

# Community-Based Health Education on Metabolic Diseases among Female Migrant Workers in Malaysia: An Indonesian Lecturers' Community Service Initiative

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## ABSTRACT

This study aims to examine the implementation and outcomes of a community service programme focusing on health education related to metabolic diseases among female migrant workers in Malaysia. The programme was conducted as part of the *Tri dharma* of higher education in Indonesia, emphasising the role of lecturers in delivering community-based interventions beyond national boundaries. A health education intervention using an educational counselling approach was implemented on 24 January 2025, involving 35 female migrant workers. The content covered important factors that contribute to metabolic diseases, such as lifestyle choices, eating patterns, and work-related stress, and was presented using engaging and hands-on approaches to improve learning and involvement. The findings indicate a noticeable participants' understanding of metabolic diseases and their associated risk factors has improved, and there has been a growing sense of motivation to make healthier lifestyle choices. The counselling-based approach, along with culturally respectful communication and content that is relevant to the context, was found to be effective in promoting both cognitive and motivational results. The program also shows how academic community service can be useful in tackling public health issues faced by vulnerable groups, especially migrant workers who have limited access to health-related information. The initiative provides a model that can be replicated and adjusted for use in other host countries, supporting wider discussions on involving communities in health efforts and preventing illnesses.

**Keywords:** Community service, metabolic diseases, migrant workers, health education, lifestyle change

## INTRODUCTION

Higher The *Tri dharma* of higher education constitutes a foundational principle governing the roles and responsibilities of lecturers in Indonesia, encompassing teaching, research, and community service as three inseparable pillars. Within this structure, community service is not just an extra activity but a required part of

the academic program that links academic knowledge with the needs of society. Recent studies have underscored that lecturers' engagement in community-based activities contributes to knowledge dissemination, social empowerment, and the practical application of research outcomes (Arifin et al., 2025; Nailly et al., 2023). At the same time, the growth of international academic cooperation has become a growing focus for scholars, especially in relation to global civic duty and collaborative efforts across borders (Bringle & Clayton, 2022; Iyer, 2025). These initiatives allow Indonesian lecturers to expand the application of Tri dharma beyond their country's borders, particularly in meeting the needs of vulnerable groups like migrant workers. However, despite this growing trend, the literature indicates that structured documentation of international community service conducted by Indonesian academics remains relatively limited, thereby necessitating further empirical contributions.

In the field of public health, metabolic diseases such as diabetes, hypertension, and obesity have become significant global health issues, affecting socially and economically disadvantaged populations more severely than others. Recent studies show that these conditions are heavily affected by factors related to behavior, the environment, and work, such as poor eating habits, not enough exercise, and long-term stress (Marchetti et al., 2023; Valenzuela et al., 2023). Migrant workers are especially vulnerable to these risks because they often have limited access to healthcare, face language difficulties, and endure tough working conditions. Working conditions (Moyce, 2021; Pega et al., 2021). Female migrant workers are more vulnerable due to gender inequality, limited control over their own lives, and feelings of being isolated from others. These factors can make it harder for them to take steps to stay healthy. Previous research has thoroughly examined the spread and causes of metabolic diseases, but there is still a significant lack of studies focused on interventions for migrant women in Southeast Asia, especially those from Indonesia living in Malaysia (Mota et al., 2021).

Health education programs are commonly seen as a successful method for dealing with non-communicable diseases by improving knowledge and encouraging healthier behaviors. Recent evidence suggests that community-based educational programmes, particularly those employing participatory and counselling-oriented methods, can significantly improve individuals' understanding of health risks and motivate positive lifestyle changes (Gagliardi et al., 2022; Prestwich et al., 2024). In addition, studies in behavioural science emphasize the need to build self-efficacy and encourage intrinsic motivation to support the long-term success of these changes (Berry et al., 2023; Mather et al., 2022). Although there have been some improvements, most studies so far have mainly looked at people within their own countries and healthcare facilities, rather than exploring community or informal approaches aimed at supporting migrant workers. In addition, there is a paucity of research examining the role of lecturers' community service activities particularly those rooted in the Tri dharma framework in delivering health education interventions across national borders.

Therefore, a significant gap can be observed where Tri Dharma based community service, migrant health, and health education interventions meet. While previous research has established the significance of metabolic disease prevention and the effectiveness of educational strategies, limited attention has been given to how Indonesian lecturers operationalise their community service mandate in international contexts to address these issues. There is limited practical evidence showing the results of these programs, especially regarding how they improve knowledge and encourage better behaviour in female migrant workers. Therefore, this study seeks to address this gap by presenting and analysing a community-based health education programme conducted in Malaysia, with the aim of improving awareness of metabolic diseases and encouraging healthier lifestyle practices among Indonesian female migrant workers.

## LITERATURE REVIEW

### Prevalence and Determinants of Metabolic Diseases

Recent studies from around the world regularly point out that metabolic diseases are becoming a significant and growing problem for global health, especially in countries with lower and middle incomes. Research shows that diseases like diabetes, high blood pressure, and obesity are closely linked to lifestyle choices that can be changed, such as poor eating habits, lack of physical activity, and smoking (Marchetti et al., 2023; Safari & Rahimi, 2025). In addition, occupational stress is considered a major factor, as long working hours and physically taxing or uncertain employment conditions can lead to disruptions in metabolic processes (Kainiemi et al., 2023; Valenzuela et al., 2023). Access to healthcare services also plays a crucial role, as limited preventive care and

delayed diagnosis exacerbate disease progression (Allen et al., 2024). While previous studies have thoroughly measured how common something is and found important factors that influence it, most of the existing research has looked at general populations rather than focusing on vulnerable groups like migrant workers. Furthermore, there has been limited focus on factors that are specific to contexts within transnational labour environments, suggesting a lack of understanding about how migration-related issues influence metabolic health risks.

### **Health Vulnerabilities of Migrant Workers**

The body of research on migrant health shows that a variety of structural, social, and personal factors work together to make migrant groups more at risk. Migrant workers frequently face unstable job situations, feelings of being left out, and difficulties in integrating into society. Limited access to healthcare services has a negative impact on health outcomes for these individuals (Kusumaningtyas et al., 2018; Pega et al., 2021). Female migrant workers encounter specific challenges related to their gender, such as risks to their reproductive health, reduced control over their own decisions, and greater exposure to psychological and social stress (Medeiros et al., 2023). Scholars have also pointed out that cultural and language differences can make it harder for people to get health information, which in turn makes current health promotion activities less effective (Stevens et al., 2024). Although previous studies have offered considerable evidence regarding the weaknesses of migrant workers, most. The studies stay descriptive and concentrate on identifying risks rather than suggesting ways to address them. There is a clear absence of research that specifically focuses on Indonesian migrant workers in Malaysia as a unique group, especially when it comes to their metabolic health and the strategies used to prevent related issues.

### **Effectiveness of Health Education and Counselling Interventions**

Health education and counseling programs are commonly recognized as effective ways to enhance health literacy and promote changes in behavior, especially when it comes to managing non-communicable diseases. Research shows that organized learning programs can greatly increase people's understanding of factors that contribute to diseases and encourage them to make better lifestyle decisions (Gagliardi et al., 2022; Simonsmeier et al., 2022). Behavioural change theories also indicate that interventions which include interactive and participatory activities, like counselling and group discussions, tend to be more effective in. Fostering long-term motivation and a sense of self-efficacy (Berry et al., 2023; Mather et al., 2022). However, most existing research has focused on clinical or community settings within local populations, and there is limited investigation into interventions specifically designed for migrant communities. Only a few studies have investigated short-term, community-focused educational programs carried out by academic institutions as part of their community service efforts. This indicates a gap in understanding the potential of Tri dharma-based interventions to address health disparities among migrant workers.

### **Research Gaps and Contribution of the Present Study**

A review of existing research highlights several significant areas that are not yet adequately addressed. Even though a lot has been learned about the factors that contribute to metabolic diseases and the risks faced by migrant groups, there is still not enough connection between these areas in practical research aimed at developing interventions. There is a notable absence of research that empirically examines the intersection of health education, the experiences of migrant workers, and participation in academic community service across borders. Furthermore, earlier studies have not paid much attention to Indonesian female workers who migrate to Malaysia, even though they are present in large numbers and have distinct socio-cultural traits. Accordingly, the present study contributes to the literature by documenting and analysing a community-based health education intervention delivered by Indonesian lecturers as part of their *Tri dharma* obligations. It provides understanding on how these efforts can increase knowledge and encourage changes in behaviour, thus tackling both theoretical and practical shortcomings in the areas of public health and community involvement.

## **PROGRAM DESCRIPTION AND METHODS**

### **Program Overview and Context**

The community service programme, entitled *Health Education on Metabolic Diseases among Female Migrant Workers*, was conducted in Malaysia on 24 January 2025 as part of the Tri dharma obligations of Indonesian lecturers, particularly within the domain of community engagement. This initiative was created to tackle the lack of access to preventive health information among migrant communities, particularly women who are employed in informal or semi-formal work environments. Recent studies highlight that migrant workers are frequently not adequately supported by health promotion initiatives because of structural and institutional challenges (Orcutt et al., 2020; Pega et al., 2021). Accordingly, cross-border community service activities have been increasingly recognised as a strategic approach to extend academic contributions to vulnerable groups beyond national contexts (Bringle & Clayton, 2022; Tonkin, 2023). While prior studies have explored international service-learning and global engagement, there remains limited documentation of structured health-focused programmes led by Indonesian academics abroad, thereby reinforcing the relevance of the present initiative.

### **Target Participants and Program Setting**

The program targeted female migrant workers, with a total of 35 participants who voluntarily attended the activity. The choice of this group was based on available evidence. Female migrant workers are more likely to experience health issues because of the stress from their jobs, difficulty in getting proper healthcare, and social and cultural barriers that limit their opportunities (Medeiros et al., 2023). The program was conducted in a community setting to make it easier for people to access and feel comfortable, which matches what earlier studies have suggested about how informal and familiar surroundings can improve participation and learning results (Simonsmeier et al., 2022). Although previous studies have recognized the importance of focusing on vulnerable groups, there is still a lack of programs specifically aimed at Indonesian female migrant workers in Malaysia, especially those that tackle metabolic health through direct educational efforts.

### **Educational Materials and Content Design**

The materials delivered during the programme focused on the determinants of metabolic diseases, including lifestyle factors, dietary habits, physical inactivity, and stress-related conditions. The content was adapted to the participants' socio-cultural context to ensure relevance and comprehension. Contemporary research suggests that culturally sensitive health studies show that educational materials help people better understand and remember health-related information (Gagliardi et al., 2022; Prestwich et al., 2024). In addition, incorporating real-life examples and situations that people can easily connect with has been found to increase awareness of healthy behaviours and promote thoughtful consideration of one's own health habits (Berry et al., 2023). Although previous research has created standard educational programs about non-communicable diseases, there has been little work done to customize these resources for migrant workers who come from different language and cultural backgrounds.

### **Implementation Strategy: Educational Counselling Approach**

The program employed an educational counselling approach aimed at enhancing participants' knowledge and fostering motivation for behavioural change. The session featured organized presentations along with opportunities for interactive discussions, enabling participants to engage closely with the content and exchange their personal insights. Recent studies in behavioural science support this approach, showing that methods involving active participation and open dialogue are more successful than simply providing information in encouraging long-term behaviour change (Berry et al., 2023; Mather et al., 2022). In addition, counselling-based approaches have been shown to enhance individuals' feelings of control and confidence in their ability to make changes, which are essential factors in adopting healthier lifestyle habits (Prestwich et al., 2024). Although these findings are valuable, most of the existing research has mainly concentrated on clinical or institutional environments, and there is not much attention given to counselling-based education that is carried out through short-term community service initiatives.

### **Roles and Responsibilities of the Implementation Team**

The implementation of the programme involved a structured division of responsibilities among the academic team, consisting of a chair and supporting members. The chair was responsible for overall coordination, which

involved planning the programme, ensuring the content was accurate, and managing the main session. Team members helped in creating the educational resources, organizing the logistics, and ensuring active involvement of participants throughout the event. This method of working together shows how best practices are applied in delivering community services, as it brings different professionals together to make programs more effective and ensure they run smoothly (Bailey, 2023; Tonkin, 2023). Although teamwork in academic outreach has been widely discussed, there is still limited research on the specific roles that lecturers play in organizing and delivering international community service activities, especially within the field of health education.

### **Ethical Considerations and Logistical Arrangements**

Ethical aspects were handled by making sure that participation was voluntary, showing respect for the participants' dignity, and providing information in a way that was fair and considerate of different cultures. The program also focused on ensuring clear communication and building a supportive learning environment. The logistics involved coordinating with local contacts, preparing educational materials that are easy to understand, and organizing the timing of the session at a time convenient for participants. Recent studies emphasize the need for ethical awareness and the ability to adjust approaches based on the specific situation in community-based programs, especially when supporting at-risk groups like migrant workers (Orcutt et al., 2020; Stevens et al., 2024). There is still a need for more comprehensive reporting on ethical practices in short-term, cross-border community service programs, as these are frequently overlooked in academic publications.

### **Implementation Of the Activity**

#### **Programme Opening and Participant Engagement**

The activity commenced with an introductory session aimed at establishing rapport with participants and creating a supportive learning atmosphere. The facilitators explained the goals of the program and discussed the importance of metabolic health in the everyday lives of migrant workers. Creating a welcoming and respectful atmosphere from the beginning is commonly seen as essential for improving how participants engage and respond (Prestwich et al., 2024; Simonsmeier et al., 2022). In community-based health education, particularly when working with vulnerable populations, building trust and using culturally appropriate communication methods are crucial for promoting active involvement (Stevens et al., 2024). Although previous research has emphasized the significance of participant engagement strategies, there is still a lack of detailed information on how these methods are actually put into practice in short-term, cross-border community service settings.

#### **Delivery of Educational Content**

Participants The main part of the session focused on providing educational resources that explained the factors contributing to metabolic diseases and how to prevent them. The facilitators used simple and easy-to-understand language, along with real-life examples that related to the participants' everyday work and living situations. Visual aids and easy-to-understand explanations were used to help with understanding and remembering the information better. Recent studies indicate that using examples that are relevant to the context and providing visual aids greatly enhance comprehension, especially for groups with varied levels of education (Nutbeam & Lloyd, 2021). Furthermore, adapting content to align with participants lived experiences has been shown to increase the perceived relevance of health information and facilitate behavioural awareness (Berry et al., 2023). Although these strategies are commonly suggested, their use in health education programs that focus on migrants is still not thoroughly explored.

#### **Interactive Discussion and Knowledge Exchange**

After the presentation, the session included an interactive discussion where participants were encouraged to share their personal experiences, ask questions, and think about their health practices. This method of dialogue allowed for an exchange of information in both directions, enabling the facilitators to correct misunderstandings and offer explanations that were suited to the needs of each participant. Recent research shows that methods involving interaction and participation are better than one-way communication at helping people understand and get involved more deeply (Mather et al., 2022; Wallerstein et al., 2020). These methods also give participants a greater sense of control by recognizing their experiences and encouraging them to take an active role in making

decisions about their health. Although these benefits exist, many health education programs still use lecture-based approaches, showing a difference between what is advised and how it is carried out in real-life situations.

### **Communication Strategies and Learning Environment**

The facilitators used flexible communication methods to better suit the participants' language and cultural contexts. Simple language, repeated key points, and the use of everyday comparisons were focused on to make sure everything is clear. The learning environment It was deliberately created to be casual and not threatening, which helps promote honest conversation and active involvement. Studies have shown that using communication methods which simplify information and connect with cultural backgrounds are crucial for boosting health understanding in disadvantaged groups (Nutbeam & Lloyd, 2021; Orcutt et al., 2020). Furthermore, research has shown that fostering a psychologically safe environment is linked to a greater readiness to participate and openly discuss experiences (Ornek et al., 2022). There is still a lack of detailed information on how these environments are developed and maintained within community service-oriented health education programs.

### **Participant Feedback and Responsiveness**

Throughout the session, participants showed active participation, as seen through their readiness to ask questions and take part in discussions. Feedback from informal sources suggested that the content was seen as relevant and helpful, especially when it came to everyday health routines. Participants' responsiveness matches results from earlier studies, which show that customized and inclusive approaches are more effective in creating positive involvement and a sense of usefulness (Prestwich et al., 2024). Although there is existing literature on structured evaluation methods, it has not paid much attention to the qualitative and observational insights gained from community service activities. This shows that there is a greater need to thoroughly record and document the experiences of participants in similar programs.

### **Use of Supporting Media and Educational Tools**

The implementation of the programme was supported using simple educational media, including visual aids and explanatory materials designed to facilitate understanding. These tools were chosen to match the participants' needs and the casual atmosphere of the activity. Research indicates that using visual and interactive media can improve learning results by making complicated health information easier to understand and by increasing student involvement (Gagliardi et al., 2022; Simonsmeier et al., 2022). However, the use of these tools in low-resource, community-based environments, especially within migrant communities, has not been sufficiently studied in existing research, indicating a need for more development and creative approaches in this field

## **RESULTS AND DISCUSSION**

### **Enhancement of Knowledge on Metabolic Diseases**

The implementation of the programme resulted in a noticeable improvement in participants' understanding of metabolic diseases and their underlying determinants. Participants demonstrated increased awareness of the role of dietary habits, physical inactivity, and occupational stress in contributing to conditions such as diabetes and hypertension. This outcome is consistent with prior studies indicating that structured health education interventions can effectively enhance health literacy, particularly when information is delivered in a contextually relevant and accessible manner (Gagliardi et al., 2022; Nutbeam & Lloyd, 2021). Furthermore, the use of simplified explanations and practical examples appeared to facilitate comprehension among participants with diverse educational backgrounds. Although previous research has established the effectiveness of educational interventions in general populations, the present findings extend this understanding to migrant worker contexts, which remain relatively underexplored in the literature.

### **Emergence of Motivation for Healthier Lifestyles**

The Beyond cognitive improvements, the programme also contributed to the development of participants' motivation to adopt healthier lifestyle practices. Participants showed a greater readiness to change their everyday

routines, such as what they eat and how much they exercise, to help prevent metabolic diseases. This finding supports behavioural change theories that highlight the significance of knowledge in leading to motivation and action (Berry et al., 2023; Mather et al., 2022). In addition, previous studies indicate that interventions that include participatory aspects are more likely to encourage intrinsic motivation and self-efficacy (Prestwich et al., 2024). However, while existing studies have predominantly examined long-term interventions, the present activity demonstrates that even short-term, community-based educational programmes can initiate motivational shifts, particularly when tailored to participants lived experiences.

### **Effectiveness of the Educational Counselling Approach**

The program's counselling-based method was successful in helping participants gain knowledge and stay motivated. The way information was presented in an organized manner along with opportunities for discussion helped participants take part in the session and think about their own health habits. This conclusion is backed by earlier research that shows participatory and dialogue-focused methods are more effective than traditional lecture-based techniques in encouraging behavioural change (Berry et al., 2023; Mather et al., 2022). Moreover, the session's interactive format enabled facilitators to correct misunderstandings and offer tailored explanations, which helped improve the overall impact of the intervention. Even though these benefits are well-documented, the available research shows that these methods are not regularly used in community health education programs, highlighting a difference between what is suggested in theory and what is done in practice.

### **Contextual Relevance for Migrant Populations**

The outcomes of the programme underscore the importance of contextualising health education interventions to the specific needs of migrant populations. Participants appreciated the content being delivered in a way that was both culturally respectful and easy to understand, and it considered their work environment and everyday difficulties. This finding aligns with current studies that highlight the need for customized approaches to support migrant workers, as they face challenges related to language, culture, and system structures when accessing healthcare services (Orcutt et al., 2020; Pega et al., 2021). In addition, the program's focus on gender-specific issues considered the particular challenges and risks that female migrant worker face, as noted in earlier research (Medeiros et al., 2023; Ornek et al., 2022). Although previous studies have thoroughly described these weaknesses, there is still not enough real-world evidence showing how educational programs that take context into account can successfully deal with them in actual situations how context-sensitive educational interventions can effectively address them in practice.

### **Implications for Community-Based Health Education**

The results add to the ongoing discussion about community-based health education by showing how initiatives based on the Tri dharma principle can help reduce health inequalities in disadvantaged groups. The noticeable increases in knowledge and motivation indicate that community service programs led by academics can be effective ways to promote health, especially among groups that have limited access to resources. This is consistent with existing research that supports the role of universities in public health initiatives (Stith et al., 2021; Tonkin, 2023). Although there is existing research on these initiatives, it has not completely examined how scalable they are and their long-term effects, especially when it comes to projects that involve migrant communities across different countries. Therefore, this study emphasizes the practical importance of the topic and the necessity for more academic research in this field.

### **Practical Implications**

#### **Importance of Culturally Sensitive Health Education**

The implementation of the programme underscores the critical importance of culturally sensitive health education in addressing the needs of migrant populations. The favourable response to the educational material suggests that adapting messages to match participants' language skills, cultural background, and everyday situations improves understanding and involvement. This result aligns with previous studies that show culturally tailored interventions are better at enhancing health literacy and promoting awareness of behaviours (Nutbeam & Lloyd, 2021; Prestwich

et al., 2024). Moreover, using examples that people can relate to and explaining things in simpler terms matches the advice given for making health communication more inclusive (Gagliardi et al., 2022). Although previous research has highlighted the importance of cultural sensitivity in theory, there is still limited use of these ideas in real-world situations involving migrant workers. This indicates that future programs should focus on adapting to specific local contexts as a key part of their design.

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### **Role of Academic Institutions in Migrant Health Promotion**

The program emphasizes the important role that academic institutions, especially lecturers following the Tri dharma framework, play in tackling public health issues affecting less-served communities. By taking community service initiatives beyond their own country, academic institutions can play a role in promoting global health and fostering a sense of social responsibility. This is consistent with existing research that highlights universities as important players in involving the community and sharing knowledge, especially when dealing with difficult societal challenges (Bringle & Clayton, 2022; Tonkin, 2023). Furthermore, the participation of lecturers in health education programs shows how their academic knowledge is used in actual situations. Despite these contributions, previous research has largely focused on teaching and research outputs, with comparatively limited attention to the operationalisation of community service in international settings, especially in the domain of migrant health.

### **Addressing Health Vulnerabilities among Female Migrant Workers**

The program offers practical information on how focused actions can tackle the health challenges that female migrant workers face. The noticeable rise in knowledge and motivation indicates that educational counselling can be a useful method for reducing the risks linked to metabolic diseases. This finding aligns with current research showing that migrant workers, especially women, need customized support because they face challenges like structural obstacles, high work-related stress, and restricted access to healthcare services (Orcutt et al., 2020; Pega et al., 2021). In addition, it is important to use approaches that consider gender differences to address the specific difficulties faced by female migrants, such as feeling lonely and having limited control over their own decisions (Medeiros et al., 2023; Ornek et al., 2022). Although previous research has thoroughly examined these weaknesses, there is still a lack of effective programs at the community level that apply this knowledge, and this current effort aims to start filling that gap.

### **Potential for Programme Replication and Scaling**

The structure and outcomes of the programme suggest significant potential for replication and scaling in other host countries with substantial Indonesian migrant populations. The program uses a straightforward, counselling-focused approach that allows it to fit into different situations without needing a lot of resources. Previous research indicates that community-based and participatory interventions are particularly suitable for low-resource settings and can be effectively implemented across diverse populations (Berry et al., 2023; Mather et al., 2022). In addition, incorporating academic community service within international settings offers a reliable model for increasing the influence of higher education institutions. However, the existing research has not thoroughly examined the scalability of these initiatives, especially regarding their long-term sustainability and the ability to collaborate across different countries, which points to a significant area that requires further attention in the future.

## Strengthening Community-Based Health Promotion Strategies

The program supports the wider effort of community-based health promotion by showing the importance of engaging and participant-focused methods. The mix of sharing knowledge and keeping people motivated aligns with proven methods in health education, as shown by research in behavioural science (Berry et al., 2023; Prestwich et al., 2024). Additionally, the program shows how short-term interventions can act as a starting point for longer-term behavioural change initiatives. Even though these contributions are valuable, most of the current research has mainly looked at large-scale or clinical initiatives, and there has been relatively little focus on smaller, community-based programs. Therefore, this current effort provides useful advice for creating adaptable and situation-aware health promotion approaches that academic institutions can use as part of their commitment to serving their communities.

### Limitations Of The Program

The programme's implementation faced several limitations that need to be recognized in order to properly understand the results and help shape future efforts. The small number of participants means that the range of viewpoints and experiences gathered during the activity is not very broad. Although the program effectively involved female migrant workers in the chosen setting, the level of participation is still not enough to accurately reflect the broader group of Indonesian migrant workers in Malaysia or other host nations. This constraint aligns with the typical challenges faced in community-based interventions aimed at hard-to-reach groups, where access and involvement are frequently shaped by factors such as availability of time, working conditions, and social influences.

Another key limitation is the brief length of the intervention. The programme was conducted as a one-day educational session, which restricts the ability to observe sustained changes in knowledge retention and behavioural practices over time. Although there were noticeable improvements in understanding and motivation right away, the lack of follow-up activities makes it difficult to determine if these changes lead to long-term results lifestyle modification. Previous studies on health education highlight that ongoing involvement and repeated reminders are important for sustaining changes in behaviour, suggesting that brief interventions might only act as starting points rather than complete answers.

Third, the outcomes of the programme were primarily interpreted through qualitative observations, particularly in relation to participants' increased understanding and motivation. The lack of quantitative measurement tools, like pre- and post-assessment instruments, makes it difficult to objectively measure the extent of change. Consequently, the findings rely on descriptive insights rather than statistically verifiable evidence. While qualitative methods are suitable for understanding participants' experiences in community service settings, incorporating straightforward quantitative measures can improve the strength and ability to compare future initiatives.

Finally, the reliance on self-reported expressions of knowledge gain and motivational change introduces the possibility of response bias. Participants might have given answers that are socially acceptable or agreed with the facilitators' messages without really understanding or accepting the information fully. Such bias is a common limitation in educational and community-based activities, particularly when interactions occur in group settings. Therefore, care should be taken when interpreting the results, and future initiatives are recommended to use a wider range of assessment methods to gain a fuller picture of the effects.

## CONCLUSION

The programme provides a meaningful illustration of how community service, as an integral component of the Tri dharma of higher education in Indonesia, can be operationalised to address pressing public health challenges beyond national boundaries. By working closely with female migrant workers in Malaysia, the initiative shows how academic groups can turn their knowledge into real-world actions that help improve society. This activity highlights the social responsibility of lecturers and strengthens the importance of community service as a way to connect academic knowledge with actual community needs, especially for those from underprivileged groups.

The results show that the program successfully improved participants' knowledge about metabolic diseases and the factors that contribute to them. In addition, the emergence of motivation to adopt healthier lifestyle practices suggests that even short-term, counselling-based activities can initiate positive behavioural intentions. These results show how important it is to provide health education that is easy to access, fits the specific situation of the community, and respects their cultural background, in order to increase awareness and inspire preventive behaviours within migrant populations.

Furthermore, the programme offers a practical and adaptable model for similar community service initiatives, particularly those targeting Indonesian migrant populations in other host countries. A simple educational counselling method, along with active involvement from participants, shows that effective interventions can be carried out even with few resources. Therefore, the program helps in promoting public health and contributes to discussions about how academic communities can engage more effectively. It highlights how activities based on the Tri dharma principles can create positive effects both locally and across international borders.

## **RECOMMENDATIONS FOR FUTURE PROGRAMMES**

### **Integration of Longitudinal Evaluation Approaches**

Future programs are encouraged to use long-term methods to track ongoing changes in participants' knowledge, attitudes, and behaviour over time. The current activity clearly showed quick increases in awareness and motivation, but observing the behaviour over a longer period would give a better picture of how persistent these changes are. Previous research highlights that changing behaviour is an ongoing process that is shaped by ongoing support and the surrounding environment. Previous studies emphasise that behavioural change is a dynamic process influenced by continuous reinforcement and environmental factors (Berry et al., 2023; Mather et al., 2022). In addition, research on consumer behaviour and intention formation suggests that attitudes and motivations evolve through repeated exposure and experience (Suhud, Allan, Hoo, et al., 2024; Suhud & Allan, 2022). Therefore, integrating follow-up activities and periodic evaluation would strengthen the effectiveness and scholarly contribution of similar community service initiatives.

### **Incorporation of Quantitative Assessment Tools**

Although community service activities primarily emphasise practical impact, the inclusion of simple quantitative assessment tools is recommended to enhance the robustness of programme evaluation. Pre- and post-intervention instruments can provide measurable indicators of knowledge improvement and behavioural intention. This recommendation aligns with prior research that highlights the importance of structured measurement in validating intervention outcomes (Gagliardi et al., 2022; Nutbeam & Lloyd, 2021). Furthermore, studies by Suhud and colleagues demonstrate the value of quantitative modelling, such as structural equation approaches, in capturing relationships between attitudes, motivation, and behavioural intention (Suhud, Allan, Hoo, et al., 2024; Wibowo et al., 2019). While such advanced techniques may not be essential for every community program, incorporating fundamental quantitative indicators can enhance comparability and replicability.

### **Strengthening Collaboration with Local Health Authorities**

Future should focus on working closely with local health authorities and community groups in the countries where the programs are based. Such collaborations can improve the credibility of the program, ensure it is suitable for the local culture, and help reach a wider range of participants. Existing research shows that working together with various groups is crucial for tackling difficult health problems, especially when it comes to people who have moved from one country to another (Orcutt et al., 2020; Pega et al., 2021). In addition, research on organisational support and institutional collaboration indicates that supportive environments significantly improve programme effectiveness and sustainability (Gathmyr et al., 2025; Wolor et al., 2023). Despite these insights, many community service activities remain independently conducted, suggesting the need for stronger institutional integration in future programmes.

### **Expansion of Preventive Healthcare Topics**

The scope of future programs should be broadened to cover a wider variety of preventive healthcare subjects in addition to those related to metabolic diseases. Certain areas like mental health, reproductive health, occupational safety, and digital health literacy are especially important for migrant workers. Previous research shows that health behaviours are shaped by several connected factors, such as mental health, the social surroundings a person is in, and how easily they can get information (Prestwich & Barker, 2022; Medeiros et al., 2021). Moreover, research by Suhud and collaborators highlights the importance of multidimensional factors such as motivation, self-perception, and environmental influences in shaping behavioural outcomes (Suhud et al., 2021; Suhud, Allan, Hoo, et al., 2024). Therefore, taking a comprehensive approach to health education would be beneficial enhance the relevance and impact of future initiatives.

### **Development of Scalable and Replicable Programme Models**

Future initiatives should focus on creating scalable and standardized models that can be applied in various geographical settings. The current initiative demonstrates that a counselling-based educational approach is both practical and adaptable; however, systematic guidelines and frameworks are needed to facilitate wider implementation. Research on community involvement and international service learning indicates that organized frameworks improve uniformity and effectiveness in various contexts (Bringle & Clayton, 2022; Tonkin, 2023). In addition, studies by Suhud and colleagues on tourism and behavioural intention illustrate the importance of conceptual modelling in understanding and predicting human behaviour across contexts (Suhud, Allan, Juliana, et al., 2024). Applying these modelling principles to community service design can help create more effective and adaptable intervention frameworks.

### **Leveraging Digital and Technological Support**

It is suggested to incorporate digital tools and technologies to improve the scope and impact of the programme. Online platforms, mobile apps, and digital communication tools can help maintain ongoing interaction and make health information easier to access for migrant workers. Recent studies emphasize the importance of digital transformation in enhancing how services are provided and how communication takes place across different areas, such as healthcare and community development (Gaffar et al., 2022). Furthermore, the idea of "cyborg consumers" proposed by Suhud and Allan (Suhud, Allan, Hoo, et al., 2024) highlights how digital technologies are becoming more deeply embedded in daily life, which opens new possibilities for creating innovative approaches to promoting health.

### **Enhancing Participant-Centred and Behavioural Approaches**

Future programs should keep focusing on approaches that put participants first, ensuring more interaction, meaningful dialogue, and content that is relevant to their personal experiences. Research in behavioural science regularly shows that methods involving active participation are more successful in increasing motivation and leading to lasting behaviour changes (Berry et al., 2023; Mather et al., 2022). Moreover, research on behavioural intention shows that factors like perceived value, personal experience, and emotional involvement play a key role in influencing individual choices (Suhud & Allan, 2022). Therefore, creating programs that engage participants and consider their real-life experiences can improve the results of the initiative.

### **Encouraging Interdisciplinary and Cross-Sectoral Approaches**

The complexity of health challenges among migrant populations necessitates interdisciplinary collaboration involving public health experts, social scientists, and community practitioners. Studies focused on creative industries and community resilience show that working together across different sectors can improve a community's ability to adapt and come up with new solutions to social challenges (Wolor et al., 2023). Incorporating insights from marketing, behavioural science, and health communication exemplified in Suhud's research can offer a more thorough understanding of how to effectively influence health-related behaviours.

### **Institutionalisation of International Community Service**

It is necessary to establish international community service programs as part of higher education systems to ensure they continue and remain effective over time. Incorporating these initiatives into academic policies and strategic plans would support organized planning, securing of funding, and assessment. Research on higher education participation emphasizes the role of institutional backing in maintaining community-focused initiatives. Furthermore, the diverse research contributions of Suhud and collaborators demonstrate how academic expertise can be mobilised across contexts to generate both theoretical and practical impact (Bringle & Clayton, 2022; Iyer, 2025).

### **Advancing Research–Practice Integration in Community Service**

In the end, future initiatives should work on improving the connection between academic studies and real-world community service efforts. While the current effort is centered on implementation, connecting these activities with research frameworks can improve the generation and sharing of knowledge. Prior studies emphasise that bridging research and practice is essential for generating evidence-based interventions and advancing scholarly discourse (Gagliardi et al., 2022). What a line with this, the extensive body of work by Suhud illustrates how empirical research on behaviour, motivation, and intention can inform practical strategies across domains (Suhud & Allan, 2022; Wibowo et al., 2019). Therefore, integrating research insights into community service design will strengthen both academic and societal impact.

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