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Determinants of Post-Traumatic Stress Disorder in Syrian Refugees living in Turkey's four cities

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Abstract

Circumstances of forced migrations are associated with increased post-traumatic stress disorder (PTSD). Research indicates that Syrian refugees are highly vulnerable and likely to experience various mental diseases due to forced migration and war-related traumatic events. Also, there are geographical-based differences in the psychological stress outcomes of refugees. The objective of the research is to examine the differences in self-reported PTSD due to circumstances of forced migration among Syrian refugees living in Turkey (N=777 respondents) by their living city. To explore which group of factors had the most significant influence on PTSD, I conducted multiple logistic regression analyses for 777 respondents. Considering logistic analysis results, self-reporting post-traumatic stress is more common among Syrian refugees who live in large cities (İstanbul/İzmir) and Syrian border conservative cities (Şanlıurfa), have poorer self-expressed health status, experience war-related situations, feel unsafe in their neighbourhood and receive less support from their families when faced with problems. These findings point to the importance of assessing self-reported PTSD due to the circumstances of refugees. Furthermore, these results show that refugees feel the burden of the experiences they carry differently.

Keywords: Post-Traumatic Stress Disorder; Syrian; Refugees; Social Determinants; City Disparities

Introduction

The conflict in Syria has led to a significant displacement of people, with 5 million Syrians seeking refuge in other countries, 6.3 million being internally displaced, and 4.5 million living in besieged areas. Among these, Turkey, with its 900-kilometre border with Syria, hosts the most considerable number of registered refugees globally. Turkey currently hosts 4 million registered refugees, with 3.53 million Syrians. For this article, I will be referred to as **refugees**[i]. The estimated number of refugees, including unregistered ones, is around 3.5 million.

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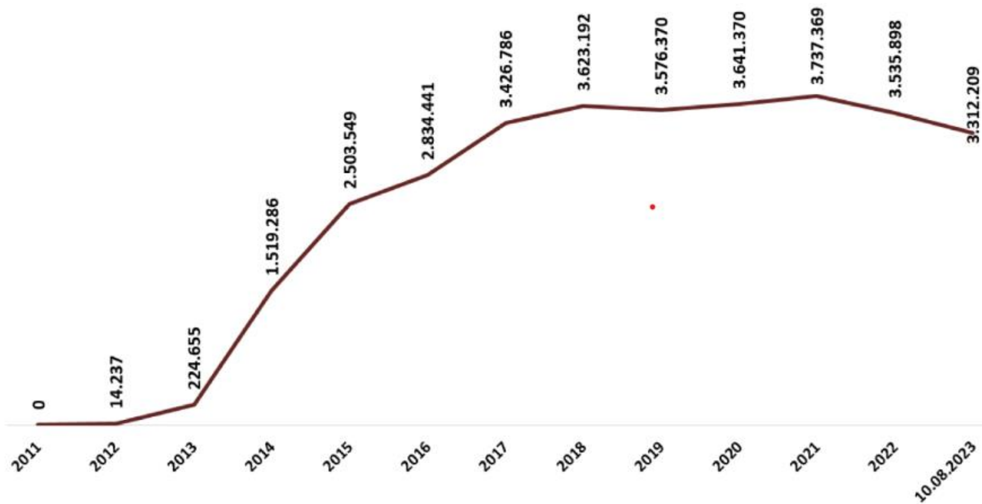
Communities affected by conflicts are at a heightened risk of encountering psychiatric disorders. The prevailing body of research predominantly centres on post-traumatic stress disorder (PTSD),[ii] given its frequent association with mental health challenges. In a meta-analysis conducted in 2009, which explored the mental health of refugees and individuals affected by conflicts, a wide range of prevalence rates for PTSD was identified from 0% to 99% (Steel et al., 2009). Social, ecological, and contextual factors also play a significant role (Fazel, Wheeler & Danesh, 2005; Bogic et al., 2015; Porter & Haslam, 2005). Factors that significantly impact mental health include demographics such as age and education, trauma-related factors such as the extent of exposure to traumatic events, and post-conflict factors. Daily stressors such as security concerns, limited economic opportunities, inadequate permanent housing, and a lack of social support are also influential contributors (Brewin, Andrews & Valentine, 2000).

This research examines the determinants of post-traumatic stress disorder of Syrian refugees by concentrating on post-arrival experiences living in four different cities. The number of Syrian refugees living in Turkey constitutes the largest immigrant population, according to the International Organization for Migration, making Turkey the world's number one refugee-hosting country. Thus, they constitute a convenient case for investigating mental health problems in Turkey. Hence, the main question aimed to be lightened by this analysis is: What are the determinants of PTSD of Syrian refugees in Turkey?

Figure 1

Distribution of Syrians Under Temporary Protection by Year in Turkey



Note: Presidency of Migration Management, https://en.goc.gov.tr/temporary-protection27 (Accessed: 20.08.2023)

Embarking on the exploration of these research questions, I employed data from The Horizon 2020 RESPOND study, titled "Multilevel Governance of Migration and Beyond" authored by Jancewicz et al. (2020) to investigate the factors influencing PTSD among Syrian refugees in Turkey. In the first part of the paper, a brief definition of Syrian refugees in Turkey is displayed, followed by a theoretical framework including PTSD, migration-related challenges of immigrants, and the city location. After this background, the research design and analysis

with the obtained results are demonstrated. According to these results, the findings are discussed in the conclusion, along with the study's limitations and further research recommendations.

Syrian immigrants in Turkey

Starting from April 2011, after the civil war in Syria, a significant exodus of Syrians from their homeland was prompted by distressing living conditions, life-threatening insecurity, and the inability to fulfil basic needs. The influx of Syrian refugees into Turkey began after this crisis. Throughout the war, approximately 6 million Syrians fled their homes, seeking refuge in safer zones within the national borders, as indicated by the official United Nations report. Around 4 million individuals opted to migrate beyond Syria's borders. Due to its historical, cultural, and geographical proximity to Syria, Turkey has demonstrated an unwavering commitment to accommodating Syrians. Nearly 44 % of the Syrian population seeking refuge throughout these four years migrated to Turkey (Tunç, 2015).

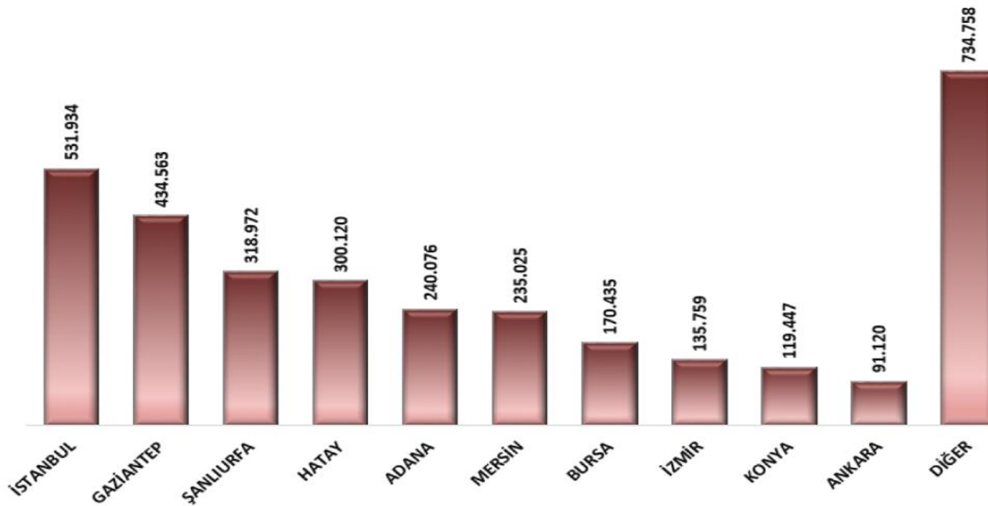
According to a field study conducted on Syrian refugees residing in Turkey, it has been identified that significant issues arise between Syrians and the local population due to disparities in culture, language, and lifestyle. These differences are one of the primary drivers behind reactions directed towards Syrians. This circumstance significantly hampers the process of integration and acceptance within the societal context. (Oytun & Gündoğar, 2015).

Syrian refugees encounter opportunities within the social context, including the emergence of multiculturalism following migration and the role of marriage as a means of social integration. However, the risks and threats Syrians pose in Turkey are significantly more significant than the opportunities they present. These risks and threats can be classified as societal threat perceptions, individual threat perceptions, urban threat perceptions, and threats directed towards Syrians.

There is an inverse relationship between the cultural characteristics of Syrians, such as their sect and ethnic background, and the city's social fabric. In other words, as the demographic characteristics of Syrians differ from those of the city's population, the sense of distrust among the local population and the perception of Syrians as a threat increase. This situation has led to sectarian and ethnic polarisation in some cities. The significant problems Syrian refugees encounter regarding essential services such as healthcare, housing, and education are particularly evident (Durmaz et al., 2023).

Figure 2

Distribution of Syrians Under Temporary Protection By Top 10 Provinces



Note: Source: Presidency of Migration Management, https://en.goc.gov.tr/temporary-protection27 (Accessed: 20.08.2023)

Post-traumatic stress disorder among Refugees

As per the American Psychiatric Association, Post-traumatic stress disorder (PTSD) *"is a psychiatric disorder that can happen to people who have experienced or witnessed a traumatic event such as a natural disaster, a terrorist attack, war or battle, rape or other attacks on that person"* (American Psychiatric Association, 2013). It is undeniable that war inherently involves profoundly traumatic events like death and widespread devastation. However, beyond these inherent aspects, additional psychological trauma can arise from witnessing extreme violence, enduring terrorist attacks, experiencing kidnappings, enduring torture, facing separation from family members, and forced migration because of the imperative need for survival (Johnson & Thompson, 2008).

As a result, PTSD can emerge as a hazardous and incapacitating mental disorder, affecting both the individual and the broader society. In recent times, increased attention has been directed towards investigating the ramifications of its symptoms, and studies conducted within the general population have unveiled its profound impact on the overall functioning of society. Various events and circumstances have been identified through numerous studies as having the potential to influence an individual's mental well-being significantly (Basoglu et al., 2005). In some instances, the individual can manage these influences themselves through various defence mechanisms, while in other cases, traumatic events can directly and rapidly trigger the development of PTSD (Newman, 2013).

Numerous studies consistently indicate that most civilian adults and children residing in regions affected by warfare, including the Middle East, undergo at least one traumatic event due to the consequences of war and political conflicts (Khamis, 2005; Naja et al., 2016). This is particularly true for Syria, where estimations suggest that between 3% to 30% of refugees experience clinical depression, and a significant 50% to 57% grapple with post-traumatic stress disorder (PTSD). Investigations conducted with Syrian refugees in Lebanese camps

unveiled a PTSD prevalence of 35.4% and a depression rate of 43.9% (Kazour et al., 2017). Similarly, among Syrian refugees in Turkey, PTSD is documented to be as high as 33.5% (Alpak et al., 2015). In alignment with these findings, a study by Mahmood et al. (2019) showcased that over half of the residents in an Iraqi refugee camp were contending with both PTSD and depression. This underscores the critical importance of addressing these mental health concerns, particularly among female refugees, as they pose significant challenges to their well-being.

Adverse social conditions, such as poverty, unemployment, housing problems, social stratification, and lack of social support, can lead to health disparities and hinder individuals from leading fulfilling lives (Marmot, 2007). Given the social realities refugees face, it becomes imperative to consider the various stages of their resettlement: before, during, and after migration. According to Hynie's article (2018), social determinants can be classified into material factors, which encompass elements like a secure environment, housing, healthcare, education, economy, and policies, and interpersonal factors, which include aspects like cultural, ethnic, or religious identity, social networks and support, experiences of trauma, discrimination, and social status. Understanding and addressing these social determinants is crucial for enhancing the well-being and integration of refugee populations. This perspective is also highlighted in work by DeMarinis et al. (2021).

The American Public Health Association (2014) has officially declared that the well-being of refugees and internally displaced persons (IDPs) is a significant public health concern. Their health-related challenges extend beyond infectious diseases or issues stemming from service disruptions. Their experiences in their home countries and their hazardous journeys expose them to many health risks, including physical ailments and mental health problems (Morabia & Benjamin, 2015; Giacaman,2017).

Populations impacted by conflict are exposed to a heightened risk of experiencing psychiatric disorders. Within existing literature, significant attention is placed on PTSD, as this condition is commonly linked with mental health challenges during periods of war and displacement. In a 2009 meta-analysis investigating the mental health of refugees and other conflict-affected populations, reported prevalence rates for PTSD and depression showed significant variability, spanning from 0% to 99% for PTSD and 3% to 85.5% for MDD (Steel et al., 2009). These fluctuations were attributed to various factors, including clinical and methodological aspects such as nonrandom sampling, small sample sizes, and differences in assessment tools. Moreover, social, ecological, and contextual elements played a role in these variations (Fazel et al., 2005; Bogic et al.,2015). Demographics, such as gender, age, and education, influence mental health, as do trauma-related factors like the degree of exposure to traumatic events and post-conflict circumstances. Additionally, daily stressors such as security concerns, economic opportunities, and the availability of permanent private housing and social support are pivotal in shaping mental well-being within these populations (Porter & Haslam, 2005; Brewin et al., 2000).

Refugees are among the most vulnerable groups to experience mental health problems compared to other migrant populations (Bhugra et al., 2011). Epidemiological studies that have examined the prevalence of mental health disorders in resettled refugee populations consistently show high rates of psychiatric conditions, such as PTSD (Marshall et al., 2005), depression and anxiety (Gerritsen et al., 2006). In a systematic review conducted by Fazel et

al. (2005), large-scale surveys of psychiatric disorders in refugee populations revealed lower prevalence rates of severe mental disorders compared to smaller studies that utilized less stringent definitions. Nevertheless, the combined reported prevalence rate of PTSD was approximately ten times higher, 9%, in refugee populations than in age-matched general populations. Furthermore, a comprehensive meta-analysis, which included fifty-six studies and 67,294 participants, demonstrated that refugees scored 0.41 standard deviations worse on mental health measures when compared to control groups across all studies. This finding highlights the significant impact of forced migration and resettlement on refugees' mental well-being (Porter & Haslam, 2005).

Given the dispersed nature of millions of Syrian refugees across various locations worldwide, the manifestations of mental health issues are expected to vary significantly. A report by the International Medical Corps (2017), which examined the mental health profiles of Syrians residing in Syria, Turkey, Lebanon, and Jordan, revealed different rates of severe emotional disorders: 61% in Syria, 23% in Turkey, 59% in Lebanon, and 74% in Jordan (Hijazi & Weissbecker, 2017). These variations indicate that multiple factors influence Syrian's mental health and necessitate a comprehensive approach to studying and addressing these issues.

Findings from community studies conducted among recently resettled refugees indicate that they exhibit higher rates of mental disorders, notably depression, PTSD, and various anxiety disorders. These rates surpass those typically observed within non-war-affected general populations (Fazel et al., 2005). Several longitudinal studies focusing on recently resettled refugees have suggested that post-traumatic stress reactions might persist and even intensify over time, particularly in the immediate aftermath of war trauma and the process of resettlement (Mollica et al., 2001; Roth et al.,2006).

This increased susceptibility to mental health challenges is linked to factors before and after migration. Premigration experiences, particularly exposure to traumatic events during conflict (Johnson & Thompson, 2008), contribute to this vulnerability. Additionally, refugees' post-migration conditions and stressors in their host countries, such as family separation, difficulties with asylum processes, detention, unemployment, subpar housing, and acculturation-related issues, further exacerbate these challenges (Robjant, Hassan & Katona, 2009).

Post-Trauma Stress Disorder regarding the location

The experience of migration is a traumatic event that causes significant changes in people's lives, such as loss, separation, and conflict (Berger & Weiss, 2003). Migrants face different stressors at every stage of the migration process (Özen, 1996). Migrants may experience adverse life events such as the death of friends and family during migration and thus experience trauma, being extorted by smugglers, and being exposed to violence and exploitation. (Sutherland & Bryant, 2008). Additionally, discrimination harms the mental health and well-being of the persons affected. The climate of fear and mistrust toward migrants in polarised Western host societies can exacerbate adaptation challenges and lead to adverse mental health outcomes (e.g., da Silva Rebelo et al., 2018). Experiences of exclusion and discrimination have been shown to create difficulties in immigrant youths' school adjustment (Özdemir & Stattin, (2014) and young people's adaptation during resettlement (Buchanan et al., 2018). Additionally, these experiences are linked to various internalizing mental health issues (e.g., Beiser et al., 2016), such as anxiety, depression, low (academic) self-

esteem (Hassan et al., 2013), and young people's sense of social competence in peer relations (Oxman-Martinez et al., 2012).

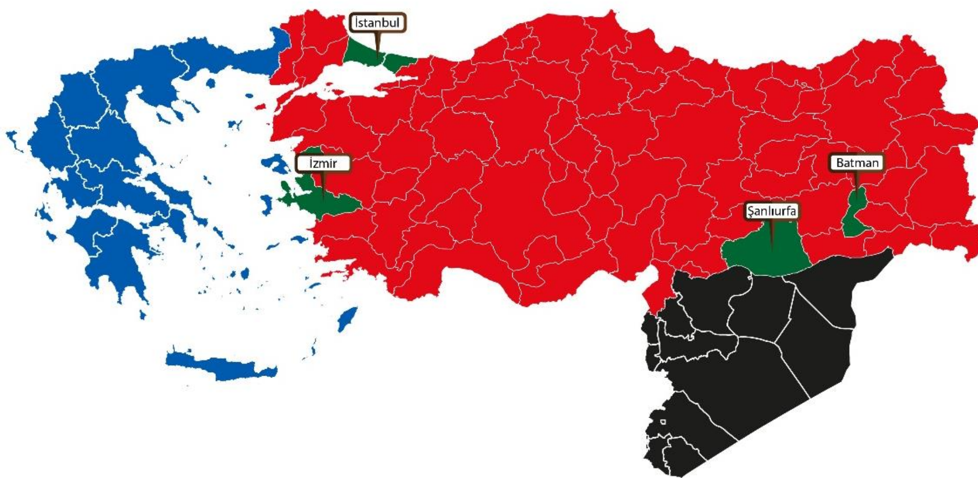
Differences in mental health outcomes between rural and urban settings areas are notable. The likelihood of experiencing significant mental illnesses like anxiety, psychotic, mood, or addictive disorders is typically elevated in urban settings (Ullmann et al., 2011). Research examining anxiety disorders, encompassing conditions such as post-traumatic stress disorder, distress, anger, and paranoia, has identified higher prevalence rates in urban locales compared to rural regions across numerous Latin American and Asian nations (Arcaya et al., 2014). Similar findings were observed for psychotic disorders, including schizophrenia, in China (Heinz, 2002) and densely populated urban regions in Germany. A study conducted on 2075 refugees living in Germany between 2013 and 2016 (Grabo & Leavey, 2023) found that perceived discrimination is a risk factor, especially for the mental health of female refugees in eastern Germany. The East-West geographical distinction can be attributed to variations in sociostructural factors, rural landscapes, diverse regional encounters with migrant populations, and a higher prevalence of right-wing, populist parties in eastern Germany. According to a study conducted among 540 internally displaced people in Syria and refugees in Turkey in 2017, refugees in Turkey exhibited a higher frequency of major depressive disorder compared to internally displaced persons in Syria. Conversely, other mental disorders, such as post-traumatic stress disorder, were more prevalent among the refugees living in Syria than among the Turkeys. Additionally, post-traumatic stress disorder showed associations with postmigration factors. Notably, major depressive disorder was found to be more likely among refugees in Turkey.

Based on all these regional and urban differences, I ask whether there is an inequality or difference in the probability of PTSD among Syrian refugees living in different cities in Turkey. Istanbul is a relatively considerable distance from the land border of Syria, but it is a major port city. Additionally, Istanbul is perceived as a transit hub for migrants' routes to Europe. Sanliurfa is among the provinces significantly impacted by the ongoing civil war in Syria. As seen in Figure 2, Şanlıurfa is one of the provinces hosting Syrian refugees. Despite the favourable economic outcomes stemming from Syrian-initiated businesses in commercial hubs within Şanlıurfa, as observed in several other regions, the local community's response to Syrians has been marked by both individual and collective reactions. Syrians are often perceived as a source of low-cost labour. This perception has arisen due to the escalating unemployment rate within the province (Karademir & Doğan, 2019). While the formation of social and spatial clusters by Syrian refugees has brought about positive impacts in preserving their distinct identity and culture, it has also given rise to challenges regarding their sense of belonging and overall social cohesion. Notably, there has been a noticeable weakening of neighbourly relations and a surge in exclusion, particularly since 2017. Furthermore, providing Syrian refugees with free healthcare and education services has triggered various reactions among the local population. Additionally, local studies reveal problems between asylum seekers and local people due to different languages, cultures, and lifestyles. A conservative culture dominates border provinces in Turkey. Local people react to developments that shake this conservative life (İnce, 2019). In this context, one of the most significant developments is the marriage between elderly or young, single or married Turkish men and young Syrian women. This situation is most prevalent in Kilis, Şanlıurfa, and Hatay, and it has led to conflicts, particularly between women and the local population (Oytun & Gündoğar, 2015)

Furthermore, another concern in the border provinces is the occurrence of demographic changes and the resulting sense of insecurity. Compared to metropolitan areas like Istanbul and Izmir, with greater cultural and ethnic diversity, the border provinces have a more homogeneous culture. This effect is not present in every province but is particularly pronounced in Şanlıurfa. In Şanlıurfa, the reaction to using low-income Syrian refugees as cheap labour, which takes away local job opportunities, is also present. This situation has created tensions among the local population in Şanlıurfa (Herwig, 2017).

Figure 3

Four Turkish cities where the survey was conducted.



Research Design

Hypotheses, Data Set and Method

In this research, the determinants of self-reported PTSD among Syrian refugees are examined regarding living in the city. Therefore, this study was designed with a view of assessing PTSD and its associated individual-level factors among Syrian refugees living in Turkey between 2011-2017 years. Hence, to investigate these factors, three hypotheses were constructed based on the theoretical backgrounds as follows:

H1: There are city-based differences in self-report PTSD of Syrian refugees who arrived in Turkey between 2011 and 2017. I analysed to assess the relationship between migration circumstances and self-reported PTSD within a sample of Syrian refugees in Turkey obtained from the RESPOND Data. Our hypothesis (H1) posited that challenging conditions prompting migration, coupled with adverse experiences upon arrival and during settlement, would be associated with higher levels of PTSD.

H2: The probability of having higher self-reported PTSD increases among Syrian refugees living in a conservative/local city (Şanlıurfa).

H3: Adding the post-migration stressors, self-expressed poor health, and experiencing war-related situations and perceived discrimination, the probability of having higher self-reported PTSD increases among Syrian refugees in Turkey.

I analyse the data from the study of The Horizon 2020 RESPOND, "Syrians in Turkey Experiences of Migration and Integration through a Survey Study" by Jancewicz. In 2019, the RESPOND project initiated a survey to understand the situation of Syrians who fled the conflict-ridden country and arrived in Turkey between 2011 and 2017. Since this data includes migrants' journey, route and reception, international protection, education, employment, citizenship, psychosocial health and discrimination and demographics questions of refugees in Turkey, it can provide a reliable and large-scale comparison of samples. This research involved collecting responses from a total of 777 individuals residing in four different cities: Istanbul (234 interviews), Şanliurfa (195 interviews), Izmir (197 interviews), and Batman (151 interviews). Turkey's registered Syrians with Temporary Protection status was nearly 3.4 million (Ministry of Interior, 2023)[iii], which has increased slightly. The survey findings revealed that Syrian refugees in Turkey face many challenges frequently experienced by other migrants. These difficulties include securing employment, acquiring proficiency in the local language, and achieving a sense of acceptance within their new communities. However, due to their status as displaced people, they possess fewer resources and opportunities to address these challenges independently.

I consider self-reported post-traumatic stress disorder as a dependent variable. For the analyses of self-reported post-traumatic stress disorder, I rely on the four PTSD questions: "Have you had nightmares about it or thought about it when you did not want to? (d3_1), have you tried hard not to think about it or go out of your way to avoid situations that reminded you of it? (d3_2) were they constantly on guard, watchful, or easily startled? (d3_3) Did you feel numb or detached from others, activities, or surroundings? (d3_4)" Respondents could answer 0= No 1= Yes. Independent variables include cities', perceived discrimination, social support, psychosocial health, acculturation measures, and protection/ feeling unsafe. Control variables are the age of the refugees, marital status, refugees' education, and type of current place of residence. I could not add the most critical variables about refugees' economic status: "Are you currently working?" (c8) because of having higher missing values (*missing n* = 409.).

The study used the multiple logistic regression model to assess the relationship between the dependent variables, self-reported PTSD, and the independent variables. The analysis calculated estimated odds ratios (OR) along with corresponding 95% confidence intervals (CI) to indicate the impact of each category in predicting self-reported PTSD relative to the reference category for each variable. In the models, I use multiple logistic regression models to examine the association of *living in cities with having higher PTSD*.

Using convenience sampling is a limitation of this research. Researchers often choose participants based on their easy accessibility or availability. While this approach might be practical, it can introduce selection biases and limit the sample's representativeness. Therefore, it is essential to exercise caution when generalizing the study's findings to the larger Syrian population in Turkey, particularly those living in different circumstances like the temporary accommodation centres, as the results may only partially capture their experiences. However, it is worth noting that there are justifications for employing convenience sampling, particularly in exploratory research endeavours that aim to generate novel theoretical concepts and hypotheses (Bryman, 2015).

Indeed, illiteracy can present a significant barrier to survey participation for some Syrian nationals, especially older individuals and women. The inability to read and comprehend the questionnaire independently may have discouraged them from taking part in the survey despite the assistance provided by interviewers. Illiterate respondents may feel uncomfortable or hesitant to participate due to concerns about potential misunderstandings or feeling burdensome during the data collection process.

Analysis

Describing the data set

The sample demographics (Table 1) show that the İstanbul sample's characteristics reveal that the largest group of participants consists mainly of women. Most participants are married, which might explain the relatively higher average number of children (mean 2.32). The percentage of participants with a higher education degree is low (17.09%). More than half of the migrants residing in the densely populated city of Istanbul have a Turkish language proficiency level below basic. They feel the slightest sense of being a part of Turkish Society. A significant portion of the group reports poor psychological health, and in parallel, approximately 54% of them have experienced events related to war before. At workplaces and healthcare centres, over a quarter of participants have experienced racism at least once.

Among Syrian refugees living in Şanlıurfa, the percentage of males is the highest among other provinces (approximately 63%). Regarding education levels, Şanlıurfa has the highest rate of individuals with an associate degree compared to other regions. About 17% of refugees live in areas with populations of less than 20,000. A little over half of the refugees living in the city-state have poor psychological health. Even though the rate of witnessing war-related incidents is relatively low, at least 30% of participants in the host country, Turkey, have experienced racism at workplaces and healthcare centres.

According to the characteristics of participants living in İzmir, they have the youngest average age, a higher percentage of unmarried individuals compared to other cities, around 74% of them hold a high school diploma, a lower number of children, and most live in a metropolitan city. Unlike refugees in other cities, more than 60% of participants in İzmir report speaking Turkish well. This could be attributed to the relatively young population. It might be due to the characteristics specific to İzmir. However, the refugees experiencing the highest percentage of racism at workplaces and healthcare centres are found in this sample, possibly aligned with the young population or other characteristics of İzmir.

The characteristics of the participants in Batman, where the average age is 36.58, are as follows: More than 70% of the participants are married. Looking at the education levels, 46.36% of the participants are primary school graduates, higher than in other cities. Almost all participants live in towns with populations between 20,001 and 100,000. The percentage of participants who speak Turkish well or fluently is higher than in Istanbul but lower than in Izmir. More than half of the Syrian refugees in Batman reported that their psychological health is not good. The rate of experiencing insults and assaults is relatively low compared to other cities. After Izmir, the highest percentage of participants who reported experiencing racism at work at least once or more is Batman (32.45%). These characteristics reflect the living conditions, demographic structure, and experiences of Syrian refugees living in Batman.

Table 2 presents post-trauma stress experiences among the refugees. Significant differences existed between those living in Istanbul and Şanlıurfa and those living in Izmir and Batman. The proportion of refugees who have nightmares or think about them even though they do not want to be is over 20% in Istanbul and Şanlıurfa, 10% in Izmir and 5% in Batman. Migrants who try hard not to think about the horrible experiences they have been through are most likely to live in Istanbul (30%, n=69) and Şanlıurfa (28%, *n*=54). Migrants residing in Şanlıurfa (30%, *n*=58) and Istanbul (28%, *n=64*) are more likely to feel constantly alert, awake or easily startled than refugees living in Izmir (9%) and Batman (5%). Refugees living in Istanbul (26%) and Şanlıurfa (29%) are the most likely to feel numb or detached from others, activities, or their environment. In comparison, almost only 6% of migrants residing in Izmir and Batman feel detached. Refugees living in Istanbul, the Turkish centre, and Şanlıurfa, a province that borders Syria, are more likely to experience post-traumatic stress problems than those living in Izmir and, most recently, Batman. Being male or female does not increase post-traumatic distress, according to the cross-tabulations during the research.

Table 1

Sociodemographic Characteristics, Migration Circumstances, and Self-reported PTSD for Syrian Refugees in Turkeys Four Cities: Horizon 2020 project 'RESPOND study, 2019.

	Istanbul, Mean ±SD or No. (%)	**Sanliurfa, Mean ±SD or No. (%)**	**Izmir, Mean ±SD or No. (%)**	**Batman, Mean ±SD or No. (%)**
Sociodemographic characteristics				
Age, (n=777) (s2	33.32	31.74 ±11.45	27.53 ±8.65	36.58 ±15.37
Min-Max	±11.21	(18-73)	(18-67)	(18-75)
	(18-68)			
Gender (s1)				
Male	102 (43.59)	122 (62.56)	121 (61.42)	76 (50.33)
Female	132 (56.41)	73 (38.44)	76 (38.58)	75 (49.67)
Marital status (p1)				
Married/Engaged	173 (73.93)	115 (58.97)	118 (59.90)	110 (72.85)
Widowed/Divorced	13 (5.56)	8 (4.10)	5 (2.54)	9 (5.96)
Single	48 (20.51)	72(36.92)	74 (37.56)	32 (21.19)
Educational level				
(p6)	100 (42.74)	23 (11.79)	14 (7.11)	70 (46.36)
Primary school	94 (40.17)	66 (33.85)	145 (73.60)	57 (37.75)
Prepar/High	40 (17.09)	106 (54.36)	38 (19.29)	24 (15.89)
Associate /Tertiary				
Having children				
(p2)	68 (29.06)	96 (49.23)	94 (47.72)	48 (31.79)
No	166 (70.94)	99 (50.77)	103 (52.28)	103 (68.21)
Yes				
Number of children (p2a)	2.32 ±2.33	1.44 ±1.96	1.39 ±1.68	2.02 ±2.02
Place of Residence				
(p8)	33 (14.10)	16 (8.21)	9 (4.57)	1 (0.66)
Rural Area	0	17 (8.72)	2 (1.01)	147 (97.53)
Medium Town	1 (0.43)	93 (47.69)	16 (8.12)	3 (1.99)
Big Town	200 (85.47)	69 (35.38)	171 (86.29)	0
Large City				

		Acculturation Variables		
Turkish language ability				
(c1_Turkish)	92 (39.32)	57 (29.23)	13 (6.60)	64 (42.38)
No Turkish	99 (42.31)	80 (41.03)	23 (11.68)	39 (25.83)
Basic proficiency	33 (14.10)	45 (23.08)	119 (60.41)	37 (24.50)
Good	10 (4.27)	13 (6.67)	42 (21.32)	11 (7.28)
Excellent /Near Native				
Feeling part of the Turkish society (c20)				
Somewhat feel part	113 (48.29)	102 (52.31)	141 (71.57)	94 (62.25)
Less feeling	121 (57.71)	93 (47.69)	56 (28.43)	57 (37.75)
		Discrimination / Past Migration		
Self-report psychological health				
(d1)	82 (35.04)	91 (46.67)	121 (61.42)	65 (43.05)
Good	152	104 (53.33)	76 (38.58)	86 (56.95)
Poor	(64.96)			
Having experienced a war-related				
situation (d2)	108 (46.15)	159 (81.54)	177 (89.95)	97 (64.24)
No	126 (53.85)	36 (18.46)	20 (10.15)	54 (35.76)
Yes				
Have you ever been...(b3…)				
Insulted (Yes%) (b3_2)	19 (8.12)	21 (10.77)	34 (17.26)	2 (1.32)
Extorted (Yes%) (b3_6)	31 (13.25)	31 (15.90)	40 (20.30)	2 (1.32)
Have you ever experienced discrimination…*at least once / more…*				
At work (Yes%) **(d5_3)**	71 (30.34)	62 (31.79)	106 (53.81)	49 (32.45)
During getting medical care (Yes%) **(d5_5)**	63 (26.92)	63 (32.31)	90 (45.69)	10 (6.62)
N	234	195	197	151

Table 2

Frequency and percentage of Self-reported Post Traumatic Stress Disorder by cities

Self-reported Post Traumatic Stress Disorder	**Istanbul (%)**	**Sanliurfa (%)**	**Izmir (%)**	**Batman (%)**
Have you had nightmares about it or thought about it when you did not want to? **(d3_1)**				
No	178 (76.07)	152 (77.94)	179 (90.86)	144 (95.36)
Yes	56 (23.93)	43 (22.06)	18 (9.14)	7 (4.64)
Have you tried hard not to think about it or go out of your way to avoid situations that reminded you of it? **(d3_2)**				
No	165 (70.51)	141 (72.30)	175 (88.83)	143 (94.70)
Yes	69 (29.49)	54 (27.70)	22 (11.17)	8 (5.30)
Were they constantly on guard, watchful, or easily startled? **(d3_3)**				
No	170 (72.65)	137 (70.25)	180 (91.37)	144 (95.36)
Yes	64 (27.35)	58 (29.75)	17 (8.63)	7 (4.64)
Have you felt numb or detached from others, activities, or your surroundings? **(d3_4)**	175 (74.79)	140 (71.79)	187 (94.92)	143 (94.70)
No	59 (25.21)	55 (28.21)	10 (5.08)	8 (5.30)
Yes				
N	**234**	**195**	**197**	**151**

Logistic regression of self-rated PTSD among refugees

Table 3 shows a different pattern of predictors. In bivariate analyses (model 1), cities İstanbul İzmir and Şanlıurfa were associated with significantly greater odds of having PTSD for both Syrian refugees compared to Batman. The odds of Syrian refugees having PTSD increase by a factor of 17.79 for those living in İstanbul, by 6.21 for those living in İzmir and 19.97 for those living in Şanlıurfa compared to those residing Batman refugees (ref.) ($p<.001$). In model 1, the odds ratio for the predictor variable medium big and large town is less than 1. This means that increasing from rural areas to medium towns, big towns and large cities is associated with decreased odds of having PTSD.

In model 2, with variables regarding health, cities are also significant. The odds of having PTSD are predicted to be about 2.85 times larger among self-expressed poor health refugees (controlling socio-economic variables) than among self-expressed higher health. Regarding having experienced war-related situations, the odds of Syrian refugees having PTSD increase by 2.20 for those having war-related experiences compared to those who have not experienced severe accidents, natural catastrophes, rape, war, or torture. Family help predictor is about family helping with coping with any problematic situations. The odds ratios between 0 and 1 correspond to "negative effects" because it decreases the odds of having PTSD. So, the odds ratio for the predictor variable family help situation is less than one and statistically significant ($p<.001$). This means that increasing from 0 to 10 for family help with a decrease in the odds of having PTSD. In Model 3 with acculturation variables, feeling unsafe in the neighbourhood has a significant estimate for having PTSD. Given this, it means that compared to feeling safe to dangerous in a neighbourhood, a unit increase in that variable is associated with an increase in the odds of having PTSD by 1.63 ($p < 0.05$). In model 4 with discrimination predictors, cities have a significant estimate besides İzmir, which is not substantial anymore. In this

model, being extorted is a one-unit change in extorted (from not being extorted to being extorted) would make the having PTSD. As a result, compared to feeling safe to unsafe in the neighbourhood, a unit increase in that variable is associated with an increase in the odds of having PTSD by 1.63 ($p < 0.05$). In model 4 with discrimination predictors, cities have a significant estimate besides İzmir, which is not substantial anymore. In this model, being extorted is a one-unit change in extorted (from not being extorted to being extorted) would make the having PTSD. Considering these results, having self-report post-traumatic stress is more common among Syrian refugees who live in large and conservative/border cities, have poorer self-expressed health, experience war-related situations, feel unsafe in their neighbourhood, being extorted in the society and receive less support from their families when faced with problems.

Table 2

Logistic Regression Analyses of Having PTSD Among Syrian Refugees in Turkey with Four Cities: Horizon 2020 project 'RESPOND study, 2019

	(Model 1) OR (95% CI)	**(Model 2) OR (95% CI)**	**(Model 3) OR (95% CI)**	**(Model 4) OR (95% CI)**
	SES Variables	**Health/Support**	**Acculturation**	**Discrimination**
PTSD				
Batman(ref.)	1	1	1	1
	[1,1]	[1,1]	[1,1]	[1,1]
İstanbul	17.79***	8.964***	7.834**	5.478*
	[5.369,58.92]	[2.580,31.14]	[2.179,28.16]	[1.443,20.80]
İzmir	6.215**	5.228*	5.340*	3.036
	[1.829,21.12]	[1.467,18.63]	[1.441,19.79]	[0.763,12.08]
Şanlıurfa	19.97***	15.57***	13.65***	10.34***
	[6.529,61.09]	[4.835,50.14]	[4.068,45.81]	[2.907,36.78]
Age	1.006	1.002	1.005	1.006
	[0.989,1.024]	[0.984,1.021]	[0.986,1.025]	[0.986,1.026]
Married (ref.)	1	1	1	1
	[1,1]	[1,1]	[1,1]	[1,1]
Single	0.808	0.847	0.930	0.937
	[0.517,1.263]	[0.530,1.352]	[0.568,1.522]	[0.567,1.549]
Divorced/Widowed	2.192	1.957	1.973	2.043
	[0.997,4.819]	[0.858,4.464]	[0.866,4.495]	[0.892,4.678]
University(ref.)	1	1	1	1
	[1,1]	[1,1]	[1,1]	[1,1]
Primary school	1.088	0.896	0.796	0.808
	[0.653,1.810]	[0.523,1.534]	[0.439,1.446]	[0.443,1.473]
High school	0.922	0.911	0.861	0.864
	[0.598,1.419]	[0.576,1.439]	[0.535,1.386]	[0.532,1.403]

Rural Area (ref.)	1	1	1	1
	[1,1]	[1,1]	[1,1]	[1,1]
Medium Town	0.264*	0.162**	0.157**	0.136**
	[0.0862,0.810]	[0.0495,0.533]	[0.0463,0.532]	[0.0373,0.495]
Big Town	0.323**	0.255**	0.246**	0.229**
	[0.148,0.706]	[0.111,0.586]	[0.105,0.573]	[0.0952,0.551]
Large City	0.138***	0.130***	0.130***	0.142***
	[0.0711,0.267]	[0.0648,0.261]	[0.0633,0.267]	[0.0676,0.299]
Self-expressed poor health		2.859***	2.673***	2.611***
		[1.933,4.228]	[1.795,3.981]	[1.741,3.916]
Exp. war-related situation		2.206***	2.218***	2.190***
		[1.442,3.375]	[1.444,3.406]	[1.410,3.401]
Family help situation		0.901***	0.909***	0.906***
		[0.854,0.950]	[0.861,0.959]	[0.858,0.957]
Excellent (ref.)			1	1
			[1,1]	[1,1]
No Turkish			0.933	1.079
			[0.391,2.227]	[0.442,2.637]
Basic			1.242	1.360
			[0.565,2.730]	[0.608,3.042]
Good			0.843	0.808
			[0.397,1.789]	[0.372,1.754]
Less Feeling Part of Turkish Society			1.637* [1.109,2.417]	1.385 [0.926,2.070]
Feeling unsafe in the neighbour			1.532 [0.875,2.684]	1.379 [0.768,2.476]
Insulted				1.987*
				[1.048,3.769]
Extorted				1.863*
				[1.073,3.234]
Disc_work				1.275
				[0.832,1.954]

Disc_hous				0.898
				[0.593,1.360]
Disc_med				1.383
				[0.894,2.139]
N	777	777	777	777
R2	0.1840	0.2461	0.2598	0.2788

Note: Exponentiated coefficients; [95% conf. interval] statistics in parentheses
[*] $p < 0.05$, [**] $p < 0.01$, [***] $p < 0.001$

Conclusion

As highlighted by Sweileh et al. 2018, there is a trend towards a growing recognition of the importance of health in the context of migration and diversity. However, despite this growing awareness, it is worth noting that health studies continue to represent one of the most minor clusters within migration research. In particular, the academic literature does not sufficiently include quantitative research on the mental health of Syrian refugees in Turkey regarding the city analysis.

Based on the research hypotheses, we have confirmed that the location significantly predicts whether Syrian refugees have self-reported post-traumatic stress disorder (PTSD). In this context, particularly in Şanlıurfa, a city with distinct characteristics with conservative local people and being a border neighbour with Syria, as evident in Figure 3, it can be stated that PTSD is more prevalent compared to other cities. Istanbul, a major city, and then Izmir follow these patterns. Additionally, added variables such as self-reported health status and acculturation determinants also show positive effects related to having PTSD. Based on the descriptive and regression results, it becomes evident that self-assessed post-traumatic stress is more prevalent among refugees residing in large cities and border cities. Furthermore, this trend is associated with reporting poorer psychological health, having experienced war-related situations, and expressing insecurity within their neighbourhoods.

A lower understanding of the Turkish language is a significant risk factor for PTSD for many articles. A lack of proficiency in the local language can result in social isolation and greater dependence on others for communication and assistance (Schweitzer, Brough, Vromans, & AsicKobe, 2011). Acculturation and integration variable language levels have no significant estimates for PTSD.

The limitation of this article is that respondents' scales are single-item self-reported scales, like the subjective health rating and self-assessment of PTSD. These are sometimes disregarded due to concerns about their reliability and susceptibility to influences from the surrounding context (Stanojevic, 2017).

In recent years, the economic downturn in the country has been attributed to Syrian refugees, especially in cities with a high number of Syrians. Therefore, I consider conducting this research particularly valuable. In Şanlıurfa, the rapid increase in the number of Syrian-owned workplaces, casual labour in construction, the decline in wages, and the utilization of Syrians as cheap labour have contributed to the perception of Syrians as a reason for the economic challenges. Numerous studies have indicated that the risk of mental disorders decreases with time since displacement. However, existing reviews have mainly centred on refugees in Western countries, particularly focusing on recently resettled refugees' duration of displacement (Porter & Haslam, 2005) (Silove et al., 2007), where higher rates are expected

(Fazel et al., 2005). Consequently, there is a need for a systematic review that delves into the long-term mental health outcomes of war refugees on a global scale. Comprehending the post-traumatic stress experiences of Syrian refugees through this analysis is imperative to shape the health policies of host countries, particularly Turkey, that aim to provide sustainable support for long-term PTSD.

Significantly, the dynamic social and political climate of a country of refugees can impact refugee post-trauma stress/mental health problems. This new reality is hard for Turkish society to ignore, as most refugees are concentrated in big cities, where they live side-by-side with Turkish citizens (Erdoğan, 2021). In the end, this study offers a valuable contribution, particularly in cases where quantitative research is scarce concerning the mental health of Syrian refugees in Turkey within academic literature.

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[i] "Refugees are individuals or groups who have been compelled to abruptly and unexpectedly leave their residences due to factors such as military conflicts, internal strife, systemic human rights abuses, or natural and man-made disasters within their home country." Mooney, E. (2005). THE CONCEPT OF INTERNAL DISPLACEMENT AND THE CASE FOR INTERNALLY DISPLACED PERSONS IS A CATEGORY OF CONCERN. Refugee Survey Quarterly, 24(3), 9–26. http://www.jstor.org/stable/45053998, page 10.

[ii] In this research, abbreviated as a PTSD

[iii] Source: Ministry of Interior, Presidency of Migration Management, External Link: https://www.goc.gov.tr/gecici-koruma5638 (accessed 16 August 2023)