects were at the pre-adolescence stage, parents were interviewed first. When working together with adolescents, first the adolescent was interviewed. If there were any disparities among the information from different sources the clinician evaluated data according to clinical assessment of their own [29]. In order to prove reliability and validity of KSADS-PL, writers also had studied with 30 children and adolescents who volunteered in psychiatric clinics to participate in research. The reliability and validity of the K-SADS-PL-T scales have been shown for Turkish version [30].

### Procedures

Two child and adolescent psychiatrists speaking both Turkish and Kurdish, interviewed children, adolescents, and their parents individually for this research. Researchers stayed in the camp throughout the research and assessed the conditions of camp in addition to interviews. Camp authorities and participants of research gave their written consents for the research. The research was approved by Sakarya University's Ethics Council.

### Data analysis

Descriptive analyses were performed to provide information on general characteristics of the study population. Kolmogorov-Smirnov test was used to evaluate whether the distribution of continuous variables was normal or not. Since the distribution was not normal, Mann-Whitney *U*-test was used to compare the demographic characteristics and other continuous variables between the groups. The continuous variables were presented as the mean  $\pm$  standard deviation. Pearson's chi-square test, Yates' corrected chi-square test, or Fisher's exact chi-square test were applied to compare the categorical data. Categorical variables were presented as a count and percentage. A multiple logistic regression model was implemented to determine socio-demographic and individual factors and other covariates associated with psychiatric disorders (diagnosis, PTSD, and depression). Literature information and high correlation have been taken into consideration in the independent variables for multiple logistic regression models. Backward stepwise regression method, regression coefficient ( $\beta$ ) and standard error (SE) odds ratio (OR) and 95% confidence interval (95% CI) were used. A *p*-value of  $<.05$  was considered significant. Analyses were performed using commercial software (IBM SPSS Statistics for Windows, Version 23.0. IBM Corp, Armonk, NY).

## Results

### Sample

One hundred and thirty-six children and adolescents participated in the research, 73 of them male (53.7%) and 63 of them female (46.3%). The participants were between the ages of 6 and 17, with the average age being 11 years ( $SD = 3.11$  years). Ninety-two (69.7%) of the participants were between 6 and 11 years old, and 40 (30.3%) of them were between 12 and 17 years old. The mean age of the participant boys was  $10.65 \pm 2.96$  (SD) years and the average age of the participant girls was  $11.51 \pm 3.23$  (SD) years. One hundred and fourteen (84.4%) of the participants did go to school before migrating, and 83 of them (61.0%) continued their education afterwards. Six participants (7.5%) from the research group did not have immediate family with them, 99 participants (92.5%) who had their immediate family members with them, also had relatives in the camp, as well. 56.6% ( $n = 77$ ) of the participants had siblings between the ages of 5 and 8; 22.1% ( $n = 30$ ) have siblings between the ages of 1 and 4; and 21.3% have 9 or more siblings. Among the participating group, there were only two (1.5%) participants who could speak Turkish. Only 66 individuals (48.5%) indicated that they were pleased with the life at camp. Six (4.4%) of the participants stated that either one of their parents or a sibling had been killed, and 94 (69.1%) of them stated that they suffered the loss of close relatives, friends, and/or neighbours. One hundred and nine (80.1%) of the research subjects indicated that they had left behind relatives whom welfare they were concerned about. And 15 (11.0%) of them told that they experienced mistreatment or torture at war or during migrating. Sixty-four (47.1%) of the participants stated that they witnessed a deceased body; 47 (34.6%) of them witnessed someone being murdered or tortured; 112 (82.4%) of them witnessed gunfire or bombing; 61 (45.5%) of them saw people getting injured either at war or during migrating. During migration, none of the participants was alone, but on the other hand, 91.8% ( $n = 123$ ) of them were deprived of essentials such as shelter or food. One hundred and two (75%) of the participants declared that they do not believe the war will be over, and 92 (68.1%) of them do not believe that one day they would be able to go back to their country. As the age of the participants ascends, the belief that the war would end descends, significantly. Furthermore, the feeling of despair increases among those between the ages of 11 and 17 ( $p = .049$ ).

### Family description

The participants' mothers' ages were 35.72 years ( $SD = 6.69$ ) on average and the fathers' ages were 39.27 ( $SD = 7.22$ ) on average. Ninety-three (69.9%) of mothers and

31 (23.3%) of fathers did not have an education. The number of mothers (4.6%) and fathers (9.8%) with a secondary school or a high school education were very few. At the time of the research, 36 (27.1%) declared to be physically ill, 16 (11.8%) of them declared to have suffered psychiatric issues in the past, and 31 (23.1%) of them declared they still had psychiatric problems. But yet, only 12 (9%) indicated that they continued with their treatment at the camp (Table 1).

### Psychiatric evaluation

At the end of the structured interviews, the number of participants who were diagnosed with a psychiatric illness was 99 (72.8%). In that group, 59 (43.4%) individuals fit the diagnostic criteria of only one illness, while 28 (20.6%) were diagnosed with two and 11 (8.1%) were diagnosed with three illnesses. Only one of the participants met the criteria for all five illnesses. Those who meet the criteria for more than one illness and identified comorbidity were 29% ( $n = 40$ ) of the participant group. Table 2 shows the distribution of the values of the study group according to the criteria of diagnosis.

### Gender

Variables evaluated according to gender indicates that the level of unpleasantness of being in the camp and the living conditions was substantially higher among girls

**Table 1.** Demographics of the participants.

Gender	Boy	73 (53.7)
	Girl	63 (46.3)
Age		11.05 $\pm$ 3.11
Age Groups	Child (6–11 Years)	92 (69.7)
	Adolescent (12–17 Years)	40 (30.3)
Do you go to school?	Yes	83 (61)
	No	53 (39)
Did you go to school before you came here?	Yes	114 (84.4)
	No	21 (15.6)
Do you live with your parents here?	Yes	130 (96.3)
	No	5 (3.7)
Do you have other relatives living here?	Yes	99 (92.5)
	No	8 (7.5)
Are you pleased with the conditions here?	Not pleased	61 (44.9)
	Pleased	66 (48.5)
	Not sure	9 (6.6)
Do you have friends here?	Yes	131 (96.3)
	No	5 (3.7)
Do you speak Turkish?	None	132 (98.5)
	A little	2 (1.5)
Specifications of the Participants' Families		
Mother's Age		35.72 $\pm$ 6.69
Father's Age		39.27 $\pm$ 7.22
Do you have any illnesses right now?	Yes	36 (27.1)
	No	97 (72.9)
Did you have a psychiatric illness in the past?	Yes	16 (12)
	No	117 (88)
Do you have a psychiatric illness right now?	Yes	31 (23.1)
	No	103 (76.9)
Did you receive psychiatric treatment during your stay here?	Yes	12 (9)
	No	122 (91)
Were you mistreated or tortured at war or during migration?	Yes	11 (8.4)
	No	120 (91.6)

Note: Data were shown as mean  $\pm$  standard deviation (%).



**Table 2.** The distribution of participants' diagnosis.

PTSD	59 (%43.4)
Depression	38 (%27.9)
Enuresis nocturna	14 (%10.3)
Anxiety	13 (%9.6)
Conduct disorder	7 (%5.1)
Sleep disorder	6 (%4.4)
Specific phobia	6 (%4.4)
ADHD	6 (%4.4)
Tic	4 (%3.0)

Notes: Participants diagnosed with more than one illness are indicated in each diagnostic group. Data were shown as *n* (%).

than among boys ( $p = .013$ ). Similarly, the girls' despair regarding the war's end was considerably higher than the boys' ( $p = .037$ ). The psychiatric evaluation showed that girls had been diagnosed with PTSD more than the boys ( $p = .049$ ). There were no considerable differences between boys and girls regarding the other diagnosis. Diagnosis of depression was more among those aged between 12 and 17 years than those aged 6–11 years ( $p = .003$ ). In terms of other diagnoses, there were no significant differences between age groups.

### Life events

It was identified that those diagnosed with a psychiatric illness were not more unhappy being at the camp compared to the others and there were significant differences between the two groups ( $p = .027$ ). The number of participants who were diagnosed with a psychiatric illness had lost a member of the immediate family or a relative, neighbours, or friends at war were more than those who did not get diagnosed with a psychiatric illness, and the difference in between was statistically significant ( $p = .028$ ). Similarly, children and adolescents in the diagnosed group had relatives left behind that they worried about ( $p = .013$ ), witnessed a dead or injured person ( $p = .002$ ), and witnessed people being tortured or killed ( $p = .011$ ). Also, in the diagnosed group, the number of a relative being injured next to them ( $p = .014$ ) was higher than the other group (those who were not diagnosed with a psychiatric illness). In addition, the diagnosed group's belief that the war would not end was considerably higher than that of the others ( $p = .045$ ).

### School

In the study group, the rate of that continuing education, between the ages of 6 and 11 years, was considerably higher than the 12- to 17-year-olds ( $p < .001$ ). However, the education rate among 11- to 17-year-olds before migration was much higher ( $p = .045$ ).

### Logistic regression

Factors that might affect the psychiatric diagnosis of participants were assessed using logistic regression

model. It was shown that witnessing war and violence significantly increased the risk of a psychiatric diagnosis ( $p = .038$ ). It was 5.581 times more of a possibility for those who suffered from violence in Iraq to be diagnosed with a psychiatric disorder, than those who did not suffer from violence (Table 3).

Factors that might affect the PTSD diagnosis of participants were assessed using logistic regression model. It turned out that witnessing a gunfight ( $p = .028$ ) and people getting injured during migration ( $p = .024$ ) were significantly predictive. It was found that for those who witnessed a gunfight in Syria were 6.879 times more likely to be diagnosed with PTSD, as well as those who witnessed people getting injured would carry the same diagnostic risk 3.248 times more (Table 4).

Factors that might affect the depression diagnosis of participants were assessed using logistic regression model. Age ( $p = .004$ ), parents with psychiatric illness history ( $p = .001$ ) and duration in the camp ( $p = .034$ ) were significantly predictive. The research showed that, for older participants, it was 1.251 times more of a possibility to be diagnosed with depression, compared to younger participants. And those who have parents with psychiatric disorder history were 9.448 times more under the risk, compared to those who did not have parents diagnosed with a psychiatric disorder (Table 5).

### Discussion

The study took place in the refugee camp for Yazidis who migrated from Iraq to İki Köprü Municipality in Beşiri district, about 25 km away from the city of

**Table 3.** A multiple logistic regression model for diagnosis.

	$\beta$ (SE)	OR (95% CI)	<i>p</i>
Gender (male)	0.610 (0.524)	1841 (0.659–5.14)	.244
With family? (Yes)	2268 (1502)	9662 (0.509–183.456)	.131
Pleasant? (Yes)	0.877 (0.517)	2403 (0.873–6.616)	.090
Killed in action (No)	0.791 (0.542)	2206 (0.763–6.381)	.144
Seeing deceased (Yes)	1085 (0.676)	2960 (0.787–11.130)	.108
witnessing violence (Yes)	1719 (0.829)	5581 (1.100–28.315)	<b>.038</b>
Witnessing gunfight (No)	0.562 (0.624)	1754 (0.516–5.964)	.368
Fear (No)	1473 (1185)	4364 (0.428–44.522)	.214
Constant	–3526 (2788)		.206

Note:  $\beta$ : Regression coefficient, OR: odds ratio, SE: standard error, CI: confidence interval.

**Table 4.** A multiple logistic regression model for PTSD.

	$\beta$ (SE)	OR (95% CI)	<i>p</i>
Gender (female)	0.799 (0.452)	2223 (0.917–5.389)	.077
Where from (Syria)	2172 (1358)	8778 (0.613–125.783)	.110
Parent mistreated (Yes)	0.298 (0.882)	1347 (0.239–7.593)	.736
Seeing deceased (Yes)	0.317 (0.554)	1372 (0.463–4.066)	.568
Witnessing violence (Yes)	0.203 (0.605)	1225 (0.374–4.014)	.737
Witnessing gunfight (Yes)	1928 (0.879)	6879 (1.227–38.561)	<b>.028</b>
Injured people (Yes)	1178 (0.522)	3248 (1.168–9.036)	<b>.024</b>
Will you go back to your country (yes)	0.825 (0.477)	2283 (0.896–5.816)	.084
Constant	–4453 (2299)		.053

$\beta$ : Regression coefficient, OR: odds ratio, SE: standard error, CI: confidence interval.

**Table 5.** A multiple logistic regression model for depression.

	$\beta$ (SE)	OR (95% CI)	<i>p</i>
Age (year)	0.224 (0.078)	1.251 (1.073–1.459)	.004
Parent with psychiatric diagnosis history (yes)	2.246 (0.700)	9.448 (2.395–37.277)	.001
Seeing deceased (yes)	0.606 (0.470)	1.834 (0.729–4.611)	.197
Fear (yes)	1.431 (0.917)	4.181 (0.693–25.224)	.119
Will you go back to your country (no)	0.839 (0.550)	2.314 (0.787–6.805)	.128
Constant	–0.391 (2166)		.857

$\beta$ : Regression coefficient, OR: odds ratio, SE: standard error, CI: confidence interval.

Batman. The camp is placed by a river, and the sewage is drained into this river. Even though the working refugees in camp have been living there for almost nine months, they still did not have their legal permits. Also, they have not applied for any international legal permits, yet. During the study that took place in summer, the heat damaged the facilities of camp. Food was delivered by outside sources at the beginning, but throughout the study, it was discovered that the refugees cooked their own meals. As a result of these, the conditions of the camp were under several risks for the physical health of children and the elderly. The refugee camp is governed by three people who were elected among themselves. They informed us that the UN representatives have not paid a visit to the camp at all.

Various data regarding refugees' mental health indicated that the conditions of the country they reside in are quite effective during this period. Considering the number of people that had to migrate from Iraq after the war and the life conditions where they migrated to, the conditions of the camp might be accepted to be at an average standard when compared to camps in other countries or the living conditions of those who do not live in a camp. Still, 61% of the refugees in camp are not pleased being in the camp, 75% do not believe the war would end and 68% do not have faith that they would return home one day. Loss of faith that the war would end and that they would return home increases with age. This could be explained by cognitive abilities that, as the age increases, the events are realized and evaluated more realistically. In addition, the children and adolescents identified with a psychiatric diagnosis were significantly more hopeless about the future and in lower spirit for living in the camp, than the others. Their lower spirit and hopelessness might be evaluated as expected consequences, considering the fact that those with a psychiatric diagnosis have experienced severe war and migration traumas (loss of a loved one, friends and family left in the war zone, death directly related to war, and injuries) compared to the others [8,31].

It has been stated that post-flight experiences could be as important as pre-flight experiences in the development of psychiatric disorders among refugee

children [32]. High prevalent rates of psychiatric disorders observed among refugee children must be evaluated because of a complex interaction between pre and post-flight experiences [33]. When the literature regarding refugees is examined, anxiety disorder, depression, PTSD, and major depressive disorder are the most common psychiatric conditions we encountered with and these reflect the traumas and losses that the refugees suffered from [34]. The symptoms of the participants evaluated thoroughly, each individual was assessed on a single diagnosis and/ or a similar diagnosis and only 30 participants (22.1%) were diagnosed merely with PTSD. Depressive disorder was noted in 15 participants (11.0%), and anxiety disorder in five participants (3.7%). The most studied topics of diagnosis among research are PTSD, anxiety disorder, and depression. Studies about refugees in other countries mostly assess the psychiatric conditions among adults. Regardless of age, clinical research among refugees indicate that depression rates are between 4% and 89% and PTSD is 50% and above [22]. A systematic revision survey among refugee communities showed that 9% of adults suffered from PTSD, 4% from general anxiety disorder, and 5% from major depression [35]. In a survey by Duncan and colleagues back in 2000, among 33 girls (ages between 14 and 17) living in the camp who were separated from their families, 48% showed severe PTSD symptoms, 45% anxiety symptoms, and 42% depression symptoms [36].

There are various theories explaining the high comorbidity between depression and PTSD that formed after natural disasters and accidents, violence in various forms, war, and many other traumatic incidents [37]. The studies state that the refugee children not only have one but also have several psychiatric disorders and the comorbidity is very high. The rates of depression and anxiety disorder too, as well as PTSD, vary among studies. In our study, the rate of anxiety disorder diagnosis was 5%, and the comorbidity of PTSD, anxiety disorder and depression was indicated as 4%. Since the anxiety problems were not clear throughout the process, this did not draw attention as much as depression and PTSD. Actually, in some of the studies, the refugees' rates of anxiety disorder are not very far from the rates of the people of the hosting country [38]. When the comorbidity rates were examined in this particular study, PTSD and depression were the diagnoses that present comorbidity the most. The study shows 12% of comorbidity between PTSD and depression [38].

In addition, if parents were diagnosed with a psychiatric disorder, it was significantly effective over depression diagnosis. Parents reactions to traumatic incidents might effect children's understanding of the event and may help children to cope with traumatic events. Parents with psychiatric illness backgrounds

and not supporting the child increased the anxiety, caused loss of confidence and affected expectations of future negatively and caused depression [39–41]. The study also showed that PTSD rates are significantly higher among girls than among boys. There were no substantial differences between boys and girls regarding the other diagnosis. However, the rate of girls who were not pleased with the conditions of the camp and living there was significantly higher than that of the boys. Similarly, girls had less hope for the future and that the war would end. These results might be correlated with increasing PTSD rates among girls. On the other hand, living in the camp was more restrictive for girls as a result of culture and traditions, there were more risks for girls before and after migrating (such as kidnapping, rape, etc.), which could be explanatory reasons for both less hope about future and the increased rates of PTSD.

The journey of the refugees consists of three phases: pre-migration, migration, and relocation. Every phase contains incomparable complexities. In pre-migration, the children might be exposed to violent battles [4]. Many children witness the death, murder, loss, or deprivation of their family members. In this study, it was observed that the rates of PTSD and depression rates among children and adolescents who lost a family member were higher. All children and adolescents with a PTSD diagnosis witnessed either a gunfight or a bombing where they came from, and this rate is significantly higher than the other diagnosis group. Similarly, 76.7% of participants diagnosed with PTSD witnessed the people they are with, getting injured during war or migration. Although it was not significant, there were other psychiatric problems among this group. The increasing rates of mental problems were directly related to frightful events they had to face. Also, the rates of PTSD are directly related to the traumatic incidents they have been through, especially the ones occurred after they left their hometown. Children who had to experience the war are under high risks of PTSD and comorbid conditions [42]. After facing the realities of war, going through multiple traumas as a refugee, both are considered as one of the main factors of the increase in all disorders, especially PTSD, among the children participating in this study.

More recently, there have been studies aiming to define the correlations between PTSD and attention-deficit/hyperactivity disorder (ADHD). In order to understand the relationship between these two disorders' symptoms better, a variety of resources is necessary [43]. Until recently, many studies worked on understanding the relationship between PTSD and ADHD [44]. In a study among 117 children who were subject to mistreatment and have been through psychological traumas, Famuloro and colleagues indicated that the PTSD rates are 35% [45]. Husain and colleagues, on the other hand, proved comorbidity

between PTSD and ADHD symptoms, in their research among children who were abused during the Bosnian war [46]. In a study of longitude, Wozniak and colleagues searched for relations among PTSD and ADHD, but it could not be proved whether PTSD or being traumatized is related to ADHD [47]. In our study, comorbidity among PTSD and ADHD was not shown.

It was observed that the Yazidi refugees in the camp prefer to live isolated from the locals and do not communicate with them. At the root of it lies that the camp is far from the city centre, but also the fact that Yazidi culture and beliefs prevent them from interacting with others should be considered as another reason. Throughout this period, the most significant area that the children and the locals contacted was education. There were six tents set up as preschool, primary and secondary schools by the volunteers. The children's rights council constrains governments for free-of-charge mandatory education at primary school level and notifies the necessity of funding secondary and higher education. Even though it is difficult to provide these utilities during an urgency case, these goals and necessities should not be dismissed. Those who had to leave their homes because of war attach importance to education. They almost believe it to be as important as the future of their children and society [48]. It becomes utterly difficult for children to attend school during these times for security reasons or destroyed education system or bad education conditions. Prior to conflict or the appearance of military forces, the long period of insecurity weakens the education system. For teenagers, there is also the child soldier phenomenon and military obligations that keep them away from formal education. On the other hand, it could not be specified whether the psychiatric symptoms withheld children from school. In our study, 76% children and 27% adolescents continued their education. More children attend school because there is no high school level of education. Going to school, which is especially more important for refugee children to adapt to new living conditions, and to connect to the local people of the country they migrated to, also improves their trauma therapy period.

Although we gathered very important findings on mental well-being of children in a refugee camp in Turkey, it should be taken into account that our study has several limitations that make it impossible to generalize our study findings. First of all, small sample size makes it hard to generalize our findings. It must also be taken into account that our study sample was carried out with an ethnic and religious minority who have lower socioeconomic status that make them more vulnerable to adverse effects of war. The interview conditions were also not in ideal standards that may have cause limitations on gathering information. Finally, the information gathered from parents who were also



survivors of mass execution and have very high levels of stress might have caused some limitations.

Compulsory migration is one of the fastest growing issues of society in the post-modern world. In addition to natural disasters, we are going through times, where millions of people leave their homes, wandering, for the chance of a better and honourable life. The transition from death to safety is only the first step, afterwards comes regaining respect, a job, friends, and a spouse and these are the basic needs of humans. As a result, the rates of PTSD and similar psychiatric disorders are much higher among those children who experienced multi-traumas, than it is to be seen in a regular society [49]. To be with their families in the country they migrated to, to provide proper living conditions, to continue their education, and to interact with the new society they are living in, these are all crucial must-haves for the refugees, and the refugees must be evaluated psychologically and be provided with access to regular treatment and support.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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