

# Determinants of Mental Disorders in Syrian Refugees in Turkey Versus Internally Displaced Persons in Syria

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**Objectives.** To compare frequencies of some mental health disorders between Syrian refugees living in Turkey and internally displaced persons in Syria, and to identify factors associated with posttraumatic stress disorder and major depressive disorder.

**Methods.** We carried out a field survey in May 2017 among 540 internally displaced persons in Syria and refugees in Turkey.

**Results.** The study revealed that mental disorders were highly prevalent in both populations. Major depressive disorder was more frequent among refugees in Turkey than among internally displaced persons in Syria; other mental disorders, including posttraumatic stress disorder, were more prevalent in the latter than in the former. Posttraumatic stress disorder was also associated with postmigration factors. Major depressive disorder was more likely among refugees in Turkey. In addition, the likelihood of major depressive disorder was predicted by stopping somewhere else before resettlement in the current location.

**Conclusions.** The resettlement locus and the context and type of displacement seem to be important determinants of mental health disorders, with postmigration factors being stronger predictors of conflict-related mental health. Internally displaced persons may benefit more from trauma-focused approaches, whereas refugees may derive greater benefit from psychosocial approaches. (*Am J Public Health.* 2018;108:938–945. doi: 10.2105/AJPH.2018.304405)

The war in Syria has resulted in a massive displacement of people. Five million Syrians have fled to other countries, 6.3 million are internally displaced, and 4.5 million are living in besieged areas.<sup>1</sup> With its 900-kilometer border with Syria, Turkey is hosting the largest number of registered refugees in the world: 3.2 million, of whom 2.9 million are Syrians. (Syrian migrants in Turkey are not legally defined as refugees but have been given temporary protection status. Nevertheless, owing to difficulty in nomenclature, they will be referred to as refugees in this article.)<sup>1</sup> If unregistered refugees are included, the number is thought to be around 3.5 million. About 250 000 of the registered Syrian refugees live in camps run by Turkish Disaster and Emergency Management with access to shelter, food, health care, and education, while more than 2.5 million

(> 90%) are supporting themselves in various cities.

The American Public Health Association has stated that the health of refugees and internally displaced persons (IDPs) is a public health priority.<sup>2</sup> Their health problems are not limited to infectious diseases or problems arising from disruption of services. Experiences in their countries and the dangerous

treks they make expose them to many health risks, including mental health problems.<sup>3,4</sup>

The influx of Syrian refugees has put an immense burden on the national health systems of destination countries, often aggravated by a significant language barrier. The Turkish Government has established migrant health centers for refugees with Syrian medical personnel, but mental health specialists are scarce. In Jordan and Lebanon, Syrian refugees have difficulty accessing health care because of both financial issues and overburdened health systems.<sup>5</sup> In Syria, most medical personnel have migrated to other countries and the health facilities are targets in the war.<sup>6</sup>

Populations affected by conflict are at high risk of psychiatric morbidity. The literature mainly focuses on posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) because they are commonly associated with mental health in war and displacement. A 2009 meta-analysis of the mental health of refugees and other conflict-affected populations reported that the prevalence of PTSD and depression varied from 0% to 99% for PTSD and 3% to 85.5% for MDD.<sup>7</sup> The meta-analyses and reviews argued that the wide variations in prevalence are attributable to clinical and methodological factors (e.g., nonrandom sampling, small sample size, and different assessment tools) as

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This article was accepted February 24, 2018.

doi: 10.2105/AJPH.2018.304405

well as social, ecological, and contextual factors.<sup>7–10</sup> The main factors affecting mental health are demographics such as gender, age, and education; trauma-related factors such as degree of exposure to trauma and postconflict factors; or daily stressors such as security, economic opportunities, and the lack of permanent private housing and social support.<sup>9–11</sup>

As millions of Syrian refugees are spread around the world in varying circumstances, the manifestations of mental problems are expected to vary widely. A report by the International Medical Corps giving mental health profiles of Syrians living in Syria, Turkey, Lebanon, and Jordan indicated that the rates of severe emotional disorders were 61%, 23%, 59%, and 74%, respectively.<sup>12</sup> Studies of Syrian refugees in Lebanon showed prevalences of both 27.2%<sup>13</sup> and 41.8%<sup>14</sup> for PTSD and 43.9% for MDD.<sup>15</sup> Studies conducted in Turkey among Syrian refugees revealed prevalences of 33.5%<sup>16</sup> and 83.4% for PTSD and 37.4% for MDD.<sup>17</sup> These differences indicate that Syrians' mental health is affected by many factors and needs to be studied in a holistic way.

The rates of PTSD among displaced people or refugees are higher than among those permanently resettled in another country.<sup>7</sup> Studies have shown that refugees have poorer mental health outcomes than nonrefugees.<sup>18–21</sup> Studies comparing refugees to IDPs have, however, yielded contradictory results. Some have shown that IDPs show poorer mental health than refugees,<sup>10,22</sup> whereas others' results have been vice versa.<sup>23</sup> A meta-analysis comparing mental health between refugees and nonrefugees from the former Yugoslavia indicated that externally displaced people were more impaired relative to nondisplaced people than were IDPs.<sup>24</sup>

The difference between mental problems in refugees and in people living in conflict settings is unclear because most studies compared refugees to nonrefugees, regardless of locus of displacement and exposure to conflict of the control groups.

The aim of this study was (1) to compare the frequencies of some mental health disorders (PTSD, MDD, panic disorder, agoraphobia, and generalized anxiety disorder [GAD]) and suicidal ideation between Syrian refugees living in Turkey and IDPs in Syria; (2) to identify factors associated with PTSD

and MDD in the context of the Syrian conflict on both sides of the border; and (3) to contribute to public health policy planning for Syrians affected by conflict.

## METHODS

The study was cross-sectional. We carried out a field survey between May 6 and 17, 2017. We used the Arabic version of the structured Mini International Neuropsychiatric Interview<sup>25</sup> and a questionnaire as the survey instruments. The questionnaire was tested with a pilot population for appropriateness of inventory, and changes were made as necessary before it was carried out in the study population.

The study was conducted in the Jarabulus district of Aleppo in Syria and the Nizip district of Gaziantep province in Turkey. Jarabulus was the only region in Syria where a study could be conducted for security and logistical reasons. We chose Nizip for comparison in view of its geographical and cultural proximity. Nizip and Jarabulus are on one of the busiest routes between Turkey and Syria, located on either side of the Karkamış border crossing (Figure 1). These settings allowed us to compare mental disorders among conflict-affected people from the same country living in different contexts (refugees or IDPs) and economic conditions, or in the actual conflict area, but still in geographically and culturally close areas.

Gaziantep province has a population of nearly 2 million.<sup>26</sup> It hosts the fifth largest number of Syrian refugees of any province in Turkey (333 518 have been registered).<sup>27</sup> Nizip hosts a high number of Syrian refugees because it is the entry point and there are job opportunities. According to the local authorities, the Syrians living in Nizip vary in ethnicity and religion.

Jarabulus consisted of 1 subdistrict and 76 villages with a population of 35 000 before the war. More than 145 000 IDPs from all over Syria are currently living there.

Our target population consisted of adult Syrian refugees and IDPs (aged > 18 years) living in Nizip and Jarabulus outside the camps. Because of the high mobility of the study population and the lack of reliable demographic data, we could not apply any proper randomization method. We aimed to

reach 600 people, 300 from each study site. In Nizip, the 5 subdistricts chosen all had Syrian refugees from diverse socioeconomic backgrounds. In Jarabulus, security considerations dictated that the interviews be conducted in the main streets around the city center.

Because of the difficulty of using probability sampling strategies, we used a combination of convenience and snowball sampling. We interviewed 1 person in each household and in each building, with a maximum of 12 persons in a street to reach as characteristic a sample as possible. The surveys were administered face to face by trained Syrian interviewers. In Nizip, the interviewers had a medical background, were certified by the Ministry of Health as medical interpreters, were experienced with surveys, and had been living in Turkey. In Jarabulus, the interviewers had a medical background and had been working in psychosocial support programs and living in Syria. All the interviewers participated in a 2-day training and field exercise. For cultural reasons, women were mainly interviewed by female interviewers; for security reasons, the interviewers worked in pairs.

The Mini International Neuropsychiatric Interview is a structured diagnostic interview, exploring in a standardized manner the main *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition*, and *International Classification of Diseases, Tenth Revision*, psychiatric diagnoses.<sup>28</sup> We used the Arabic validated version of the Mini International Neuropsychiatric Interview and its MDD, suicidal ideation, panic disorder, GAD, agoraphobia, and PTSD modules. The questionnaire, which we prepared on the basis of the literature, site observations, and interviews at the research site, included demographic characteristics and key post- and premigration information as explanatory variables (Appendix A, available as a supplement to the online version of this article at <http://www.ajph.org>).

For the study sample characteristics, we reported numeric variables as mean  $\pm$  SD and categorical variables as frequencies and percentages. We conducted the Pearson  $\chi^2$  test to examine bivariate differences between categorical variables where the assumption that the expected count less than 5 should not exceed 20% for variables was satisfied; if otherwise, we used the exact  $\chi^2$  test. We determined the goodness-of-fit test of



**FIGURE 1—Location of Nizip District of Gaziantep Province in Turkey and Jarabulus District of Aleppo in Syria**

numeric variables to normal distribution by using the Shapiro–Wilk ( $n \leq 50$ ) or Kolmogorov–Smirnov ( $n > 50$ ) test. We tested the difference between independent groups by  $t$  test for 2 independent samples if the normality assumption was satisfied; otherwise we used the Mann–Whitney U test.

We performed a new categorization process because there were insufficient observations in some of the variables. These variables were as follows. We categorized number of families in the household into 1 or 2 or more families. We grouped number of people in the household into 1 to 4, 5 or 6, 7 or 8, or 9 or more people. We grouped self-expressed economic status before and after migration into very good or good, average, or very bad or bad. We divided monthly income before and after migration into US \$0 to \$300, or US \$301 and more. We categorized having stopped somewhere else before current settlement as moved around in Syria and Europe, America, or Arab countries.

We specified MDD (current) and PTSD (current) as dependent variables. We included variables found significant according to the Pearson  $\chi^2$  or Mann–Whitney U test and specified as clinically important in the logistic regression models as independent variables (Appendix A). We used Hosmer–Lemeshow statistics to assess the model assumption. There were some missing observations in the data set; we used the listwise deletion method to handle these. We accepted a  $P$  value less than .05 as significant. We expressed the results of the analysis as odds ratios and their 95% confidence intervals.

For both of the dependent variables, we performed binary logistic regression to adjust for covariates by following 4 steps. In the first step, we entered city as the independent variable (model 1). In the second step, we included sociodemographic variables (age, gender, and marital status) in the model in addition to the variables in model 1 (model 2).

Model 3 for MDD (current) included model 2 covariates plus postmigration variables (working status after migration, family unity, satisfaction about living in Jarabulus or Nizip, and having stopped somewhere else before current settlement). The final model adjusted for premigration factors (working status before migration, income before migration and war experience), in addition to model 3 (model 4).

Model 3 for PTSD (current) included model 2 covariates plus postmigration variables (number of families in household, number of people in household, working status after migration, income after migration, self-expressed economic status after migration, receipt of economic support after migration, family unity, future plans and satisfaction about living in Jarabulus or Nizip).

The final model adjusted for premigration factors (income before migration, self-expressed economic status before migration, and war experience), in addition to model 3 (model 4).

## RESULTS

In Nizip, we conducted 300 interviews; 2 interviewees dropped out and the supervisor excluded 12 interviews because of invalid application. In Jarabulus, for logistical reasons, we conducted 290 interviews; 13 interviewees dropped out and the supervisor excluded 23 interviews because of invalid application. That left 540 valid interviews. The main reason given by the 15 interviewees who quit was that they found the survey useless.

Women made up 60.3% of the respondents. In Jarabulus, most of the respondents were women (73.0%;  $n = 178$ ). The mean age was 34.95 ( $\pm 10.73$ ) years. Table 1 shows the characteristics of the study population.

Respondents in both settings lived in similar conditions after migration and differed little with regard to family unity (losses in the family), satisfaction about living where they were, and whether they had stopped

somewhere else first. Respondents in Jarabulus (IDPs) were relative newcomers whereas respondents in Nizip (refugees) had more frequently been there between 1 and 5 years. Ninety respondents in Jarabulus and 103 in Nizip had work; of these, 86.7% ( $n = 78$ ) and 59.2% ( $n = 61$ ), respectively, had temporary jobs. In general, refugees tended to describe their mental health as worse than did the IDPs, but their physical health as better. Table A (available as a supplement to the online version of this article at <http://www.ajph.org>) displays the distribution of postmigration variables according to city.

Refugees assessed their economic status before migration as better compared with the IDPs, mentioning higher incomes. The IDPs reported a greater frequency of war experiences than did the refugees: 39.4% ( $n = 82$ ) and 30.4% ( $n = 48$ ), respectively, mentioned that family members or close relatives had died during the war, and 47% ( $n = 105$ ) in Jarabulus and 69.6% ( $n = 110$ ) in Nizip said that their homes had been destroyed. Almost all respondents tended to describe their mental and physical health as very bad or bad. There was a statistically significant difference in having had a psychological diagnosis and treatment before migration, with a higher frequency of such diagnosis and treatment in Jarabulus. Table B (available as a supplement to the online version of this article at <http://www.ajph.org>) displays the distribution of premigration variables according to city. Frequencies of demographic and pre- and postmigration variables according to PTSD and MDD are displayed in Tables C through H (available as supplements to the online version of this article at <http://www.ajph.org>).

Of the 12 mental health disorders studied, 6 showed statistically significant differences in frequencies between the populations in Jarabulus and Nizip. Whereas the frequency of MDD (current) was higher in Nizip, frequencies of agoraphobia (current), panic disorder with agoraphobia (current), agoraphobia without history of panic disorder (current), PTSD (current), and GAD (current) were higher in Jarabulus (Table 2).

To explore which group of factors had the greatest influence on PTSD and MDD, we conducted multiple logistic regression analysis. We excluded self-expressed mental and physical health from the models because of imbalances in the distributions. Regression

TABLE 1—Sociodemographic Characteristics of Participants: Jarabulus in Syria and Nizip in Turkey, 2017

Sociodemographics	Jarabulus, Mean $\pm$ SD or No. (%)	Nizip, Mean $\pm$ SD or No. (%)	Total, Mean $\pm$ SD or No. (%)	P
Age, y (n = 538)	35.81 $\pm$ 10.16	34.19 $\pm$ 11.17	34.95 $\pm$ 10.73	.012
Gender				<.001
Male	66 (27.0)	144 (50.5)	210 (39.7)	
Female	178 (73.0)	141 (49.5)	319 (60.3)	
Total	244 (46.1)	285 (53.9)	529 (100.0)	
Marital status				<.001
Married, civil marriage	141 (55.3)	200 (71.2)	341 (63.6)	
Married, only religious marriage	43 (16.9)	28 (10.0)	71 (13.2)	
Single	34 (13.3)	41 (14.6)	75 (14.0)	
Divorced, living separately, or widowed	37 (14.5)	12 (4.3)	49 (9.1)	
Total	255 (47.6)	281 (52.4)	536 (100.0)	
Education level				<.001
Illiterate	27 (10.8)	16 (5.6)	43 (8.0)	
Can read and write	38 (15.2)	15 (5.3)	53 (9.9)	
Primary school	54 (21.6)	100 (35.1)	154 (28.8)	
Secondary school	49 (19.6)	88 (30.9)	137 (25.6)	
High school	49 (19.6)	35 (12.3)	84 (15.7)	
University or college	33 (13.2)	31 (10.9)	64 (12.0)	
Total	250 (46.7)	285 (53.3)	535 (100.0)	

analysis of the factors predicting the likelihood of PTSD and MDD are presented in Table 3. Tables I and J (available as supplements to the online version of this article at <http://www.ajph.org>) present all of the models. With regards to PTSD, the following variables showed no significant association: number of families and people in household, income after migration, receipt of economic support after migration, family unity, future plans, satisfaction about living in Jarabulus or Nizip, income before migration, self-expressed economic status before migration, and war experience. Although living in Jarabulus showed a strong association, its impact altered slightly with the introduction of demographic variables into the model, and more apparently with the introduction of postmigration variables. Age became statistically significant only when postmigration variables were introduced. Gender was significant when entered in the model, although after the introduction of postmigration variables the association was somewhat stronger. Being married with a civil or religious marriage and single status seemed to be eventual protective factors, especially after the entry of post- and premigration variables. The impact of working status after migration was stable in the analysis. Self-expressed economic status after

migration did not show a significant association in the final model.

Regarding MDD, the city of residence and having stopped somewhere else before current settlement were the only variables that showed significant association. Living in Jarabulus was significant in all models. The odds of having MDD in this group were lower than in the reference group. The impact of having stopped somewhere else was stable in the analysis.

## DISCUSSION

This study provides a valuable insight into the mental health situation among IDPs in Syria and Syrian refugees in Turkey.

## Limitations

The study did, however, have some limitations. As in most cross-sectional studies, it was not possible to infer causal relationship. In addition, because of the conditions, a representative sample and a probability sampling strategy could not be used. The refugee camps in Nizip were not included as it was impossible to get permission to conduct the study in the camps. Thus, it is not possible to generalize the findings. Because of the complex and

ambiguous nature of mental disorders it was not possible to study all the determinants in a single study. For example, we could not control the findings according to degree of war exposure, and our restricted sample size meant that we could not include all postmigration variables, such as coping capacities. There was an imbalance in the distribution of gender in Jarabulus, probably because we had more female interviewers in Jarabulus resulting in more interviews with women.

The frequency of most mental disorders was higher in Jarabulus compared with Nizip. This finding is consistent with studies showing that refugees have better mental health outcomes than IDPs.<sup>10,22</sup> However, it contradicts studies indicating that refugees show more mental health impairment than IDPs<sup>23,24</sup> and nonrefugees.<sup>18–21</sup> This could be attributable to the fact that the war has been continuing for 7 years without let-up. On the other side of the border, refugees living in Nizip are in a safe area. This is consistent with a finding from gray literature that severe emotional disorders are more common inside Syria (61%) than in Turkey (23%).<sup>12</sup> Overall, the locus, context, and type of displacement seem to be important determinants of mental health.

**TABLE 2—Frequencies of Studied Mental Disorders According to Cities: Jarabulus in Syria and Nizip in Turkey, 2017**

Mental Disorder	Jarabulus, No. (%)	Nizip, No. (%)	Total, No. (%)	<i>P</i>
Major depressive disorder (current)				.004
No	105 (41.2)	84 (29.5)	189 (35.0)	
Yes	150 (58.8)	201 (70.5)	351 (65.0)	
Total	255 (47.2)	285 (52.8)	540 (100.0)	
Major depressive disorder (recurrent)				.26
No	128 (61.5)	134 (56.3)	262 (58.7)	
Yes	80 (38.5)	104 (43.7)	184 (41.3)	
Total	208 (46.6)	238 (53.4)	446 (100.0)	
Suicide risk (current)				.14
No	112 (43.9)	144 (50.3)	256 (47.3)	
Yes	143 (56.1)	142 (49.7)	285 (52.7)	
Total	255 (47.1)	286 (52.9)	541 (100.0)	
Panic disorder (lifetime)				.10
No	199 (78.0)	239 (83.6)	438 (81.0)	
Yes	56 (22.0)	47 (16.4)	103 (19.0)	
Total	255 (47.1)	286 (52.9)	541 (100.0)	
Limited symptom attacks (lifetime)				.26
No	194 (76.1)	229 (80.1)	423 (78.2)	
Yes	61 (23.9)	57 (19.9)	118 (21.8)	
Total	255 (47.1)	286 (52.9)	541 (100.0)	
Panic disorder (current)				.29
No	210 (82.4)	245 (85.7)	455 (84.1)	
Yes	45 (17.6)	41 (14.3)	86 (15.9)	
Total	255 (47.1)	286 (52.9)	541 (100.0)	
Agoraphobia (current)				.002
No	158 (62.5)	211 (74.8)	369 (69.0)	
Yes	95 (37.5)	71 (25.2)	166 (31.0)	
Total	253 (47.3)	282 (52.7)	535 (100.0)	
Panic disorder without agoraphobia (current)				.33
No	216 (85.4)	248 (88.3)	464 (86.9)	
Yes	37 (14.6)	33 (11.7)	70 (13.1)	
Total	253 (47.4)	281 (52.6)	534 (100.0)	
Panic disorder with agoraphobia (current)				.008
No	227 (89.0)	272 (95.1)	499 (97.2)	
Yes	28 (11.0)	14 (4.9)	42 (7.8)	
Total	255 (47.1)	286 (52.9)	541 (100.0)	
Agoraphobia without history of panic disorder (current)				.005
No	178 (70.4)	228 (80.9)	406 (75.9)	
Yes	75 (29.6)	54 (19.1)	129 (24.1)	
Total	253 (47.3)	282 (52.7)	535 (100.0)	
Posttraumatic stress disorder (current)				<.001
No	104 (41.4)	200 (70.2)	304 (56.7)	
Yes	147 (58.6)	85 (29.8)	232 (43.3)	
Total	251 (46.8)	285 (53.2)	536 (100.0)	
Generalized anxiety disorder (current)				.005
No	124 (49.2)	175 (61.2)	299 (55.6)	
Yes	128 (50.8)	111 (38.8)	239 (44.4)	
Total	252 (46.8)	286 (53.2)	538 (100.0)	

The frequency of agoraphobia (current), panic disorder with agoraphobia (current), GAD, and PTSD was higher in Jarabulus, whereas the frequency of MDD was higher in Nizip. This finding indicates that anxiety and fear-related disorders were more common in our sample in Jarabulus, a conflict zone, and that depression was more common in Nizip, where the context of external migration could be observed. In Jarabulus, the war could be leading to a greater persistence of anxiety and fear than in Nizip and, in turn, could be leading to more frequent anxiety disorders and PTSD. The absence of actual threat or expectation of threat in Nizip might allow scope for mourning losses and the longing for loved ones and homeland, which are part of adapting to a new culture. These factors could be associated with more frequent MDD. This result is partly consistent with a study comparing Afghan women living in Kabul and Pakistan, which found that PTSD was higher in Kabul, depression was higher in Pakistan, and there was no difference regarding anxiety.<sup>19</sup>

Posttraumatic stress disorder was most strongly associated with living in Jarabulus, and its impact increased when the postmigration factors were taken into account. Among the demographic factors, initially only male gender and civil marriage showed an association. Some studies have found associations between PTSD and demographic factors whereas some have not, as the extent to which each factor affects mental health can vary according to methodology and the population of interest.<sup>11</sup> When postmigration factors were taken into account, age, religious marriage, and single status also showed an association. Younger and male refugees and IDPs were more likely to have PTSD. This finding contradicts most studies in the literature, which have indicated that female gender<sup>10,16,17</sup> and older age<sup>9,10</sup> are risk factors for developing PTSD. The higher frequency of PTSD in younger people could be attributable to a limited coping capacity or social support, although we do not have any supporting data for this explanation.

The higher frequency of PTSD in men could be explained by a shift in gender roles, mainly because of high rates of unemployment. Men lose their traditional role as breadwinner and face threats and discrimination from some members of host communities while looking for work.<sup>29</sup> Consistent with the studies in the literature, our sample showed that

**TABLE 3—Multiple Logistic Regression Analysis of the Factors Predicting the Likelihood of Posttraumatic Stress Disorder and Major Depressive Disorder: Jarabulus in Syria and Nizip in Turkey, 2017**

	Model PTSD, OR (95% CI)	Model MDD, OR (95% CI)
City		
Aleppo/Jarabulus	4.457 (2.387, 8.321)	0.561 (0.345, 0.910)
Gaziantep/Nizip (Ref)	1	1
Age	0.969 (0.943, 0.996)	1.010 (0.987, 1.034)
Gender		
Male	2.190 (1.204, 3.984)	1.254 (0.720, 2.185)
Female (Ref)	1	1
Marital status		
Married, civil marriage	0.301 (0.122, 0.742)	0.717 (0.313, 1.641)
Married, only religious marriage	0.329 (0.109, 0.999)	0.570 (0.213, 1.528)
Single	0.184 (0.055, 0.610)	0.615 (0.212, 1.782)
Divorced, living separately, or widowed (Ref)	1	1
No. of families in household		
1	0.736 (0.414, 1.310)	
≥ 2 (Ref)	1	
No. of people in household		
≥ 9	1.083 (0.480, 2.447)	
7–8	0.985 (0.490, 1.983)	
5–6	1.534 (0.839, 2.804)	
1–4 (Ref)	1	
Working status after migration		
No	2.145 (1.246, 3.692)	1.408 (0.894, 2.216)
Yes (Ref)	1	1
Monthly income after migration, US \$		
0–300	1.163 (0.573, 2.358)	
≥ 301 (Ref)	1	
Self-expressed economic status after migration		
Very bad or bad	1.966 (0.631, 4.150)	
Average	1.113 (0.621, 1.994)	
Very good or good (Ref)	1	
Receipt of economic support after migration		
Yes	1.179 (0.684, 2.031)	
No (Ref)	1	
Family unity		
No	1.212 (0.732, 2.008)	1.335 (0.859, 2.075)
Yes (Ref)	1	1
Future plans		
I will leave Turkey as soon as possible	1.429 (0.624, 3.271)	
I will leave Turkey and return to Syria when the war is over	1.116 (0.561, 2.220)	
I intend to stay in Turkey	0.542 (0.268, 1.096)	
I do not want to specify or I have not decided (Ref)	1	
Satisfaction about living in Jarabulus or Nizip		
No	1.433 (0.647, 3.175)	1.253 (0.637, 2.465)
Partly	0.913 (0.530, 1.573)	1.077 (0.676, 1.715)
Yes (Ref)	1	1

*Continued*

TABLE 3—Continued

	Model PTSD, OR (95% CI)	Model MDD, OR (95% CI)
Stopped somewhere else before current settlement		
I moved around in Syria		1.666 (1.018, 2.725)
Other (Europe, America, Arab countries, etc.; Ref)	1	1
Working status before migration		
No		1.384 (0.823, 2.329)
Yes		1
Monthly income before migration, US \$		
0–300	0.642 (0.353, 1.167)	1.494 (0.916, 2.435)
≥301 (Ref)	1	1
Self-expressed economic status before migration		
Very bad or bad	0.630 (0.234, 1.691)	
Average	1.608 (0.924, 2.799)	
Very good or good (Ref)	1	
War experience		
Yes	1.256 (0.710, 2.222)	1.228 (0.738, 2.044)
No (Ref)	1	1

Notes. CI = confidence interval; MDD = major depressive disorder; OR = odds ratio; PTSD = posttraumatic stress disorder. Model summary of the model PTSD: Hosmer–Lemeshow test ( $P = .371$ ); Nagelkerke  $R^2 = 0.286$ ; classification rate = 70.4%. Model summary of the model MDD: Hosmer–Lemeshow test ( $P = .173$ ); Nagelkerke  $R^2 = 0.100$ ; classification rate = 65.5%.

unemployment was an associated factor for PTSD.<sup>9–11</sup> However, prospective studies are required to provide greater clarity, as unemployment in the sample might be also partly attributable to PTSD. People who are widowed, divorced, or living apart seemed to be more predisposed to PTSD, possibly because they face greater domestic hardships compared with married and single people, and might be less able to cope with difficulties related to war and forced migration. The fact that civil or religious marriage seems to protect against PTSD emphasizes the importance of social support.

The likelihood of MDD was predicted by only 2 factors: living in Nizip and stopping somewhere else first. Major depressive disorder seemed to be closely related with the experience of fleeing to another country. In general, our results support the studies arguing that postmigration factors are stronger predictors of conflict-related mental health than demographics and premigration factors.<sup>9,10</sup>

## Public Health Implications

These results have important implications for public health policy planning for Syrians and probably other populations affected by conflict worldwide.

We suggest that situational analysis and needs assessments should consider the living

contexts and postmigration factors of conflict-affected Syrians living in different settings. Our results also contribute to the debate on the optimal approaches to address the mental health needs of war refugees.<sup>30</sup> Trauma-focused approaches may be better for IDPs and psychosocial interventions for enhancing recovery, functionality, and coping mechanisms should be considered for refugees. To address the high rates of mental disorders among Syrians, community mental health services should be developed as part of general health care to provide a faster response and prevent stigma. Capacity-building activities for professionals and community members are important.<sup>31</sup> Where there is a language barrier, such activities should aim to train Arabic-speaking mental health workers and translators, as well as local medical personnel, in prediagnosis and early detection of medical problems. We suggest that these recommendations should be led by governmental organizations in cooperation with specialized agencies of the United Nations and non-governmental organizations. **AJPH**

## CONTRIBUTORS

S. Tekeli-Yesil initiated and designed the study, planned and supervised the statistical analysis, interpreted the data, and drafted and revised the article. E. Isik initiated the study, supervised data collection, participated in the

interpretation of data, and drafted and revised the article. Y. Unal initiated the study, supervised data collection, participated in cleaning and interpretation of data, and drafted and revised the article. F. A. Almosa supervised data collection and revised the article. H. K. Unlu planned the statistical analysis, cleaned and analyzed the data, and revised the article. A. T. Aker initiated the study, participated in interpretation of data, and revised the article. All authors provided substantive suggestions and critically reviewed the article, and gave final approval for the article.

## HUMAN PARTICIPANT PROTECTION

Ethical approval was received from the Istanbul Bilgi University Ethical Committee on April 4, 2017.

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