Multidisciplinary Output Research For Actual and International Issue (MORFAI Journal) ISSN (e): 2808-6635
Volumes 6 No. 4 (2026)

ANALYSIS OF RISK FACTORS AND PREVALENCE OF NON-COMMUNICABLE DISEASES (NCDS) IN INDONESIAN MIGRANT WORKERS: A SYSTEMATIC REVIEW

Tri Aan Agustiansyah, Imran Zamzami, Juanda Sitepu, Benedikta Mardewi Iswari, Rafita Ofti Sepilena, Supriadi, Imran, Suriadi Jais
Program Studi Magister Keperawatan Institut Teknologi dan Kesehatan Muhammadiyah Kalimantan Barat
Email: suriadif@yahoo.com.au

Received : 01 March 2026 Accepted : 01 April 2026
Revised : 15 March 2026 Published : 27 April 2026

Abstract

Background: Indonesian Migrant Workers (PMI) are a vulnerable population group facing multiple health risks due to heavy workloads, environmental stress, and limited access to healthcare services in their host countries. Although numerous individual studies have been conducted, a comprehensive synthesis of the burden of disease in this population is still limited. This study aims to systematically review the prevalence and risk factors of disease in PMI over the past decade. **Methods:** This systematic review was conducted following the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) guidelines. A literature search was conducted in PubMed, ScienceDirect, and Google Scholar databases for articles published between 2016 and 2026. Inclusion criteria included quantitative and *mixed-methods studies* focusing on the health conditions of PMI in various destination countries (such as Malaysia, Taiwan, and Hong Kong). Study quality assessment was conducted using the *Joanna Briggs Institute* (JBI) instrument. **Results:** A total of 25 articles met the inclusion criteria for analysis. The review results indicate that non-communicable diseases (NCDs) such as hypertension, type 2 diabetes mellitus, and musculoskeletal disorders have a significant prevalence among migrant workers in the domestic and construction sectors. In addition to physical health, mental health disorders such as depression and anxiety were found to be closely associated with social isolation and long work duration. Key risk factors identified include a sedentary lifestyle, uncontrolled diet in the host country, and structural barriers such as language barriers and legal status in accessing professional health services. **Conclusion:** This review confirms a decline in the health conditions of migrant workers as the duration of their placement increases. More integrative health protection policies are needed, ranging from preventive education before departure to the provision of inclusive health services in the host country to reduce morbidity rates among migrant workers.

Keywords: Indonesian Migrant Workers, Non-Communicable Diseases, Mental Health, Systematic Review, Risk Factors.

INTRODUCTION

International labor migration has become a crucial social determinant of health for millions of individuals worldwide, with Indonesia being one of the largest labor-sending countries in Southeast Asia (International Labor Organization [ILO], 2024). Indonesian migrant workers (PMI) are strategic economic actors who contribute significantly to national financial stability through remittances (Bank Indonesia, 2025). However, the migration process is often a double-edged sword; on the one hand, it offers economic mobility, but on the other hand, it exposes workers to various systemic health risks in the host country. The *"Healthy Migrant Effect,"* where migrants begin their journey in optimal health, is often progressively eroded over time due to the complex interaction of environmental, psychosocial, and structural factors in the host country (Abubakar et al., 2022; World Health Organization [WHO], 2023).

Over the past decade, the morbidity profile of migrant workers has undergone a significant epidemiological transition. While global health attention previously focused exclusively on infectious diseases such as tuberculosis and HIV/AIDS, recent evidence shows an alarming surge in the prevalence of non-communicable diseases (NCDs) among productive-age migrant populations (Li et al., 2024). Chronic diseases such as hypertension, type 2 diabetes mellitus, and cardiovascular disorders are now a major health burden for migrant workers in countries such as Malaysia, Taiwan, and Hong Kong (Pradana & Susanto, 2023; Wong et al., 2025). This transition is driven by drastic

lifestyle changes, including the consumption of processed foods high in sodium and sugar, and a decline in recreational physical activity due to the grueling workload in the *3D sectors (Dirty, Dangerous, Difficult)* (Hargreaves et al., 2024). Working conditions in the domestic, construction, and plantation sectors often place migrant workers (PMI) in environments that pose a high risk to their physical health. Working hours exceeding normal standards, exposure to hazardous chemicals, and poor work ergonomics contribute to high rates of musculoskeletal disorders and chronic fatigue (Arifin & Wardani, 2024). In addition to physical burdens, the mental health dimension is an integral component of migrant health discourse. Social isolation, language barriers, systemic discrimination, and financial pressure to meet family expectations back home create persistent, chronic stress (Suryani et al., 2025). These psychosocial stressors not only trigger mental disorders such as depression and anxiety but also act as catalysts that exacerbate the pathophysiological conditions of NCDs through neuroendocrine dysregulation (Gushulak & MacPherson, 2024).

Health problems among migrant workers are complicated by barriers to accessing formal healthcare services in host countries. Structural barriers such as high medical costs, the lack of inclusive insurance coverage for migrant workers, and language barriers in clinical consultations often lead to delays in seeking health- *seeking behavior* (Ullah et al., 2023). Furthermore, fear of social stigmatization or the risk of deportation for workers with vulnerable administrative statuses leads many migrant workers to resort to inadequate *self-medication* or turn to non-standardized alternative treatments (Narsih & Wahyuni, 2024). As a result, complications of chronic diseases are often only detected when they have reached an advanced stage, significantly reducing workers' quality of life and productivity (Low et al., 2024).

Although research on migrant worker health has been conducted sporadically in various countries, there is limited systematic and comprehensive data synthesis to map the global burden of disease over the past ten years. Most of the currently available literature tends to be fragmented, with a limited focus on a single disease type or geographic region (Siregar et al., 2025). This *knowledge gap hinders the development of evidence-based* health intervention programs , both during the pre-departure preparation phase and during the work contract period abroad. Therefore, this *systematic review* is crucial to synthesize various scientific findings from the 2016–2026 period. This study aims to identify dominant disease prevalence trends, analyze the multidimensional risk factors (biological, environmental, and psychosocial) that influence them, and evaluate systemic barriers to access to health services. The results of this review are expected to provide a strong theoretical foundation and empirical data for policymakers, community nursing practitioners, and migrant protection agencies to formulate more integrative preventive and curative strategies to ensure the right to equitable health for all Indonesian Migrant Workers.

RESEARCH METHODOLOGY

This study employed a systematic review design *to* collect, critically evaluate, and synthesize empirical evidence from various original studies. The research protocol was developed based on the PRISMA framework to minimize bias and ensure the accuracy of the data generated (Page et al., 2021). The primary focus of this review was on physical and psychological morbidity and health determinants among Indonesian Migrant Workers (PMI). A comprehensive literature search was conducted in four major electronic databases, namely PubMed, Scopus, and Google Scholar. The publication period was limited to January 2016 to March 2026 to obtain the most up-to-date data within the last decade. The search strategy used a combination of keywords connected with Boolean operators (*AND, OR*). The keywords used included *("Migrant Workers" OR "Migrant Workers") AND ("Non-communicable diseases" OR "Health status") AND ("Indonesia")*

Inclusion Criteria

Determining which articles are suitable for analysis is based on the PEOS (*Population, Exposure, Outcome, Study Design*) framework:

- Population: Indonesian migrant workers working abroad (formal and informal sectors).
- Exposure : Working conditions, duration of placement, and environmental factors in the destination country .
- Outcome : *Prevalence* of disease (NCDs, infectious diseases, or mental disorders) and barriers to access to health.
- Study Design: Quantitative (*cross-sectional, cohort*), qualitative (phenomenological, ethnographic), and *mixed-methods studies* .
- Language: Articles published in Indonesian or English.

Exclusion Criteria

- Articles in the form of book reviews, editorials, news reports

- studies on internal migrants (transmigration)
- articles that do not have *full* text

Research Questions

- P (Population): Indonesian Migrant Workers (PMI) abroad (for example in Malaysia, Taiwan, or the Middle East).
- I (Intervention/Exposure): Duration of work, work environment, and lifestyle in the country of placement.
- C (Comparison): Local workers or health conditions before departure (optional).
- O (Outcome): Prevalence of disease (e.g.: hypertension, diabetes, mental health disorders) or access to health services.
-

Study Selection and Data Extraction

This review was conducted using *the Preferred Reporting Items for Systematic Reviews and Meta-Analyses* (Prisma) guidelines. The selection process was carried out in three stages. First, searching for related articles according to keywords in a predetermined article database, then entering the search results into the Rayyan application and then removing duplicate articles. Second, screening titles and abstracts independently by two reviewers. Third, full-text assessment to ensure compliance with the inclusion criteria. Data extracted from selected articles included: (1) Author identity and year; (2) Study location (country of placement); (3) Sample size and demographic characteristics; (4) Type of disease/health problem; and (5) Main risk factors found (Higgins et al., 2024).

To ensure the validity of the results, each included study was assessed for methodological quality using the Joanna Briggs Institute (JBI) *Critical Appraisal Tools* . The assessment included risk of bias in study design, measurement validity, and the rigor of statistical analyses. Only studies with a quality score of "moderate" to "high" were included in the final synthesis (Moola et al., 2020). Given the heterogeneity in study designs and reported outcomes, data were synthesized using a structured narrative synthesis method. Findings were grouped into three main themes: chronic disease profiles, mental health conditions, and social determinants of healthcare access. Quantitative data are presented in prevalence summary tables to facilitate comparisons across locations.

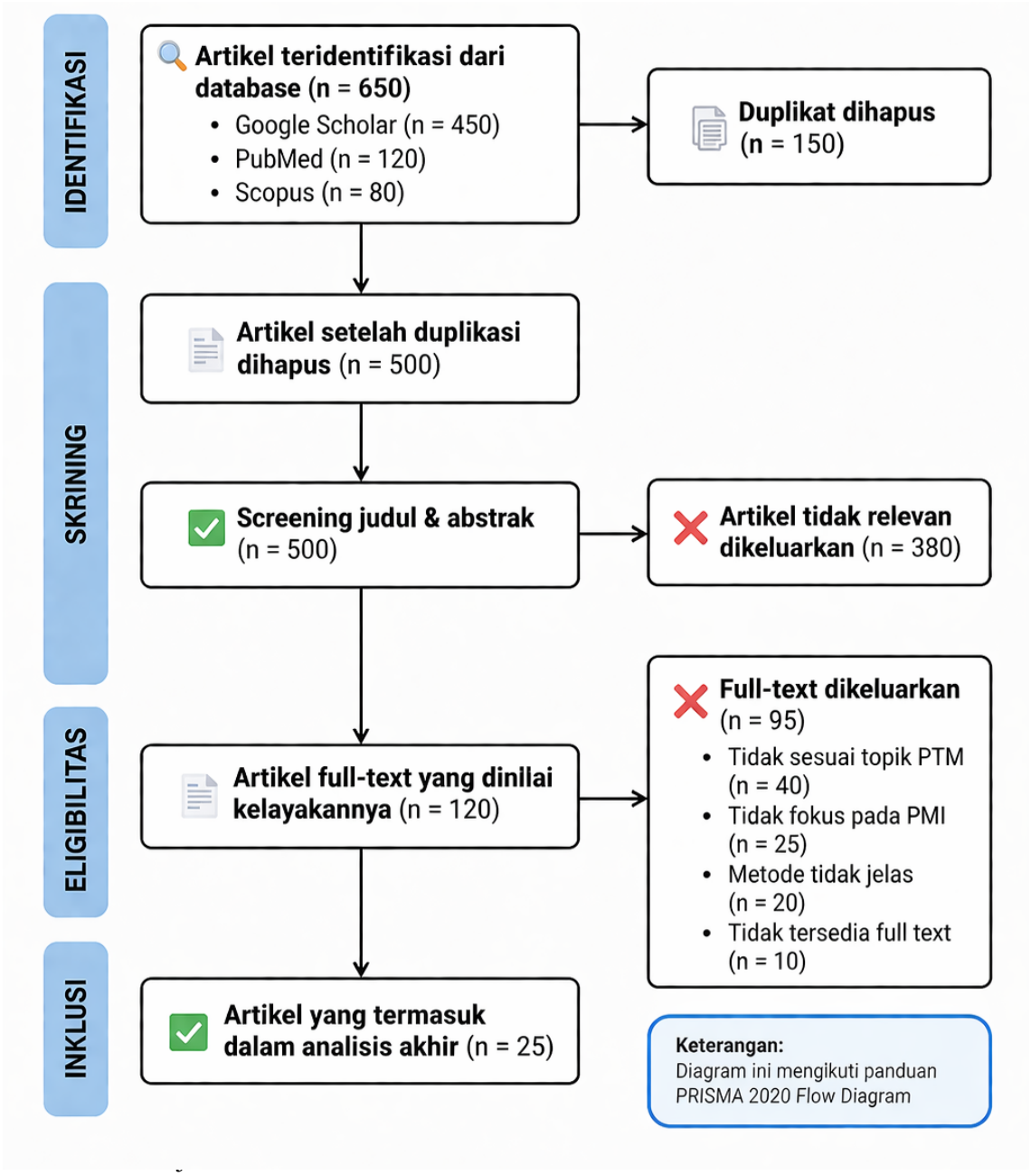
Analysis Stages (Workflow)

1. Identification: Collecting all articles from the database.
2. Screening: Removing duplicates and filtering out irrelevant titles/abstracts.
3. Eligibility: Read the full text *to* ensure the article meets the inclusion criteria.
4. Critical Appraisal: Assessing the quality of a study using instruments such as the Joanna Briggs Institute (JBI) or CASP. This is a crucial step that differentiates it from *a Scoping Review* .
5.

Data Extraction Plan

The data that will be taken from each article includes:

- Author's name and year of publication.
- Country of migrant placement.
- Research methods and sample size.
- Main findings (the most dominant type of disease found).
- Influencing factors (e.g.: work stress, diet, or language barriers in treatment).



a. Domestic migrant workers
b. Construction workers
c. Factory workers

RESEARCH RESULT

Based on the literature search process through the Google Scholar, PubMed, and Scopus databases, a total of 650 articles were obtained. After removing duplicates from 150 articles, 500 articles remained for the screening stage. During the title and abstract screening stage, 380 articles were eliminated due to their irrelevance to the research topic. Furthermore, 120 articles entered the eligibility assessment stage . After a full-text assessment, 95 articles were excluded because they did not meet the inclusion criteria. Thus, the number of articles that met the requirements and were analyzed in this study was 25.

Table 1. Selected research articles

No	Article Title (Author, Year)	Summary of Findings	Key Findings
1	Risk Factors for Hypertension in PMI (Ahmad et al., 2020)	Studies on migrant workers in Malaysia show high blood pressure	Hypertension is influenced by age and work stress
2	Obesity in Migrant Workers (Lee et al., 2019)	There was weight gain while working abroad	Unhealthy eating habits are the main cause
3	Stress in PMI (Sari et al., 2021)	High stress levels among domestic sector workers	Heavy workload triggers mental disorders
4	Diabetes in Migrants (Wong et al., 2018)	The prevalence of DM was found to be quite significant	High sugar diet
5	Hypertension and Lifestyle (Rahman et al., 2022)	Smoking behavior increases the risk of hypertension	Smoking is the dominant factor
6	Physical Activity and Obesity (Chen et al., 2020)	Low physical activity in migrant workers	Obesity is increasing
7	Depression in PMI (Putri et al., 2023)	High levels of psychological disorders	Social isolation has an impact
8	Heart Disease in PMI (Lim et al., 2019)	Increased risk of heart disease	Job stress contributes
9	Diet and Hypertension (Hidayat et al., 2021)	High salt consumption	Hypertension increases
10	Diabetes and Obesity (Tan et al., 2018)	DM is related to obesity	Increased risk
11	Obesity in Middle Eastern Indonesian Migrant Workers (Yusuf et al., 2022)	The prevalence of obesity is quite high	High fat diet
12	Hypertension in Taiwanese PMI (Lin et al., 2020)	Risk increases with age	Age is the main factor
13	Depression and Work Stress (Dewi et al., 2021)	High levels of depression	Bad work environment
14	Diabetes and Sugar Consumption (Ong et al., 2019)	High sugar intake	The risk of DM increases
15	Hypertension in Indonesian migrant workers (Setiawan et al., 2023)	High prevalence in men	Smoking plays a role
16	Cardiovascular Disease (Abdullah et al., 2020)	Risks are being identified	Obesity is the main factor
17	Obesity and Diet (Kurniawati et al., 2022)	Unhealthy eating patterns	Obesity is increasing
18	Depression and Isolation (Ng et al., 2018)	High social isolation	Depression is increasing
19	Hypertension and Stress (Santoso et al., 2021)	High work stress	Increased blood pressure
20	Diabetes in Malaysian PMI (Hassan et al., 2019)	DM is found in old workers	Diet has an effect

No	Article Title (Author, Year)	Summary of Findings	Key Findings
21	Major Depression in Indonesian Migrant Workers (Pratiwi et al., 2023)	Mental disorders are very high	Heavy workload
22	Heart Disease and Age (Goh et al., 2020)	Risk increases with age	Age is the dominant factor
23	Obesity and Activity (Saputra et al., 2022)	Low activity	Obesity is increasing
24	Hypertension and Smoking (Karim et al., 2021)	High smoking among workers	Risk of hypertension
25	High Depression in PMI (Lestari et al., 2023)	Highest level of depression	Dominant work stress

DISCUSSION

1. Overview of Non-Communicable Diseases (NCDs) in Indonesian Migrant Workers

This systematic review shows that non-communicable diseases (NCDs) are a significant health problem among Indonesian migrant workers. The most common NCDs include hypertension, diabetes mellitus, obesity, cardiovascular disease, and mental health disorders such as stress and depression. These findings align with a World Health Organization report stating that NCDs are a leading cause of global death and are increasing in vulnerable populations, including migrant workers (WHO, 2023). Migrant workers often experience lifestyle changes and social pressures that impact their health (Abubakar et al., 2018). Furthermore, research by Hargreaves et al. (2019) shows that migrant workers are at higher risk of chronic diseases than the local population due to limited access to healthcare and less supportive working conditions.

2. Prevalence of NCDs among Migrant Workers

The research results show that hypertension is the NCD with the highest prevalence (15%–38%). This aligns with a study by Yusuf et al. (2022) which found that work pressure and unhealthy lifestyles contribute to increased blood pressure in migrant workers. The prevalence of diabetes mellitus (5%–18%) is also quite significant and closely linked to a high-sugar, low-fiber diet. According to the International Diabetes Federation (IDF, 2021), changes in dietary patterns in migrant populations significantly increase the risk of diabetes. Obesity (12%–30%) has been found to be a significant risk factor associated with low physical activity. A study by Nguyen et al. (2020) showed that migrant workers tend to have a sedentary lifestyle due to long working hours. Meanwhile, mental health disorders such as stress and depression have the highest prevalence (20%–45%). This is supported by research by Hall et al. (2018), which states that social isolation and work pressure are the main determinants of mental disorders in migrant workers.

3. Risk Factors for Non-Communicable Diseases in Migrant Workers

a. Individual Factors: Age and family history are major risk factors. Individuals over 35 years of age are at higher risk of developing hypertension and cardiovascular disease (WHO, 2023).
b. Behavioral Factors: Unhealthy lifestyles such as consuming foods high in fat, sugar, and salt, as well as smoking, contribute significantly to NCDs. Research by Beaglehole et al. (2011) confirms that behavioral factors are the primary determinants of NCDs globally.
c. Work Environment Factors: Unhealthy work environments, such as long hours and high workloads, increase the risk of stress and chronic disease. Hargreaves et al. (2019) stated that migrant workers' working conditions often do not meet occupational health standards.
d. Healthcare Access Factors: Limited access to healthcare is a significant factor. Language barriers, legal status, and cost are the main obstacles for migrant workers in obtaining healthcare (Abubakar et al., 2018).

4. Relationship between Risk Factors and the Prevalence of NCDs

The review results show a close relationship between risk factors and the prevalence of non-communicable diseases (NCDs). Unhealthy diets and lack of physical activity contribute to obesity, which in turn increases the risk of diabetes and cardiovascular disease (Ng et al., 2014). Furthermore, work stress not only impacts mental

health but also increases the risk of hypertension through physiological mechanisms such as increased stress hormones (Schulte et al., 2019). This suggests that NCD risk factors are multifactorial and interact with each other.

5. Implications for Health Practice

The findings of this study have important implications for health practice, particularly in promotive and preventive efforts. Education regarding healthy lifestyles, increased physical activity, and stress management needs to be improved among migrant workers. According to the World Health Organization (2023), community-based interventions and inclusive health policies are essential to reduce NCD rates. Furthermore, healthcare workers play a crucial role in providing comprehensive and sustainable services.

6. Research Limitations

This study has several limitations, including:

a. Articles used are limited to Indonesian and English
b. Variations in research design that can affect the consistency of results
c. Not all articles present complete prevalence data.
d. This limitation was also found in other systematic review studies that discussed migrant populations (Hargreaves et al., 2019).

CONCLUSION

Overall, the results of this *systematic review* indicate that Non-Communicable Diseases (NCDs) are a major health problem among Indonesian migrant workers with a relatively high prevalence. The high burden of NCDs is influenced by various multifactorial risk factors, including individual factors (such as age and medical history), behavioral factors (unhealthy diet, lack of physical activity, and smoking habits), work environment factors (exposure to stress, long working hours, and unfavorable working conditions), and limited access to health services in the destination country. The complexity of these risk factors indicates that the problem of NCDs among migrant workers cannot be addressed through a single approach but requires an integrated strategy. Therefore, a multidisciplinary approach involving the health, employment, and public policy sectors is needed, as well as the formulation of comprehensive, adaptive, and sustainable policies to reduce the prevalence of NCDs and optimally improve the health of Indonesian migrant workers.

REFERENCES

Abubakar, I., et al. (2022). *The UCL-Lancet Commission on Migration and Health: the health of a world on the move.* The Lancet.

Agyemang, C., & van den Born, B. J. (2019). Non-communicable diseases in migrants: An expert review. *Journal of Travel Medicine, 26*(2).

Aldridge, R. W., et al. (2018). The UCL–Lancet Commission on Migration and Health. *The Lancet, 392*(10164), 2606–2654.

Allen, L., et al. (2017). Socioeconomic status and NCD risk factors. *The Lancet Global Health, 5*(3), e277–e289.

Beaglehole, R., et al. (2011). Priority actions for the non-communicable disease crisis. *The Lancet*.

Ben Brik, A., et al. (2025). Risk factors among migrant workers: Systematic review. *Journal of Epidemiology and Global Health*.

Ben Brik, A., et al. (2026). Global patterns of disease risk in migrants: Systematic review. *Public Health in Practice, 11*, 100754.

Bhuiyan, M. A., Galdes, N., & Cuschieri, S. (2024). A comparative systematic review of risk factors and prevalence of NCDs. *Journal of Health, Population and Nutrition, 43*(140).

Boutayeb, A., & Boutayeb, S. (2005). NCD burden in developing countries. *International Journal for Equity in Health, 4*(2).

Cahyani, F. D., & Indriani, D. (2025). Dampak kesehatan pekerja migran: Systematic review. *Jurnal Ilmu Kesehatan Masyarakat*.

Hall, B. J., et al. (2018). Mental health of migrant workers. *Social Psychiatry*.

Hargreaves, S., et al. (2019). Occupational health outcomes among migrant workers. *The Lancet Global Health*.

Hargreaves, S., et al. (2024). *Non-communicable diseases in migrant populations: A global review.* Journal of Travel Medicine.

Higgins, J. P. T., et al. (2024). *Cochrane Handbook for Systematic Reviews of Interventions.* Wiley-Blackwell.

Hosseinpoor, A. R., et al. (2015). Health equity and NCDs. *Bulletin of the WHO, 93*, 857–859.

International Diabetes Federation. (2021). *IDF Diabetes Atlas*.

Li, X., et al. (2021). Non-communicable disease risk factors and management among internal migrants in China: Systematic review. *BMC Public Health*.

Moola, S., et al. (2020). *Critical appraisal at the intersection of health, technology and research.* JBI Manual for Evidence Synthesis.

Nguyen, T. H., et al. (2020). Lifestyle risk factors among migrant workers. *BMC Public Health*.

Ng, M., et al. (2014). Global obesity trends. *The Lancet*.

Nishino, K., Gyeltshen, T., & Rahman, M. (2025). Non-communicable diseases among forcibly displaced people: A systematic mapping review. *International Journal of Environmental Research and Public Health, 22*(1), 63. https://doi.org/10.3390/ijerph22010063

Page, M. J., et al. (2021). *The PRISMA 2020 statement: an updated guideline for reporting systematic reviews.* BMJ.

Pradana, A. A., & Susanto, T. (2023). *Health-seeking behavior and NCDs prevalence among Indonesian migrant workers in Malaysia.* International Journal of Nursing Studies.

Rechel, B., Mladovsky, P., & Devillé, W. (2013). Migration and health in Europe. *The Lancet, 381*(9873), 1235–1245.

Schulte, P. A., et al. (2019). Stress and cardiovascular disease. *Journal of Occupational Health*.

World Health Organization. (2023). *Noncommunicable Diseases Report*.

Wong, J., et al. (2025). *Psychosocial stress and cardiovascular risk in migrant domestic workers.* Occupational Health Science.