Title

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Permalink

https://escholarship.org/uc/item/76w048kq

Journal

Neurology: Clinical Practice, 13(2)

ISSN

2163-0402

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Publication Date

2023-04-01

DOI

10.1212/CPJ.0000000000200139

Peer reviewed

Improving Sleep Health Among Refugees

A Systematic Review

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Abstract

Purpose of Review
Sleep disorders among refugees are common yet understudied. Interventions are difficult in resource-limited settings where most of these populations live. A systematic review of sleep disorders in refugee populations is warranted to identify prevalence, comorbidities, and the limitations of the current state of sleep health among refugees.

Recent Findings
Sleep disturbances, particularly insomnia and nightmares, occur with a higher prevalence among refugees. Diseases associated with insomnia in this population included fibromyalgia, posttraumatic stress disorder, depression, and anxiety. Risk factors include trauma, migration, lower socioeconomic status, lower educational level, and settlement in areas with a high influx of new residents or proximity to conflict. Only a few partially successful therapies were identified.

Summary
This review identifies the high prevalence of the disturbed sleep in this population and its risk factors. It proposes ways of increasing awareness of it in this vulnerable population as a first step toward remediation.

Human rights crises result in refugee populations worldwide, with over two-thirds of refugee populations living in low- and middle-income countries where health care is not always available.[1] Even for refugees who resettle in high-income countries such as the United States or Europe, access to basic health care is often extremely limited.[2] Lack of knowledge, awareness, and resources, such as translators, interpreters, and/or housing needs, exacerbate disparities already faced by refugee populations.[3] In children from refugee communities, several chronic diseases are seen at a disproportionate rate, including malnutrition, micronutrient deficiencies, infectious diseases, neurologic or ocular complications due to war and conflict, and physical and mental health impacts of torture and violence. This is all compounded by xenophobia or discrimination experienced in host nations.[4] In adults, many of these same risk factors are compounded over time, predisposing adult refugee communities toward the development of chronic, noncommunicable diseases including hypertension,[2] diabetes,[2] asthma,[2] skin conditions,[2] and cardiovascular illnesses.[5] Attention and awareness of refugee health has been increasing in recent years, especially in the field of mental health.[6] There are fewer studies pertaining specifically to sleep health in refugees than those pertaining to mental health. This is particularly important to examine given that sleep disorders are intimately linked to mental health disorders, as well as to higher rates of resistant hypertension, metabolic diseases, poor cardiovascular health, challenges with stress and acculturation, and trauma.[7-9] Sleep disparities may also exacerbate the risks of neurocognitive decline,

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altogether serving as an important contributor to poor health outcomes among refugee populations.[10] Trauma, torture, and war are all known contributing factors to sleep disparities among refugees.[9] This is a systematic review of sleep disorders in refugees, which aims to identify sleep health disparities among these populations and suggest a feasibility study for a protocol to remedy it.

Methods

A systematic review of sleep disorders in refugee populations was conducted in October 2021 using the PubMed/MEDLINE and Ovid databases. The search terms were "sleep," "refugees," and "health." Results were not limited to years of publication. Studies were initially included if they met the following inclusion criteria: (1) human subjects in peer-reviewed studies including randomized controlled trials, nonrandomized trials, and meta-analyses; (2) studies on sleep disorders in refugee populations, including both adults (>18 years) and children (<18 years); and (3) English language. Studies were excluded if they (1) did not involve humans, (2) did not present novel unique data (i.e., letter to the editor), or (3) were non–peer reviewed (i.e., commentary papers or editorials) or case reports and case series. After the initial search, duplicate studies were removed to determine the initial publications to screen. A description of the search strategy is summarized in Table 1. Three of the coinvestigators independently assessed each paper for inclusion. Authors of the individual paper were not contacted.

Results

The initial search resulted in 180 articles identified. Removal of duplicates resulted in 135 articles. These items were then screened by title and abstract, resulting in 43 articles. Full-text screening excluded another 21 articles because sleep metrics were neither the primary or independent determinant nor the primary outcome; also, one was a review paper and the other a perspective paper. This resulted in 22 articles that met inclusion criteria (Figure 1).

These remaining 22 articles were grouped into 3 thematic categories and analyzed within their corresponding category: prevalence and demographic correlates (n = 7), relationships

Table 1 Search Strategy for Identification of Studies Included in Review

Databases searched	Time period searched	Search terms
PubMed/MEDLINE	1987–2021	"Sleep" "Refugee" or [1] [2] "Refugees" "Health"
Ovid	1946–2021	"Sleep" "Refugee" or "Refugees" "Health"

with physical and mental health disorders (n = 15), and treatment and prevention (n = 5). Five of these articles were included in 2 categories. The findings from these articles are synthesized below.

Prevalence and Demographic Correlates

Seven articles assessing the prevalence of sleep disorders in refugee populations (Table 2) were included. All studies found higher rates of sleep disturbances, particularly insomnia and nightmares among refugees. The prevalence of insomnia ranged from 32.6% to 73.3% depending on the screening tool used to assess for insomnia and the size of the cohort. In comparison, the average prevalence of insomnia diagnosis, according to a recent multinational study (13 countries), is 11.3% (2.3%–25.5%).[18] Two studies reported a prevalence of insomnia 6.9%[13] and 17.2%[12] in control groups of native populations. Unlike insomnia in the general population, one study did not demonstrate a higher prevalence of insomnia among refugee women.[18] In most cases, there was no gender predilection, and in one,[3,4] men had a higher prevalence of insomnia.[13] Other demographic variables that correlated with insomnia included older age,[11,12,14] less access to health care,[11] and unemployment.[11,12]

Relationships With Physical and Mental Health Disorders

Fifteen articles assessing disturbed sleep and its associations and correlations in refugee populations were included (Table 3). In most cases, these were psychiatric and behavioral disorders. Fibromyalgia (FM) was the only nonpsychiatric disorder that was studied and found to be correlated with insomnia. In the Jordanian cohort, FM severity (based on the Fibromyalgia Impact Questionnaire [FIQ]) correlated with the severity of insomnia (based on the ISI scores),[21] but not with the degree of FM impact.[19] In the latter study, posttraumatic stress disorder (PTSD) was the primary disorder that correlated with the degree of FM impact. PTSD was the disorder that was found to be most commonly correlated with disturbed sleep in these studies. PTSD and related nightmares correlated with disturbed sleep in a bidirectional relationship.[17] PTSD also correlated with moderate to severe insomnia, and as PTSD was treated and it improved, over a period of a year, sleep also improved.[14,15,25] More specifically, PTSD severity was inversely associated with sleep duration.[24] This is consistent with findings in nonrefugee populations where insomnia and disturbed sleep are prevalent in people with PTSD.[29]

Other psychiatric conditions that were found to be correlated with insomnia were depression and anxiety.[12,14] Anxiety was associated with longer sleep onset latency.[24] Objective sleep disturbances and sleep architecture changes correlated with attentional deficits in refugee children, but not in the control group.[23] Insomnia and sleep disturbances in children and adolescents also correlated with poor scholastic performance,[26,27] corroborating what has been documented in other studies with nonrefugee children.[30]
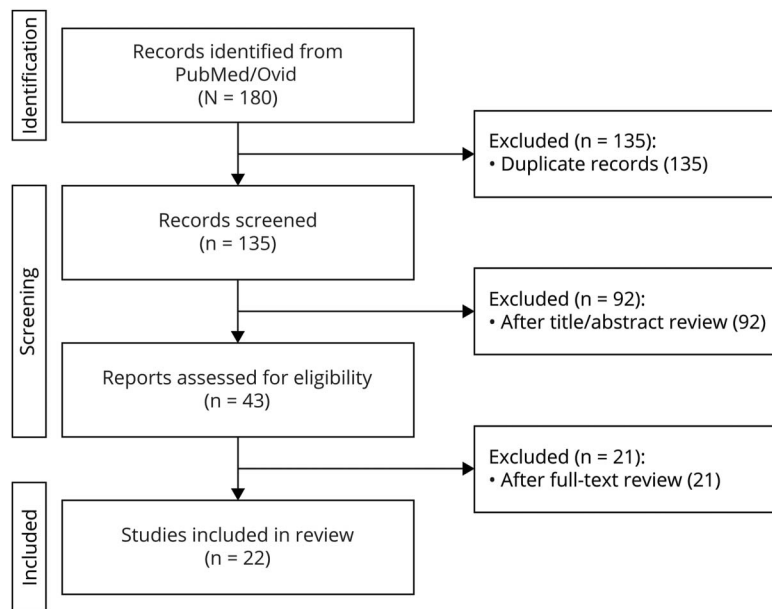
Figure 1 Review Flow Diagram of Included Studies

Table 2 Summary of Studies Reporting Prevalence and Demographic Variables

Author	Design	Study setting	Sleep measures	Key findings
Al-Smadi et al.[11]	A cross-sectional survey method	Jordan	ISI	Of 373 (F/M 1.67/1, 42.73 y, SD = 14.26) Syrian and Iraqi refugees, 52.2% had moderate to severe insomnia. Not having access to medications (p 0.013), low educational level (p 0.001), older age (p 0.011), and living in Amman and Mafraq (p 0.000) were significantly correlated with insomnia
Basishvili et al.[12]	A cross-sectional survey method	Georgia	ISI	Of a cohort of 87 Abkhazian refugees (F/M 1/1.1, mean age 45.2 years, SD = 1.8), 41.1% had moderate to severe insomnia. Demographic correlates included increasing age ($p < 0.001$), higher education ($p = 0.011$), lower SES and unemployment (p 0.012), and being married (p 0.012)
Bruck et al.[13]	A cross-sectional survey method	Australia	• ISI • PSQI-A • Author-designed sleep questionnaire	Of 109 South Sudanese patients (F/M 1/1.1, age range 16–60 y) surveyed, 21.6% had clinical insomnia compared with 6.9% of Australians. Insomnia among this cohort was significantly correlated with male sex ($p < 0.001$). M/F 31.6% vs 11.5%
Lies et al.[14]	A cross-sectional database query	Australia	Structured clinical interviews	Of a cohort of 2703 from multiple countries (F/M 1/1.14, age range 0–70 y), 73.3% reported moderate to severe insomnia. Older age and being an asylum seeker were significantly correlated with insomnia ($p < 0.001$)
Lies et al.[15]	A cross-sectional survey method	Australia	• ISI • PSAS • Sleep diary	Of 69 Syrian refugees (F/M 1/1.2, mean age 45.6 y and SD = 15.9), 51% had moderate to severe insomnia
Lies et al.[16]	Cross-sectional descriptive design	Australia	• ISI • PSAS • Sleep diary • Actigraphy	Of 86 Syrian refugees (F/M 1/1, mean age 45.41 y and SD = 16.39), 32.6% had probable insomnia, and 32.6% had likely insomnia. Premigration trauma, postmigration living difficulties, and PSAS scores positively correlated with insomnia ($p < 0.001$)
Montgomery and Foldspang[17]	Cross-sectional interviews of a community sample	Denmark	Structured clinical interviews	Cohort of 311 refugee children (F/M 1/1.06, mean age 7.5 y and SD is not given). Frequent nightmares were reported in 19%, frequent trouble falling asleep in 19.9%, and frequent trouble staying asleep in 18%. Frequent sleep complaints were correlated with Kurdish ethnicity ($p < 0.05$), violence experienced by parents or grandparents, and length of father's education (both $p < 0.0005$), and being without both parents in Denmark ($p < 0.025$)

Abbreviations: ISI = Insomnia Severity Index; PSQI-A = Pittsburgh Sleep Quality Index—Addendum; PSAS = Pre-Sleep Arousal Scale; SES = socioeconomic status.

Table 3 Descriptive Summary of Studies Included in the Association and Correlation Group

Author	Design	Study setting	Sleep measures	Key findings
Al-Smadi et al.[19]	A cross-sectional survey method	Jordan (female Syrian and Iraqi refugees living in Jordan)	ISI	Insomnia was not associated with a higher impact of FM (p 0.09), although anxiety (p 0.001) and PTSD (p 0.001) were.
Basishvili et al.[12]	A cross-sectional survey method	Georgia	ISI	Using the ISI, PSS, and BDI, insomnia was significantly associated with a) self-estimated influence of war-related stress (based on the author-designed survey) (odds ratio [OR] = 2.51 $p < 0.01$), b) frequency of nightmares (OR = 1.6 $p < 0.0000$), c) PSS score (OR = 1.14 $p < 0.0000$), and d) BDI score (OR = 1.12 $p < 0.0000$).
Bronstein and Montgomery[20]	A cross-sectional observational study	United Kingdom (male Afghan adolescents)	Author-designed sleep questionnaires	Later bedtime on school nights $p < 0.01$, longer SOL on school days $p < 0.001$, and weekends $p < 0.01$ Shorter TST on school nights $p < 0.001$ and shorter TST on weekends $p < 0.05$ were associated with PTSD as was a higher nightmare frequency over a 2-week period $p < 0.001$
Gammoh et al.[21]	A cross-sectional survey method	Jordan (Syrian female refugees living in Jordan)	ISI	A positive correlation between FM severity and insomnia severity ($r = 0.277$, $p = 0.001$).
Gerhart et al.[22]	A cross-sectional survey method	Palestine	Two structured interviews 6 mo apart	Sleep problems were significantly correlated with nightmares ($\beta = 0.22$, $p < 0.05$), PTSD ($r = 0.37$, $p < 0.05$), and depression ($r = 0.47$, $p < 0.05$) at time 1. Trauma exposure was significantly related to sleep problems at both times ($\beta = 0.17$, $p < 0.01$ and $\beta = 0.10$, $p < 0.05$), respectively Sleep problems at time 1 were significantly associated with PTSD symptom severity at time 2 ($\beta = 0.23$, $p < 0.01$). PTSD at time 1 was not significantly associated with sleep problems at time 2.
Lee et al.[23]	Controlled comparative trial	Korea (N. Korean refugees compared with a S. Korean sample)	PSG	Attentional deficits on standardized testing correlated with sleep architecture changes on PSG ranging from 0.42 to 0.5 depending on the specific sleep parameter ($p < 0.05$)
Lies et al.[14]	A cross-sectional database query	Australia (refugees and asylum seekers from multiple countries)	Structured clinical interviews	Disturbed sleep correlated with PTSD $r = 0.62$ (95% CI 0.59–0.65) $p < 0.001$. With depression $r = 0.59$ (95% CI 0.56–0.61) $p < 0.001$ With anxiety $r = 0.57$ (95% CI 0.54–0.60) $p < 0.001$ It also correlated with psychosocial concerns Including family dysfunction $r = 0.22$ (95% CI 0.18–0.25) $p < 0.001$, interpersonal difficulty $r = 0.22$ (95% CI 0.18–0.25) $p < 0.001$, and social isolation $r = 0.32$ (95% CI 0.29–0.36) $p < 0.001$
Lies et al.[15]	Cross-sectional survey and 1-y follow-up	Australia (Syrian refugees)	• ISI • PSAS • Sleep diary	Insomnia severity decreased after a year but presleep cognitive arousal increased. This correlated with decrease in PTSD ($R^2 = 0.22$ $p = 0.01$) and anxiety/depression ($R^2 = 0.37$ $p = 0.01$) and increase in migration stress
Lies et al.[16]	A cross-sectional descriptive survey design, with multinomial regression analyses and mediation analyses	Australia (Syrian and Iraqi refugees residing in Australia)	• ISI • PSAS • Sleep diary • Actigraphy	PTSD symptoms significantly correlated with insomnia ($R^2 = 0.62$; $p < 0.001$).
Montgomery and Foldspang[17]	Cross-sectional interviews of a community sample	Denmark (refugee children from the middle east)	• Structured clinical interviews	Difficulty falling asleep, difficulty staying asleep, and nightmares correlated significantly with one another (r's = 0.5–0.6 $p < 0.00001$).
Müller et al.[24]	A cross-sectional survey design using smartphone-assisted EMA	Germany	EMA	PTSD was inversely associated with sleep duration ($\gamma = -0.15$, t(31) = -2.12, $p < 0.05$), and anxiety was associated with longer sleep latency ($\gamma = 0.13$, t(37) = 1.82, $p < 0.05$).
Park et al.[25]	A cross-sectional survey method	South Korea (at a school for North Korean refugee youth)	ISI	PTSD had a strong correlation with insomnia $r = 0.56$ $p < 0.001$

Table 3 Descriptive Summary of Studies Included in the Association and Correlation Group *(continued)*

Author	Design	Study setting	Sleep measures	Key findings
Sakhelashvili et al.[26]	Cross-sectional interviews in addition to self-reported questionnaires in active and sex- and age-matched control groups	Georgia (internally displaced [ID] adolescents from Abkhazia)	• ESS • CSWS	Using validated scales including CSWS, being an ID adolescent was a significant predictor for poor sleep quality (F(1, 64) = 10.237, p = 0.002). This was despite no difference in daytime sleepiness or nocturnal sleep duration. Worse CSWS score was correlated with lower SES (r = 0.73, p = 0.000) and academic performance (r = 0.49 p = 0.004) in ID adolescents as compared to an age- and sex-matched non-ID control group. Again, female sex was not a predictor of poor sleep in ID, but it was in non-ID adolescents.
Sakhelashvili et al.[27]	Cross-sectional interviews in addition to self-reported questionnaires in active and sex- and age-matched control groups	Georgia (ID children from Abkhazia)	SDSC	Compared with the control group, ID children had a lower level of academic excellence and poorer family environment (p < 0.01) as well as higher scores in all the SDSC dimensions (p < 0.05). SDSC scores positively correlated in ID children with cognitive hyperarousal and standardized self-assessed family environment.
Sandahl et al.[28]	Data extracted from another randomized clinical trial	Denmark	PSQI	Poor sleep quality significantly correlated with symptoms of PTSD (r = 0.33) (p < 0.000)

Abbreviations: BDI = Beck Depression Inventory; CSWS = Children's Sleep–Wake Scale; EMA = Ecological Momentary Assessment; ESS = Epworth Sleepiness Scale; FM = fibromyalgia; ID = internally displaced; ISI = Insomnia Severity Index; PSAS = Pre-Sleep Arousal Scale; PSG = polysomnography; PSQI = Pittsburgh Sleep Quality Index; PSS = Perceived Stress Scale; PTSD = posttraumatic stress disorder; SDSC = Sleep Disturbance Scale for Children; SES = socioeconomic status; SOL = sleep onset latency; TST = total sleep time.

Risk factors for disturbed sleep among refugees included past violent experiences and present life context.[17] The effects of such events were seen in children, whose sleep quality was directly affected by violent exposures toward their family members.[17] This was also attributed to the parents' mental state after their traumatic experiences, which had a detrimental effect on the attention and care they gave to their children.[17] These findings were replicated elsewhere,[27] reaffirming the importance of family environment for the development of sleep disturbances in children after war-related traumatic events. Adults with self-estimated influence of war-related stress (based on the author-designed survey)[12] were also at higher risk for insomnia. Insomnia also correlated with social isolation, interpersonal difficulties, and dysfunctional family environments (based on standardized surveys).[14] Other factors contributing to the poor sleep quality of refugees include the process of migration itself (e.g., living in detention centers or displacement),[14,16] lower socioeconomic status,[26] and lower educational level.[11] It is also important to note that the location in which refugees were residing also played an important role particularly in areas with a high influx of new residents and proximity to areas of conflict.[19] None of the included studies explored the association between sleep disturbances and other conditions beyond FM and mental health disorders, including not assessing health-related quality of life.

Treatment and Prevention

Five articles assessing the treatment of sleep disorders in refugee populations (Table 4) were included. Therapies that improved sleep quality included listening to relaxing music before bed.[32] In a small cohort of 9 patients and 6 sex-matched controls, listening to relaxing music, composed specifically for therapeutic purposes, 15 minutes to 2 hours per night for 3 weeks, improved Pittsburgh Sleep Quality Index (PSQI) scores. It did not affect the PTSD symptoms.[32] This was later demonstrated by the same authors in non-refugee populations where music improved subjective sleep but not objective sleep.[35] Given the strong correlation with PTSD, psychotherapy techniques designed for PTSD, such as stabilizing or guiding imagery through web or app-based audio files, were also tried.[34] The audio file had 3 parts: one was mindful breathing, the second body scan, and the last guided imagery technique "The Inner Safe Place."[34] They were in multiple languages.[34] After 9 days of treatment, the patients attended a booster instructional session. Then, they practiced for 2 months and had a final follow-up.[34] The authors did not perform statistical analysis, although their qualitative findings found that most patients reported improvement in sleep. Only 45% of patients completed the study.[34] Narrative exposure therapy was found to significantly reduce PTSD, depression, and internalizing/externalizing symptoms as well as sleep quality (PSQI scores) compared with treatment as usual.[33] Pharmacotherapy was only used in 2 studies.[28,31] One study randomized 262 patients to 1 of 3 arms for only one night with mixed results.[31] To find a cost-effective easily available treatment modality, a single dose of an antihistamine, chlorpheniramine, was compared with placebo and valerian/hops combo. Valerian root is a herb with sedative qualities. Hops are a flowering plant that also has a sedating effect. They are often found together in over-the-counter

Table 4 Descriptive Summary of Studies Included in the Treatment and Prevention Group

Author	Design	Study setting	Sleep measures	Key findings
Gammoh et al.[31]	Randomized double-blind comparison trial	Jordan	LSEQ	Compared with placebo and valerian-hops, chlorpheniramine significantly reduced sleep latency ($p < 0.001$) but resulted in more AFS ($p < 0.001$). Valerian-hops did not significantly affect sleep parameters compared with placebo. There were no significant differences in the total hours slept among the 3 groups
Jespersen et al.[32]	2-Group pretest/posttest design with repeated measures taken for sleep quality	Denmark	PSQI	The group that listened to relaxing music at bedtime experienced significantly greater improvement in global sleep quality than the control group ($t(13) = 2.25$; $p < 0.043$). There was no effect of the music intervention on trauma symptoms
Park et al.[33]	Randomized controlled clinical trial	South Korea	ISI PSQI	Compared with treatment as usual, NET significantly improved sleep quality ($p < 0.001$) and significantly reduced insomnia ($p < 0.0001$)
Sandahl et al.[28]	Randomized controlled clinical trial	Denmark	PSQI	Compared with treatment as usual, neither IRT alone, IRT with mianserin, or mianserin alone improved PSQI.
Zehetmair et al.[34]	Qualitative study with coding analysis of semistructured interviews	Germany	Structured interviews	Stabilizing and guided imagery techniques helped to reduce body tension immediately after practice (majority of patients) and improved sleep (majority of patients).

Abbreviations: AFS = awakenings from sleep; IRT = imagery rehearsal therapy; ISI = Insomnia Severity Index; LSEQ = Leeds Sleep Evaluation Questionnaire; NET = narrative exposure therapy; PSQI = Pittsburgh Sleep Quality Index.

supplements marketed for insomnia. The chlorpheniramine improved sleep onset latency and subjective satisfaction with sleep, but it resulted with greater fragmentation in sleep than placebo. Valerian/hops combination did not have any significant impact on sleep.[31] The second study randomized 240 patients to treatment as usual, imagery rehearsal therapy (IRT), mianserin, a sedating antidepressant, or IRT + mianserin. Neither IRT nor mianserin, alone or together, significantly improved the PSQI.[28]

Discussion

This review demonstrates that insomnia and poor sleep quality are more prevalent among refugees. This is true whether historic controls are used[18] or whether the studied population was compared with native controls.[12,13] Most of the demographic determinants of insomnia were the same as in general populations including advanced age,[36] unemployment,[36] and poorer health status.[18] The only difference in demographic determinants between refugees and general populations was the lack of gender disparity. International studies have often shown a higher prevalence of insomnia in females.[18] The prevalence studies included in this review had an F/M ratio ranging from 1.67/1 to 1/1.2. This discrepancy, therefore, cannot be explained by the lack of female representation in the samples surveyed. Other studies from China[37] and Japan[36] have also not shown a gender disparity. One explanation could be the various types of metrics used to study insomnia. Most epidemiologic

studies use author-designed interviews or specific insomnia questionnaires. In the articles reviewed, ISI was primarily used, sometimes supplemented by other measures. Menopause and related physiologic changes are one of the reasons for the higher prevalence of insomnia in women.[38] The prevalence studies included in this review had a relatively younger population with mean ages among the adult samples in the mid-40s, reflective of refugee populations at large. Finally, it is possible that psychosocial stress, related inflammation, and its impact on sleep eliminate the preexisting sex differences as has been suggested in past studies.[39]

The prevalence of insomnia reported had a wide range of 32.6%–73.3%. This is due to large variation in the definitions and tools used to assess insomnia. The grouping of these papers together is one of the limitations of this review.

The primary correlations and associations in these studies are with PTSD, depression, anxiety, and other behavioral metrics. Only one cohort, 2 studies, looked at fibromyalgia (FM). Patients with FM were identified by their medical records, and the diagnosis was made by their own physicians. They also filled out a validated translated version of the Fibromyalgia Severity Impact Scale.[19,21] The association of sleep disturbances, insomnia, and nightmares particularly is well established in PTSD.[40] PTSD is also very common among refugees, with a reported prevalence of 30.6% based on one meta-analysis.[41] Insomnia, in the general population, has been previously reported to be strongly correlated with

generalized anxiety disorder[42] and depression.[43] The American University of Madaba cohort demonstrated that the severity of FM correlated with the severity of insomnia,[21] but insomnia was not associated with the severity of FM impact.[19] Both findings are in line with the relationship between insomnia and FM previously documented in the sleep literature.[44,45] Finally, some of the papers that reported data from children and adolescents demonstrated that insomnia correlated with attention deficit and scholastic performance. Again, this is consistent with data from the population at large. Insomnia in adolescents, among other factors, is associated with poor school performance[46] and attention-deficit/hyperactivity disorder (ADHD).[47] Another limitation of this review is that the findings that PTSD, depression, and anxiety are closely related to insomnia are not novel and have been described in nonrefugee populations. Similarly, the findings of children with disturbed sleep underperforming in school have been documented in the general population.

The data available on therapeutic interventions included mostly behavioral interventions. The few pharmacologic interventions reported were either ineffective[28] or had very modest benefit.[31] None of these pharmacologic agents are standard of care for insomnia. This was primarily because of limited resources at the sites where the studies were conducted. Mianserin is an antidepressant, and strong evidence is lacking in the use of antidepressants in insomnia.[48] Valerian/hops has been demonstrated to be ineffective in insomnia,[49] and the evidence on antihistamines as sedative hypnotics is tenuous at best and can have significant adverse effects including restless legs syndrome.[50] The nonpharmacologic interventions also produced mixed results because of a variety of reasons. Sandahl et al.[28] tried imagery rehearsal therapy (IRT) to improve sleep to no avail. IRT is an effective treatment for nightmares, but not for insomnia.[51] Guided imaging techniques were reported to improve sleep.[34] This study reported no quantitative data and had a high dropout rate, yet another limitation of this review. Narrative exposure therapy improved subjective sleep metrics and insomnia severity indices.[33] This has not been reported before, so it is a promising and low-cost treatment that could be explored in the future. Listening to relaxing music helped improve subjective sleep metrics.[33] The results of music therapy (MT) for insomnia have been mixed in the general population.[35] Subjectively, MT seems to improve, yet not completely, subjective sleep measures but not necessarily objective metrics.[35]

Based on this, a protocol is proposed that can be easily implemented, and its feasibility studied in a target group of refuges. Step 1 would include identifying a clinical entity that serves the health care needs of a specific refugee population and engaging these stakeholders to assess the prevalence of sleep disorders with translated, validated, and standardized questionnaires. Step 2 is assessing the role of sleep screening in the practice of the primary care providers (PCPs), identifying barriers and their level of sleep knowledge. Step 3 is making short educational videos to increase awareness among PCPs of sleep disturbances and providing them with, succinct, easy-to-use screening tools. Step 4 is distributing these educational materials over a period of 3 months. Step 5 is assessing both the effectiveness of these educational materials and changes in the PCPs' practices by using standardized surveys. Step 6 is reassessing 3 months out the prevalence of sleep disorders among the original cohort to establish whether increasing PCP awareness improved patient outcomes. Figure 2 summarizes the protocol above.

Richter et al.[9] published a systematic review on sleep disorders among migrants and refugees. They identified and synthesized only 13 papers compared with this paper's 22.[9] They arrived at the same conclusions that the prevalence of insomnia and sleep disorders was extremely high among refugees; the strongest correlation/association was with PTSD and mental health outcomes and similarly called for better implementation of standard therapeutic modalities.[9]

Limitations of these studies are that they did not consistently define refugees, who may be conflated with asylum seekers or other migrant groups. These groups do not make a homogeneous population. According to the United Nations High Commissioner for Refugees, an asylum seeker is someone who has fled persecution and requested sanctuary, yet their

Figure 2 Summary of Proposed Intervention to Increase Awareness of Sleep Disorders Among Refugees
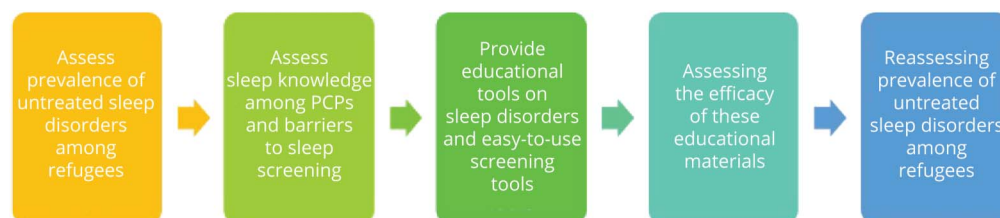
TAKE-HOME POINTS

→ Sleep health is linked to mental health disorders, higher rates of metabolic disease, and faster neurocognitive decline. When compared with both historic controls and native controls, refugee populations report higher rates of insomnia and poor sleep quality.

→ In refugee populations, poor sleep quality was positively correlated with PTSD, depression, anxiety, and fibromyalgia in adults as well as attention deficits and poor scholastic performance in children and adolescents.

→ Few pharmacologic therapies have been beneficial in improving sleep among refugees, although behavioral interventions such as listening to relaxing music, narrative exposure therapy, and stabilizing guiding imagery were associated with improved sleep quality.

request has not been processed, whereas a refugee has had their claim processed and granted. Both groups have a lot of similar mental health and primary health care experiences, each also has its unique set of challenges particularly as a result of asylum seekers' tenuous legal status.

Moving forward, recommend increasing awareness among both the refugee populations and their caretakers and clinicians of the prevalence of insomnia and its implications. If these efforts are successful at demonstrating the feasibility of the proposed protocol, then wider implementation can lead to globally increased awareness. Finally, treatments should include standard-of-care therapies such as cognitive-behavioral therapy for insomnia (CBT-I)[52] and sedative hypnotics that are safe and approved for the treatment of insomnia.[53] Delivery of some of these treatments can be made easier through telemedicine platforms[54] or use of community health workers.[55] From a policy standpoint, ending detention, particularly of children,[56] better housing and access to mental and medical health care for this population can mitigate sleep disturbances in this population.[57] Finally, more research is needed to explore the association of insomnia and sleep disturbances with cardiovascular health outcomes[8] and quality of life outcomes.[23] Ultimately, optimizing sleep health for this vulnerable and growing population will require multilevel interventions.

Acknowledgment

Appendix Authors

Name	Location	Contribution
Archit Baskaran, MD	Department of Neurology, University of Chicago, IL	Drafting/revision of the manuscript for content, including medical writing for content, and major role in the acquisition of data
Emily Marogi, MD	Department of Internal Medicine University of California San Francisco, CA	Drafting/revision of the manuscript for content, including medical writing for content, and major role in the acquisition of data
Ricardo Bitar, BS	American University of Beirut, Lebanon	Major role in the acquisition of data
Hrayr Attarian, MD	Department of Neurology, Northwestern University, Chicago, IL	Drafting/revision of the manuscript for content, including medical writing for content; major role in the acquisition of data; study concept or design; and analysis or interpretation of data
Altaf Saadi, MD, MSc	Department of Neurology, MGH Asylum Clinic, Harvard Medical School, Boston, MA	Drafting/revision of the manuscript for content, including medical writing for content; study concept or design; and analysis or interpretation of data

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