

**The Relationship between Sleep Quality and PTSD in Syrian Refugees in Michigan**

**by**

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## **Dedication**

First and foremost, I dedicate this project to God, my Creator, the Most Merciful and the Most Compassionate. He is the All-Knowing and the All-Aware One, and without Whom I could not have completed this project.

I dedicate this work to my husband, Abdulghani, who has been supportive, encouraging, and understanding throughout the duration of my entire Masters' program, and for that I am grateful. To my children Muna, Senna, and Muhammed who have been supportive and patient with my aspirations to finish my degree and this project. To my father in-law and mother in-law, who helped with the kids many times while I was working on my degree. And to my many friends, my extended village of mothers, who were there when I needed them during this process.

I dedicate this project to the Syrian people. The resilience and strength they have shown despite immense adversary in the past nine years of conflict is truly aspirational. It is my hope that this small endeavor may bring about some relief to their situation.

And finally, and above all, I dedicate this work to my parents. My mother Suad, who has been my mentor, supporter, and advisor not only through this project, but throughout my entire life, and who without her, I would not be who I am today, and for that I am eternally grateful. And to my late father, Dr. Muhammed Adnan Sankari, who always exemplified the importance of knowledge within our family and community, but also instilled in us to always remain humble. May God bless his soul.

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## **Abstract**

Currently, there are over 70 million displaced people worldwide, the greatest number ever recorded in human history, according to the United Nations High Commissioner for Refugees (unrefugees.org, 2019). Violence, destruction, separation from family, torture, rape, and other traumatic experiences greatly impact refugees' overall health and ability to acculturate in their new host countries (Hargreaves, 2002; Hollifield et al., 2002). Post-immigration stressors such as worry about economic stability, social isolation, access to education and perceived hostility and racism can also be significant stressors for refugees (Burnett & Peel, 2001; Porter & Haslam, 2005). Although previous research suggests that refugees experience greater levels of PTSD compared to that of the general population, little is known about the relationship between poor sleep with past and ongoing trauma on the maintenance of PTSD symptoms in refugees. Understanding sleep problems within this population is critical as it is associated with worse mental and physical health outcomes. Therefore, the purpose of this study was to examine the relationship that PTSD-related sleep symptoms, previous traumatic experiences, and current life difficulties have with overall sleep quality and with the presence of PTSD symptomology. Syrian refugees living in the metro-Detroit, Michigan area were assessed for presence of PTSD-related disturbed sleep, past trauma, current living difficulties, overall quality of sleep, and presence of PTSD symptoms approximately one-year post immigration. PTSD symptomology was found to be positively associated with PTSD-disturbed sleep, overall poor sleep quality, and current living difficulties. When entered into a multiple regression equation, current living difficulties and PTSD-related sleep disturbances were found to be significant predictors of PTSD symptom severity. This study has implications for future research to further understand the impact disturbed sleep and current life stressors may have on PTSD

symptomology in refugees. Clinical implications include emphasis on providing mental healthcare to refugees in treating and managing PTSD symptoms and disturbed sleep. Also, assisting refugees in attaining basic services in their host country will allow for an easier transition and help minimize the impact current life stressors may have on their overall health and well-being.

## **Chapter I Introduction**

### **Refugees: A Population at Risk**

There are currently over 70 million forcibly displaced people worldwide, the greatest levels of human displacement ever recorded, and of those, 25.9 million are refugees (unrefugees.org, 2019). According to the UNHCR a refugee is “someone who has been forced to flee his or her country because of persecution, war or violence....[and] has a well-founded fear of persecution for reasons of race, religion, nationality, political opinion, or membership in a particular social group. Most likely, they cannot return home or are afraid to do so” (2019). There are currently 44,500 people being displaced daily, which equates to one person becoming displaced every two seconds worldwide and over half of the world’s refugees are under the age of 18 (unrefugees.org, 2019).

While refugees are a highly diverse population in terms of country of origin, language, and cultural background, they all share the same traumatizing experience of being forced to leave their homes due to war or fear of persecution. Many refugees also experience additional trauma leading up to their displacement including torture, rape, witnessing death of family and friends, and other war related trauma (Hargreaves, 2002; Hollifield et al., 2002). Their trauma can persist during and post migration due to stress relating to resettlement procedures (Miller, Kulkarni, & Kushner, 2006) as well as perceived discrimination in their new host countries (Ellis et al., 2010). Stressors can also include worry about safety of relatives in their country of origin, uncertainty about financial and residence status in their host country, language barriers, and cultural differences (Buhmann, 2014; Silove & Ekblad, 2002).

## **The Syrian Refugee Crisis**

The Syrian crisis that began in 2011 has brought about the massive displacement of Syrians both inside and outside of the country with humanitarian consequences unparalleled in modern times. According to Filippo Grandi, UNHCR High Commissioner, “Syria is the biggest humanitarian and refugee crisis of our time, a continuing cause of suffering for millions which should be garnering a groundswell of support around the world” (UNHCR, 2016). According to the UNHCR, over 5.6 million people have escaped Syria since 2011, with the vast majority seeking refuge in neighboring countries, some reaching Europe and North America, and 6.6 million remaining internally displaced (2019).

Since the beginning of the crisis, Syrian refugees have experienced major stressors in their host countries stemming from lack of a sense of security due to difficulty with attaining legal status and protection, difficulty with accessing basic services such as healthcare, education and employment, and perceived discrimination and stigma from the host country population (Syria Crisis, International Medical Corps, 2014). Also, language and cultural barriers in the host country may significantly contribute to increased psychological stress, somatization, and violence (Sahlool, Sankri-Tarbichi, & Kherallah, 2012). With the Syrian crisis entering into its ninth year, trauma and stress will continue to negatively impact Syrian refugees’ overall well-being and future acculturation.

### **Refugees Experience Increased Risk for PTSD**

Prior to resettlement, the vast majority of refugees have witnessed or been subjected to physical, psychological, and/or gender or sexual based violence which predisposes them to significant mental health problems (Giacco, Laxhman, & Priebe, 2018). In fact, it has been shown that refugees suffer from higher prevalence rates of mental disorders such as depression,

anxiety, somatoform disorders, severe mental disorders such as psychosis, substance use disorders, and stress-related disorders compared to that of the general population (Bogic, Njoku, & Priebe, 2015; Fazel, Wheeler, & Danesh, 2005; Slewa-Younan, Guajardo, Heriseanu, & Hasan, 2015). However, the most common and researched mental health outcome within refugees is Post-Traumatic Stress Disorder (PTSD) (Nosè et al., 2017) as the disorder is 10 times more likely to be present in refugee populations compared to their respective host populations (Bogic et al., 2015; Fazel et al., 2005; Slewa-Younan et al., 2015).

Refugees often experience trauma pre and post migration which can impact their level and timeliness of acculturation and thus prolong the trauma effects. Studies have indicated while not all war victims are diagnosed with PTSD, the majority will have symptomology such as high anxiety, nightmares and distressing memories (Creamer, 1995; Kleber, Brom, & Defares, 1992). In fact, a study on the mental health among Bosnian refugees in the Netherlands found that posttraumatic experiences along with acculturation difficulties were a strong predictor of mental distress, ten years post migration (Knipscheer & Kleber, 2006).

Studies have shown that up to 30% of refugees suffer from PTSD and it is considered to be a more chronic form of the disorder compared to that of the general population (Boynton, Bentley, Strachan, Barbato, & Raskind, 2009; Javanbakht et al., 2019). Specifically, a cross-sectional study of Syrian refugees in Michigan found that almost one-third (32.3%) of the sample had prevalence of PTSD not due to a previous diagnosed (Javanbakht et al., 2019). Furthermore, research has shown that stressful migration factors associated with adaptation to host culture including social, occupational and psychological factors can cause exacerbation of mental health issues associated with trauma exposure (Lindencrona, Ekblad, & Hauff, 2008; Porter & Haslam, 2005; Silove, Sinnerbrink, Field, Manicavasagar, & Steel, 1997).

## **Sleep Disturbances and Trauma Within Refugee Populations**

Sleep is an essential biological process necessary for physical and psychological well-being. Those who suffer from poor sleep are at risk for lower performance in social, educational, and occupational functioning (Pilcher & Huffcutt, 1996) and may have a lower quality of life. Furthermore, studies have shown that individuals exposed to stressful and traumatic events including escaping a war zone, various types of violence, losing family members or friends, and being displaced from one's home frequently suffer from sleep disturbances and these disturbances can be fleeting or persistent in nature (Cernovsky, 1990; Germain, Buysse, & Nofzinger, 2008; Gvilia et al., 2006; Lavie, 2001). Also, there is evidence that sleep disturbances occurring after trauma exposure may contribute to a specific mechanism in the pathophysiology of chronic PTSD and poor clinical outcomes (Germain et al., 2008). Both subjective and objective measures of sleep disturbances that occur post trauma exposure have been shown to be associated with an increased risk of meeting PTSD criteria up to one year later (Koren, Arnon, Lavie, & Klein, 2002; Mellman, Bustamante, Fins, Pigeon, & Nolan, 2002; Mellman, Knorr, Pigeon, Leiter, & Akay, 2004). Moreover, it has been shown that sleep disturbances can exacerbate daytime symptoms of PTSD, as well as contribute to poorer clinical outcomes in PTSD including increased depression severity and suicidality (Krakow et al., 2000), increased psychiatric distress and poorer overall functioning and quality of life (Krakow et al., 2002), and lower perception of physical health (Clum, Nishith, & Resick, 2001). Thus, these associations between sleep disturbances and poor clinical outcomes underscore the mediating role sleep disturbances may have between PTSD and poor health and functioning (Germain et al., 2008).

Refugees are at an increased risk for suffering sleep disturbances due to the profoundly stressful nature of their lives pre and post migration as well as likely previous trauma exposure. In fact, sleep disturbances are the most common symptoms refugees report experiencing, which likely impairs their function and may worsen or predicate other disorders (Bäärnhielm, Laban, Schouler-Ocak, Rousseau, & Kirmayer, 2017). In a study of Abkhaz refugees in Tbilisi, Georgia, 92% of those who suffered from insomnia attributed the commencement of their sleep disturbances to trauma and stress relating to their escape from a war zone and were still suffering from these sleep problems even though it had been 15 years post their displacement (Basishvili et al., 2012).

Furthermore, research has shown that those who suffer from sleep disturbances are more likely to have a pervasiveness of worry, intrusive thoughts, and have increased susceptibility to anxiety related behaviors and disorders (Freedman & Sattler, 1982; Harvey, 2002; Harvey, Tang, & Browning, 2005). Refugees will also be more likely to ruminate about stress and overemphasize consequences of stressors compared to the general population, therefore causing hyperarousal states which successively increases their overall risk for developing and maintaining insomnia and other sleep disturbances (Basishvili et al., 2012).

### **What are Sleep Disturbances?**

It is clear that refugees are at a high risk for PTSD and moreover, there is an increased risk for sleep disturbances. Sleep disturbances encompass a variety of pathological disruptions of normal sleep stemming from insomnia, leg movements, or sleep-disordered breathing (SDB). Insomnia is a common disorder that is manifested by the complaint of inability to sleep at night for at least 3 months that can lead to varying degrees of impairment during the day (American Psychiatric Association, 2013). In the literature, sleep deprivation, sleep loss, and sleep

disturbances have all been used to describe insomnia. Insomnia includes two subcomponents: sleep onset and sleep maintenance. Sleep onset insomnia refers to difficulty falling asleep and sleep maintenance insomnia is frequent awakenings during the night (American Academy of Sleep Medicine, 2014). Much research has been undertaken in the study of sleep disturbances in a variety of populations to understand prevalence rates. Based on the findings of population-based research, there is a general consensus among sleep researchers that up to 30% of adults in the general population suffer from one or more symptoms of insomnia (Ancoli-Israel & Roth, 1999)

Those who have experienced trauma are especially at risk for experiencing sleep disturbances, specifically insomnia (Lamarche & De Koninck, 2007; Maher, Rego, & Asnis, 2006). Insomnia is found to occur in a staggering 60-90% of those who suffer from PTSD (Ohayon, 2002). Moreover, patients with PTSD report suffering from a wide range of subjective sleep disturbances including overall poor sleep quality, night-time awakenings, and problems with initiating and maintaining sleep (Krakow, Germain, et al., 2001; Krakow, Hollifield, et al., 2001; Ohayon & Shapiro, 2000). These sleep disturbances, however, are non-specific to PTSD patients and are present in other psychiatric populations, including depressed patients as shown by similar scores on subjective sleep measures (Buysse, Reynolds III, Monk, Berman, & Kupfer, 1989; Doi et al., 2000; Reynolds III et al., 1992).

It has been shown, however, that certain disruptive nocturnal behaviors (DNB) are specific to PTSD which include nightmares related and unrelated to the experienced trauma, sleep terrors, disturbing nocturnal memories, nocturnal panic attacks, dream enactment, and other nocturnal physical behaviors (Fisher, Kahn, Edwards, & Davis, 1973; Freed, Craske, & Greher, 1999; Husain, Miller, & Carwile, 2001; Ohayon & Shapiro, 2000; Ross et al., 1994).

The PSQI Addendum (PSQI-A) is an instrument used to assess specific DNB severity in patients with PTSD by measuring the frequency of seven DNB which include: frequency of hot flashes, general nervousness, memories or nightmares of traumatic experience, severe anxiety or panic not related to traumatic memories, bad dreams not related to traumatic memories, episodes of terror or screaming during sleep, and episodes or acting out dreams (Germain, Hall, Krakow, Shear, & Buysse, 2005). In a validation study of the PSQI-A comparing women with PTSD to women who did not have the trauma disorder, it was found that the measure demonstrated high sensitivity for discriminating between the two clinical groups, thus indicating the PSQI-A is measuring a distinct construct of trauma related sleep disturbances (Germain et al., 2005). Thus, it is possible that DNB are contributing to the maintenance and severity of PTSD, with proposed mechanisms described below.

### **Sleep Disturbances in Refugee Samples**

Despite research showing high prevalence rates of sleep problems in the general population and increased rates for those who have trauma, there are, a limited number of research studies investigating the prevalence of sleep disturbances in refugee populations specifically. One study of Abkhaz refugees in Tbilisi, Georgia which investigated the prevalence of insomnia, reported the rate to be as high as 41.4% (Basishvili et al., 2012). A more recent cross-sectional study among Syrian refugees in Jordan found that the majority of the refugees (52.2%) suffered from moderate to severe insomnia (Al-Smadi et al., 2017). Thus, these studies suggest that prevalence rates of sleep disturbances will be elevated in refugee populations due to the elevated PTSD rates and trauma exposure refugees experience.

## **Etiology & Theory of Sleep Disturbances Concurrent with PTSD**

The development and maintenance of sleep disturbances, specifically insomnia, is believed to be a disorder that emanates from hyperarousal experiences throughout the course of the day which in turn leads to difficulty initiating and maintaining sleep at night (Stepanski, Zorick, Roehrs, Young, & Roth, 1988). A cognitive operational model of insomnia suggests that this hyperarousal is exacerbated by rumination and worry about life stressors that disrupts sleep and leads to difficulty initiating sleep and going back to sleep after an awakening (Harvey, 2002). Rumination and worry about life stressors then shifts to worries about sleep itself and the problems associated with daytime fatigue in relation to the individual's lack of good sleep (Roth, 2007), hence perpetuating a cycle of hyperarousal and sleep disturbances. Refugees are especially prone to ruminate about life stressors as they are constantly living in a state of uncertainty about their future and transition post-migration. Also, nightmares of experienced trauma will likely affect sleep quantity and quality, hence making refugees more vulnerable to developing and maintaining sleep disturbances.

As described earlier, insomnia and sleep disturbances are considered to be among the core features of PTSD. In fact, it has been postulated that various features of PTSD may be interacting with insomnia (DeViva & Capehart, 2015). It has been shown that nightmares associated with PTSD have a strong relationship with insomnia (Jason C DeViva, Zayfert, & Mellman, 2004) thus suggesting that a learned association between nightmares and sleep is created, causing a hyperarousal state prior to sleep and avoidance of sleep to avoid possible distress of nightmares (Krakow, Hollifield, et al., 2001; Neylan et al., 1998). Also, patients who suffer from PTSD have a heightened sense of anxiety and arousal which is antagonistic to achieving good sleep (Woodward, 1995). These factors suggest that the etiology of trauma

exposure and PTSD symptomology is closely intertwined with that of insomnia and sleep disturbances.

### **Present Study**

Clearly the literature shows a link between sleep and symptoms of PTSD, as reviewed above. However, less is known on how disturbed sleep is associated with PTSD symptoms in refugees, and specifically within the Syrian refugee population in the United States. Currently, the association between Syrian refugees' PTSD symptoms and trauma related sleep disturbances and overall sleep quality is unknown.

The aim of the present study was to examine the relationship between sleep quality and PTSD symptoms in adult Syrian refugees living in Michigan. To our knowledge, this is the first study to examine the relationship of sleep disturbances and PTSD among Syrian refugees in the United States.

### **Hypotheses**

Based on the literature reviewed above, the study hypotheses are listed below and are also illustrated in Figure 1.

1. PTSD symptom severity is associated with Disruptive Nocturnal Behaviors (DNB) in Syrian refugees living in the United States.
2. PTSD symptom severity is associated with overall poor sleep quality in Syrian refugees living in the United States.
3. Increased experiences of current living difficulties and past trauma are associated with PTSD symptomology.
4. PTSD-related sleep disturbances, or Disruptive Nocturnal Behaviors, are associated with overall poor sleep quality Syrian refugees living in the United States.

5. Disruptive Nocturnal Behaviors are positively associated with current stressors and past trauma.
6. Disruptive Nocturnal Behaviors are associated with maintenance or increase in PTSD symptomology and may predict maintenance of symptoms beyond what is predicted by current stressors.

**Data Analysis Plan:**

In order to test the various associations between the variables of PTSD symptom severity, overall sleep quality, PTSD-related sleep disturbances, current life difficulties and previous trauma experienced, correlational analysis was conducted. Furthermore, to examine which factors significantly predict PTSD symptomology, a stepwise multiple regression was performed.

## Chapter II Methods

### *Participants*

Participants from this study are part of a larger study of Syrian refugees that were recruited from two primary care clinics where the refugees were required to obtain a primary health screening within one month of their arrival to the United States (Javanbakht et al., 2019). The larger study was conducted in two phases. This study used data only from Phase II as sleep measures were not collected in Phase I. Data from Phase II was collected one-year post collection of the initial data in Phase I via scheduled home visits. Inclusion criteria included: over the age of 18, the country of origin to be Syria, admitted through a refugee program to the United States, and be able to understand Arabic and/or English, and all refugees had been living in a refugee camp for two years prior to entry into the United States, and provided informed consent for participation (Javanbakht et al., 2019).

Table 1 provides a summary of the demographic characteristics of the study sample. The final sample for this study consisted of 53 participants all who resided in the metro-Detroit area at the time of this study. The average age of participants was 34.84 ( $SD = 10.57$ ). There was an almost even distribution of female and male participants, 27 females and 26 males. The majority of the participants originated from the city of Daraa in Syria, 45.3% ( $N = 24$ ), which is considered to be the origin of where the Syrian crisis began in March 2011, 22.6% ( $N = 12$ ) of the participants originated from the city of Homs, 13.2% ( $N = 7$ ) were from Damascus, 5.7% ( $N = 3$ ) were from Aleppo, 3.8% ( $N = 2$ ) were from Idlib, 3.8% ( $N = 2$ ) were from Hama, and the remaining two participants were from other cities. The majority of participants were married 75.5% ( $N = 40$ ) and unemployed 60.4% ( $N = 32$ ). Participants rated their overall health on a subjective rating scale from 1 (Excellent) to 5 (Poor). The majority of participants rated their

overall health as Good, 32.1%, (N =17), followed by Very Good 22.6% (N = 12), Fair 20.8% (N = 11), Excellent 18.9%, (N = 10), and Poor 5.7% (N= 3). Participants also rated their subjective ability to speak English on a scale from 1 (not at all) to 4 (very well) and the majority rated their English speaking ability as Not well 41.5% (N = 22), followed by Well 34% (N = 18), and Not at all 24.5% (N = 13). They also rated their subjective ability to write English on the same type of rating scale, and most rated themselves as writing English Well 41.5% (N = 22), followed by Not Well 32.1% (N = 17) and finally Not at all 26.4% (N = 14).

### ***Measures***

**Demographics Questionnaire.** A demographics questionnaire was included to assess age, gender, employment, marital status, subjective ratings of overall all health, subjective rating of ability to speak and write English, and city of origin within Syria.

**Pittsburgh Sleep Quality Index (PSQI).** This scale consists of 19 self-rated items which assess seven components of sleep quality over a one-month period (subjective sleep quality, sleep latency, duration, efficiency, disturbances, use of sleep medication, and daytime dysfunction). Each component is based on a 0-3 Severity Scale indicating the frequency of each disturbance yielding a total score with a range of 0-21. A PSQI global score of 5 or more indicates clinically significant sleep disturbances (Buysse et al., 1989). A translated Arabic version was used, retrieved from *Mapi Research Trust* and was back-translated by an Arabic speaking researcher. Cronbach's alpha for the current sample was 0.66. This measure can be found in Appendix E.

**Pittsburgh Sleep Quality Index Addendum (PSQI-A).** This instrument is a seven item self-report that assesses the frequency of seven disruptive nocturnal behaviors (DNB) that are considered hallmark symptoms of PTSD (hot flashes, general nervousness, memories or

nightmares of traumatic experience, severe anxiety or panic not related to traumatic memories, bad dreams not related to traumatic memories, episodes of terror or screaming during sleep without fully awakening, and episodes or acting out dreams, such as kicking punching running or screaming) (Germain et al., 2005). Items are rated on a 0-3 scale based on the frequency of each occurrence. A total score is obtained from the sum of the seven items with a range from 0-21. The PSQI-A has been shown to have good internal consistency, convergent validity and total scores  $\geq 4$  are considered symptomatic (Germain et al., 2005). This instrument was translated into Arabic by a licensed translator and back translated by an Arabic speaking researcher. Cronbach's alpha for the sample was 0.90. This measure can be found in Appendix F.

**The Posttraumatic Stress Disorder Checklist (PCL-5).** The PCL-5 is the most commonly and widely used measure to assess the presence of DSM-5 PTSD symptomology (Blevins, Weathers, Davis, Witte, & Domino, 2015). The PCL-5 is a self-report measure and respondents rate each symptom on a 0-4 scale where 0 = "Not at all," 1 = "A little bit," 2 = "Moderately," 3 = "Quite a bit," and 4 = "Extremely." Total symptom severity can be calculated by adding the scores for each of the 20 items. Based on recent studies on the psychometric properties of the PCL-5, a cutoff score of 33 is considered to be diagnostic (Blevins et al., 2015). The PCL-5 scoring was adjusted to be comparable to the PCL-C-4, as done in a previous study to allow approximate DSM-5 diagnoses using DSM-IV criteria (Rosellini et al., 2015). Cronbach's alpha for this sample was 0.92. This measure is found in Appendix A.

**Life Events Checklist for DSM-5 (LEC-5).** The LEC-5 is a self-report measure that screens for potential traumatic events in the respondent's lifetime by assessing exposure to 16 events known to likely result in PTSD or distress. It also includes an additional item screening for any other extremely stressful event not indicated by the other 16 items. Respondents rate

their level of exposure to each type of potential trauma on a 6-point scale, where 1 = “Happened to me,” 2 = “Witnessed it,” 3 = “Learned about it,” 4 = “Part of my job,” 5 = “Not sure,” and 6 = “Doesn’t apply.” There is not a formal scoring method or total score for the LEC-5, rather it identifies if the respondent has experienced one or more of the events listed (Weathers et al., 2013). In the present study, only items that were endorsed 1 = “Happened to me” or 2 = “Witnessed it” were included in the data analysis. For each participant, a total score was computed of the number of traumatic events endorsed as either directly experienced or witnessed directly. Cronbach’s alpha was found to be 0.79 for this sample. The measure can be found in Appendix G.

**Post-Migration Living Difficulties Questionnaire (LDQ) - Modified.** This checklist assesses current life stressors of refugees and asylum seekers (Silove et al., 1997). Items include communication, discrimination, access to medical and social services, isolation, safety and among others. Participants are asked to indicate whether any of the items on the checklist had been a problem over the previous year. Responses are rated on a 5-point scale where 0 = “No problem at all,” 1 = “A bit of a problem,” 2 = “Moderately serious,” 3 = “A serious problem,” and 4 = “A very serious problem” and a total composite score is calculated. There is no formal scoring method or total cut-off score for the LDQ. For the purpose of this study, a cumulative score was used to assess for greater living difficulties experienced since migrating to the United States. Cronbach’s alpha was found to be 0.92 for this sample. This measure can be found in Appendix B.

## ***Procedure***

This study was approved by the Wayne State University Institutional Review Board. As noted above, the data used for the current study was part of the Phase II assessment. This data was collected via home visits by the research staff via a scheduled appointment with the family.

Prior to completion of any of the study measures, each participant provided informed consent. Participants self-completed all measures answering in either or English or Arabic, as both languages were on all measures. Research assistants, including several who were fluent in Arabic, were present during the entire duration of data collection at refugees' homes, and assisted participants if they needed help or clarification. Response packets were deidentified using a subject ID number for each participant. All data collected was uploaded to a secure database by research assistants. Participants were reimbursed \$35 each for participating covered by a Children's Hospital of Michigan Foundation Grant and the Wayne State University Department of Psychiatry and Behavioral Neurosciences New Investigator Grant

## Chapter III Results

### Descriptives

Data was entered into SPSS and basic descriptive statistics and correlations were examined. Measures missing more than two responses were excluded from analysis. Measures missing two or less responses an average response score was calculated and used. Basic descriptive statistics for the main variables PCL-5, PSQI-Total, PSQI-A, Total Stressful Events Experienced, and Living Difficulties Questionnaire (LDQ) are summarized in Table 2. The PTSD Checklist for DSM-5 (PCL-5) had a mean of 32.16 ( $SD = 10.99$ ), which approaches the clinical cut off of 33 for PTSD diagnosis, and skewness of 0.78 and kurtosis of 0.03. The PSQI-Total had a mean of 5.15 ( $SD = 2.49$ ), surpassing clinical cut-off of 5, and skewness of 0.71 and kurtosis of 0.02. The PSQI-A had a mean of 6.67 ( $SD = 6.67$ ), surpassing the clinical cut-off 4 and skewness of 1.28 and kurtosis of 0.88. The Total Stressful Events Experienced yielded a mean of 2.73 ( $SD = 2.50$ ), meaning that individuals had directly experienced or witnessed an average of 2-3 traumatic events and skewness of 1.50 and kurtosis of 2.85. The LDQ Total mean was 20.06 and ( $SD = 15.63$ ) and skewness of 1.24 and kurtosis of 1.36.

### Correlational Analysis

Table 3 displays the correlation matrix for the study's main variables. As can be seen, total Stressful Events Experienced was significantly positively correlated with the Living Difficulties Questionnaire (LDQ),  $r(39) = .37, p < .05$ . The PSQI-A was significantly positively correlated with the PSQI-Total,  $r(43) = .59, p < .01$ , the LDQ,  $r(42) = .45, p < .01$  and the PCL-5,  $r(41) = 0.65, p < .01$ . PCL-5 was also positively correlated with the LDQ,  $r(46) = 0.02, p < .01$  and the PSQI-Total,  $r(46) = 0.42, p < .01$ .

## Regression Analysis

A stepwise regression analysis was conducted to examine the role of overall sleep quality, PTSD specific sleep disturbances, current living difficulties, and the number of pre-immigration traumatic events directly experienced or witnessed on the presence of overall PTSD symptomology. Table 4 presents the significant predictors for presence of PTSD symptomology (PCL-5). Based on the correlational analysis, only two of the predictors entered the regression equation.

In Step 1 of the Regression, it was found that the Living Difficulties Questionnaire (LDQ), which measures current stressors accounted for 39% of the variance in the model ( $F(1,31) = 20.14, p < .01$ ). The LDQ was a significant predictor of current PTSD symptomology ( $B = 0.44, t(30) = 4.49, p < .01$ ). In Step 2 of the Regression, it was found that 51% of the variance of overall PTSD symptoms was attributed to the LDQ and the PSQI-A ( $F(1, 30) = 15.79, p < .01$ ), which reflects PTSD related sleep difficulties. The LDQ was a significant predictor ( $B = 0.30, t(30) = 2.85, p < .01$ ) as was the PSQI-A ( $B = 0.66, t(30) = 2.71, p < .01$ ). The PSQI-A produced a significant increment in prediction of current PTSD symptoms over LDQ alone, with an  $R^2$  change value of 0.12 ( $p < .01$ ).

## Chapter IV Discussion

As the Syrian crisis enters into its ninth year, the ramifications of the drawn-out war fall squarely on the shoulders of Syrian refugees. The pre and post-migration challenges compounded with likely trauma experienced in Syria makes recovery and acculturation for Syrian refugees in their host countries difficult at best. It is well documented in the literature that refugees in general are at a higher risk for developing and maintaining mental disorders due to their previous traumatic experiences as well as continued difficulties in their host countries including social and economic hardships (Fazel et al., 2005; Hollifield et al., 2002; Miller et al., 2006; Miller & Rasmussen, 2010). Specifically, Post Traumatic Stress Disorder (PTSD) is found to have higher prevalence rates in refugee populations compared to the general population (Lindert, Wehrwein, Brähler, & Schäfer, 2018). A recent study of Syrian refugees living in a Greek refugee camp found a staggering 75% prevalence rate of anxiety disorders including PTSD (Farhat et al., 2018) and an assessment of a randomly selected sample of Syrian refugees in a Turkish refugee camp found specifically a prevalence of PTSD at 33.5% (Alpak et al., 2015).

Furthermore, it is well known in the literature that there is a strong association between psychological disorders and sleep disturbances in non-refugee populations. Specifically, it has been found that between 70% to 90% of sufferers of PTSD in the general population experience various sleep disturbances (Koffel, Khawaja, & Germain, 2016; Maher et al., 2006). Moreover, sleep disturbances are considered to be the most common and debilitating symptom of PTSD (Germain, 2013; Spoomaker & Montgomery, 2008).

Despite the research that points to high levels of PTSD prevalence in refugee populations, very few studies have examined the prevalence of sleep disturbances and the association with

PTSD symptom severity and stressors within this vulnerable population. This study was the first that the author was aware of that examined the relationship between poor sleep, previous trauma experienced, current life stressors, and overall PTSD symptomology in Syrian refugees living in the metro-Detroit area.

### **Hypothesis 1**

#### **PTSD symptoms are associated with PTSD-related sleep disturbances, or disruptive nocturnal behaviors (DNB)**

The hypothesis of trauma related PTSD symptom severity is positively associated with Disruptive Nocturnal Behaviors (DNB), or PTSD related sleep disturbance as measured by the PSQI-A, was supported. Thus, participants who reported higher severity of symptoms of PTSD also reported higher symptoms of PTSD-related sleep disturbances. This outcome is supported by a recent study (in press) that found the severity of sleep disturbances was positively correlated with more severe PTSD symptomology within a highly diverse group of refugee and asylum seekers in Melbourne, Australia (Lies, Mellor, Jobson, & Drummond, 2019). This study, however, only assessed sleep by a stand-alone item that defined sleep disturbance as difficulty falling or staying asleep only; it did not use the validated PSQI-A measure as was done in the present study. Thus, the present study is more sensitive to the relationship between specific PTSD related sleep disturbances as measured by the PSQI-A and presence of PTSD symptom severity in refugees. These findings indicate that this population suffers from significant sleep disturbances related to their current PTSD symptom severity, and that in general both measures yield average scores at or near the clinical cut-off for diagnosis, even up to one-year post immigration.

## **Hypothesis 2**

### **War related PTSD symptom severity associated with overall poor sleep quality.**

It was also found that PTSD symptom severity was strongly related to having overall poor sleep quality. This finding is well established in the literature, as disturbed sleep is considered the hallmark of PTSD. In a study of women in the general population who had a current diagnosis of PTSD, it was shown that those who had poor sleep, as measured by the PSQI, tended to have more severe PTSD symptoms (Casement, Harrington, Miller, & Resick, 2012). The aforementioned Australian study of refugees also confirms this relationship between sleep and PTSD symptomology in refugees, however it did not use the PSQI to assess for overall sleep quality (Lies, Mellor, Jobson, & Drummond, 2019). While causation cannot be determined based on current findings, these results suggest these refugees' sleep and PTSD symptomology are highly comorbid.

## **Hypothesis 3**

### **Increased experiences of current living difficulties and past trauma is associated with PTSD symptomology.**

A strong and positive correlation was found between increases in current living difficulties as measured by the LDQ and presence of PTSD as measured by the PCL-5. This is corroborated with a previous study that also demonstrated that higher endorsements of post-migration living difficulties was positively associated with PTSD (Aragona, Pucci, Mazzetti, & Geraci, 2012). It is interesting to note that previous traumas experienced was not correlated with PTSD symptom severity in this group. This suggests that current life stressors are more likely to be mediating PTSD symptomology compared to trauma previously experienced pre-migration. Again, because this population did not have measures from pre-migration to compare to,

direction cannot be inferred. However, results suggest current stressors are likely implicated and intertwined with PTSD symptom severity.

#### **Hypothesis 4**

**PTSD-related sleep disturbances, or disruptive nocturnal behaviors (DNB), are associated with overall poor sleep quality.**

There was found to be a strong correlation between PTSD-related sleep disturbances, or DNB, as measured by the PSQI-A and overall poor sleep quality as measured by the PSQI. This is supported by a validation study of the PSQI-A in male military veterans with PTSD symptomology which found a significant and positive correlation between the PSQI-A and the PSQI (Insana, Hall, Buysse, & Germain, 2013). These findings suggest that the disruptive nocturnal behaviors (DNB) of PTSD, as measured by the PSQI-A are contributing to generally poorer sleep outcomes.

As stated earlier, previous studies have suggested that patients with PTSD suffer from specific sleep disturbances such as trauma-related nightmares, night-time intrusive memories not related to the trauma experienced, hot flashes, general nervousness and episodes of acting out dreams such as kicking, punching, running, or screaming which contribute to overall poor sleep quality (Fisher et al., 1973; Freed et al., 1999; Husain et al., 2001; Ohayon & Shapiro, 2000; Ross et al., 1994). Thus, the findings here further help validate the PSQI-A measure in its ability to detect specific PTSD-sleep related disturbances in a refugee population with PTSD symptomology.

#### **Hypothesis 5**

**PTSD-related sleep disturbances, or disruptive nocturnal behaviors (DNB), are associated with current living difficulties and past traumas.**

PTSD-related sleep disturbances were found to be strongly associated with current living difficulties. Interestingly, the frequency of self-reported past traumas experienced directly or witnessed was not positively associated with PTSD-sleep related disturbances. This may suggest that the refugees' sleep disturbances are being mediated by their current daily life struggles such as communication difficulties, discrimination, and worry about economic security and not necessarily by the frequency of previous war traumas they experienced. This novel finding is significant, as it suggests that there is a relationship between current life stressors and PTSD related sleep disturbances and may be more detrimental to refugees' sleep than traumatic events experienced in the past.

### **Hypothesis 6**

**PTSD-related sleep disturbances, DNB, are associated with maintenance and prediction of severity of PTSD symptomology.**

As expected, PTSD-related sleep disturbances were found to be strongly correlated with the severity of PTSD symptomology among this refugee group. Furthermore, it was found that the presence of PTSD-related sleep disturbances, or disruptive nocturnal behaviors (DNB), was a strong predictor of the severity of PTSD symptoms. When the PSQI-A was added to the stepwise multiple regression model, it significantly enhanced the prediction of PTSD symptom severity by current stressors alone. This suggests that sleep disturbances significantly impact the maintenance of PTSD symptom severity, even beyond the level that would be predicted from the current level of stress. The implication of this finding underscores the importance of sleep for well-being, specifically in PTSD symptomology.

## **Implications**

The findings demonstrate in general that disturbed sleep may be used to predict the severity of PTSD symptoms. It was also found that current life difficulties are associated with mediating disturbed sleep and PTSD symptom severity.

It is well known that refugees continue to lead difficult lives post migration. They are faced with numerous challenges in their host countries including worry over economic stability, social isolation, changes in their family function and structure, limited and difficult access to education, cultural barriers, and experienced hostility and racism (Burnett & Peel, 2001; Porter & Haslam, 2005). Our findings indicate that these stressors are likely impacting maintenance of PTSD symptom severity, more so than previous war trauma experienced. Providing assistance to refugees to address these living difficulties may likely improve acculturation as well as overall health, specifically those suffering with PTSD.

Also found was that there was a strong association between presence of refugees' PTSD-related sleep disturbances, or disruptive nocturnal behaviors (DNB), and likelihood of more severe symptoms of PTSD. It may be that refugees who suffer from disturbed sleep are more likely maintaining their PTSD symptomology at a high level. While it would be ideal to offer treatment for PTSD, continuing medical and psychiatric services are not always readily available to refugees. However, educating on basic sleep hygiene in support groups and pamphlets distributed by refugee agencies may help alleviate some symptoms until continued medical care is available. In a study of adult working women with sleep problems it was found that sleep hygiene education led to improved sleep quality outcomes (Chen, Kuo, & Chueh, 2010). Thus, providing psychoeducation may prove helpful for better outcomes in mental and sleep health in this refugee community.

## **Limitations**

The greatest limitation of our study was the small sample size. There were difficulties in contacting and arranging for home appointments with refugees one year post initial migration. Furthermore, the current administration's immigration policy of 2017 significantly limited the number of Syrian refugees entering the country.

Limitations in the measures themselves may have also been a factor in the study. While all measures were translated and back-translated, they have never been validated for Syrian-Arabic speaking participants, thus there are no studies to compare the current results to. In addition, the finding regarding a limited impact of past traumatic stressors on current sleep disturbance and other variables may have been a function of the nature of the measure. Merely counting events did not account for the absolute level of trauma experienced, or how frequently these individual events were experienced. Also, the cross-sectional nature of the study is a substantial limitation of the study. The data is only a snapshot of the refugees' symptomology. There is no previous data to have a baseline of refugees' sleep and PTSD symptomology prior to arriving to the United States. Furthermore, the findings cannot determine causation, but rather only association between the measures.

## **Strengths**

This study was the first to the author's knowledge to examine the relationship of sleep disturbances, current stressors, and previous trauma experienced with PTSD symptom severity in Syrian refugees in the metro-Detroit area. Although, these variables have been considered in the literature, little has been done to study the factors that may be a link between sleep disturbances, stress, trauma, and PTSD symptom severity in refugees. While causation could not be

determined from the findings, this study adds to the knowledge of overall sleep quality and PTSD-related sleep disturbances and their likely impact on refugees.

There were several researchers who were fluent in Arabic and also several who were Syrian-American, that assisted with data collection and input. This helped tremendously in assisting the refugees complete the measures and were also culturally aware and sensitive while visiting the refugees' homes. Research suggests that in studies involving minority language participants, when the researcher is an "insider" meaning sharing the same language and culture as the study population, accuracy and consistency of the study is increased (Irvine, Roberts, & Bradbury-Jones, 2008).

### **Conclusions and Future Research**

In conclusion, our study suggests that Syrian refugees that are experiencing substantial current living difficulties are likely suffering from PTSD symptoms. Furthermore, it was found that PTSD-related sleep disturbances are a significant predictor of presence of PTSD. Thus, together both current living difficulties and sleep disturbances account for and predict PTSD symptom severity in Syrian refugees. These findings provide some insight on some of the underlying struggles refugees may face in their host countries.

The findings of this study can be utilized in both clinical and research settings. Currently, research on Syrian refugees living in the United States is minimal. Understanding the many psychological, physical, and social hardships Syrian refugees face will allow for better outcomes in acculturation, and perhaps encourage governments and agencies to address the many social issues that refugees struggle with. In the future, studies with larger sample sizes across the United States would be helpful in better understanding the plight of the Syrian refugee. The population in this study had a unique situation of living in an area with a large

Arab-speaking community. Thus, their experiences will likely differ compared to Syrian refugees in other parts of the country where language and communication would be more of a barrier.

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## Tables

Table 1  
Characteristics of Study Population

Variable	Total Sample (n = 53)
<b>Age</b>	
Mean	34.84
SD	10.57
Range	38
<b>Gender</b>	
Female n (%)	27 (50.9%)
Male n (%)	26 (49.1%)
<b>Marital Status</b>	
Married n (%)	40 (75.5%)
Single n (%)	13 (24.5%)
<b>Employment</b>	
Employed n (%)	20 (37.7%)
Unemployed n (%)	32 (60.4 %)
<b>Health</b>	
Excellent n (%)	10 (18.9%)
Very Good n (%)	12 (22.6%)
Good n (%)	17 (32.1%)
Fair n (%)	11 (20.8%)
Poor n (%)	3 (5.7%)
<b>City Origin</b>	
Aleppo n (%)	3 (5.7%)
Baghdad n (%)*	1 (1.9%)
Damascus n (%)	7 (13.2%)
Daraa n (%)	24 (45.3%)
Hama n (%)	2 (3.8%)
Homs n (%)	12 (22.6%)
Idlib n (%)	2 (3.8%)
<b>English Speak</b>	
Not at all n (%)	13 (24.5%)
Not well n (%)	22 (41.5%)
Well n (%)	18 (34%)
Very well n (%)	0
<b>English Write</b>	
Not at all n (%)	14 (26.4%)
Not well n (%)	17 (32.1%)
Well n (%)	22 (41.5%)
Very Well n (%)	0

\*This participant was originally from Baghdad, however, was living in Syria prior to the beginning of the 2011 Syrian crisis.

Table 2  
Descriptive statistics for main variables

Variable	Total Sample (n = 53)
PSQI	
Mean	5.15
SD	2.49
PSQI-A	
Mean	6.67
SD	6.67
Living Difficulties Questionnaire (LDQ)	
Mean	20.06
SD	15.63
Total Stressful Events Experienced	
Mean	2.73
SD	2.50
PCL-5	
Mean	32.16
SD	10.99

Abbreviations: PCL-5: Post Traumatic Stress Disorder Checklist- 5, PSQI-A: Pittsburgh Sleep Quality Index-Addendum, LDQ: Post-Migration Living Difficulties Questionnaire, PSQI: Pittsburgh Sleep Quality Index

Table 3

Correlations among overall sleep Quality, PTSD related sleep disturbances, current living difficulties, trauma experienced and overall presence of PTSD symptomology

	1	2	3	4	5
1. PCL-5 Sum	--	0.65**	0.56**	0.42**	0.18
2. PSQI-A		--	0.45**	0.59**	0.11
3. LDQ Total			--	0.27	0.37*
4. PSQI-Total				--	0.05
5. Total Stressful Events Experienced					--

\*Correlation is significant at the  $p < 0.05$  (2-tailed). \*\*Correlation is significant at the  $p < 0.01$  (2-tailed).

PCL-5 Sum N = 49, PSQI-A N = 46, LDQ-Total N = 52, PSQI-Total N = 52, Total Stressful Events Experienced N = 41

Abbreviations: PCL-5: Post Traumatic Stress Disorder Checklist- 5, PSQI-A: Pittsburgh Sleep Quality Index-Addendum, LDQ: Post-Migration Living Difficulties Questionnaire, PSQI: Pittsburgh Sleep Quality Index

Table 4

A stepwise multiple regression analysis predicting current PTSD

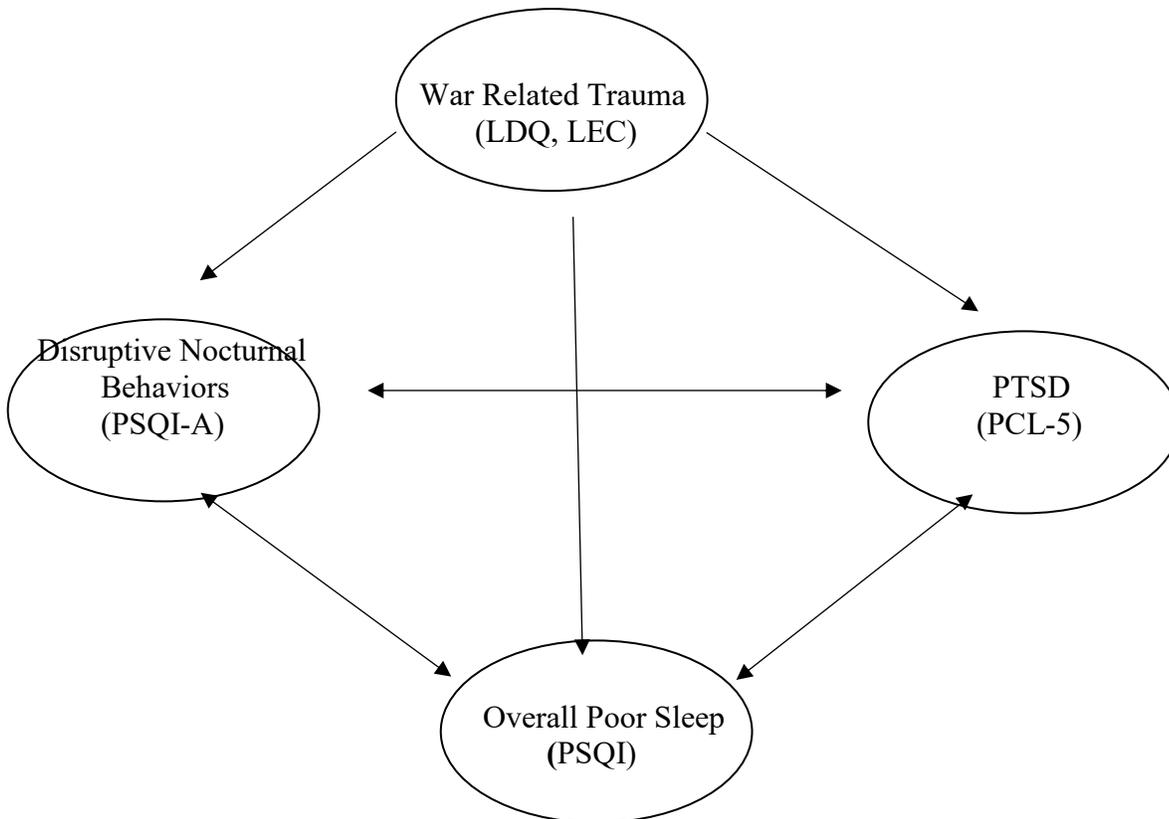
	Variable	B	SE B	$\beta$	t	R <sup>2</sup>	F	$\Delta R^2$	F
Step 1						0.39**			20.14
	Constant	23.31	2.49		9.37				
	LDQ	0.44	0.10	0.63	4.49				
Step 2						0.51**	15.79	0.12**	7.34
	Constant	21.79	2.34		9.34				
	LDQ	0.30	0.10	0.42	2.85				
	PSQI-A	0.66	0.25	0.40	2.71				

Note: \*\* $p < .001$ , Step 1  $df(1, 31)$ ; Step 2  $df(1, 30)$ ,  $N = 33$ .

Abbreviations: LDQ: Post-Migration Living Difficulties Questionnaire, PSQI-A: Pittsburgh Sleep Quality Index-Addendum

## Figures

Figure 1  
Model of Proposed Hypotheses



Abbreviations: LDQ: Post-Migration Living Difficulties Questionnaire, LEC: Life Events Checklist, PSQI: Pittsburgh Sleep Quality Index, PSQI-A: Pittsburgh Sleep Quality Index Addendum, PCL-5: Post-Traumatic Checklist.

## Appendix A: PTSD Checklist (PCL-5)

### PTSD Checklist (PCL) - 5

Name: \_\_\_\_\_ Date: \_\_\_\_\_

Instructions: Below is a list of problems that people sometimes have in response to a very stressful experience. Please read each problem carefully and then circle one of the numbers to the right to indicate how much you have been bothered by that problem in the past month.

In the past month, how much were you bothered by:	Not at all	A little bit	Moderately	Quite a bit	Extremely
1. Repeated, disturbing, and unwanted memories of the stressful experience?	0	1	2	3	4
2. Repeated, disturbing dreams of the stressful experience?	0	1	2	3	4
3. Suddenly feeling or acting as if the stressful experience were actually happening again (as if you were actually back there reliving it)?	0	1	2	3	4
4. Feeling very upset when something reminded you of the stressful experience?	0	1	2	3	4
5. Having strong physical reactions when something reminded you of the stressful experience (for example, heart pounding, trouble breathing, sweating)?	0	1	2	3	4
6. Avoiding memories, thoughts, or feelings related to the stressful experience?	0	1	2	3	4
7. Avoiding external reminders of the stressful experience (for example, people, places, conversations, activities, objects, or situations)?	0	1	2	3	4
8. Trouble remembering important parts of the stressful experience?	0	1	2	3	4
9. Having strong negative beliefs about yourself, other people, or the world (for example, having thoughts such as: I am bad, there is something seriously wrong with me, no one can be trusted, the world is completely dangerous)?	0	1	2	3	4
10. Blaming yourself or someone else for the stressful experience or what happened after it?	0	1	2	3	4
11. Having strong negative feelings such as fear, horror, anger, guilt, or shame?	0	1	2	3	4
12. Loss of interest in activities that you used to enjoy?	0	1	2	3	4
13. Feeling distant or cut off from other people?	0	1	2	3	4
14. Trouble experiencing positive feelings (for example, being unable to feel happiness or have loving feelings for people close to you)?	0	1	2	3	4
15. Irritable behavior, angry outbursts, or acting aggressively?	0	1	2	3	4
16. Taking too many risks or doing things that could cause you harm?	0	1	2	3	4
17. Being "super-alert" or watchful or on guard?	0	1	2	3	4
18. Feeling jumpy or easily startled?	0	1	2	3	4
19. Having difficulty concentrating?	0	1	2	3	4
20. Trouble falling or staying asleep?	0	1	2	3	4

Total \_\_\_\_\_

## Appendix B: Living Difficulties Questionnaire (LDQ)

### LIVING DIFFICULTIES QUESTIONNAIRE (MODIFIED)

Participant ID: \_\_\_\_\_ DATE: \_\_\_\_\_

INTERVIEWER: \_\_\_\_\_ DATE OF BIRTH: \_\_\_\_\_ SEX: \_\_\_\_\_

MARITAL STATUS: \_\_\_\_\_ ARRIVAL DATE: \_\_\_\_\_

DATE DATA COLLECTED: \_\_\_\_\_

Below is a list of living difficulties that people who have arrived in Michigan sometimes experience. During the past 12 months have any of the difficulties listed below been a problem for you in Michigan?

	No problem at all	A bit of a problem	Moderately serious	A serious problem	A very serious problem
1. Communication difficulties					
2. Discrimination					
3. Separation from family					
4. Worries about family back at home					
5. Unable to return home in Emergency					
7. Not being able to find work					
8. Bad job conditions					
9. Fears of being sent home					
10. Worries about not getting treatment for health problems					
11. Poor access to emergency medical care					
12. Poor access to long term medical care					
13. Poor access to dentistry care					
14. Poor access to counselling services.					
15. Little government help					
16. Little help from Charities					
17. Poverty					
18. Loneliness and Boredom					
19. Isolation					
20. Poor access to the foods I like					
21. Feel unsafe walking in front of my home during the day					
22. Feel unsafe walking in front of my home when it is dark outside					
23. Feel unsafe inside my home					

24. Been very late due to transportation problems					
25. Could not go where I wanted because of transportation problems					
26. Problems with temperature in my home(too cold in winter and too hot in summer)					
27. Poor access to grocery store					
28. Too much noise in the neighbourhood					
29. Poor quality of schools for children					
30. Problems with repairs to home					
31. Problems with landlord					
32. Problems with neighbours					

## Appendix C: Pittsburgh Sleep Quality Index (Arabic)

### Pittsburgh Sleep Quality Index

### مؤشر جودة النوم

#### التعليمات

الأسئلة التالية تتعلق بعلامات نومك خلال الشهر الماضي فقط. يجب ان تشير اجابتك ببقه الى معظم الايام والليالي في الشهر الماضي. من فضلك اجب على جميع الاسئلة.

1) خلال الشهر الماضي متى كنت تذهب عادة الى الفراش ليلا؟

ميعاد النوم المعتاد ..... (مثلا: 10:30 مساء)

2) خلال الشهر الماضي كم كان عدد الدقائق التي تستغرقها حتى تخلد للنوم كل ليله عادة؟

عدد الدقائق ..... (مثلا 10 دقائق)

3) خلال الشهر الماضي متى كنت تنهض من الفراش في الصباح؟

ميعاد النهوض من الفراش ..... (مثلا: 7:30 صباحا)

4) خلال الشهر الماضي كم كان عدد الساعات الفعليه التي تنامها كل ليله ؟ (هذا قد يختلف عن عدد الساعات التي تقضيها في الفراش)

عدد ساعات النوم كل ليله ..... (مثلا: 10:30 ساعات)

اختر الاجابه الافضل لكل من الاسئلة التاليه من فضلك اجب على جميع الاسئلة.

5) خلال الشهر الماضي كم مره حدثت لك مشاغل خلال النوم لذلك .....

ليس خلال الشهر الماضي	اقل من واحده في الاسبوع	مره او مرتين في الاسبوع	ثلاث مرات او اكثر في الاسبوع

				ز) الشعور بالحر الشديد
				ح) تساورك احلام سيئه
				ط) الشعور بالآلم
				ي) اسباب اخرى رجاء أشرح ..... خلال الشهر الماضي تم مره حدثت لك مشكل خلال التره بسبب تلك

٦) خلال الشهر الماضي، كيف تقيم جودة نومك عموماً

- جيد جداً .....  
جيد إلى حد ما.....  
سئ جداً.....  
سئ إلى حد ما.....

ثلاث مرات أو أكثر في الأسبوع	مره او مرتين في الأسبوع	اقل من واحده في الأسبوع	ليس خلال الشهر الماضي	
				٧. خلال الشهر الماضي تم مره اخذت انويه موصوفه او غير موصوفه لتساعدك على النوم
				٨. خلال الشهر الماضي تم مره واجهت مشكله بالبقاء مستيقظا أثناء القيادة أو أثناء تناول وجبات الطعام أو خلال الانخراط في الانشطه الاجتماعيه

٩) خلال الشهر الماضي، تم كان حجم المشكله لديك للحفاظ على ما يكفي من الحماسه لانجاز الامور

- لا مشكله على الاطلاق.....  
فقط مشكله بسيطه جدا.....  
مشكله الى حد ما.....  
مشكله كبيره جدا.....

## Appendix D: Pittsburgh Sleep Quality Index- Addendum (Arabic)

### PSQI Addendum for PTSD

ملحق أ

التعليقات:

الرجاء الإجابة على الأسئلة الإضافية التالية المتعلقة بطبيعة نومك في الشهر السابق. أشر إلى أي ملاحظات من شريك السرير أو الغرفة.

1-كم مرة واجهتك صعوبات في النوم في الشهر الماضي بسبب:

أ. الشعور بهبات ساخنة

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

ب. الشعور بحساسية عامة

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

ت. كان لديك ذكريات أو كوابيس من تجربة صادمة

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

ث. لديك قلق شديد أو ذعر لا علاقة له بذكرات الصدمة

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

ج. لديك أحلام سيئة لا علاقة لها بذكرات الصدمة

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

ح. لديك نوبات من الرعب أو الصراخ أثناء النوم دون الصحوّة تماماً

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

خ. لديك نوبات من (تمثيل) أحلامك مثل الركل أو اللكم أو الركنض أو الصراخ

لم تحدث في الشهر \_\_\_\_\_ أقل من مرة في الأسبوع \_\_\_\_\_ مرة أو مرتين في \_\_\_\_\_ ثلاث مرات أو أكثر في \_\_\_\_\_ الأسبوع \_\_\_\_\_ الماضي \_\_\_\_\_

- ١٠ هل لديك شريك في الفراش او تشارك الغرفة  
 لا يوجد شريك في الفراش او لا تشارك الغرفة -----  
 شريك في غرفة أخرى -----  
 شريك في الغرفة وليس الفراش -----  
 شريك في الفراش -----

١١ انا كان لديك شريك في الفراش او تشارك الغرفة اساله/ او اسالها خلال الشهر الماضي، كم مرة كان لديك

ليس خلال الشهر الماضي	أقل من واحد في الاسبوع	مرة او مرتين في الاسبوع	ثلاث مرات او أكثر في الاسبوع

٢- إذا كان لديك نكريات أو كوابيس من تجارب صاعمة خلال النوم (سؤال ات في الأعلى)....

أ- ما هو مقدار التلق الذي شعرت به خلال النكريات والكوابيس؟

لا يوجد ----- قليل جداً ----- متوسط ----- شديد -----

ب- ما هو مقدار الغضب الذي شعرت به خلال النكريات والكوابيس؟

لا يوجد ----- قليل جداً ----- متوسط ----- شديد -----

ت- في أي وقت في الليل حدثت معظم النكريات والكوابيس؟

أول الليل ----- منتصف الليل ----- آخر الليل، قبيل الصباح ----- لا يوجد وقت محدد -----

## Appendix E: Pittsburgh Sleep Quality Index

Page 1 of 4

Subject's Initials \_\_\_\_\_ ID# \_\_\_\_\_ Date \_\_\_\_\_ Time \_\_\_\_\_ AM  
PM

### PITTSBURGH SLEEP QUALITY INDEX

---

**INSTRUCTIONS:**

The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of days and nights in the past month. Please answer all questions.

---

1. During the past month, what time have you usually gone to bed at night?  
BED TIME \_\_\_\_\_
2. During the past month, how long (in minutes) has it usually taken you to fall asleep each night?  
NUMBER OF MINUTES \_\_\_\_\_
3. During the past month, what time have you usually gotten up in the morning?  
GETTING UP TIME \_\_\_\_\_
4. During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spent in bed.)  
HOURS OF SLEEP PER NIGHT \_\_\_\_\_

*For each of the remaining questions, check the one best response. Please answer all questions.*

5. During the past month, how often have you had trouble sleeping because you . . .
  - a) Cannot get to sleep within 30 minutes

Not during the past month _____	Less than once a week _____	Once or twice a week _____	Three or more times a week _____
------------------------------------	--------------------------------	-------------------------------	-------------------------------------
  - b) Wake up in the middle of the night or early morning

Not during the past month _____	Less than once a week _____	Once or twice a week _____	Three or more times a week _____
------------------------------------	--------------------------------	-------------------------------	-------------------------------------
  - c) Have to get up to use the bathroom

Not during the past month _____	Less than once a week _____	Once or twice a week _____	Three or more times a week _____
------------------------------------	--------------------------------	-------------------------------	-------------------------------------

d) Cannot breathe comfortably

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

e) Cough or snore loudly

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

f) Feel too cold

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

g) Feel too hot

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

h) Had bad dreams

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

i) Have pain

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

j) Other reason(s), please describe \_\_\_\_\_

How often during the past month have you had trouble sleeping because of this?

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

6. During the past month, how would you rate your sleep quality overall?

Very good \_\_\_\_\_

Fairly good \_\_\_\_\_

Fairly bad \_\_\_\_\_

Very bad \_\_\_\_\_

7. During the past month, how often have you taken medicine to help you sleep (prescribed or "over the counter")?

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

8. During the past month, how often have you had trouble staying awake while driving, eating meals, or engaging in social activity?

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

9. During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?

No problem at all \_\_\_\_\_  
 Only a very slight problem \_\_\_\_\_  
 Somewhat of a problem \_\_\_\_\_  
 A very big problem \_\_\_\_\_

10. Do you have a bed partner or room mate?

No bed partner or room mate \_\_\_\_\_  
 Partner/room mate in other room \_\_\_\_\_  
 Partner in same room, but not same bed \_\_\_\_\_  
 Partner in same bed \_\_\_\_\_

If you have a room mate or bed partner, ask him/her how often in the past month you have had . . .

- a) Loud snoring

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

- b) Long pauses between breaths while asleep

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

- c) Legs twitching or jerking while you sleep

Not during the past month \_\_\_\_\_ Less than once a week \_\_\_\_\_ Once or twice a week \_\_\_\_\_ Three or more times a week \_\_\_\_\_

## Appendix F: Pittsburgh Sleep Quality Index Addendum for PTSD

### Appendix A. PSQI Addendum for PTSD

**INSTRUCTIONS:**

Please answer the following additional questions regarding your sleep in the past month. Include any observations from your bedpartner/ roommate.

1. During the past month, how often have you had trouble sleeping because you...

a) Feel hot flashes:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

b) Feel general nervousness:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

c) Had memories or nightmares of a traumatic experience:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

d) Had severe anxiety or panic, not related to traumatic memories:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

e) Had bad dreams, not related to traumatic memories:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

f) Had episodes of terror or screaming during sleep without fully awakening:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

g) Had episodes of "acting out" your dreams, such as kicking, punching, running, or screaming:

Not during the past month_____	Less than once a week_____	Once or twice a week_____	Three or more times a week_____
--------------------------------	----------------------------	---------------------------	---------------------------------

2. If you had memories or nightmares of a traumatic experience during sleep (question 11-c above)....

a) How much anxiety did you feel during the memories/nightmares?

None\_\_\_\_\_ Very little\_\_\_\_\_ Moderate\_\_\_\_\_ Severe\_\_\_\_\_

b) How much anger did you feel during the memories/nightmares?

None\_\_\_\_\_ Very little\_\_\_\_\_ Moderate\_\_\_\_\_ Severe\_\_\_\_\_

c) What time of night did most memories/nightmares occur?

Early in the night\_\_\_\_\_ Middle of the night\_\_\_\_\_ Late night, near morning\_\_\_\_\_ No particular time\_\_\_\_\_

---

## Appendix G: Life Events Checklist-5

### LEC-5

**Instructions:** Listed below are a number of difficult or stressful things that sometimes happen to people. For each event check one or more of the boxes to the right to indicate that: (a) it happened to you personally; (b) you witnessed it happen to someone else; (c) you learned about it happening to a close family member or close friend; (d) you were exposed to it as part of your job (for example, paramedic, police, military, or other first responder); (e) you're not sure if it fits; or (f) it doesn't apply to you.

**تعليمات:** أدناه قائمة أحداث أو تجارب صعبة أو مُجهدة قد تحدث لبعض الأشخاص. لكل حدث يرجى وضع علامة ✓ أمام الجواب المناسب: (أ) حدث لك شخصياً. (ب) شهِدته يحدث لشخص آخر. (ج) علمت أنه حدث لفرد من العائلة أو صديق مقرب. (د) تعرضت له كجزء من عملك (مثال: مُسعف، شرطي، عسكري، أو غيره). (ح) لست متأكد إذا كان مناسب. (خ) لا ينطبق عليك.

Be sure to consider your entire life (growing up as well as adulthood) as you go through the list of events.  
الرجاء التأكد إن كان أي منها حدث في أي وقت من كل حياتك ( الطفولة و الشباب).

f) Doesn't apply f) لا ينطبق	e) Not sure e) لست متأكد	d) Part of my job d) جزء من عملي	c) Learned about it c) علمت به	b) Witnessed it b) شهِدته	a) Happened to me a) حدث لي	Event الحدث
						1. Natural disaster (for example, flood, hurricane, tornado, earthquake). 1. كوارث طبيعية (مثال: فيضان، إعصار، زوايع، زلازل).
						2. Fire or explosion 2. نيران أو انفجارات.
						3. Transportation accident (for example, car accident, boat accident, train wreck, plane crash). 3. حادث مواصلات (مثال: حادث سيارة، حادث قارب، تحطم قطار، تحطم طائرة).
						4. Serious accident at work, home, or during recreational activity. 4. حادث خطير في العمل، البيت، أو خلال نشاط ترفيهي.

						5.Exposure to toxic substance (for example, dangerous chemicals, radiation). 5. التعرض لمواد سامة ( مثال: كيمواويات خطيرة، إشعاع).
						6.Physical assault (for example, being attacked, hit, slapped, kicked, beaten up). 6. اعتداءات جسدية ( مثال: هجوم، ارتطام، صفع، ركل، ضرب).
						7.Assault with a weapon (for example, being shot, stabbed, threatened with a knife, gun, bomb). 7. اعتداء بالسلاح ( مثال: إطلاق نار، طعن، تهديد بالسكين، بندقية، قنبلة).
						8.Sexual assault (rape, attempted rape, made to perform any type of sexual act through force or threat of harm). 8. اعتداء جنسي ( مثال: اغتصاب، محاولة اغتصاب، محاولة أداء أي فعل جنسي بالقوة أو التهديد).
						9.Other unwanted or uncomfortable sexual experience 9. أي فعل جنسي آخر غير مرغوب أو مريح.
						10.Combat or exposure to a war-zone (in the military or as a civilian). 10. قتال أو تعرض إلى منطقة حرب (خلال العسكرية أو كمدني).
						11.Captivity (for example, being kidnapped, abducted, held hostage, prisoner of war). 11. أسر ( مثال: اختطاف، احتفاظ برهينة، مسجون حرب).
						12.Life-threatening illness or injury. 12. مرض أو إصابة مُهددة للحياة.
						13.Severe human suffering 13. معاناة إنسانية شديدة.
						14. Sudden violent death (for example, homicide, suicide). 14. موت عنيف مفاجئ ( مثال: قتل، انتحار).
						15.Sudden accidental death. 15. حادث مميت مفاجئ.

						16. Serious injury, harm, or death you caused to someone else. 16. إصابة خطيرة، ضرر، أو موت تسببت به لشخص آخر.
						17. Any other very stressful event or experience. 17. أي حدث أو تجربة مُجهدة أخرى.