HHS Public Access

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Res Gerontol Nurs. Author manuscript; available in PMC 2023 July 01.

Published in final edited form as:

Res Gerontol Nurs. 2022 ; 15(4): 193–202. doi:10.3928/19404921-20220518-01.

Experiences of Sleep Problems Among Older Korean Immigrants

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Abstract

Despite the poor sleep among older adults, little is known about the sleep habits of older immigrants living in the United States. This pragmatic qualitative descriptive study explored sleep among older Korean immigrants, using a focus group with six participants and individual phone interviews with 22 Korean immigrants aged 60 or older. The transcripts were coded to identify underlying themes. Several thematic categories were identified under six domains: daytime function, getting ready for bed, falling asleep, awakenings during sleep, going back to sleep, and seeking advice from peers. Unhealthy sleep behaviors were found during daytime and bedtime, particularly among those who were retired/unemployed or living alone. Seeking advice from peers was common but none of the advice helped them sleep. Sleep education programs in Korean-speaking communities can be used to target those who are socially isolated and may benefit older Korean immigrants with sleep difficulties.

Keywords

Aging; Korean immigrants; Qualitative study; Sleep behaviors

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Declaration of Conflicting Interests
The authors declare that there is no conflict of interest.

A part of this work was presented at the National Hartford Center of Gerontological Nursing Excellence Annual Leadership Conference, October 2020 and the Gerontological Society of America, November 2021. We wish to thank Janet Lee (University of California Los Angeles) and Wendy Yoo and Moonja Han (Orange County Korean American Health Information and Education Center) for their support on this project.

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Introduction

More than a half of older adults complain of at least one or more symptoms related to insomnia. They include difficulty falling asleep, trouble maintaining asleep at nighttime, and waking up too early in the morning (Jaussent et al., 2011; Park et al., 2014; Schubert et al., 2002). Such nighttime sleep disturbances in older adults are associated with higher odds of napping (Goldman et al., 2008), impaired daily functioning (Gooneratne et al., 2003), and cognitive impairment (Yaffe et al., 2014). Negative impacts of sleep disturbances further extend to include two-fold increased risk of dementia and all-cause mortality in older adults in the United States (Robbins et al., 2021).

Growing evidence has shown racial and ethnic disparities in sleep (Grandner et al., 2016; Johnson et al., 2019). For example, Asian Americans showed higher odds of having disordered breathing during sleep (Chen et al., 2015), shorter sleep duration (Carnethon et al., 2016; Chen et al., 2015; Jackson et al., 2014; Whinnery et al., 2014), and poorer sleep quality than did Whites (Chen et al., 2015). This suggests a critical need for sleep management interventions for Asian Americans.

Behavioral therapies targeting sleep (e.g., cognitive behavioral therapy for insomnia [CBT-I]) are recommended as the first line of treatment for insomnia disorder (Qaseem et al., 2016). The CBT-I focuses on changing dysfunctional cognitions (e.g., worrying about sleep loss, the need to take a nap after lost sleep) and uses behavioral strategies such as changing one's sleep schedule and managing/eliminating behavioral (e.g., watching television in bed) or environmental factors (e.g., turning bedroom lights on at night) that interfere with good sleep. Although evidence supports the effectiveness of CBT-I, most research study samples have primarily comprised non-Hispanic Whites, limiting generalizability to other racial and ethnic subgroups. All large-scale CBT-I trials in the United States have been carried out in English-speaking populations. Sleep behaviors and practices are shaped by cultural and societal norms (Williams et al., 2015) and sleep habits among older immigrants often reflect their cultures of origin in regard to when and where to sleep and what to do to sleep better. Many older immigrants in the United States may practice the same culture where they were originally from. Therefore, methods for coping with sleep problems, non-sleep behaviors in bed, and/or beliefs about sleep may differ between immigrant groups. For example, some older immigrant groups may think that sleep problems are a part of aging and thus may not seek treatment for their sleep issues. Asian Americans tend to be the least likely to speak with their doctors about their sleep problems, and most likely to get advice from family and friends (National Sleep Foundation, 2010). Some behaviors before bed or in-bed may be culturally unique and indicate a required modification to traditional CBT-I.

Access to a traditional behavioral treatment for poor sleep is sometimes limited for older adults because it is provided by specially trained practitioners, typically psychologists and other mental health providers, and requires multiple visits to complete the treatment. Access to and acceptability of behavioral therapy may be more challenging to racial and ethnic minority older adults, especially those who are immigrants and do not speak English fluently.

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Understanding beliefs and attitudes about sleep and sleep disorders is an important first step in tailoring CBT-I to meet the needs of racial and ethnic minority older adults with sleep problems. Little is known about sleep problems and their management in racial and ethnic minority older adults who are immigrants. This study explores sleep practices of older Korean immigrants, one of the largest minority groups in Southern California, who have significant risk factors for sleep problems, such as high rates of diabetes (Jung et al., 2021), and may have unique behavioral factors affecting their sleep habits such as their relationship with family and health seeking behaviors.

Methods

Recruitment and Participants

Recruitment was conducted in Los Angeles County and Orange County, California, in collaboration with the Orange County Korean American Health Information and Education Center (OCKAHIEC). A bilingual research assistant (RA) distributed a study recruitment flyer to OCKAHIEC and other local Korean communities. Potential participants were eligible for the study if they (1) were Korean immigrants (i.e., born in Korean and a resident of the United States), (2) were able to speak, read, and write in Korean or English, (3) were 60 years old, and (4) had no history of cognitive impairment. We used a brief screening questionnaire addressing these eligibility criteria. We also added the Insomnia Severity Index (ISI) (Morin et al., 2011) to the screening questionnaire to ensure that we include participants with a range of sleep problems. The ISI is a seven-item questionnaire commonly used to assess severity of nighttime (e.g., difficulty falling asleep) and daytime symptoms (e.g., interfering with daily functioning) related to insomnia over the past 2 weeks. The total scores range from 0 to 28 with a higher score indicating worse insomnia symptoms. The ISI was used to assign participants with similar levels of sleep problems in the same group. Sample size for this study was determined based on prior studies of cultural beliefs among Korean immigrants, which ranged between 23 and 33 participants (Choi et al., 2015; Wong et al., 2006). We also considered achieving thematic saturation with sample sizes of similar focus group studies (Choi et al., 2015; Wong et al., 2006).

Study recruitment and data collection were conducted from November 2019 through June 2020. If potential participants were interested in the study, a bilingual RA administered the brief screening questionnaire (in-person or by phone). We initially obtained written informed consent from focus group participants. After the first focus group, we transitioned to individual telephone interviews due to “safer at home” orders during the COVID-19 pandemic. At that point, we obtained verbal consent from those who participated in a phone interview. All study procedures were approved by the Institutional Review Board at our institution (IRB#19-000647).

We screened 110 individuals; 67 refused to participate in the study or did not respond to our calls, resulting in 43 that were invited to participate in the study. Twenty-eight participated in either the focus group (n = 6 with ISI scores < 8 indicating no insomnia) or individual phone interviews (n = 22 with ISI scores 8).

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Data Collection

The focus group guide was developed in consultation with the study team members and OCKAHIEC and translated into Korean by the principal investigator (PI). Participants were asked open-ended questions regarding the following topics about their sleep: (a) daytime function (e.g., When you had bad sleep, how did you feel the next day?"), (b) getting ready for bed (e.g., What is it like getting ready for bed? What kinds of things and activities do you find make it more difficult to sleep?"), (c) falling asleep (e.g., When you do have difficulty falling asleep, what kind of things do you try to help you drift off?"), (d) awakenings during the night (e.g., What makes you wake up in the middle of the night?"), (e) going back to sleep (e.g., What have you tried to help you go back to sleep? What has been helpful or not helpful?). The focus group was moderated by the PI, and it lasted approximately 1 hour.

The PI also conducted the individual phone interviews, which lasted approximately 25 to 30 minutes. The phone interview participants were asked the same questions that were used in the focus group. The RA took notes and ensured that all topics were covered for the focus group and interviews. Audiotapes of the focus group and interviews were transcribed verbatim in Korean. Quotes from study participants presented in this paper were translated into colloquial English by bilingual research staff and back translated into Korean by another staff to ensure the accuracy of the translation.

Data Analysis

We used a 2- step process to analyze the focus group and phone interviews beginning with *a priori* coding and finishing with an *inductive* coding process. In the first step, we identified all text in the transcripts that was related to each of the *a priori* domains covered in the interview guides, including *daytime function, getting ready for bed, falling asleep, awakenings during sleep,* and *going back to sleep*. A priori domains were generated based on common symptoms of chronic sleep problems and the consequences occurred throughout daytime and nighttime (International Classification of Sleep Disorders, 2014). This would allow us to fully explore thoughts and/or behaviors related to sleep problems occurring at different times throughout the night (i.e., from preparing for sleep to wake state). To ensure we did not miss important concepts, three coders (the PI and two additional bilingual research members) independently coded each transcript.

In the second step, we compiled the text for each domain and sorted informants' quotes into thematic categories based on their similarities. The three members of the team then compared coded text and sought agreement on their designation of codes in an iterative fashion (Choi et al., 2016). Codes or words used by the participants themselves were used to categorize key phrases and comments. Coded passages were read to identify underlying themes and patterns of responses that are applicable to the key questions. We achieved 98% inter-coder agreement during the final round of coding.

The interviews and coding framework were scrutinized until the data offered no new insights. The induced thematic categories allowed us to examine the range of people's beliefs and patterns of behavior, as well as the degree to which these were shared across

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the sample. Preliminary findings were reviewed with an anthropologist co-investigator for validation. We used Dedoose, version 8.0.35 (SocioCultural Research Consultants LLC, Los Angeles, CA, USA), to organize the data and facilitate analysis of patterns.

Results

Characteristics of the 28 study participants (mean age 73.1 ± 6.5 years, *SD* 6.5; range 60-85 years) are shown in Table 1. We identified six sleep-related content domains, which are described in detail below. The summary of the key quotes for each domain is shown in Table 2.

Domain 1: Daytime Function

Daytime Performance—Most participants reported that their poor sleep impacted their functioning the next day. This included (1) feeling dizzy, half asleep, sleepy, (2) easily forgetful, unfocused, unable to concentrate, taking longer to accomplish tasks, (3) feeling anxious and annoyed, and (4) having less energy, being more tired, and feeling less enthusiastic. One male participant stated: *"(If I don't sleep well at night), I feel tired and can't concentrate on anything. I have communication issues during work while running my business."*

Napping—All participants spoke about experiences with napping during the daytime, particularly after a night of poor sleep. Most participants perceived that it was better to take a nap rather than force themselves not to during the daytime. Naps occurred in several different circumstances, including when they felt tired, when they felt bored or had nothing to do, after eating breakfast or lunch, or while watching television or reading a book. One female participant stated: *"I have lots of free time because I am not working anymore, so I tend to doze off during the daytime."* A shorter nap tended to make them feel refreshed; a longer nap led to them having difficulty falling asleep at night. Another female participant stated: *"If I take 5–10-minute, nap, it is fine but if it is longer than 30 minutes, I can't sleep that night."* This suggests a role of a daytime nap on nighttime sleep and vice versa.

Caffeine Intake—Caffeine intake was identified as a helpful means of overcoming sleepiness by several participants during the day, however, it adversely affected their sleep. Drinking coffee in the late afternoon caused them to have difficulty falling asleep at night. Three participants learned a better strategy via trial and error. One female participant stated that: *"I can't sleep well at night if I drink coffee in the late afternoon. So, I never drink it after 1pm."*

Domain 2: Getting Ready for Bed

Bedtime Routine—Only a few participants addressed routine activities before bed, for example, checking their next-day schedule, taking a shower, or watching television. Some of these bedtime routines were identified as very helpful to falling asleep without difficulties. One participant noted that writing a journal containing a list of completed activities and a to-do list for the next day helped them fall asleep quickly by removing bedtime rumination,

a potential barrier to falling asleep. In contrast, nine participants did not have any bedtime routine. Instead, they fell asleep anytime that they felt sleepy at night.

Calming Mechanism—We identified two types of calming mechanisms that participants tried before bed: those that had a physical effect and those that had an intellectual/emotional effect. Activities that provided physical calming effects before bed included exercise (e.g., walking) or taking a shower. Participants also engaged in activities that helped them to relax emotionally (i.e., intellectual/emotional effect). These activities included watching television or a video, reading the Bible or a book, listening to a hymn or other music, or writing in a journal.

Device Use—Six participants used their electronic devices, such as a smartphone or tablet, to engage in activities to calm their mind (e.g., watching YouTube, listening to a hymn or other music). This device use continued even when they were in bed trying to fall asleep.

Domain 3: Falling Asleep

Bedtime Rumination—A common contributor to difficulty falling asleep was bedtime worry about the future and rumination about past events. Participants indicated that they often could not fall asleep because of worrying or thinking about their next day or beyond. Eight participants said that this anxiety was related to their roles or responsibilities. One male participant stated: "Because I have a small business to run, I have many things to take care of… and so if I think about this and that, I can't fall asleep quickly. I get out of the bed, move around in the house, and go back to bed. I close my eyes but can't still fall asleep." Thinking about past events also made it difficult for participants to fall asleep. One example was a participant regretting a failure in managing his/her business and the resulting financial difficulties.

Calming Mechanisms—In bed, calming mechanisms were used for intellectual/ emotional effects. Eight participants tried the same calming activities they used as getting ready for bed; however, they were not always helpful. Others used a calming mechanism only when they had trouble falling asleep. Watching videos or listening to something on a device was the most common calming mechanism that was used. Spiritual activities such as praying or listening to a sermon were also used by several participants. One male participant stated: "If I can't fall asleep, I tend to listen to music and then eventually fall asleep. If I do so, my mind focuses on the music, and I forget about other thoughts in my mind. Then I don't even remember when I fell asleep. If I watch something from television, computer, or cell phone, my mind focuses on it and other thoughts disappear…So I use this when I can't fall asleep."

Device Use—Using electronic devices was a main activity for participants once they were in bed. One participant stated that if she is having trouble falling asleep, she used the Korean App to chat with friends or family in South Korea. Although participants used the device as a tool to calm down their mind, its benefit in falling asleep or having good quality of sleep was not fully supported by participants' comments. "*I dozed off once while browsing the internet on the iPad. Then I bumped the iPad and woke up*."

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Sleep Environment—Four participants set up their environment before bed for sleeping better. It included wearing a sleeping eye mask, socks, or a scarf. Others said that their sleep environment was a distraction to falling asleep, for reasons such as noise (from a spouse or the neighborhood) and room temperature (i.e., too cold or too hot).

Alcohol and Pills—Interestingly, all male participants stated that they tried drinking alcohol to help them sleep; however, they agreed that it was not helpful and caused headaches. Taking a sleeping pill was chosen as the last resort to sleep when other methods did not work by both men and women. Nevertheless, participants perceived that taking a sleeping pill was better than not sleeping at all. One female participant stated: "If I start feeling sleepy while watching television in the living room, I move to my bedroom and keep watching TV. And then turn it off and go to sleep if I feel sleepy again. Since I am living alone, TV is my friend… I don't even have anyone to talk with… and then if I have trouble falling asleep, I take half a tablet of the sleeping pill."

Domain 4: Awakenings During Sleep

Rumination—Participants noted that thoughts about the next day or worry awoke them in the middle of the night. This was also experienced by those who took sleeping pills because they had nightmares or could not sleep through the night. One female participant explained: "Even when I take sleeping pills, I have bad dreams. I am frequently startled awake. Very bad dreams… often dream of my family. My family in Korea are all sick. Dreams of my family in Korea that gives me bad feelings… If I'm awakened by them, I can't go back to sleep. I just get up."

Internal Distraction—Common situations in which participants woke up at night included the need to urinate and symptoms suggesting risk of sleep apnea or another condition. All participants stated that they had to use a restroom during the night. Eight participants had other physical conditions, such as awakening from stopping breathing, allergy symptoms, or feeling hungry.

External Distraction—Another situation of awakening was external distractions, including noise from outside or the snoring of a spouse. However, only two participants were able to manage those distractions, for example, by sleeping alone in a separate room.

Domain 5: Going Back to Sleep

Rumination—Ten participants said that worry or thoughts bothered them when they woke during the night and made it hard to go back to sleep. One female participant stated that: "I live alone. I worry about what's gonna happen to me when I am sick… this kind of thoughts and worries make it difficult going back to sleep."

Calming and Distracting Mechanism—When participants were having trouble going back to sleep at night, they engaged in activities that helped them calm down their mind or distract them from feelings of hyperarousal. Praying was one example of a calming mechanism that was helpful for some participants. Seven participants tried turning on the television or doing housework (e.g., cooking) to be distracted from being too focused on

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going back to sleep. However, those activities sometimes completely awakened them, and they started their day earlier than they had planned. Three participants stated that they did not have anything to do in the middle of the night, and that they continued to lie in bed until they eventually fell back to sleep.

Device Use—A few participants stated that they used an electronic device such as a smart phone or tablet to get back to sleep; however, this was not perceived as a preferred strategy as it took longer to fall back to sleep.

Domain 6: Seeking Advice from Peers

Seeking advice from peers to improve sleep was very common among participants, and they often tried to follow the advice. However, all agreed that none of the advice of their peers worked to help them sleep. One female participant stated that: "Someone suggested drinking milk or eating a banana before bed. So, I tried it and it helped a little bit. But I started having indigestion. So, I stopped after a few times." Another said, "A group of my friends also told me that drinking a glass of water before bed is healthy. The healthiest friend told me that as well." Only a few participants said that they talked about their sleep problems with their health care providers, and none of them indicated that they received non-pharmacological sleep treatments from the providers. Two participants stated that their doctors simply suggested "*Relax your mind*."

Discussion

This study adds to the literature on understanding sleep in racial and ethnic minority subgroups in the United States. Many of the Korean immigrants in this study experienced sleep problems, including difficulty initiating sleep, waking up in the middle of the night, and difficulty going back to sleep. Poor sleep at nighttime further disturbed their daytime functioning, which is consistent with previous studies (Kleinman et al., 2013; Kyle et al., 2010). Only a few studies targeted older Korean immigrants living in the United States with the prevalence of sleep disturbance ranging between 23% and 83% (Jang et al., 2011; Lee et al., 2021; Sok, 2008). One study (age between 50-75 years) reported a higher rate of sleep disturbances among Korean immigrants (23%, n=200) compared to Chinese immigrants (14%, n=200), which remained significant after adjusting for other factors such as age, sex, education, and marital status (Lee et al., 2021). Unfortunately, no studies of Korean immigrants explored their thoughts and behaviors linked to sleep disturbances.

In our study, napping was perceived as an acceptable behavior, particularly if it occurred before the late afternoon. However, taking a nap for a long time or later in the day further disrupted their sleep at night, creating a vicious cycle. In a study of older adults in Taiwan, afternoon napping was viewed as a cultural tradition and habit, and being bored was one of the contributing factors of napping (Lin, 2018). While there is no Korean culture specific to napping behaviors among adults, taking a nap was common among Korean immigrants who stayed home during the daytime (e.g., those who were not employed or retired) in our study. This may be in part due to feeling bored or emotionally distressed. In fact, in another study of Korean immigrants, taking a nap occurred when they felt angry or stressed (Sin et al., 2011). It is also possible that some participants in our study may not have recognized

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that they were dozing off during the day. Chen and colleagues (2015) found higher odds of daytime sleepiness among Asian Americans than among Whites, and it is well-established that long daytime napping can reduce sleep drive at night. Because our study focused on exploring nighttime sleep behaviors, we did not measure duration of daytime naps. Future studies are needed to collect both subjective and objective daytime sleep among older Asian immigrants, particularly in relationship with other health outcomes.

Rumination was the most common reason participants gave for their difficulty initiating or falling back to sleep after awakening. Notable rumination included worries about the future, financial issues, past events, and worries about their family in Korea. In general, bedtime rumination tends to increase arousal in bed and cause sleep disturbance. Rumination about negative or stressful life events can play a substantial role in sleep disturbance. In prior studies, daily stressors were significantly associated with more disturbed sleep among patients with insomnia (Shaver et al., 2002). Moreover, immigrants with emotional distress were at risk of sleep disturbances than non-immigrants (Schneeberger et al., 2019). Although not all types of bedtime rumination contribute to poor sleep, deep thinking about a troubling situation may affect arousal at bedtime. We did not explore sleep issues in relationship with immigration history itself. However, it is possible that acculturative stress (e.g., homesickness, language barriers, perceived discrimination) may play a role in developing sleep problems (Jang & Chiriboga, 2010; Lee et al., 2021; Suh et al., 2013). Future studies should consider immigration history in relation to rumination contributing to sleep disturbances in this group.

Spiritual activities, including praying, reading the Bible, or listening to hymns were commonly reported as calming mechanisms and perceived to be helpful by the study participants. In Korean immigrant communities in the United States, churches have played an important role in providing social networks, which can offer a sense of belonging and emotional support. In previous studies, religious engagement and social support were significantly associated with greater life satisfaction and better self-reported health status among older Korean immigrants (Lee & Woo, 2013; Park et al., 2012). This may suggest potential benefits of church-based sleep intervention programs for this group.

As a calming activity or routine to aid sleep, electronic device use before going to bed or while in bed was noted. The participants also used devices for a distraction from negative thoughts or to provide religious activities to calm themselves and be ready for sleep. However, the device also disrupted their sleep. Participants seemed not to realize the connection between back-lit devices and sleep disturbance (Garland et al., 2018). Sleep hygiene addressing appropriate use of devices around bedtime may benefit those with poor sleep in this subgroup.

The use of sleeping pills only as a last resort may be, in part, related to worry about their potential adverse effects (e.g., sleepiness or drowsiness the next day). Reluctance to use sleeping pills is consistent with findings from studies of other racial and ethnic minority subgroups. For example, in a study of adults in Hong Kong, concerns were raised about the side effects of sleeping pills, and Chinese medicine was preferred (Yung et al., 2016). Nevertheless, some participants believed that getting some sleep by taking a pill was better

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than not sleeping at all. Addressing such misbeliefs about sleep medications will need to be a target for sleep management in this group. One study in the United States also found that acceptability of sleeping pills was associated with older age (Culver et al., 2016).

Our study findings also suggest particular attention may need to be paid to those living alone, who are at higher risk of loneliness and social isolation (Griffin et al., 2020), as this was described as a factor contributing to poor nighttime sleep in study. Loneliness is significantly higher among older immigrants than older non-immigrants (Victor et al., 2012). In a study of older Korean immigrants, both social isolation and loneliness were significantly associated with subjective cognitive impairment (Jang et al., 2021). In another study, living alone but also disengaged with others (i.e., eating alone) were significantly associated with loneliness among older Korean women immigrants (Park et al., 2021). The availability of social services regarding this issue needs to be further investigated as part of efforts to address sleep problems and improve sleep health in this group. Future studies are also needed to explore how living alone or living in other places than their own home could impact sleep among older immigrants.

We found that participants seek help or advice from peers when they experience sleep problems. However, none of the advice helped them to sleep better. This suggests a critical need of a sleep intervention program tailored to individuals' sleep issues. Racial and ethnic minority older adults' health care decisions and behaviors are often influenced by peer group experiences, beliefs, and traditions (Phillips et al., 2015). A peer group intervention program may be one feasible method for delivering sleep education sessions to this subgroup.

We did not specifically ask study participants about their experience of sleep management by their health care providers. But in our study, none of participants had heard about non-pharmacological sleep management options (e.g., CBT-I) from their providers. It is possible that the participants may perceive their sleep problem as a normal aging process and, thus, may not share detailed information about their sleep issues with their providers. Another possible reason could be a belief that the treatment offered by their health care providers for poor sleep would be sleeping pills (Venn & Arber, 2012). Studies have also shown that clinicians have limited training on sleep medicines, gaps in their knowledge related to defining the underlying cause and appropriate treatment options of sleep problems, and a lack of resources (e.g., clinical practice guidelines for sleep disorders) available at their primary care practices (Ogeil et al., 2020), which are barriers to the recognition, diagnosis, and management of sleep disorders. Moreover, Korean immigrants often seek Korean providers, mostly due to language and cultural barriers (Jang, 2016), suggesting the critical role of these clinicians in addressing sleep issues.

While this study provides insight into sleep among older Korean immigrants, its limitations should be acknowledged. Our study participants all resided in Southern California in or near Korean communities. Therefore, study findings may not be generalized to those living in other geographic areas in the United States or other countries. The study participation rate was only 25%. Despite availability of bilingual research staff, we were unable to conduct active in-person recruitment and follow-ups due to the COVID-19 pandemic. We conducted an individual phone interview with most of our study participants and therefore,

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could not collect nonverbal communication data, such as facial expressions or gestures. However, the individual phone interviews may have allowed study participants to feel more comfortable and share more in-depth experience with our research team than traditional focus groups. Additionally, it is possible that some participants' sleep may have been affected by the pandemic. However, all interviews were conducted within 3 months after the initial COVID-19 lockdowns, and we instructed the participants to share their experience of sleep before the pandemic.

Our study has implications for clinical practice. First, healthcare providers may need to proactively inquire about sleep problems in older Korean immigrants, especially among those living alone, and offer suggestions for curtailing daytime napping. Second, sleep education delivered in the context of religious communities may encourage healthy sleep and may create opportunities for effective peer support when sleep disturbances are experienced. Finally, our study suggests that the strategies used in CBT-I should be tailored to address the unique experiences of immigrant communities. For example, following stimulus control recommendations (i.e., limiting non-sleep activities in bed) may be challenging to those who use an electronic device in bed to connect with friends or family in South Korea, given the limited time window for communication due to time zone differences. Future studies testing key components of CBT-I for this subgroup are warranted to develop a treatment manual and effective delivery strategies. Additional strategies to decrease social isolation, such as peer-based sleep programs within Korean communities may enhance the benefits achieved with CBT-I.

Acknowledgements

Dr. Song was supported by UCLA Resource Center for Minority Aging Research/Center for Health Improvement of Minority Elderly (RCMAR/CHIME) funded by National Institutes of Health (NIH), National Institute on Aging (NIA) P30-AG021684 and UCLA Clinical and Translational Science Institute (CTSI) funded by NIH/National Center for Advancing Translational Science (NCATS) UL1TR001881. The work was also supported by NIA (K23AG055668, PI: Song) and the National Heart Lung and Blood Institute (K24HL143055, PI: Martin). Dr. Martin is supported by a VA HSR&D Research Career Scientist Award (RCS 20-191). The content is solely the responsibility of the authors and does not necessarily represent the official views of the Department of Veterans Affairs, National Institutes of Health, or the U.S. Government.

Data availability statement:

The data that support the findings of this study are available from the corresponding author, [YS], upon reasonable request.

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Table 1.

Study Participant Characteristics (N=28)

	Mean (*SD*)/ Frequency (%)
Age, years	73.1 (6.5)
Gender	
Men	9 (32%)
Women	19 (68%)
Marital status	
Married	12 (43%)
Divorced	6 (21%)
Widowed	10 (36%)
Living situation *	
Living in their own home/apartment	24 (86%)
Living in a daughter's home	2 (7%)
Living in Go house	1 (4%)
Living arrangement	
Living alone	14 (50%)
Living with spouse and/or others	14 (50%)
Duration of residing in the United States, years †	38.5 (11)
Levels of education *	
Some high school	1 (4%)
High school graduate	8 (30%)
Business/vocational school	1 (4%)
Some college	5 (19%)
College graduate	9 (33%)
Graduate or professional education	3 (11%)
Employment status	
Currently employed for wages	8 (29%)
Retired	18 (64%)
Never worked	2 (7%)
Type of a recent job	
Small business owner/self-employed	14 (50%)
Annual household income **	
<= $10,000	3 (13%)
$10,001-$20,000	8 (33%)
$20,001-$30,000	4 (17%)
$30,001-$40,000	2 (8%)
$40,001-$50,000	1 (2%)
$50,001-$100,000	2 (8%)

	Mean (*SD*)/ Frequency (%)
>=$100,001	4 (17%)

*n=27

**n=24

†range from 0.2 to 55 years

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Table 2.

Summary of Key Quotes

Domains	Key Quotes
1. Daytime function	
Daytime performance	"(If I don't sleep well at night), I feel tired and can't concentrate on anything. I have communication issues during work while running my business." (male, divorced, living alone) "I have had a sleep issue for more than 10 years. First thing I can think of sleep is that I feel like losing my time by sleeping… I feel like I can make a better use of my time when I am not sleeping. Now I only sleep a couple of hours at night. I feel fine mentally but tired physically. If I sleep less than one hour, then I feel more tired both mentally and physically." (a widow living alone)
Napping	"I wish I can take a nap, but I am working full-time. On some occasions, I take a brief nap like 10-15 minutes during my break time at work." (male, married) "I have lots of free time because I am not working anymore, so I tend to doze off during the daytime." (a widow living with a daughter and her family) "If I take 5–10-minute, nap, it is fine but if it is longer than 30 minutes, I can't sleep that night." (a widow living alone)
Caffeine intake	"I can't sleep well at night if I drink coffee in the late afternoon. So, I never drink it after 1pm." (a widow living alone)
2. Getting ready for bed	
Bedtime routine	"I don't have a fixed bedtime or a routine before bed. I sleep when I feel sleepy." (male, married) "I keep a diary of what I have done today and what I have to do tomorrow before bed. Then I don't worry about things when I am in bed…" (a female participant from the focus group)
Calming mechanism	"I don't like it when my husband asks me to go exercise together. Feels like being led into a slaughterhouse but feels good when returning and I sleep well." (a female participant from the focus group) "I can't sleep without taking a shower but sometimes showering wakes me up and can't go to sleep." (male, divorced, living alone) "Before going to bed, I read bible, which helps me to fall asleep." (a widow living alone)
Device use	"I use my smart phone. I listen to sermons and watch shows on my phone." (a widow living alone)
3. Falling asleep	
Bedtime rumination	"Because I have a small business to run, I have many things to take care of… and so if I think about this and that, I can't fall asleep quickly. I get out of the bed, move around in the house, and go back to bed. I close my eyes but can't still fall asleep." (male, divorced, living alone) "I was used to own multiple rental homes but during the IMF (economic recession in South Korea in late 1990's), I lost all my properties since I couldn't collect rent. So I can't sleep due to feelings of unfairness. Even eviction notices were useless. All the money I didn't get to spend. I feel very angry. Those thoughts come to my mind when I try to sleep." (female, divorced, living alone)
Calming mechanisms	"If I can't fall asleep, I tend to listen to music and then eventually fall asleep. If I do so, my mind focuses on the music and I forget about other thoughts in my mind. Then I don't even remember when I fell asleep. If I watch something from television, computer, or cell phone, my mind focuses on it and other thoughts disappear… So I use this when I can't fall asleep." (male, married) "I watch South Korean TV programs in the morning. A doctor from one of the health-related programs said that the best way to fall asleep easily is to lie down straight and do some simple exercises when going to bed. Then you would feel comfortable and fall asleep. So I tried them. Simple exercises." (a female participant from the focus group)
Device use	"I dozed off once while browsing the internet on the iPad. Then I bumped the iPad and woke up." (male, divorced, living alone) "When I am in bed, I turn on 30 minutes of deep sleep music or sermons on my smart phone." (a widow living alone) "… I lie down in my bed and listen to "Renew Me" (one of Korean Christian programs) using my smart phone. I put the phone next to my ear and I find myself asleep." (a widow living alone)
Sleep environment	"Sleeping with my husband on the same bed is the cause of my sleep issues. I rarely fall asleep quickly. Sounds of his snoring and turning in bed keeps me from sleeping, so we sleep in separate rooms now. So sleep comes to me much easier." (female, married) "After working the night shifts, I can't sleep during the day because of noises from outside (I sleep in the office building since I'm homeless)." (male, divorced)
Alcohol and pills	"If I start feeling sleepy while watching television in the living room, I move to my bedroom and keep watching TV. And then turn it off and go to sleep if I feel sleepy again. Since I am living alone, TV is my friend… I don't even have anyone to talk with… and then if I have trouble falling asleep, I take half a tablet of the sleeping pill." (a widow living alone) "I tried drinking alcohol, but one glass wouldn't help me sleep. So I drink 2-3 glasses, and get a headache. Then I take medicine for the headache." (male, divorced, living alone)
4. Awakenings during sleep	

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Domains	Key Quotes
Rumination	"Even when I take sleeping pills, I have bad dreams. I am frequently startled awake. Very bad dreams… often dream of my family. My family in Korea are all sick. Dreams of my family in Korea that gives me bad feelings… If I'm awakened by them, I can't go back to sleep. I just get up." (female, divorced, living alone) "If I have something to worry about, I wake up in the middle of the night." (male, married)
Internal distraction	"I sleep with my mouth open, so perhaps I wake up from breathing issues. Due to my excessive snoring, I sleep in a separate room when we go on a vacation with my family. They say that I sometimes stop breathing." (a widow living alone) "I always wake up after about 2 hours of sleep. If I wake up, I use the restroom. I don't know why I wake up. My doctors suggested that my severe allergy could be the reason." (a widow living alone)
External distraction	"Before I started using CPAP, I snored a lot. I used to wake up from my wife poking me." (male, married)
5. Going back to sleep	
Rumination	"I live alone. I worry about what's gonna happen to me when I am sick… this kind of thoughts and worries make it difficult going back to sleep" (a widow living alone)
Calming and distracting mechanism	"If I can't fall asleep, I get out of my bed and watch television for about 30 minutes. Then I fall asleep. When I try to sleep, my mind becomes more active. If I try to sleep more, it gets even harder to fall asleep. So, I get up and do other stuff and eventually fall asleep." (male, married) "If I'm having difficulty going back to sleep, I turn on music and fall asleep. If even more difficult, I fall asleep while watching the TV in the living room. Without this, it's difficult to fall asleep. Even before I had sleep problems, I always fell asleep while listening to sermons." (a widow living alone)
Device use	"I get on my smartphone sometimes, but it takes me more than 2 hours to fall asleep. Since it doesn't help, I don't use the phone anymore." (male, divorced living alone)
6. Seeking advice from peers	
-	"Someone suggested drinking milk or eating a banana before bed. So, I tried it and it helped a little bit. But I started having indigestion. So, I stopped after a few times." (female, divorced, living alone) "A group of my friends also told me that drinking a glass of water before bed is healthy. The healthiest friend told me that as well." (female, married) "A deacon gave me his/her sleeping pill, so I tried it once. But then it gave me terrible headache. I only slept 1-2 hours that night. I don't take the pill any more since then." (a widow living alone)