Are Migration Status and Low Life Satisfaction Associated with Poor Sleep Quality among Older Adults in India? Evidence from Longitudinal Ageing Study in India (LASI), 2017–2018

Introduction

India has been experiencing rapid population ageing due to significant shifts in demographic trends, such as declining fertility rates and reduced mortality rates in recent decades (Rajan et al., 2003). The number of older adults in the country is projected to more than double, rising from 100 million (8.4 per cent) in 2011 to 230 million (14.9 per cent) by 2036 (National Commission on Population, 2020). Life expectancy at birth in India has also seen a remarkable increase, from 36.2 years in 1950 to 67.5 years in 2015, and is expected to reach 75.9 years by 2050. Even more impactful for population ageing, life expectancy at age 60 has significantly risen, from around 12 years in 1950 to 18 years in 2015, and is projected to exceed 21 years by 2050 (United Nations, 2022). Additionally, the country has experienced a remarkable surge in the number of internal migrants over the past few decades. The number of internal migrants grew from approximately 309 million in 2001 to about 450 million by 2011, and by 2021, it is estimated that around 600 million people in India will have migrated within the country (Rajan & Bhagat, 2022). An increasing number of migrants are entering into old age, and many of them suffer from deterioration of health outcomes in later life. According to the Periodic Labour Force Survey 2021 (PLFS), among all the reasons for migration, approximately 0.4 per cent of Indians migrate after retirement, with another 0.7 per cent migrating due to health-related issues. Additionally, around 9.2 per cent of individuals migrate with earning members, which consists of a significant number of elderly who are migrating in old age (NSO, 2022). A growing body of literature found that the migration status of older adults had major consequences not only on their socioeconomic but also on their physical and mental health (Conkova et al., 2024; Hossain et al., 2022; Mandal et al., 2023; Samanta et al., 2023; Srivastava, n.d.).

Growing older is often associated with a decline in life satisfaction. Numerous factors, such as poor health, poverty, disability, loneliness, and anxiety, can negatively influence the sense of life satisfaction among the elderly (Didino et al., 2016; Eshkoor et al., 2015). Life satisfaction is an important predictor of well-being among the elderly. Life satisfaction is a holistic evaluation of one's life, reflecting a deep-seated sense of fulfilment and contentment that goes beyond fleeting emotions or individual experiences (Bukhari et al., 2023). Some

studies show that older adults who are female, educated, and active tend to report higher life satisfaction than others (Mehr et al., 2019; Zeinalhajlou et al., 2020). A study found that the life satisfaction among migrants is generally lower than that of natives at place of destination but it was higher compared to their peers in their place of origin (Baykara-Krumme & Platt, 2018). However, another study found that rural migrants experience lower life satisfaction than non-migrants (Yue et al., 2019).

Poor sleep quality is a significant concern in the lives of older adults. Sleep is a crucial activity essential for life, during sleep, the body experiences several physiological changes. (Kryger et al., 2010). Findings of many studies show that between 40% and 70% of older adults have poor sleep quality and related chronic diseases, where half of them were undiagnosed (Miner & Kryger, 2020; Park et al., 2013; Thichumpa et al., 2018). It has been seen that negative health outcomes and poor sleep quality have been hypothesized to be bidirectional (Wu et al., 2012). Studies show that diseases such as diabetes, depression, heart disease, arthritis etc., adversely affect sleep quality (Foley et al., 2004; Nanthakwang et al., 2021; Wang et al., 2020) . Conversely, some studies shows that poor sleep quality can lead to cognitive impairments and depression among older adults (Banerjee & Boro, 2022; Than et al., 2023).

Migrants often face worse working conditions, poorer health, being overqualified for their jobs, living in substandard housing, and generally seem to be less satisfied with life compared to the rest of the population (Ciorbagiu et al., 2020). Low life satisfaction is often linked with poor sleep quality (Park et al., 2013; Thichumpa et al., 2018). For older adults, being a migrant with low life satisfaction may create a double burden, further exacerbating poor sleep quality.

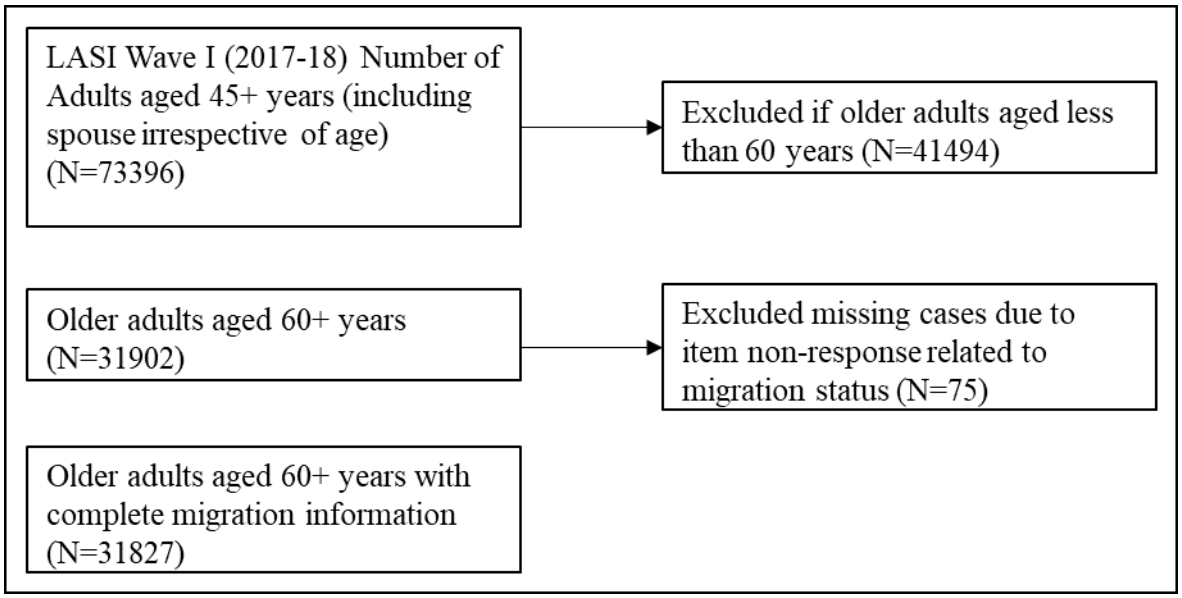
Despite the significance of understanding sleep health among migrants, there is a scarcity of research examining the association between migration status and poor sleep quality (Modesti et al., 2016; Seicean et al., 2011; Voss & Tuin, 2008). Particularly in the Indian context, no studies have yet explored the important association. To address this gap in the literature, the present study makes an attempt to provide new insights utilizing data from a recent national-level sample survey. The focus is to analyse how migration status correlates with poor sleep quality, considering low life satisfaction as a potential mediating factor. By investigating this association, the study seeks to unravel the complex dynamics between being a migrant, experiencing low life satisfaction and suffering from poor sleep quality. The findings aim to inform policies and interventions that can address the specific health and well-being challenges faced by older migrants in India.

Methodology

Data

This study utilized the data from the Longitudinal Ageing Study in India (LASI) Wave 1 (2017-18), a nationwide, large-scale survey on ageing and health. Briefly, The LASI Wave 1 is a nationally representative survey of 73,396 older adults aged 45 and above, along with their wives at any age across all states and union territories of India. LASI delivers anonymised scientific data on a population's health and socio-economic well-being that is valid, reliable, and continuous. The LASI used a multistage stratified area probability cluster sampling design to arrive at the final units of observation. LASI used a three-stage sample design in rural areas, whereas, in urban areas, it used a four-stage sample design. Details on the methodology, design, and process of data collection are publicly available in the form of a report (LASI, 2020).

Study Sample



The participants in our study were older individuals aged 60 and above who either migrated or stayed at the same place since birth. The question “Since how many years have you been living in this place?” was asked to the respondents. If the answer was “same place”, they were considered non-migrants and remained considered migrants. After extracting the sample below the age of 60, the total sample size for the present study was 31,827 older adults aged 60 years and above.

Variable description

Outcome Variable

Poor sleep quality: Jenkins developed the sleep scale in 1988, which is considered the most effective test in epidemiological studies for measuring sleep disturbances (Jenkins et al., 1988). LASI used a 4-item scale adapted from the Jenkins Sleep Scale to assess sleep problems. The following questions were - How often: (1) do you have trouble falling asleep? (2) do you have trouble getting back to sleep? (3) Are you not able to fall asleep again? (4) do you feel unrested during the day? Responses to each item were captured on a 4-point scale: 1=never, 2=rarely (1–2 nights per week), 3=occasionally and 4=frequently (5 or more nights per week). Respondents rated any of the four symptoms on a 4-point scale, considered as having poor sleep quality and a scale point from 1 to 3, considered as good sleep quality. Poor sleep quality is coded as "1", and good sleep quality is coded as "0".

Main Explanatory Variables

Migration Status: We regarded migration status as a principal independent variable. This status was determined based on respondents' answers to the survey question, "How many years have you been residing (continuously) in this area?" Individuals indicating, they had lived in the area since birth were categorised as non-migrants and coded with "0", while others were classified as migrants and coded with "1".

Life satisfaction: The Satisfaction with Life Scale (SWLS) was used to assess older adults' life satisfaction (LS) level. The SWLS is a very simple, short questionnaire made up of only five statements: "(i) In most ways, my life is close to ideal; (ii) the conditions of my life are excellent; (iii) I am satisfied with my life; (iv) so far, I have got the important things I want in life; and (v) if I could live my life again, I would change almost nothing". A scale was assigned using the 7-point Likert scale (ranging from 1 = strongly disagree to 7 = strongly agree), indicating the respondents' agreement with the five statements regarding LS. Using the responses to the five statements regarding life satisfaction, a scale was constructed with a score ranging from 5 to 35, with a higher score indicating greater life satisfaction. The scale is further categorized into tertiles, which are 'low satisfaction' (score of 5–20), 'medium satisfaction' (score of 21–25), and 'high satisfaction' (score of 26–35) (LASI, 2020). However, for simplicity of computation and interpretation, we categorised these scales into low life satisfaction (scale of 5-20) coded with '1' and high satisfaction (scale of 21-35) coded with '0'.

Other Explanatory Variables

Respondent age was grouped as 60–69 years, 70–79 years, and 80 years and above. The sex of the respondents was categorized as male and female. The years of schooling were divided into four groups: no education, primary level (1-5 years), secondary level (6 to 9 years), and high school and above (10 or more years). The living arrangement of the respondent was categorized as living alone, living with a spouse, and living with others but not with the spouse. Marital status was categorised as Married, and others (those who were separated, deserted, and never married). The current work status of the respondent was categorized as currently working and currently not working. The place of residence was categorised as rural and urban. Religion was categorised as Hindu, Muslim, Christian and others. Caste was categorised as Scheduled Tribes (STs), Scheduled Caste (SCs), Other Backward Classes (OBCs) and Others. The monthly per capita consumption expenditure (MPCE) quintile was determined using household consumption data, and the information linked to household-level consumption of food and non-food items was used. The reference periods for food expenditure were seven days, and for non-food expenditure, were 30 days and 365 days. These expenditures have been standardised to the 30-day reference period. The variable was then categorised into five quintiles, i.e., from poorest to richest. Smoking behaviour was categorised as never smoking and ever smoking. The behaviour of alcohol consumption was categorised as never and ever consumed. The question accessed physical activity, 'How often do you take part in sports or vigorous activities, such as running or jogging, swimming, going to a health centre or gym.' The frequency of doing such activities was accessed through a five-point scale. Based on these scales, physical activity was categorised as every day (1-point scale), once a month (2–4-point scale) and never (5-point scale).

Statistical measures

The study used bivariate and logistic regression analysis to fulfil the aim of the objective. Descriptive analysis is used to show the sample profile of the respondents. Further, bivariate analysis was carried out to estimate the prevalence of poor sleep quality among older adults. The logistic regression analysis had three models to explain the unadjusted and adjusted estimates of key explanatory variables along with other covariates on poor sleep quality. Model I provide the unadjusted estimates (UOR) for the explanatory variables (migration status and low life satisfaction). Further, Model II provides the adjusted effects (AOR) of explanatory variables after controlling the covariates. In order to fulfil our objectives, we employed Model-3, which provides the interaction effects for migration status, low life

satisfaction, and poor sleep quality among older adults. All the statistical analysis is done using StataMP 17 version software.

Results

Table 1 shows the socio-economic and demographic profile of older adults in India. Older adults were categorised into three categories, where 58.6 per cent were in the 60-69 age group, 30.1 per cent in the 70-79 age group, and 11.3 per cent in the 80+ age group, respectively. Among the total respondents, males comprised 47.5%, and females comprised 52.5% of older adults. Only 3.6% of respondents were unmarried. More than 50% of respondents have not attended school. Nearly 5.7% of the elderly population were living alone. About 70.5% of respondents were living in rural regions. Regarding religious belief, the majority (82.2%) were Hindu. 40.2 % have a smoking behaviour, and 14.6 % were consuming alcohol. About 70% of respondents were not doing any physical activity. More than half (56.3%) of the respondents were migrants, and nearly 31.8 % had low life satisfaction. About 14.8% of respondents had poor sleep quality.

Table 1 Socioeconomic Attributes of Older Indian Adults, 2017–18

Background Characteristics	Total		Background Characteristics	Total	
	N	*%*		*N*	*%*
Age			***Caste***		
60-69	19184	58.6	Scheduled Caste (SC)	5146	8.1
70-79	9221	30.1	Scheduled Tribe (ST)	5304	18.9
80+	3422	11.3	Other backward class (OBC)	12116	45.2
Sex			None of above	9261	27.8
Male	15334	47.5	***MPCE Quantile***		
Female	16493	52.5	Poorest	6561	21.7
Marriage status			Poor	6556	21.7
Married	30077	96.4	Middle	6486	20.9
Other	1265	3.6	Rich	6250	19.2
Years of schooling			Richest	5974	16.4
No Schooling	17124	56.4	***Smoking***		
Primary	5904	17.5	Never	19333	59.8
Secondary	3991	11.8	Ever	12231	40.2
Highschool and above	4807	14.2	***Alcohol***		
Living arrangements			Never	26151	85.4
Living alone	1626	5.7	Ever	5418	14.6

Living with spouse	19941	70.0	***Physical activity***		
Living with others but not spouse	10260	33.3	Never	21963	68.9
Working Status			Everyday	5551	17.2
No	13442	58.2	At least once a month	4042	13.0
Yes	9355	41.8	***Migration Status***		
Residence			Migrants	17783	56.3
Rural	21019	70.5	Non-migrants	14044	43.7
Urban	10808	29.5	***Low life satisfaction***		
Religion			No	21457	68.3
Hindu	23238	82.2	Yes	9286	31.8
Muslim	3726	11.3	***Sleeping Problem***		
Christian	3180	2.9	No	27358	85.2
Others	1683	3.7	Yes	4362	14.8

Table 2 represents the bivariate estimates of poor sleep quality among older adults in India. It was found that *the overall prevalence of poor sleep quality among older adults in India was 14.7 %*. The prevalence of poor sleep quality was higher among migrants (15.9%) than non-migrants (13.3%). Similarly, the elderly with low life satisfaction also showed a higher prevalence (14.9%) of poor sleep quality than their counterparts. Prevalence of poor sleep quality increases with age, such as – 13.6% in the 60-69 age group, 15.8% in the 70-79 age group and 18.0% in the 80+ age group. PSQ was more prevalent among women (13.8%) than (12.9%) men and those living alone (17.7%) than those living with a spouse (11.9%). Poor sleep quality was more common (10.6% working and 17.7% non-working) among the elderly who were not working. The elderly in the rural regions showed higher PSQ (13.9%) than the Urban elderly (10.8%). In terms of social and religious category, Scheduled tribes and Christians had a about two times lower prevalence of poor sleep quality than other groups. The elderly who were not involved in physical activity had a higher prevalence (15.9%) than those who were involved every day (11.8%).

Table 2 ***Bivariate estimates of poor sleep quality by respondent's background characteristics in India, LASI (2017–2018)***

Background variables	Poor Sleep Quality (%)	P Value
Migration Status		
No	13.3	0.000
Yes	15.9	
Life satisfaction		
High	13.6	0.000
Low	17.1	
Age		
60-69	13.6	
70-79	15.8	0.000
80+	18.0	
Sex		
Male	13.9	0.000
Female	15.6	
Marital status		
Married	14.7	0.478
Other	17.3	
Years of schooling		
No Schooling	15.5	
Primary	15.3	0.000
Secondary	13.1	
Highschool and above	12.3	
Living arrangements		
Living alone	18.6	
Living with spouse	13.7	0.000
Living with others but not spouse	16.0	
Working Status		
No	17.3	0.000
Yes	11.8	
Residence		
Rural	15.6	0.000
Urban	12.8	
Religion		
Hindu	14.6	0.000

Muslim	15.7	
Christian	11.2	
Others	18.6	
Caste		
Scheduled Tribes (STs)	13.1	
Scheduled Castes (SCs)	17.6	0.000
Other backward classes (OBCs)	14.2	
None of above	14.2	
MPCE		
Poorest	14.6	
Poor	15.1	
Middle	14.5	0.940
rich	13.9	
Richest	15.9	
Smoking		
Never	14.6	0.385
Ever	14.9	
Alcohol		
Never	14.8	0.902
Ever	14.4	
Physical activity		
Never	15.9	
Everyday	11.8	0.000
At least once a month	12.6	

Table 3 represents the logistic regression estimates of poor sleep quality (PSQ) among older adults in India, 2017–2018. Three models have been presented to show the poor sleep quality among older adults in India. In model 1, when the model was not adjusted for socioeconomic and demographic factors, it was found that the odds of poor sleep quality (PSQ) were significantly higher among migrant older adults (UOR: 1.24; CI: 1.12–1.38) and older adults who had low life satisfaction (UOR: 1.31; CI: 1.18–1.45) in reference to their counterpart. Similarly, in model 2, which depicts the adjusted odds of poor sleep quality, it was found that the odds of poor sleep quality were significantly higher among older adult migrants (AOR: 1.31; CI: 1.15–1.49) and older adults who had low life satisfaction (AOR: 1.27; CI: 1.12–1.44). Model 3 represents the interaction effect of migration status with low life satisfaction on poor sleep quality among older adults (table 4). Older adults who were migrants and had

low life satisfaction were 62 per cent significantly more likely to have poor sleep quality (AOR: 1.62; CI 1.34,1.97) in reference to older adults who were non-migrants living life with satisfaction. Even older adults who were non-migrants with low life satisfaction were 49 per cent significantly more likely to have poor sleep quality (AOR: 1.49; CI 1.24, 1.70). Similarly, older adults who were satisfied with their lives but were migrants were also more likely to have poor sleep quality (AOR: 1.46; CI: 1.24–1.70) in reference to older adults who were non-migrants and living life with satisfaction.

Additionally, model 2 found that working status, residence, and physical activity were the significant factors associated with poor sleep quality among older adults in India.

Table 3 Logistic regression estimates of poor sleep quality for older adults by their background characteristics in India, LASI (2017–2018)

Background Characteristics	Model I		Model II		Model III	
	UOR	**CI (95%)**	**AOR**	**CI (95%)**	**AOR**	**CI (95%)**
Migration Status						
No®						
Yes	1.24***	1.12-1.38	1.31***	1.15-1.49		
Life satisfaction						
High®						
Low	1.31***	1.18-1.45	1.27***	1.12-1.44		
Age						
60-69®						
70-79			1.09	0.94-1.25		
80 and above			1.18	0.96-1.45		
Sex						
Male®						
Female			1.02	0.85-1.23		
Marriage status						
Married®						
Unmarried			1.08	0.78-1.50		
Years of schooling						
No Schooling®						
Primary			1.09	0.91-1.30		
Secondary			1.01	0.83-1.23		
Highschool and above			0.94	0.76-1.15		
Living arrangements						
Living alone®						
Living with spouse			0.83	0.60-1.14		

Living with others but not spouse	0.87	0.64-1.18		
Working Status				
No®				
Yes	0.71***	0.62- 0.82		
Residence				
Rural®				
Urban	0.81**	0.70-0.95		
Religion				
Hindu®				
Muslim	1.13	0.92-1.39		
Christian	0.75	0.52-1.07		
Others	1.33	0.99-1.79		
Caste				
Scheduled Castes (SC)®				
Scheduled Tribes (ST)	0.70**	0.54-0.91		
Other backward classes (OBC)	0.81**	0.69-0.96		
None of above	0.45**	0.62-0.90		
MPCE				
Poorest®				
Poor	1.05	0.87-1.26		
Middle	1.00	0.83-1.20		
rich	0.99	0.83-1.19		
Richest	1.20	0.98-1.47		
Smoking				
Never®				
Ever	0.94	0.83-1.08		
Alcohol				
Never®				
Ever	0.94	0.80-1.10		
Physical activity				
Never®				
Everyday	0.83**	0.70 to 0.98		
At least once a month	0.80**	0.66 to 0.96		
Migration Status #Low Life Satisfaction				
No#No®				
No#yes			1.49***	1.24-1.78
Yes#No			1.46***	1.24-1.70

Yes#Yes		1.62***	1.34-1.97

*Note: **if p<0.05, ***if p<0.001; ®: Reference; #: Interaction; OR Odds Ratio; CI Confidence Interval*

Discussion

The study examines poor sleep quality with the association of migration status and low life satisfaction among older persons within the country. In a country like India, both the migrant and the ageing populations have been increasing over the decades (Ortman et al., 2014; Parida & Ravi, 2018; Siva Raju, 2014). Thus, it has become important to investigate health-related issues arising from the increasing ageing population within the context of migration. Poor sleep is not an isolated issue; it is linked to a range of associated problems, including reduced quality of life, psychiatric disorders, and an increased risk of cardiovascular disease (Leng et al., 2015; Roth, 2007).

Our bivariate analysis revealed that age plays a significant role in predicting the level of sleep quality among older adults. Poor sleep quality has continuously increased with age. Similar results have been found in previous studies that show that aged people are more likely to experience sleep disturbances such as early awakenings, midnight awakenings, and nightmares, which reduce sleep quality (Zhu et al., 2023). we observed variations in the level of sleep quality by gender. Females are more prone to poor sleep quality than their male counterparts, possibly due to factors such as hormonal fluctuations, caregiving responsibilities, and societal expectations that may contribute to this disparity in sleep quality between genders (Guidozzi, 2015). Years of schooling show a significant association with the level of sleep quality, with an increase in years of schooling correlating with a continuous decrease in poor sleep quality. Lower levels of education often correlate with reduced income and a diminished quality of life, factors that have been consistently associated with poor sleep quality in previous research (Zhang et al., 2017). Older adults living alone were more prone to poor sleep quality than those living with others, which may be attributed to less social support, psychological distress, and lower quality of life (Chu et al., 2022).

Our study found that elderly individuals who are part of the migrant population and report low life satisfaction have a significantly higher prevalence of poor sleep quality than their counterparts. A possible reason for this phenomenon is that migration often results in separation from home, family, and familiar social structures and difficulties in integrating into a new environment. These factors may contribute to the occurrence of poor sleep quality (Richter et al., 2020). Older adults who are non-migrants and report low life satisfaction also

experience poor sleep quality. This finding is consistent with previous studies, which have shown that poor sleep quality is more prevalent in low life satisfaction among older adults (Zhu et al., 2023). Elderly migrants who were satisfied with their lives also faced poor sleep quality. One possible explanation is that migration status results in individuals being uprooted from their established social structures (Richter et al., 2020). Consequently, this displacement can significantly disrupt their social networks and community ties(Ryan, 2011).

Besides this migration status and level of life satisfaction, several factors contribute to poor sleep quality among older adults. Currently, working older adults have shown significantly less prevalence of poor sleep quality compared to their non-working counterparts; it may be the reason that engaging in regular work provides structure and routine, which can promote better sleep patterns (Irish et al., 2015).Older adults in urban areas have a significantly lower prevalence of poor sleep quality than their rural counterparts. A possible explanation is that urban areas have facilitated advanced health services, which leads to better health outcomes (Balarajan et al., 2011). These factors may play a role in decreasing the level of poor sleep quality. Several factors may influence the differences in the prevalence of poor sleep quality across caste categories. Notably, the Scheduled Caste (SC) and Scheduled Tribe (ST) populations are heavily dependent on primary activities and engage in substantial physical labor, which contributes to a decrease in poor sleep quality(Kumar et al., 2009). Older adults engaged in physical activity have shown significantly less prevalence of poor sleep quality than non-physical activity counterparts. This finding is consistent with past research showing that physical activities contribute to the prevention of poor sleep quality (Holfeld & Ruthig, 2014). Regionally, western states have shown the highest, and Northeastern states have shown less prevalence of poor sleep quality within India. Here is a possible reason that western regions are more advanced in economic activities, urbanization, and industrialization, which leads to an increase in poor sleep quality compared to less urbanized- industrialised North-eastern regions(Martins et al., 2020; Singh et al.,2024).

Our study has several limitations, particularly concerning identifying migration based on 'place of birth'. This approach fails to capture the 'place of the last residence', which is more relevant for contemporary migration research. Despite its limitations, this study uniquely provides national-level evidence on how migration and low life satisfaction affect poor sleep quality. Additionally, it benefits from a large sample size and detailed data on older adults' sleep quality and ageing issues in India.

Conclusions

This study contributes to our understanding of poor sleep quality associated with migration status and low life satisfaction among older Indian adults. The study revealed that older adults who have migrated and report low life satisfaction exhibit a higher prevalence of poor sleep quality compared to their non-migrant counterparts. These findings suggest that the challenges associated with migration—such as disruptions to social support systems, cultural adjustments, and economic hardships—may exacerbate stress and negatively impact sleep quality. Furthermore, the observed association between low life satisfaction and poor sleep quality underscores the importance of addressing psychosocial factors in this population. These insights underscore the need for targeted interventions that address both the mental health and sleep health of migrant older adults, potentially improving their overall well-being.

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