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Increasing Health Literacy and Preventive Behavior Against Noncommunicable Diseases Through Community-Based Health Education and Screening among Indonesian Immigrants in Malaysia

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Abstract

Limited access to healthcare and health information has made Indonesian migrant workers in Malaysia vulnerable to noncommunicable diseases (NCDs). This community service project aimed to improve community health literacy and preventive behavior through interactive health education, screening, and cadre empowerment in Bukit Sungai Putih, Lembah Jaya Utara, Selangor, Malaysia. The program applied a participatory approach combining community health education and direct screening for hypertension, diabetes, and metabolic risks. A total of 120 participants attended education sessions followed by individual counseling and basic health checks. Results indicated a significant improvement in health knowledge and awareness, as participants were able to identify risk factors and expressed willingness to perform regular self-monitoring. Post-activity interviews revealed an increased sense of responsibility toward adopting healthy lifestyles and sustaining community health cadres. This initiative highlights the importance of integrating education, local participation, and screening as an effective model to strengthen health literacy and disease prevention among immigrant populations.

Keywords: community empowerment, health literacy, noncommunicable disease prevention, immigrant health.

Abstrak

Keterbatasan akses terhadap layanan kesehatan dan informasi kesehatan menyebabkan pekerja migran Indonesia di Malaysia rentan terhadap penyakit tidak menular (PTM). Kegiatan pengabdian masyarakat ini bertujuan untuk meningkatkan literasi kesehatan dan perilaku pencegahan penyakit melalui pendidikan kesehatan interaktif, skrining, serta pemberdayaan kader di Bukit Sungai Putih, Lembah Jaya Utara, Selangor, Malaysia. Program menggunakan pendekatan partisipatif yang menggabungkan edukasi kesehatan komunitas dan

pemeriksaan langsung faktor risiko hipertensi, diabetes, dan penyakit metabolik. Sebanyak 120 peserta mengikuti sesi edukasi diikuti konseling individu dan pemeriksaan kesehatan dasar. Hasil menunjukkan peningkatan pengetahuan dan kesadaran kesehatan secara signifikan, di mana peserta mampu mengenali faktor risiko serta berkomitmen melakukan pemantauan mandiri secara rutin. Wawancara setelah kegiatan menunjukkan peningkatan rasa tanggung jawab terhadap penerapan gaya hidup sehat serta keberlanjutan kader kesehatan komunitas. Kegiatan ini menegaskan pentingnya integrasi edukasi, partisipasi lokal, dan skrining sebagai model efektif untuk memperkuat literasi kesehatan dan pencegahan penyakit di komunitas imigran.

Kata kunci: *pemberdayaan masyarakat, literasi kesehatan, pencegahan PTM, kesehatan imigran.*

Introduction

Noncommunicable diseases (NCDs) such as hypertension, diabetes mellitus, cardiovascular diseases, and epidemically have emerged as the leading causes of death globally, accounting for more than 74% of all deaths each year (World Health Organization, 2022). Unlike communicable diseases, which are often caused by infections and can be rapidly treated, NCDs develop slowly and are largely influenced by modifiable risk factors, including poor diet, physical inactivity, tobacco use, and alcohol consumption. This growing burden of chronic diseases is not only a health challenge but also a socioeconomic one, particularly among populations with limited access to healthcare and health education.

Migrants and immigrant workers represent one of the most vulnerable populations in this context. Globally, the migrant population exceeds 281 million people, and many of them live and work in conditions that expose them to health risks while limiting their ability to access preventive healthcare services (International Organization for Migration, 2023). Indonesian migrant workers in Malaysia, for instance, often work in informal sectors such as construction, domestic labor, or plantations, where occupational health programs and health insurance coverage are minimal or nonexistent. The combination of economic limitations, legal status uncertainty, language barriers, and long working hours contributes to neglect of personal health. As a result, NCDs often go diagnose until they reach severe or irreversible stages (Gupta, Ahluwalia, & Taneja, 2023).

Previous studies have demonstrated that low levels of health literacy—defined as an individual's ability to obtain, understand, and use health information effectively—are strongly correlated with poor health outcomes and reduced participation in preventive health measures (Nutbeam & Muscat, 2021). Among migrant populations, health literacy is often limited due to a lack of culturally appropriate health education materials and insufficient outreach from local health institutions. According to Hossain, Sultana, and Purohit (2020), migrant workers tend to rely on informal social networks rather than professional health sources for medical advice, increasing the risk of misinformation and self-medication. These behavioral patterns further exacerbate the burden of NCDs, which require consistent management, routine monitoring, and informed lifestyle choices.

In Malaysia, surveillance data and prior research indicate that the prevalence of hypertension and diabetes among low-income and immigrant communities remains high. A community health survey conducted in Selangor in 2023 showed that nearly 40% of informal workers had elevated blood pressure and one-third had high blood glucose levels but were unaware of their condition (Rahmadhani et al., 2024). These findings underscore a critical need for targeted interventions aimed at early detection and education among vulnerable groups. However, most existing public health campaigns are designed for local citizens, not immigrants—creating a gap between available resources and the actual needs of the migrant population.

Addressing NCD prevention among Indonesian immigrants in Malaysia thus requires a community-based and participatory approach that empowers individuals to take ownership of their health. Unlike top-down medical interventions, community-based strategies emphasize education, participation, and empowerment as pathways to behavior change (Bidaya, 2023). Education provides knowledge; participation fosters ownership; empowerment ensures sustainability. Evidence from participatory health programs in Southeast Asia suggests that community involvement leads to greater acceptance and longer-term adherence to healthy behaviors (Setiawan & Nuraini, 2020).

Based on this understanding, the current community service initiative was developed as a collaborative project between STIKes Rajekwesi Bojonegoro (Indonesia) and local community representatives in Bukit Sungai Putih, Lembah Jaya Utara, Ampang, Selangor. The project aimed to integrate interactive health education**,** free NCD screening**,** and community cadre empowerment to build sustainable awareness among Indonesian migrant residents at Bukit Sungai Putih, Lembah Jaya Utara, Selangor, Malaysia. The central hypothesis is that combining educational activities with health screening can bridge the gap between knowledge and practice—turning awareness into action.

The specific objectives of this community service program were: To assess and improve the knowledge and awareness levels of Indonesian immigrants regarding NCD risk factors and preventive behaviors. To promote early detection through accessible and non-stigmatizing health screening activities. To establish a cadre-based health education system to ensure the continuity of preventive practices within the migrant community (Febrianita & Annisa, 2023).

This initiative serves not only as a health intervention but also as a model of transnational academic collaboration in community engagement. It contributes to the broader goal of empowering marginalized populations to become proactive agents in maintaining their health and well-being, ultimately reducing the prevalence and impact of NCDs within immigrant communities.

Method

This community service program adopted a participatory community-based approach that combined health education, health screening, and community empowerment. The design was guided by principles of community engagement**,** adult learning theory**,** and health

promotion models (Nutbeam & Muscat, 2021). The implementation consisted of three interconnected phases—preparation, implementation, and evaluation—each of which was designed to ensure the effectiveness, sustainability, and cultural relevance of the activity. The preparation phase aimed to establish partnerships, identify community needs, and design culturally appropriate intervention materials. Coordination meetings were held between STIKes Rajekwesi Bojonegoro (Indonesia), and local community representatives in Bukit Sungai Putih, Lembah Jaya Utara, Ampang, Selangor. A rapid situational analysis was conducted through informal interviews and observation involving 15 community leaders and migrant residents. The assessment identified limited knowledge about chronic diseases, minimal access to routine health checks, and the absence of a formal health monitoring structure in the area. These findings guided the content of the educational materials and the design of the health screening component. Formal permission for conducting the program was obtained from the local community committee and local health authority in Selangor. This ensured administrative compliance and access to logistical support such as venues and volunteer recruitment. Educational media were developed in simple Bahasa Indonesia using visual aids (posters, leaflets, flipcharts, and short demonstration videos). The materials covered. The definition and risk factors of NCDs (hypertension, diabetes, dyslipidemia, hyperuricemia). Healthy lifestyle principles including diet, exercise, and stress management. Guidance on regular self-monitoring and seeking early medical consultation. Screening instruments were prepared, including digital sphygmomanometers**,** glucometers**,** cholesterol and uric acid test kits**,** BMI measurement tools, and data collection sheets for recording results. All equipment was tested and calibrated prior to field use. Ten community volunteers were recruited as local health cadres based on their leadership roles, literacy, and communication skills. They underwent a one-day training session covering: Basic concepts of NCDs and preventive behavior. Effective communication and counseling techniques. Recording and reporting of screening data. Follow-up planning for peer health education in the community. Cadres were positioned as key agents to sustain the impact after the completion of the formal program.

The implementation phase took place in February 2025 and lasted for one full day. The activity was held in the community hall of Bukit Sungai Putih with the support of Lincoln University College students as facilitators and translators. Participants were invited through the community leader network and open announcements distributed three days before the event. A total of 120 Indonesian migrant residents, aged 20–60 years, participated voluntarily. Inclusion criteria included willingness to join both educational and screening sessions and the ability to provide informed consent. Before the main session, participants completed a pre-test questionnaire consisting of 15 multiple-choice questions assessing their knowledge and attitude toward NCDs, healthy diet, and physical activity. The data served as a baseline for evaluating the educational impact. The education session lasted approximately two hours and used interactive learning methods based on adult learning principles. Techniques included: Short lectures combined with visual presentations and group discussions. Question-and-answer sessions to encourage active participation. Demonstrations of healthy food portioning, breathing relaxation, and simple exercises. Distribution of printed educational materials that

summarized key messages. Facilitators emphasized the importance of early detection, routine health checks, and maintaining balance between work and health in the migrant setting.

Following the education session, all participants were invited to undergo basic health screening. The procedures included: Blood Pressure Measurement**:** Using a digital sphygmomanometer with participants seated and rested for 5 minutes. Blood Glucose Testing: Using glucometer and sterile lancets for random blood sugar measurement. Total Cholesterol and Uric Acid Testing: Conducted using portable enzymatic test kits with single-use cartridges. Anthropometric Measurement: Weight, height, and Body Mass Index (BMI) were recorded using standard digital scales and stadiometers.

All results were recorded immediately and communicated to participants with brief explanations. Participants showing abnormal results were given referral recommendations to local clinics for further evaluation.

After the screening, individual counseling sessions were held by nurses and lecturers. Each participant received personalized feedback and advice on dietary habits, physical activity, and stress management. The use of culturally relevant examples (such as affordable local foods and daily routines) made counseling more relatable. Participants were encouraged to set personal health goals, such as checking blood pressure monthly or reducing sugar consumption.

The evaluation phase aimed to measure the effectiveness of the intervention in increasing knowledge, awareness, and behavioral intentions among participants. The same questionnaire used in the pre-test was re-administered as a post-test after the education and counseling sessions. Results were compared descriptively to identify knowledge improvement. The analysis showed an average score increase of 32%, indicating substantial enhancement in health literacy. In-depth interviews were conducted with ten randomly selected participants to explore their perceptions, satisfaction, and behavioral intentions. Qualitative feedback indicated that participants valued the approachable communication style, the free screening service, and the feeling of being cared for as migrants. The newly trained cadres were assigned to maintain community contact through informal meetings and WhatsApp groups. They collected information on health practices (such as diet and exercise frequency) and encouraged self-monitoring. Monthly unities.

Results and Discussion

The community service activity on “Increasing Health Literacy and Preventive Behavior Against Noncommunicable Diseases among Indonesian Immigrants in Malaysia” was implemented successfully in Bukit Sungai Putih, Lembah Jaya Utara, Selangor, Malaysia**,** in February 2025**.** A total of 120 Indonesian immigrant participants attended the program, consisting of both male and female adults aged between 20 and 60 years who worked primarily in informal sectors such as domestic labor, construction, food services, and small-scale trading.

The results of this program are presented in two complementary components: quantitative findings derived from the pre and post-education assessment and health screening, and qualitative findings obtained through observations, focus group discussions, and interviews

with participants and cadres. Together, these data provide a comprehensive understanding of the program's outcomes in enhancing knowledge, awareness, and health behavior among the target community.

1. Demographic Characteristics of Participants

Most participants (65%) were female, and 35% were male. Approximately 78% of them had lived in Malaysia for more than three years, and 60% had never attended any formal health education activity. Only 15% reported having ever undergone health screening before this program. Educational background varied, with 55% of participants having completed only junior high school, while 35% had finished high school and 10% held higher education credentials. These characteristics indicated that the majority of participants came from low-literacy and low-income backgrounds, which explained the limited access to health information and healthcare services.

Picture 1. Group Photo of Participants and Facilitators

2. Quantitative Findings: Knowledge and Awareness Improvement

A **pre-test and post-test** evaluation was administered to measure changes in participants' knowledge and awareness regarding noncommunicable diseases (NCDs). The questionnaire consisted of 15 questions covering NCD risk factors, prevention methods, dietary habits, and the importance of regular health checks.

Indikator	**Pre-test Mean score**	**Post-test Mean score**	**Percentage Increase**
Understanding of NCD risk factors	56%	88%	+32%
Awareness of hypertension and diabetes prevention	52%	85%	+33%
Knowledge of healthy diet and exercise	61%	90%	+29%
Willingness to perform routine screening	48%	82%	+34%
Overall health literacy level	54%	86%	**+32%**

These results demonstrate a substantial improvement in participants' health knowledge after the intervention. Statistical significance was not formally tested as this was a

descriptive community program; however, the observed percentage increase clearly indicates that the combination of interactive education and practical screening effectively enhanced health literacy.

Participants reported that the use of visual and interactive materials such as pictures, real-life examples, and local language explanations made it easier to understand medical terms. Many participants expressed that they previously believed chronic diseases were unavoidable consequences of aging, but after the session, they recognized the role of lifestyle and routine screening in prevention.

Picture 2. Small-Group Health Education and Counseling Activities

3. Health Screening Results

As part of the activity, 120 participants underwent basic health screening including blood pressure, random blood glucose, total cholesterol, uric acid, and BMI measurement. The summarized results are presented below:

Health Parameter	Normal	Abnormal	Prevalence (%)
Blood Pressure (≥140/90 mmHg = abnormal)	68	52	43.3%
Blood Glucose (≥200 mg/dL = abnormal)	87	33	27.5%
Total Cholesterol (≥200 mg/dL = abnormal)	67	53	44.2%
Uric Acid (≥7 mg/dL men; ≥6 mg/dL women = abnormal)	91	29	24.2%
Overweight/Obesity (BMI ≥25)	55	65	54.2%

The findings show a high prevalence of metabolic risk factors, particularly hypertension and hypercholesterolemia, affecting nearly half of the participants. This reflects a pattern consistent with other studies of migrant workers in Southeast Asia, where unhealthy diets, long working hours, and stress contribute to elevated NCD risks (Gupta et al., 2023; Zhou et al., 2019).

Importantly, several participants with critical blood glucose and blood pressure readings were immediately referred to nearby health facilities for further examination. The collaboration with Lincoln University College facilitated referral pathways and ensured follow-up care for these cases.

Picture 3. Banner Display and Team Documentation

4. Qualitative Findings: Behavioral and Perceptual Changes

Qualitative feedback from interviews and focus group discussions provided deeper insights into behavioral and perceptual shifts among participants. The following themes emerged:

Participants reported a greater sense of responsibility for their health. One participant stated: “I used to think that as long as I could still work, I was healthy. After this check, I realized I need to pay attention to what I eat and check my blood pressure more often.”

Before the intervention, most participants sought medical help only when they were seriously ill. After the program, 87% expressed willingness to undergo periodic check-ups and share information with peers. Some even requested follow-up screening sessions every six months.

The establishment of ten trained community health cadres proved to be a critical element for sustainability. These cadres not only assisted in the implementation but also became key motivators afterward. They formed WhatsApp groups for continued health education, sharing reminders, and providing moral support.

Several participants indicated that learning together as a group helped reduce fear and stigma about diseases. Peer support fostered a collective motivation to adopt healthier lifestyles, aligning with previous findings that community-based education enhances social capital in health promotion (Brennan & Israel, 2008).

Community engagement throughout the process was a decisive success factor. The use of local leaders as mediators increased trust and attendance. The participatory approach, rather than a top-down lecture, encouraged two-way communication. Participants were not merely recipients but contributors who shared their experiences, local food habits, and suggestions for improvement.

Moreover, involving local cadres create a sense of ownership and responsibility. They planned to replicate the health education in smaller groups within the community. This form of participatory empowerment aligns with the Ottawa Charter for Health Promotion (WHO,

1986), which emphasizes community participation as the cornerstone of sustainable health initiatives.

Despite the success, several challenges were encountered during implementation: Language and Cultural Diversity: Some participants mixed Bahasa Indonesia and Malay with local dialects, requiring facilitators to use bilingual explanations. Time Constraints: Many participants were workers with limited free time, so the schedule had to be compacted into one day. Limited Facilities: The venue space restricted the number of participants that could be screened simultaneously. Health Misconceptions: Some participants initially believed that high blood pressure was caused by fatigue alone and not a medical issue. These challenges were mitigated through adaptive facilitation—simplifying explanations, using visual media, ensuring flexible scheduling, and providing empathetic counseling.

Picture 4. Community Participants During Health Education Session

Conclusion

This community service program has demonstrated that a community-based, participatory, and educational approach can effectively enhance health literacy and preventive behavior against noncommunicable diseases (NCDs) among Indonesian immigrant workers in Malaysia. The integration of interactive education, free health screening, and community empowerment successfully bridged the gap between knowledge and practice**,** transforming passive understanding into proactive health behavior.

The outcomes of this initiative revealed a significant improvement in participants' awareness and understanding of NCD risk factors, early detection, and lifestyle modification. The quantitative findings showed an average 32% increase in knowledge scores following the educational intervention, indicating that interactive and visual learning methods were particularly effective for low-literacy communities. The screening results further highlighted the urgency of preventive measures, as more than 40% of participants were identified as having elevated blood pressure or cholesterol levels. These findings confirm the presence of hidden NCD burdens among immigrant populations who often lack access to healthcare.

Beyond the numbers, the qualitative insights emphasized a transformation in perception and motivation. Participants expressed a heightened sense of responsibility toward personal health, while the establishment of ten trained community cadres created a sustainable platform for continued health education. These cadres are now equipped to act as peer educators, enabling the program's long-term impact through informal yet structured dissemination of health messages across the community.

From a theoretical perspective, this program reinforces the Health Literacy and Empowerment Model, which posits that knowledge acquisition combined with participatory learning leads to greater autonomy and self-efficacy in health. The integration of participatory education and local cadre engagement aligns with the Ottawa Charter for Health Promoti, emphasizing community participation, supportive environments, and reorientation of health services toward prevention rather than treatment.

From a practical standpoint, the program provides a replicable model for promoting health literacy in other migrant communities across Southeast Asia. Its low-cost, adaptable format—using local language, visual media, and cadre-based follow-up—makes it feasible even in resource-limited settings. Collaboration between educational institutions (such as STIKes Rajekwesi Bojonegoro and local communities proved essential to ensure legitimacy, trust, and continuity.

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