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Review Article

Emerging disease patterns among migrant workers in India: a scoping review

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ABSTRACT

Internal migrants consist of a socially disadvantaged community who work under informal and labour-intensive sectors. Due to poor working conditions, lack of health care services, and negative social determinants of health, many health-related issues can occur. This scoping review is going to examine the existing literature regarding the health of internal migrants in India. A scoping review was conducted using the PRISMA-ScR checklist. The literature was searched from 2008 to 2025 across various databases, including PubMed, Scopus, ScienceDirect, and Google Scholar, using predefined search terms on migrant workers and their health outcomes. The quantitative primary studies were included from India. The data were extracted using a pre-defined Excel sheet. The majority of the studies were based on cross-sectional studies conducted on internal migrant laborers in urban and peri-urban areas. The outcomes of these studies showed a heavy burden of occupational hazards, musculoskeletal disorders, respiratory and gastrointestinal diseases, mental disorders, risky sexual behavior, substance abuse, and vector-borne infections. Low maternal healthcare service utilization and limited access to healthcare services due to late seeking were also found. Health challenges that confront migrant laborers in India include the occupational risks they face, their living conditions, and obstacles related to accessing health care services. Occupational safety reforms, portability of health services, and policies aimed at addressing the needs of migrants within public health care are critical towards reducing health disparities.

Keywords: Migrant workers, Occupational health, Health inequities, Disease burden, Mental health, Healthcare access

INTRODUCTION

Migrants are a vulnerable population who move from the less-developed Indian states to metropolitan cities for employment and income opportunities, often facing livelihood insecurity and neglect at their destination.[1] The 2022 World Health Organization (WHO) world report on the health of refugees and migrants emphasizes that poorer health outcomes among migrants are driven by adverse social determinants such as income, housing, education, access to services, and cultural, linguistic, and legal barriers rather than intrinsic characteristics.[2] International migrant workers face a significant burden of unfavorable health outcomes worldwide; systematic reviews show that nearly half (47%) have at least one occupational morbidity, and about 22% report workplace injuries; additional data from the Asia-Pacific region shows 37% overall morbidity and high rates of occupational illnesses in high-risk sectors compared to local workers.[3] In India, approximately 28.9% of the population is classified as migrants, with estimates of internal migrants ranging from 400-600 million, largely engaged in informal and low-wage labor sectors (government of India ministry of statistics).

Migration is shaped by regional economic disparities, with states such as Uttar Pradesh, Bihar, Odisha, Jharkhand, and Madhya Pradesh acting as major source regions and Maharashtra, Delhi, Gujarat, Karnataka, and Kerala as key destinations for employment in construction, manufacturing, services, and other unorganized sectors.[5] Migrant workers are highly vulnerable to occupational injuries, workplace hazards, and communicable diseases

due to informal labor conditions, overcrowded living environments, inadequate sanitation, and limited access to healthcare. Internal migrant workers in India suffered significant negative.[1,6] The COVID-19 pandemic further intensified these vulnerabilities, leading to psychological distress and disrupted access to routine health services.[7] Apart from this, migrant workers are commonly employed in the 3-D jobs "dirty, dangerous, and demanding or demeaning," which are characterized by lesser wages and longer work duration. Migrant workers and their families face a lack of accessible and quality services for preventive and promotive health services and healthcare information. These in total, affect the quality of life (QoL) among migrants, which was only shown to deteriorate with time.[8] Against the background of epidemiological transition and the current public health crises, there is a need for a systematic mapping of the current body of evidence. This scoping review, therefore, seeks to synthesize the existing literature on disease trends and determinants of health among migrant workers in India. Despite the growing evidence on migrant health, the available literature remains fragmented across different disease categories and occupational sectors. A comprehensive synthesis of disease patterns and determinants among migrant workers in India is therefore necessary to inform policy and health system responses.

METHODS

Search strategy

This scoping review was conducted according to preferred reporting items for systematic reviews and meta-analyses for scoping reviews (PRISMA-ScR) guidelines. The databases PubMed, Scopus, ScienceDirect, and Google Scholar were used for the literature search. The search strategy was created using the relevant keywords and medical subject headings (MeSH) terms related to the migratory workers and their health consequences. The terms were refined with the help of a research librarian to optimize article selection without compromising search sensitivity.

The search strategy was organized using the following syntax: a variety of search terms were combined with Boolean operators ("AND" and "OR") and truncation ("*"). The search terms included "migrant workers," "emigrants and immigrants," "transients and migrants," "seasonal workers," and "internal migrants", combined with health-related terms such as "hypertension," "diabetes," "cardiovascular diseases," "stroke," "obesity," "chronic kidney disease," "mental health," "cancer," "HIV," "malaria," "communicable diseases," "asthma," and "maternal health." These were further combined with outcome-related terms, including "health services accessibility," "healthcare utilization," "risk factors," "health status," "income," "education," "occupational stress," "social stigma," and "nutritional status." The authors modified the search strategies for each database and used MeSH terms when applicable. All authors reviewed and approved the search terms and strategies used for identifying, screening, and reviewing the included articles.

Inclusion and exclusion criteria

The systematic review followed a set procedure for the inclusion/exclusion criteria for relevant literature. Studies published between the years 2008 and 2025 in English were considered relevant for inclusion in the study provided that they were primarily empirical in nature. Relevant types of studies included descriptive/ observational, prospective and retrospective cohorts, and experimental studies. Studies included those that had findings concerning the health status, illness patterns, risk factors, or access to healthcare among Indian internal migrants.

In addition to peer-reviewed journal articles, relevant books and edited book chapters were consulted to strengthen the conceptual framework and support the objectives of the review.

Studies were excluded if they were not aligned with the objectives of the review, contained insufficient data, or had unclear or poorly described methodologies. Furthermore, grey literature, including reports, policy documents, conference abstracts, dissertations, theses, and unpublished studies, was excluded to ensure the inclusion of peer-reviewed and methodologically rigorous evidence. These criteria ensured the inclusion of high-quality and relevant studies while maintaining the reliability and validity of the findings.

Study selection

The search results were transferred to Rayyan, a web-based systematic review management tool, where duplicate articles were identified and removed to ensure that each study was included only once. The results identified through the database search were exported to Rayyan. Three investigators (A.K., S.S., and B.B.) were involved in the screening process. The screening process was conducted in two stages. Initially, titles and abstracts were independently screened by two reviewers (S.S. and B.B.) using predefined eligibility criteria. For the conflict resolved by the third reviewer (A.K.). Relevant articles were then retrieved for full-text assessment. The full texts were independently reviewed by all three reviewers to determine final eligibility. Any disagreements at either stage of screening were resolved through discussion and consensus among the A. K., S. S., and B. B. Furthermore, the reference lists were searched for additional relevant studies.

Data extraction

Data extraction process followed a pre-designed excel data extraction form which was prepared based on our study objectives for the scoping review purpose. For each

selected study, various information was extracted based on the following details: year of publication, country where the study was conducted, methodology used for the study, study site, as well as population demographics.

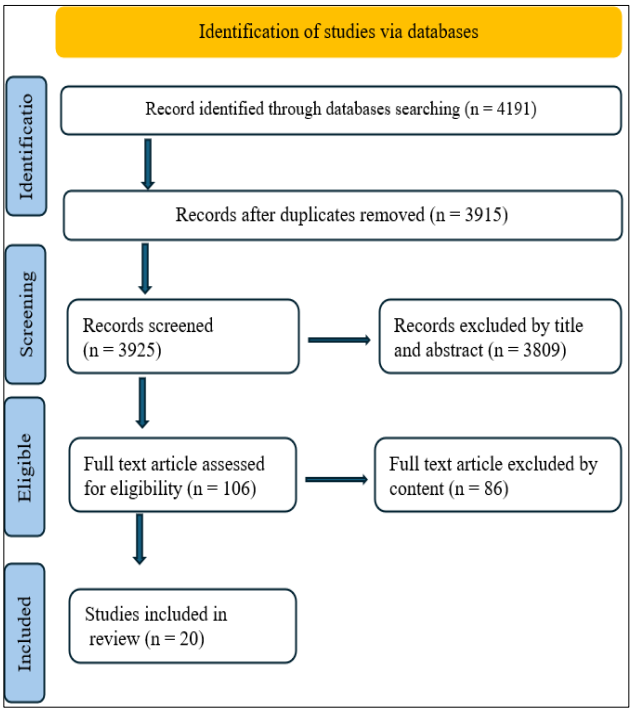

Figure 1: PRISMA flow chart for study selection.

In addition, data were extracted on variables relevant to the objectives of the review, including descriptions of the exposure and outcome variables, the measurement tools or scales used (where applicable), the prevalence or distribution of the main study variables, and key findings related to the determinants of health-seeking behaviour. Information on statistical measures such as odds ratios, confidence intervals, p values, and associations found was obtained from articles as well. Whenever possible, adjusted information was preferred to unadjusted information as a means of capturing the direction and magnitude of associations while controlling for potential confounding. In cases where the outcomes were stratified into sub-groups by the studies (for example, socio-demographic groups or by disease severity), statistically significant associations between the outcome and predictor variables in sub-groups were used as associations for the whole study group.

RESULTS

The review included 20 studies (2008-2025), which used a mainly cross-sectional approach to analyze the health of internal migrant workers in India. Most research was carried out in urban and peri-urban areas targeting populations like construction workers, factory workers, domestic workers, and female migrants. The migrant population targeted by the studies was mainly poor, uneducated, and lacked job security.

Risk factors

Several interlinked factors were identified in these studies. Occupational risk factors such as inappropriate working environment, long working hours, lack of use of personal protective equipment, and high labour demand were significantly associated with injuries, respiratory diseases, and musculoskeletal problems. Also, exposure to dust and smoke was found to be associated with chronic respiratory disorders in migrant brick kiln workers. Living conditions, improper sanitation, and hygiene practices make them more susceptible to various communicable diseases. Socio-economic factors such as low income, informal employment, poor education, and job insecurity were consistently associated with poor health outcomes.

Migration-related factors such as migration between states, seasonal migration, and lack of local identity were also regularly associated with poor access to healthcare and delayed care-seeking. Social isolation, job insecurity, financial problems, and lack of family support networks were significantly associated with mental health problems. For migrant women, including pregnant women, mobility during pregnancy, lack of awareness about their rights, and exclusion from local healthcare systems were found to be important risk factors for poor maternal healthcare access.

Socio-behavioural factors

From the extracted data, various socio-behavioral factors have led to distinct patterns of disease among the migrant workforce in India. High rates of tobacco consumption were observed, where 96.7% of the construction workers had the habit of tobacco use (smokeless -72.3%, smokers -32.2%), which has led to oral mucosal lesions in them. Alcohol consumption has been associated with the risk of injuries among construction laborers and has occurred alongside 56.6% of tobacco consumption among factory workers.

High-risk behaviors in HIV infections, such as having non-spousal sexual encounters without regular usage of condoms (60% of non-users), were seen among the male workers who were away from their spouses, specifically those who worked on a contract basis.

Health conditions identified

The included studies identified a broad spectrum of health conditions affecting migrant workers in India. Occupational injuries and musculoskeletal disorders (MSD) were found to be some of the major concerns for workers in construction and industries. The prevalence of back pain and joint pain was attributed to unsafe working environment and a lack of protective clothing. Chronic bronchitis, asthma, acute febrile illness, and digestive problems were some other ailments reported by researchers. Oral health problems associated with the development of oral mucosal lesions among those who consume tobacco were noted.

Table 1: Summarizes the characteristics and major findings of the studies included in this scoping review. The table presents information on study design, study population, sample size, health conditions assessed, key disease patterns, associated risk factors, and healthcare access and utilization among migrant workers in India.

S. no.	Author, year	Study design	Population characteristics (type of migrants, age, sex)	Sample size	Health condition (s) studied	Key findings (disease patterns/prevalence/ risk factors)	Healthcare access and utilization
1	Infanta et al, 2025[9]	Cross-sectional quantitative study	Daily wage migrant construction workers, male, ≥18 years; inter-state and intra-state migrants from Bihar, UP, West Bengal, Odisha, Rajasthan, Tamil Nadu	390	Occupational injuries; musculoskeletal disorders; skin conditions; hazard exposure; self-reported hypertension (covariate)	74.1% exposed to ≥1 workplace hazard; 65.6% reported injuries. Common conditions: musculoskeletal strain (69.7%), skin injuries (60.8%), falls (18.5%). Higher injury risk associated with low education, alcohol use, longer work experience, marital status, long working hours	68% had group health insurance; insurance coverage associated with lower hazard exposure but higher reported injury (possible reporting/access bias)
2	Firdaus, 2017[10]	Cross-sectional study	Internal migrant workers (≥18 years)	1230	Mental health/ psychological well-being	Poor mental health was more common among low-income, unskilled, unemployed, and recently migrated workers. Poor housing, limited facilities, insecurity, lack of social support, and adjustment difficulties were major risk factors, while longer stay and higher income were linked to better mental health.	Limited healthcare access, lack of medical facilities, delayed care-seeking, and poor utilization of health services.
3	Vanishree et al; 2025[11]	Cross sectional study	Migrant klin workers; men and women ≥18 years (mean age ~36.5); 66% molders, 25% loading/carrying, 6% baking	580	Chronic respiratory diseases (bronchitis, asthama); musculoskeletal pain (low back, neck, knee); other self-reported illnesses (e.g. hypertension)	6.4% had chronic bronchitis, 2.1% had asthma. Age >50 years was significantly associated with bronchitis. Among musculoskeletal complaints: low back pain 37%, neck pain 10.5%, knee pain 9.5%. High tobacco use but not quantified in key findings.	Not reported (no data on healthcare utilization provided)
4	Manikandan et al, 2024[12]	Cross sectional study	Migrant construction workers (mean age ~26.3±8.5 years); mostly male (not specified%); 81% married; many from rural areas	324	Respiratory illness; acute febrile illness; gastrointestinal disease; general physical and mental health complaints; quality of life	13% had respiratory disease, 5.1% had acute febrile illness, 5.1% had gastrointestinal disease. About 62% of respondents had poor quality of life. Education (p=0.042), longer working hours (p=0.034), and tobacco use (p=0.032) were significantly associated with poor QoL.	39.8% used private healthcare, 32% used government facilities; only 54% would visit a doctor when ill, 46% practiced self-medication; 35%

Continued.

S. no.	Author, year	Study design	Population characteristics (type of migrants, age, sex)	Sample size	Health condition (s) studied	Key findings (disease patterns/prevalence/ risk factors)	Healthcare access and utilization
							used home remedies. Common barriers: high cost of care and lack of government moutreach.
5	Sriramalu et al, 2023[13]	Cross-sectional survey	Migratory construction workers (n=75); 49.3% no formal education; 50.7% recently migrated (<1 month); 44.0% migrated with families; mean age not specified	75	Mental health (psychological distress, depression, anxiety); quality of community life	High levels of psychological distress were observed; majority scored below moderate on quality of community life measures. A large proportion had depression, anxiety and suicidal ideation (distress was 'high').	Not addressed (focus was on psychological metrics)
6	Quiny Infanta et al, 2025[14]	Cross-sectional survey	Daily-wage migrant construction laborers; adult males (details not specified)	390	Health insurance coverage (uptake)	68.2% of the migrant workers had health insurance coverage. Higher education, certain religions, castes and languages, and longer work duration were significantly associated with insurance uptake. Many workers were unaware of government schemes.	Healthcare access through insurance was relatively high (68% covered), but cost and awareness remained barriers for the uninsured.
7	Saggurti et al, 2008[15]	Cross-sectional survey	Male migrant workers (n=11,219); 70% aged 18–29; 55% married; ~34% away from wives	11219	HIV risk behaviors (non-spousal sex, condom use)	Contracted workers (under labour contractors) exhibited higher HIV risk behaviors than non-contracted. Most were young (70% <30 years), 55% married; 34% separated from spouses due to migration. Authors suggest targeted HIV interventions via labour contractors.	Not the study's focus (survey of behaviors, not care access)
8	Ajith et al, 2025[16]	Cross-sectional study	Interstate migrant workers (demographics not detailed in available extract)	400	General health issues; healthcare utilization patterns	Mean age ~31 years; 39.8% preferred private healthcare, 32% public facilities. Only 54% would visit a doctor when ill; 46% used self-medication; 35% used home remedies. Barriers: trust and cultural differences at PHCs led many to avoid local health centers.	Most used private sector (39.8%); high self-treatment (46%); underutilization of local public health services noted
9	Zabeer et al, 2020[17]	Cross-sectional study	Migrant construction workers; mean age ~26.4 years; 95.2% male	~150	Quality of life (physical, psychological, social, environmental domains)	Migrant workers had poor QoL in physical, social, and psychological domains; environmental domain (e.g. housing	Not the focus; study did not report healthcare usage

Continued.

S. no.	Author, year	Study design	Population characteristics (type of migrants, age, sex)	Sample size	Health condition (s) studied	Key findings (disease patterns/prevalence/ risk factors)	Healthcare access and utilization
						conditions) was relatively higher. Overall well-being was low.	
10	Tirukkovalluri et al, 2020[18]	Cross-sectional screening study	Migrant construction workers who use tobacco (n=640); 64.2% <30 years; 97.4% from North-East states; 42.5% illiterate	640	Oral mucosal lesions (potentially malignant lesions)	96.7% used tobacco (72.3% smokeless, 32.2% smoking, 8.1% both). Among smokeless tobacco users, 70.97% had inflammatory oral lesions (vs 22.58% in smokers). Very high prevalence of potentially malignant lesions, strongly associated with >20 years of tobacco use.	On-site screening; referred positive cases for care; no general healthcare data
11	Maurya, 2023[19]	Cross sectional study	Male migrant textile workers employed in yarn, weaving, and processing units	348	Musculoskeletal, respiratory, skin, eye, and ENT morbidities	95% workers reported occupational morbidity; musculoskeletal disorders were most common (72.7%), followed by respiratory (21.9%), eye (27.6%), skin (23.9%), and ENT problems (18.4%).	Limited preventive measures and inadequate workplace protection observed.
12	Singh et al, 2024[20]	Cross-sectional study using CFA/SEM analysis	Migrant workers from informal sectors including construction, street vending, services, garment and textile industries	411	Psychosocial well-being, occupational stress, living condition	Poor living conditions, hazardous work, low wages, cultural barriers, and psychosocial stress significantly affected migrant well-being.	Limited access due to poor living and working environments
13	Deb et al, 2009[21]	Cross-sectional study	Male migrant and local factory workers aged 18-45 years	7009	HIV risk behaviour and condom usage	Low condom use and high engagement with sex workers among migrant workers increased HIV transmission risk.	Poor utilization of HIV prevention services.
14	Sani et al, 2023[16]	Descriptive cross-sectional study	Migrant labour communities in urban poor settlements	131	Health seeking behaviour and common illness	Migrant workers often delay healthcare due to financial barriers, job insecurity, and lack of awareness.	Preference for informal or low-cost care due to economic limitations.
15	Soumya et al, 2023[22]	Cross sectional study	Migrant workers attending health camps	484	Hypertension, musculoskeletal pain, anemia, gastritis, diabetes	Hypertension (5%) and musculoskeletal pain (4%) were most common conditions	Camps served migrants unable to access routine healthcare during lockdown.
16	Jayakaviya et al, 2025[23]	Mixed method study	Women migrant construction workers	100	Musculoskeletal pain, skin disease, heat stress, injuries	Back pain (44%), shoulder pain (26%), and leg pain (21%) were common; exposure to heat, dust, and harassment reported.	Need for regular medical camps emphasized.

Continued.

S. no.	Author, year	Study design	Population characteristics (type of migrants, age, sex)	Sample size	Health condition (s) studied	Key findings (disease patterns/prevalence/ risk factors)	Healthcare access and utilization
17	Yadav et al, 2025[24]	Epidemiological survey with regression analysis	Unskilled migrant labourers	234	Depression, anxiety, common mental disorders	47.9% migrants experienced mental health problems; discrimination, acculturative stress, and poor living conditions were major predictors.	Mental healthcare access remains limited.
18	George et al, 2019[25]	Cross sectional study	Migrant labourers living in settlements, mainly construction workers; predominantly adult male migrants	309	Malaria, lymphatic filariasis, leishmaniasis	3.8% migrants tested positive for malaria and 3.6% for filariasis; no leishmaniasis cases detected. Migrants may act as reservoirs for infection in non-endemic areas.	Study emphasizes need for active disease surveillance and treatment among migrants.
19	Aslesh et al, 2015[26]	Cross-sectional	Majority from Uttar Pradesh (46.3%) and Bihar (40.6%); employed in plywood and tile factories.	244	Tobacco use (smoked and smokeless), alcohol use, oral mucosal lesions (precancerous lesions) , cancer risk (indirectly via OML)	High prevalence of risk behaviors was observed among migrant workers: 71.7% used smokeless tobacco, 41.8% smoked, and 56.6% consumed alcohol. Oral mucosal lesions were found in 36.3%, with smokeless tobacco significantly increasing the risk (AOR=4.54; 95% CI: 1.9-19.84).	Not reported (NR) Background mentions limited access due to structural barriers but no measured utilization outcomes.
20	Abdulkader et al[27]	Facility-based cross-sectional survey	Majority were young male migrants from Bihar and Uttar Pradesh, mostly married but often living away from spouses, with early migration (mean 21.8 years) and an average migration duration of 9.5 years.	755	HIV/AIDS risk behavior non-spousal sexual intercourse Condom non-use HIV knowledge	21.5% reported recent non-spousal sex; 60% did not use a condom at last such encounter. Risk behavior was linked to unmarried status and migration factors, while condom non-use was associated with older age, low education, and poor HIV knowledge.	Healthcare utilization: not reported (NR).

Depression and anxiety were found among migrants residing in urban slums. Some studies also detected risky sexual behavior among male migrants, with an increased risk of HIV infection. Also, certain communicable diseases such as malaria, lymphatic filariasis, and leishmaniasis were identified in one of the studies, indicating exposure to vector-borne infections. Additionally, female migrants faced maternal health challenges. These included low use of antenatal care and institutional deliveries, often due to issues with documentation, lack of awareness, and exclusion from public health programs. Although non-communicable diseases (NCDs) like hypertension and diabetes were studied less frequently, some findings connected them to low quality of life and unmet chronic health needs.

Health-care access and utilization

The lack of access to formal healthcare was one of the most common findings in the included studies. Almost all the studies reviewed reported structural and administrative issues that impede the access of migrant workers to public health care. The absence of identity documents, residency proof, and the non-portability of social and health insurance benefits were identified as significant factors in more than half of the studies. Language and unfamiliarity with local health infrastructure were identified as issues for interstate migrants in several studies. Seasonal and circular migrants showed an interrupted continuity of care due to their regular mobility.

The patterns of health-care utilization were mostly episodic and reactive to illness. Most studies found that treatment-seeking was often delayed, and migrants sought care only when their illnesses progressed to severe stages. Utilization of preventive services such as regular check-ups, screening, and vaccinations remained low in more than two-thirds of the studies. Utilization of maternal health services, especially antenatal care and institutional delivery, was poor among migrant women in several studies. Use of unqualified providers, pharmacies, and self-medication was common in most studies due to cost and accessibility barriers. However, a few studies found that utilization improved in the presence of NGO-provided outreach programs, mobile health clinics, or employer-supported care.

DISCUSSION

The results from this review highlight the multiple aspects of health vulnerability experienced by Indian migrant workers. Disease burden amongst migrants is not attributed to a single cause, but rather emerges from the aggregate impact of precarious employment conditions, unsafe working environments, barriers related to mobility, as well as socio-economic exclusion. High rates of smoking and drinking and risky sexual behavior have shown the impact of socio-behavioral risk factors on the burden of diseases in migrant workers based on results from various cross-sectional studies in the review. These trends are consistent with research showing that substance abuse acts as a means of coping with psychosocial stressors such as social isolation, employment discrimination, and familial separation, affecting 40% to 50% of migrant workers in informal economies.[28] Targeted interventions incorporating peer-led behavioral counseling and tobacco cessation programs integrated with occupational health services could address these modifiable risk factors, consistent with evidence-based frameworks for migrant health promotion.[10]

The included studies predominantly focused on internal migrant workers, largely rural–urban and inter-state migrants, employed in informal and labor-intensive sectors such as construction and seasonal work. Most participants were young adults, with mean ages in the mid-20s to early 30s, and samples included both male and female workers, although some studies specifically targeted female migrants of reproductive age. The populations were characterized by low educational attainment, low-income levels, poor housing conditions, and limited social security coverage. Many migrants were daily wage earners with unstable employment, and several studies highlighted inadequate documentation, lack of awareness about entitlements, and poor access to social protection schemes. Migrant workers in India are exposed to a combination of occupational, environmental, and social risk factors, which have a significant impact on the emerging trends of the disease. The key risk factors linked to their occupation include physical stress, hazardous materials, adverse weather conditions, and unsafe machinery, which are also linked to the improper use of personal protective equipment and a lack of compliance with labor laws. This has resulted in a high prevalence of musculoskeletal disorders, respiratory diseases, dermatitis, and work-related injuries.[9,19,30]

A systematic review and meta-analysis reported that nearly 47% of international migrant workers experience occupational morbidity, while 22% suffer workplace injuries, especially in high-risk sectors like construction and agriculture.[3] Similarly, migrant workers globally are often overrepresented in dangerous and physically demanding jobs and experience greater exposure to occupational hazards compared with native workers due to precarious employment conditions, lack of occupational safety training, and inadequate regulatory protections.[31] Studies conducted in Europe and North America have also demonstrated that migrant workers experience higher rates of occupational injuries, hazardous working environments, and limited access to workplace safety measures, largely due to informal employment arrangements, language barriers, and poor enforcement of labor regulations.[32,33] The table also demonstrates a high burden of morbidity among migrant workers due to gastrointestinal illnesses and mental health problems such as depression and anxiety. Oral health issues, particularly oral mucosal lesions linked to tobacco use, were also reported. Global research indicates that migrant and disadvantaged populations frequently have higher rates of untreated

dental caries, periodontal disease, and oral precancerous lesions compared with native populations due to barriers such as limited health insurance, lack of awareness, language barriers, and restricted access to preventive dental care services.[34,35] Overcrowded living conditions, poor access to healthcare, and social isolation increase migrants' vulnerability to infectious diseases such as tuberculosis and HIV, as well as mental health problems.[36] Global studies have also reported higher prevalence of depression and anxiety among migrant workers compared with non-migrant populations, highlighting persistent migrant health inequities worldwide.[37] The female migrant workers also face some gender-specific risks, which include underutilization of maternal healthcare because of mobility, lack of inclusion in the country's health programs, and socio-cultural factors.[38] Overall, these outcomes reflect the combined impact of hazardous working conditions, poor living conditions, and limited access to healthcare. International evidence indicates that migrant women are at a higher risk of poor maternal health because of low socioeconomic status, lack of employment security, high mobility, and inadequate health insurance coverage, which leads to underutilization of antenatal and postnatal care. The WHO identifies migrant women as a high-risk group for preventable maternal morbidity due to socio-cultural factors.[39] Reverse migration is also a manifestation of the cyclic nature of labor migration in India, as the migrant worker migrates back owing to job instability and poor working conditions. This phenomenon is very much associated with circular migration, since there are cases when migrant workers migrate again owing to few opportunities for livelihoods in their rural homes. Reverse migration was even further stimulated by the advent of the COVID-19 pandemic, which resulted in job losses and return migrations among migrant workers.[40,41] This review also reveals that there is a high level of inequality in health care access and utilization by migrant workers, which is linked to socio-economic factors and structural exclusion. The evidence shows that migrant workers face challenges in accessing formal health care because of financial barriers, undocumented status, discontinuity of care due to mobility, and unawareness of health care services.[29,42] These challenges are similar to those faced by internal migrant laborers in India, who face difficulties in accessing public health care services because of affordability and administrative inaccessibility.[43] Similar trends have also been identified in the rest of the world among internal and cross-border migrant workers. According to the WHO, migrant workers have a tendency to underutilize preventive and primary health care services while accessing health care at advanced stages of illness. This is mainly due to financial, legal, and social insecurity.[44]

To summarise, we can say that the evidence points to the fact that migrant workers face a disproportionate health risk as a result of the health hazards in the working environment, living conditions, as well as the inaccessibility of health care services. These factors contribute to the risk of occupational injuries, infections, and mental health conditions among migrant workers. Addressing these challenges requires strengthening occupational safety regulations, improving healthcare portability, and developing migrant-sensitive public health policies.

Limitations

This review has several limitations that should be considered while interpreting the findings. Most included studies the use of cross-sectional designs in most of the studies makes the conclusions drawn from the studies non-causal about the association between the factors related to migration and health conditions. Besides, most of the studies had relied on self-reported data, and therefore, there may have been a possibility of bias due to self-reporting while estimating the prevalence of diseases. Lastly, most of the evidence is available for specific occupations like construction, brick kiln, and factory workers. Considerable heterogeneity in study settings, populations, and outcome measures also restricted direct comparison across studies. Only English language articles have been reviewed here, so there could have been some important evidence published in other regional languages which has been missed out on. Moreover, the evidence has mostly been collected from urban/peri-urban areas and male migrants.

CONCLUSION

This scoping review has been designed to find out the health problems faced by migrant laborers in India. According to the results found through the review, the health problems faced by migrant laborers in India are immense. These health problems range from occupational hazards to communicable diseases, and mental health issues, along with poor access to healthcare facilities. These health issues are linked with the socio-economic conditions of migrant laborers. In order to enhance the health of migrant laborers, it is crucial to improve their health conditions.

Recommendations

These results highlight the importance of ensuring compliance with occupational health and safety measures in industries that employ many migrants. Also, improving occupational safety measures, increasing the portability of health insurance programs like Ayushman Bharat, and including migrant workers within the purview of urban primary healthcare services may improve their health. Moreover, addressing unsanitary living conditions, overcrowding, and the lack of access to clean drinking water and adequate sanitation facilities may improve the health of the migrant population, as these factors play an important role in determining health. In designing public health initiatives, it is important to take into account the transient nature of migrant workers, which makes it difficult to offer continuous medical care. Additionally, there is a need to design interventions that would address

issues like drug abuse, STIs, mental health problems, and communicable diseases, which are prevalent but largely overlooked. Improved health education, screenings, and preventive services for migrant workers are necessary. It is important to conduct further studies on the impact of migration on the health of workers.

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