Research Article

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Post-Traumatic Stress Disorder Symptoms and Associated Risk Factors: A cross-sectional study among Syrian refugees

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Abstract

Aims: The Syrian conflict has generated a large flow of refugees, more than one million of them located in Lebanon. Very few studies were conducted on mental health of Syrian refugees. The objective of this study was to examine post-traumatic stress disorder (PTSD) symptoms and to determine the associated risk factors in a sample of Syrian refugees living in North Lebanon.

Methods: An observational cross-sectional study was conducted, during February and March 2016, on a random sample of 450 (84.67% women and 15.33% men) Syrian refugees, aged between 14 and 45 years, living in North Lebanon. Each participant was interviewed individually using the Primary Care-PTSD (PC-PTSD) screening tool, translated into Arabic, with a back-translation to the original language to verify its accuracy. Reporting three or more PTSD symptoms was defined as a positive screen. Descriptive statistics and multiple regression analyses were used to examine the prevalence of a positive PTSD screen and associations with socio-demographic and health-related characteristics.

Results: The prevalence of positive PTSD screen in our sample of Syrian refugees was 47.3%. There were statistically significant associations between a positive PTSD screen and being a woman (P=0.011), married (P<0.001), older than 18 years (P=0.006), having chronic medical conditions (P<0.001) and reporting more than 2 stressful life events (P<0.001).

Conclusion: The results of this survey are alarming, with high proportions of refugees at risk for PTSD. Early screening may help identify individuals who would benefit from interventions to improve mental health.

Keywords: post-traumatic stress disorder, refugees, war, mental health, Middle-East, screening.

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Abbreviations: BMI - Body Mass Index; CS - Collective Shelters; DSM-4 - Diagnostic and Statistical Manual of Mental Disorders Version 4; DSM-5 - Diagnostic and Statistical Manual of Mental Disorders Version 5; IRB - Institutional Review Board; ITSs - Individual Tented Settlements; kg - kilograms; m - meters; NDU - Notre Dame University; PC-PTSD - Primary Care Post-Traumatic Stress Disorder; PHCs - Primary Health Care Centres; PTSD - Post-Traumatic Stress Disorder; SLE - Stressful Life Events; SPSS - Statistical Package for Social Science; UNHCR - United Nations High Commissioner for Refugees

INTRODUCTION

Several studies found that refugees develop post-traumatic stress disorder (PTSD) after having endured war trauma[1], or certain circumstances related to migration like moving to a new country, being unemployed and poor housing[2]. PTSD is described as distress and disability due to a traumatic event that occurred in the past[3]. In 2013, the American Psychiatric Association revised the PTSD diagnostic criteria in the fifth edition of its *Diagnostic and Statistical Manual of Mental Disorders (DSM-5)* and PTSD was included in a new category, Trauma- and Stressor-Related Disorders[4]. All of the conditions included in this category required exposure to a traumatic or stressful event as a diagnostic criterion[4]. The person with PTSD often avoids trauma-related thoughts and emotions, and discussion of the traumatic event[4]. PTSD patients are invariably anxious about re-experiencing the same trauma. The trauma is usually re-lived by the person through disturbing, repeated recollections, flashbacks, and nightmares[4]. Symptoms of PTSD generally begin within the first 3 months after the provocative traumatic event, but may not begin until several years later[4]. A large number of children (10-40%), 16 or younger, who have experienced a traumatic event in their life, tend to develop PTSD later on[5]. Moreover, many families with children growing in war zones and then moving to safer places, experience trauma, stress and reduced functioning[6]. These families have different resilience rates in their survival mechanisms, coping strategies and adaptation levels[7].

The latest war in Syria has led to the migration of large parts of the Syrian population to neighboring countries such as Lebanon, Jordan and Turkey[8].The United Nations High Commissioner for Refugees (UNHCR) estimates that approximately 1.5 million refugees are located in Lebanon[9]. These refugees have been exposed to several types of traumatic events that may increase the incidence of mental health problems[10].

We hypothesize that the proportion of positive PTSD screens would be high among Syrian refugees with the presence of some

specific related risk factors. Thus, the objective of our study was to examine PTSD symptoms and to determine the associated risk factors in a sample of Syrian refugees living in North Lebanon.

METHODS

1. Study design and population

This was a cross-sectional study that aimed to assess the proportion of Syrian refugees in North Lebanon who were at high risk of developing PTSD, and to examine the association of PTSD high risk with other factors. The survey was carried out during February and March 2016. A convenient sample of Syrian refugees of both gender, aged between 14 and 45 years, living in North Lebanon, was selected out of a population of 262,151[11].

The estimated minimum sample size, calculated using Raosoft sample size calculator, with a margin of error of 5% and a confidence interval of 95%, was 384 refugees. A total number of 450 Syrian refugees, residing in individual tented settlements (ITSs), collective shelters (CS) or Primary Health Care Centers (PHCs) located in North Lebanon, was selected according to inclusion and exclusion set criteria.

The inclusion criteria were: Syrian refugees, aged (14-45 years), physically and mentally independent. Hence, all subjects that were younger than 14 or older than 45, speechless, deaf, physically and mentally dependent, or have undergone recent moderate or severe surgery (less than one week earlier), were excluded from the study.

2. Ethical considerations

The study protocol received approval from the Notre Dame University (NDU) Institutional Review Board (IRB). The approval comprised details about the procedure of the study and the rights of the participants. Informed consent was obtained from each participant. The questionnaires were answered anonymously, ensuring confidentiality of collected data.

3. The Interview questionnaire

The interview questionnaire was divided into six sections consisting of a total of 46 questions. The questions were dichotomous, close-ended and open-ended. A cover page described the purpose of the study, ensuring the anonymity and confidentiality, and soliciting the consent of participants. The questionnaire collected data on the demographic and socio-economic characteristics of the participants. Information about health status and stressful life events (SLE) were also obtained. The PC-PTSD (Primary Care Post-Traumatic Stress Disorder) tool was used to screen PTSD.

For the purposes of the study, subjects were classified as having/not having positive PC-PTSD. The results were used to calculate the proportion of Syrian refugees who are at high risk of developing PTSD.

PC-PTSD questionnaire: The PC-PTSD was initially developed in a Veteran Affairs primary care setting and is currently used to screen for PTSD, based on the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-4) diagnostic criteria[12]. The screen consisted of 4 questions related to a traumatic life event: In the past month you (1) Have had nightmares about it or thought about it when you did not want to?; (2) Tried hard not to think about it or went out of your way to avoid situations that reminded you of it?; (3) Were constantly on guard, watchful, or easily startled?; (4) Felt numb or detached from others, activities, or your surroundings? The answers to these questions were dichotomous (Yes/No) and the total screen was considered "positive" when a patient answered "yes" to three out of four questions. PC-PTSD showed a high sensitivity (86%) and moderate specificity (57%) when using a cutoff score of 2[13].

In order to validate the Arabic version of the PC-PTSD questionnaire, it was translated into Arabic and translated back into English. The original version of the Arabic questionnaire was pilot-tested on 10 Syrian refugees to ensure the validity of the answers, and to guarantee its reliability.

Anthropometric measurements: The main anthropometric measurements were weight and height. Participants were dressed in light clothes and barefooted, and standing height was measured to the nearest 0.1 cm using a stadiometer. Body weight was measured to the nearest 100g using an electronic scale. Body Mass Index (BMI) is a measure of weight adjusted to height (kg/m^2), calculated by dividing weight (in kilograms) by the square of height (in metres). For the purposes of the study, BMI was recoded into four categories: underweight, normal, overweight and obese.

4. Data entry and statistical analysis

The Statistical Package for Social Science (SPSS) for Windows (version 22) was used for data entry and analysis.

First, bivariate analyses of categorical variables were performed using the Fisher exact tests, Chi-squared tests and Student's t-test. The dependent variable was the high risk of PTSD, using the PC-PTSD tool. Thus, the PC-PTSD score was considered the dependent variable: a dichotomous variable of PC-PTSD (-) and PC-PTSD (+), and all variables that might be a risk factor or might lead to PTSD were set as the independent variables. Two main independent variables were: age and gender. Other variables included: marital status, place of residence, number of people and families living in the same household (crowding index), income, education status, profession, work status, lifestyle habits, medical or psychological problems, medication taken and SLE. Frequencies and percentages were calculated for qualitative variables, and mean and standard deviations for quantitative variables (BMI, crowding index). A p-value of 0.05 or less was considered to be statistically significant.

RESULTS

Table 1: Socio-demographic characteristics of the 450 Syrian refugees

Variables	Frequency (n) or Mean	Percentage (%) or Standard Deviation
Gender		
· Male	69	15.3
· Female	381	84.7
Age (years)	**27.9**	**8.1**
Crowding index (co-residents/room)	4	2.4
Crowding index		
· ≤ 2.5	135	30
· 2.51-3.5	108	24
· > 3.5	207	46
Current place of residence		
· Tented settlements	62	13.8
· Collective shelters	92	20.4
· Building	296	65.8
Educational level		
· Don't know how to read and write	33	7.3
· Know how to read and write/Elementary	216	48
· Complementary/Secondary/Technical	178	39.6
· College degree	23	5.1
Marital status		
· Single	54	12
· Married	378	84
· Divorced	5	1.1
· Widowed	13	2.9
Current employment status		
· No	379	84.2
· Full-time job	40	8.9
· Part-time job	31	6.9
Presence of income		
· No	379	84.2
· Yes	71	15.8
Perceived income (n=71)		
· Satisfactory	25	35.2
· Non-Satisfactory	46	64.8

Table 2: Health characteristics and migration factors of the 450 Syrian refugees

Variables	Frequency (n)	Percentage (%)
BMI category (kg/m2)		
· <18.5	11	2.4
· 18.5-24.9	176	39.1
· ≥ 25	263	58.5
Tobacco consumption		
· Yes	97	21.6
· No	353	78.4
Presence of medical conditions		
· No	337	74.9
· Yes	113	25.1
Migration status		
· Before 2011	15	3.3
· 2011-2013	339	75.3
· After 2013	96	21.4
Seeking professional help for psychological disorders		
· No	439	97.6
· Yes	11	2.4
Number of stressful life events		
· None	22	4.9
· [1-2]	181	40.2
· [3-4]	235	52.2
· [5-6]	12	2.7
PC-PTSD		
· Negative	237	52.7
· Positive	213	47.3

Table 3: Socio-demographic characteristics associated with positive screen for PTSD among the 450 Syrian refugees (bivariate analyses)

Variables	Positive PC-PTSD n(%) or mean±SD	Negative PC-PTSD n(%) or mean±SD	p-value
Gender			**0.011***
· Male	23 (33.3)	46 (66.7)	
· Female	190 (49.9)	191 (50.1)	
Age (years)	**28.9 ± 7.6**	**26.9 ± 8.5**	**0.009***
Crowding index (co-residents/room)	**4.2 ± 2.7**	**3.8 ± 2.2**	**0.069**
Crowding index			**0.294**
· ≤ 2.5	58 (43.0)	77 (57.0)	
· 2.51-3.5	49 (45.4)	59 (54.6)	
· > 3.5	106 (51.2)	101 (48.8)	
Current place of residence			**0.137**
· Tented settlements	27 (43.5)	35 (56.5)	
· Collective shelters	52 (56.5)	40 (43.5)	
· Building	134 (45.3)	162 (54.7)	
Educational level			**0.479**
· Don't know how to read and write	16 (48.5)	17 (51.5)	
· Know how to read and write/Elementary	95 (44.0)	121 (56.0)	
· Complementary/Secondary/Technical			
· University level	92 (51.7)	86 (48.3)	
	10 (43.5)	13 (56.5)	
Marital status			**0.000***
· Single	9 (16.7)	45 (83.3)	
· Married	191 (50.5)	187 (49.5)	
· Divorced	4 (80.0)	1 (20.0)	
· Widowed	9 (69.2)	4 (30.8)	
Current employment status			**0.205**
· No	184 (48.5)	195 (51.5)	
· Full-time job	14 (35.0)	26 (65.0)	
· Part-time job	15 (48.4)	16 (51.6)	
Presence of income			**0.233**
· No	184 (48.5)	195 (51.5)	
· Yes	29 (40.8)	42 (59.2)	
Perceived income (n=71)			**0.264**
· Satisfactory	8 (32.0)	17 (68.0)	
· Non-Satisfactory	21 (45.7)	25 (54.3)	

**Significant with p-value < 0.05*

Table 4: Health characteristics and migration factors associated with positive screen for PTSD among the 450 Syrian refugees (bivariate analyses)

Variables	Positive PC-PTSD n (%)	Negative PC-PTSD n (%)	p-value
BMI category (kg/m2)			**0.183**
· *<18.5*	7 (63.6)	4 (36.4)	
· *18.5-24.9*	75 (42.6)	101 (57.4)	
· *≥ 25*	131 (49.8)	132 (50.2)	
Tobacco consumption			**0.369**
· *Yes*	42 (43.3)	55 (56.7)	
· *No*	171 (48.4)	182 (51.6)	
Presence of medical conditions			**0.000***
· *No*	143 (42.4)	194 (57.6)	
· *Yes*	70 (61.9)	43 (38.1)	
Migration status			**0.094**
· *Before 2011*	5 (33.3)	10 (66.7)	
· *2011-2013*	154 (45.4)	185 (54.6)	
· *After 2013*	54 (56.2)	42 (43.8)	
Seeking professional help for psychological disorders			**0.003***
· *No*			
· *Yes*	203 (46.2)	236 (53.8)	
	10 (90.9)	1 (9.1)	
Number of stressful life events			**0.000***
· *None*	0 (0.0)	22 (100.0)	
· *[1-2]*	66 (36.5)	115 (63.5)	
· *[3-4]*	138 (58.7)	97 (41.3)	
· *[5-6]*	9 (75.0)	3 (25.0)	

** Significant with p-value < 0.05*

All the socio-demographic, health and migration characteristics of our sample of Syrian refugees were described in Tables 1 and 2. Out of the 450 participants, 47.3% had positive PC-PTSD. In order to study the association between the socio-demographic characteristics among the Syrian refugeesand PTSD screening, abivariate association was explored as shown in Table 3. The results indicate a significant difference between gender groups, as almost half of the women (49.9%) had a positive screen for PTSD compared to 33.3% of the men (p=0.011). Mean age was significantly higher in refugees with positive PC-PTSD (28.9 ± 7.6 years) versus those with negative PC-PTSD (26.9 ± 8.5 years) (p=0.009). PTSD screening was shown to be significantly associated with marital status. In fact, positive PC-PTSD was mostly perceived in divorced participants (80%) compared to 69.2% of widowed, 50.5% of married, and 16.7% of single subjects (p=0.000). Yet, crowding index, current place of residence, educational level, employment status, and income were not significantly associated with positive PC-PTSD (p>0.05).

The association of health characteristics and migration factors among the Syrian refugees with PTSD screening was displayed in Table 4. A significant association was observed between the presence of medical condition and positive screen for PTSD, as 61.9% of subjects suffering from a medical condition had a positive PC-PTSD, compared to 42.4% of participants without medical conditions (p=0.000). However, BMI and tobacco consumption were not significantly associated with PTSD screening (p>0.05). PTSD screening was significantly associated with the presence of psychological disorders. Thus, 90.9% of refugees who sought professional help for psychological disorders had positive PC-PTSD, versus 46.2% of those who did not (p=0.003). Positive PC-PTSD was significantly associated with the increase in the number of SLE. In fact, none of the participants without any stressful event had a positive PC-PTSD, compared to 36.5% of participants with 1-2 SLE, 58.7% of participants with 3-4 SLE and 75% of participants with 5-6 SLE (p=0.000). On the other hand, no significant association was observed between PC-PTSD and migration status (p>0.05).

DISCUSSION AND CONCLUSION

PTSD represents the most frequently occurring mental disorder occurring among refugees[14]. PTSD prevalence rates ranging between 15% and 80% have been reported in refugees. A study of Cambodian refugees living in the Thailand-Cambodia border camp indicated that 15% had PTSD[15]. A cohort study aimed to show the prevalence of PTSD among Iranian, Afghani and Somalian refugees that have moved to the Netherlands at a 7-year interval [(T1=2003) - (T2=2010)]. Results displayed a high prevalence at both T1 (16.3%) and T2 (15.2%). The reason for this high unchanged prevalence may be due to the late onset of the PTSD symptoms, and the low use of mental health care centers[16]. De Jong and colleagues reported that 50% of the refugees in Rwandan and Burundese camps had serious mental health problems, mainly PTSD[17]. While Teodorescu and colleagues aimed to illustrate the prevalence of PTSD among refugees in Norway; results showed that 80% of the refugees had PTSD[18]. In our study, the high proportion of positive screen for PTSD among Syrian refugees was estimated at 47.3%. In 2006, a mental health assessment demonstrated that Lebanese citizens exposed to war were more likely to develop psychiatric problems such as PTSD[19]. Subsequently, a cross-sectional study was done in South Lebanon on 681 citizens in 2007 (1-year after the 2006 war in Lebanon). The aim of the study was to examine the prevalence of PTSD 12 months after 2006 war cessation. Results showed that the prevalence of PTSD was 17.8%[19]. A recent cross sectional study, aimed to show the prevalence of PTSD and explore its relationship with various variables. The study included 352 Syrian refugees settled in camps in Turkey. An experienced psychiatrist evaluated the participants, and results demonstrated that 33.5% of study participants had PTSD, mainly female refugees, people who experienced 2 or more SLE, or those who had a family history of psychiatric disorder[20].

PTSD has been associated with a wide range of traumatic events: emotional or physical abuse[21], sexual abuse[22], parental break-up[23], death of a loved one[24], domestic violence[25], kidnapping[26], military services[27], war trauma[28], natural disasters[29] and medical conditions including cancer[30], heart attack[31], stroke[32], intensive-care unit hospitalization[33], and miscarriage[34].

Our findings should be interpreted taking into account several limitations. The first limitation is the use of screening tools, instead of the more accurate diagnosis of the clinician, in order to detect PTSD. Given that a standardized screening tool for PTSD was used, our rates are likely an overestimate of the true prevalence rates. Secondly, this study was conducted with a limited sample of Syrian refugees and therefore should not be generalized to all refugees of other eras or from other countries. The third limitation is represented by the lack of information on the presence of other Axis I psychiatric comorbidities such as anxiety or mood disorder that could facilitate the development of PTSD or influence its manifestations[35-36].

Refugees are an important group to examine, given the high prevalence of mental health disorders. Although refugees are evaluated for health problems, currently there are no standardized screening and clinical practice guidelines for assessing PTSD in all refugees. Therefore, we may be missing opportunities to detect and treat these harmful and potentially fatal conditions. Our findings suggest the need to consider a standardized screening tool for PTSD in this population. In addition, a far greater percentage of patients may have "PTSD symptoms," that are abnormal but do not meet full criteria of the DSM5 for PTSD diagnosis, but still cause functional impairment and may later develop into a diagnosable PTSD. Given the overall high prevalence, one possible model for evaluation would be a stepped screening approach: Positive screens for PTSD could trigger a standardized clinical diagnosis for PTSD with more comprehensive assessment and early

intervention. Considering the high cost of treating individuals with PTSD, screening and intervention strategies should be addressed. Greater awareness among providers and increased targeted assessment and treatment efforts may increase early detection of a wide range of PTSD, preventing more serious future health problems and functional impairment among refugees.

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Competing Interests

None declared

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