

Migrant Health Matters (MHM): An Insight into the Public Health of Migrant Workers through Health Screenings

M.W.R. Kon¹, J.L.Y. Huang¹, L.M.Q. Nguyen², B.Y. Tan³, C.Z.X. Chua⁴, L.S.Y. Peh⁵, N.X.T. Yeo⁶, H.E. Chen⁶, H.L. Ong⁶, K.Q. Kong⁶, S.P.S. Chiew³, K.X. Kwok², K. Agoram⁷, S.S. Chan⁸, R.M.X. Lau⁹, S.Y. Tan¹⁰, and R. Agrawal¹¹

¹Yong Loo Lin School of Medicine, National University of Singapore, Singapore, mattias.kon@u.nus.edu, james.huang@u.nus.edu

²Lee Kong Chian School of Medicine, Nanyang Technological University, Singapore, leminhqu001@e.ntu.edu.sg, kkwok002@e.ntu.edu.sg

³River Valley High School, Singapore, bengyang254@gmail.com, chiew_pui_see_sarah@students.edu.sg

⁴National Junior College, Singapore, calix_chua_zheng_xuan@students.edu.sg

⁵Anderson-Serangoon Junior College, Singapore, 2025_peh_shan_yuan_leroy@asrjc.edu.sg

⁶Hwa Chong Institution (College Section), Singapore, 202793y@student.hci.edu.sg, 202588n@student.hci.edu.sg, 202805e@student.hci.edu.sg, 202691a@student.hci.edu.sg,

⁷School of Psychology, Murdoch University, Australia, agoramkrupa@gmail.com

⁸Anglo-Chinese School (Independent), Singapore, 20sophia.simone.chan@acsians.acsi.edu.sg

⁹Raffles Institution (Junior College), Singapore, 25yrach305d@student.ri.edu.sg

¹⁰Office of Training & Education, National Centre for Infectious Diseases, Singapore, seow_yen_tan@ncid.sg

¹¹Department of Ophthalmology, Tan Tock Seng Hospital, Singapore, rupeshtsh@gmail.com

MIGRANT HEALTH MATTERS (MHM): AN INSIGHT INTO THE PUBLIC HEALTH OF MIGRANT WORKERS THROUGH HEALTH SCREENINGS

Abstract: Migrant workers struggle to access healthcare in Singapore. While paths are in place for them to seek medical support, barriers remain such as the high costs of treatment and their employers' lack of flexibility in allowing them to seek help. There is a pressing need for more preventive health measures to be implemented in the local migrant health scene, focused on education and self-management. This study aims to evaluate a structured screening programme in place for the workers through statistics of attendance and participation, thus illustrating the efficacy of these screenings at health empowerment, and how they should be better organised to meet the workers' needs. The results obtained reflect steady, regular attendance and participation by the migrant workers across all screening venues, citing that there is high demand for a free screening programme which is conveniently accessible near their suburban places of residence. There is room for a greater focus on preventive health for the migrant worker population, and the organisation of more regular, widespread health screenings to enable more workers to prioritise their own health.

Keywords: Migrant Workers, Prevention, Health Screenings, Education, Self-Empowerment

Introduction

Health of Migrant Workers in Singapore

As a small city-state with high labour costs, Singapore is highly dependent on migrant labour for economic growth. In December 2023, the migrant worker population totalled 441,100 in Singapore, as measured by the number of work permit holders in the construction, marine shipyard and process sectors (Ministry of Manpower, 2024). While official statistics on a per-country basis are not published by the Ministry of Manpower, the vast majority of migrant workers (MWs) in Singapore originate from South India and Bangladesh (Transient Workers Count Too, 2021).

MWs in Singapore may suffer from various health issues, some of which are chronic. While most are below the age of 30 when they arrive, most stay for 6 to 15 years (Transient Workers Count Too, 2021), and many may go on to develop chronic diseases such as hypertension and diabetes mellitus due to poor lifestyle factors (Ang *et al.*, 2020, Rajaraman *et al.*, 2020). MWs in Singapore may also be at a low degree of risk to various occupational diseases, including work injuries which can be possibly life-threatening, (Ong *et al.*, 2006) and various infectious diseases such as dengue due to high-density living conditions and unsanitary spaces that some stay in (Sadarangani *et al.*, 2017).

Additionally, poor mental health and mental illnesses such as depression, anxiety and PTSD may be commonplace among MWs. A systematic review showed that the overall prevalence of depression and anxiety in MWs worldwide was 38.99% and 27.31% respectively (Hasan *et al.*, 2021). This high prevalence can be attributed to a range of socioeconomic causes some MWs experience, including poor living conditions, fear of employers, lack of healthcare access and a certain amount of prejudice from locals (Farwin *et al.*, 2023).

Challenges faced in Healthcare Access

Despite the specific health challenges that some MWs may face, a few barriers to healthcare access remain. In a survey of senior doctors in Singapore, the most common perceived barriers to MWs accessing healthcare were related to culture, language, and finances (Ang *et al.*, 2020). Despite the need for employers to provide MWs with S\$60,000 of insurance each policy year (Ministry of Manpower, 2024), some workers still thought that they had no insurance, or were expected to pay for healthcare support entirely out of their own pocket (Ang *et al.*, 2017).

Some MWs do not have outpatient costs covered by their insurance and may not be able to afford outpatient fees. This, along with fear of being repatriated in the event of a diagnosis of illness, causes a small minority MWs to avoid obtaining treatment for acute and chronic conditions. For instance, a survey of 525 male MWs found that 17% of MWs refrained from notifying their supervisor of a serious work-related injury, and 12% refrained from seeing a doctor despite running a high fever with prolonged respiratory symptoms (Lee *et al.*, 2014).

Health Screenings and the Preventive Health Approach

Preventive health is the science and art of preventing disease, prolonging life, and promoting physical and mental health and efficiency (Leavell *et al.*, 1979). In Singapore, all MWs undergo a compulsory health screening upon arrival, comprising medical history, physical examination and screenings for common diseases such as tuberculosis, HIV and malaria (Sadarangani *et al.*, 2017). Thereafter, only some employers provide health screenings for their MWs (Seah *et al.*, 2024). However, the essence of preventive health underlies a need for regular, consistent, health monitoring and screening for individuals.

As some MWs do not proactively seek treatment for chronic physical and mental health issues, regular health screenings can provide free health evaluations to help determine their risk of developing a medical condition, improve patient health outcomes and reduce the costs of care (McKeirnan *et al.*, 2015). Health screenings can also serve as a health education platform for MWs to learn more about maintaining a healthy lifestyle alongside the health screening (Kahar *et al.*, 2020). Lastly, MWs can obtain emotional reassurance if they are worried for their health (Cooper *et al.*, 2017).

Study Aims & Hypotheses

The Migrant Health Matters (MHM) research study aims to explore the relevance of health screenings in the local migrant health context. Given the extensive network of support built by government agencies to ensure the health and well-being of migrant workers, it remains to be discussed if health screenings which take a pre-primary care and preventive approach are meaningful in supporting the MW population.

In particular, this study has the below objectives:

1. To gauge the participation and reception of the migrant worker population towards health screening services;
2. To analyse differences in participation and reception of the migrant worker population towards health screening services in relation to island geography.

Methodology

The health screenings were organised between January 2024 and September 2024. Below, the screening programme's overall structure is discussed (Figure 1), alongside station-specific details pertaining to each station (Table 1).

Screening Structure & Overview

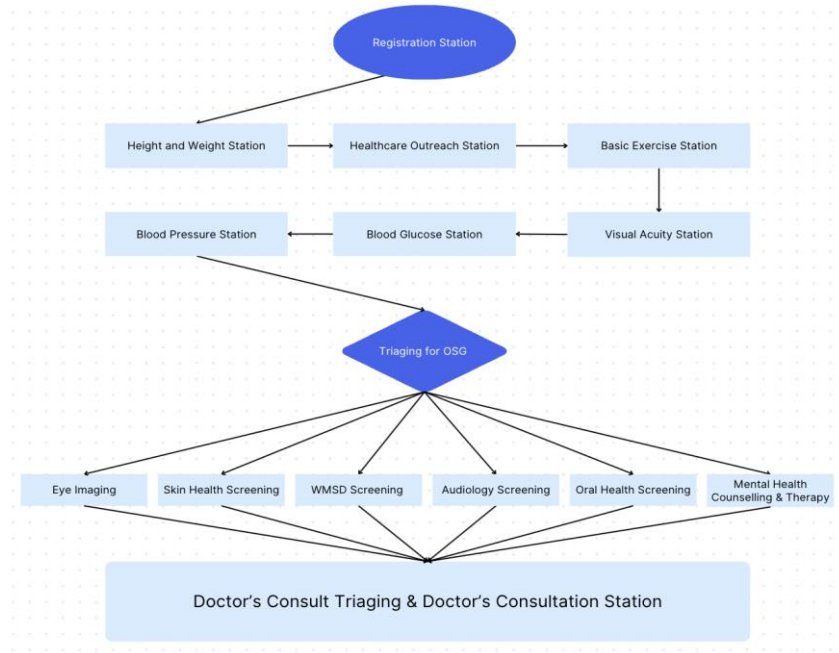


Figure 1: Flowchart illustrating screening process from the beginning at registration, to the end at the doctor's consultation station.

In particular, the optional stations group (OSG) triage station funnels migrant workers to the various screening stations on a needs-basis.

The order of the stations is specifically chosen to ensure MWs' engagement with all stations, while taking into account spatial or logistical constraints of the different venues. MWs will first register at the registration station, where their pre-existing conditions or complaints are recorded onto a physical health report card as well as on our online database.

Following registration, the MWs will be exposed to a health education station, coupled with basic physiotherapeutic exercises. The exercise has been crafted according to the McKenzie back programme (Clare *et al.*, 2004) to manage chronic lower back pain. As the MWs proceed with the remaining stations, they will have their health metrics measured and recorded, including Body Mass Index (BMI), blood pressure, blood glucose, and visual acuity, while receiving individualised health advice based on their health metrics.

Next, up to 6 stations are clustered together as the optional stations group (OSG). Each station in the OSG caters to distinct areas of health that the MWs may have concerns regarding, including work-related musculoskeletal disorders (WMSDs), eye imaging, audiometry tests, among others. The MWs will be triaged according to their existing conditions or preferences and allocated to one or more particular stations within the OSG.

Lastly, patients with alarmingly abnormal metrics or with serious concerns can have a one on one consultation with our volunteer doctors, aided by language translators. Serious conditions beyond the scope of our projects' ability will be referred to external clinics where MWs are heavily subsidised, and particular cases may be handled *pro-bono* by our partner private clinics who provide the needed services by each respective case.

Station-Specific Details

A total of 16 stations were run altogether to accommodate anywhere between 100 to 250 migrant workers over a 3 hour period every month.

Table 1: Overview of stations organised during each health screening, with their respective descriptions.

Station	Description
Registration	At the registration counter, the following information are to be obtained: - Full name - Last 4 characters of national identification number - Age - Mobile number - Dormitory - Pre-existing chronic conditions - Any acute health concerns to report - 7 short questions based on Short Warwick–Edinburgh Mental Well-being Scale (Ng Fat <i>et al.</i>, 2017), to triage for further checks at the Mental Health Screening Considering the substantial language barrier, our staff are trained and equipped with basic English phrases to obtain the MW's particulars and build rapport through non-verbal and verbal communication skills (Egan, 1986).
Height & Weight	The Migrant Workers' Height and Weight are measured and used to calculate their Body Mass Index using the formula $BMI = \text{Weight}/(\text{Height})^2$. Depending on the MWs' BMI result, volunteers are to give lifestyle advice to improve their current result. For example, for MWs with a BMI > 25.0, volunteers will help MWs interpret what their BMI signifies, the associated health risks and advise the MWs to take up diet changes and more physical exercises.
Healthcare Outreach	Staff are to give a series of general lifestyle modification advice to the MWs, which comprises improving sleep quality, choosing a healthier diet, improving exercise frequency, and maintaining mental & social well-being. The station aims to raise the basic health literacy of the MWs, thereby allowing MWs to take charge of their health. Under regular circumstances, 1 staff member and 5 MWs will be seated in a circle to facilitate conversation and mutual sharing.
Basic Exercise	The same group of staff and MWs from Healthcare Outreach will proceed to Basic Exercise together. Here, the MWs will engage in a short 5-minute excerpt of the McKenzie Back Programme to tackle chronic lower back pain (Clare <i>et al.</i>, 2004). The decision of targeting chronic lower back pain is made upon our preliminary survey of WMSDs prevalence, indicating that lower back pain is

	most frequently observed among MWs. The purpose of the station is to introduce MWs to the exercises and empower them to continue the self-physiotherapeutic exercises regularly at home, which diminish the need for regular consumption of painkillers.
Visual Acuity	The MWs' visual acuity will be assessed using PocDoc, a web-based visual acuity and vision monitoring tool, on its Snellen chart function (Chin <i>et al.</i>, 2024). The MWs are guided to a seat that is positioned 75 cm away from the screen, on which the Snellen chart is displayed. Upon completion of the test, those who require myopia glasses are provided one. MWs of age requiring reading glasses for presbyopia are also provided with a pair.
Blood Pressure	The MWs' blood pressure is measured using an electronic blood pressure machine. Depending on the MWs' blood pressure result, staff are to give lifestyle advice to improve their current result. For example, for MWs with hypertension, staff will help MWs interpret what their blood pressure signifies, the associated health risks of hypertension, and advise the MWs to take up diet changes such as DASH or aMED (Sotos-Prieto <i>et al</i> 2017) and more physical exercises (Nystoriak <i>et al.</i>, 2018) to lower their risk of cardiovascular diseases.
Blood Glucose	Before the blood glucose test, staff are to inform the MWs about the overall process of the standard glucose prick test administered and obtain their consent to take the test, and understanding of the importance of maintaining cleanliness around the wound. The MWs' blood glucose is then measured using an electronic glucometer. Depending on the MWs' blood glucose result, staff are to give lifestyle advice to improve their current result. For example, for MWs with hyperglycemia, staff will help MWs interpret what their blood glucose signifies, the associated health risks of hyperglycemia, and advise the MWs to take up diet changes, alcohol and smoking consumption changes as well as more physical exercises. The staff are also trained on how to handle sharp objects, blood stains, and proper workstation disinfection techniques.
Triage for Optional Stations Group (OSG)	At this station, MWs will be assigned to one of the optional stations depending on their past history and current needs. The mechanism of the allocation is as follows: 1. MWs with a low score on the 7 short mental health questions at the registration counter are allocated to the mental health screening station for further screening, counselling, and therapy if required. 2. MWs with a complaint relating to any station will be assigned to that screening station for us to obtain further details on their situation to better assist them (eg. hearing problems will be assigned to audiometry, chronic back/joint problems will be assigned to WMSD screening and so on). 3. MWs' preferences to be assigned to a particular station despite no

	symptoms.
Eye Imaging	MWs expressing concern about their ocular health will be directed to this station where handheld eye imaging cameras by Remidio Technologies are used to obtain images of the fundus and anterior segment of the eye (Naz <i>et al.</i>, 2024). These images are then uploaded onto an internal database and accessible by doctors on site that are able to use the images to suggest preliminary differential diagnoses on possible reasons for their adverse ocular health. They are then referred to specialist eye screening centres, or directly to ophthalmologists in private practice whenever applicable.
Mental Health Screening, Counselling, & Therapy	If the MWs score 20 or less on the Short Warwick-Edinburgh Mental Well-Being Scale (SWEMWBS) questionnaire, they will be assigned to this station, as a suggested cutoff score of 18 or less is indicative of probable clinical depression, while a score of 19 or 20 is indicative of possible mild depression (Shah <i>et al.</i>, 2018). Here, staff will administer two questionnaires, DASS-21 (Depression, Anxiety and Stress Scale 21) and PCL-5 (Post-Traumatic Stress Disorder Checklist for DSM-5), within a timespan of 10-15 minutes for both screenings combined. Questions are asked in a more conversational and flowing manner to reduce awkwardness and connect with the MWs. Powerpoint slides and printed number scales are used as visual aid to enhance clarity and understanding for the workers. When possible, screeners will be selected who speak the native language of the migrant worker (usually Bengali/Tamil). If a migrant worker is found to have a severe or extremely severe score in DASS-21 or PCL-5, or is voicing thoughts of self-harm or suicide, he will be seen immediately by a volunteer counsellor or therapist on-site, and a series of therapy techniques will be employed on a needs-basis (eg. cognitive behavioural therapy (CBT)). Follow-up sessions are provided either remotely or on-site, depending on need and availability.
Work-Related Musculoskeletal Disorders (WMSD)	The MWs with a presenting complaint of chronic pain will be further assessed for WMSDs using a Modified Nordisk Scale (MNS). Self-administered Nordic Musculoskeletal Questionnaire, a simpler version of the MNS, is concluded to be similar to information obtained through in person interview (Chairani, 2020). The MNS has 3 more questions than the usual Nordic Musculoskeletal Questionnaire to assess history of accidents, the length of time of their discomfort, and MWs' management of their conditions. The survey is relatively short, averaging less than 5 minutes to complete. Hence, the staff will proceed to inform the MWs on the various risk factors of WMSDs present throughout their jobs as construction workers (Da Costa <i>et al.</i>, 2009) and

	emphasise the need of regular self-physiotherapeutic and normal physical exercises to strengthen muscles and support skeletal structure.
	MWs expressing concern about their skin health will be directed to this station where a questionnaire will collect administrative and personal data and allow MWs to report history of skin problems and current preventive measures (Tiwari <i>et al.</i> , 2015).
Skin Health	The MWs will then be referred for a medical examination by dermatologists to diagnose observable skin disease, and given medical advice and/or pharmacological treatment when necessary. Staff will also educate MWs about early signs and symptoms of skin diseases and suggest pharmacological and non-pharmacological methods to care for their skin.
	MWs expressing concern about their oral health with reports of teeth or gum aches will be directed to this station where a questionnaire will collect administrative and personal data and allow MWs to report history of oral health problems and current preventive measures. This questionnaire was not previously used by any research group, and is an original production of this study.
Oral Health	In accordance with the level of severity of the presenting complaint of the MW, they are redirected to private clinics for pro-bono treatment services, or to charity-sponsored dental clinics for treatment at low costs. No invasive procedures are administered on-site due to the lack of compatibility of the venue with dental equipment.
	MWs with hearing complaints will be allocated to the audiometry screening booth for further testing. The audiometry booth includes a survey and the test. The survey gathers background information pertaining to aural health, including history of past hearing loss, ear injuries, and PPE usage.
Hearing & Audiometry Test	Thereafter, the MWs are sent to a separate venue with low background noise level for audiometry testing. The testing is a pure tone, virtual audiometric test using the 'Mimi' mobile app (Melo <i>et al.</i> , 2022). The worker will be concluded to have a hearing loss if he has an average hearing loss of more than 30 decibels. They are then referred to specialist hearing centres, or directly to otorhinolaryngologists in private practice whenever applicable.
	Staff will run through the health report with each worker, and wrap up the screening programme for them if they have no health concerns of note. A short survey is administered to collect the MWs' feedback on the programme.
Triage for Doctor's Consultation	MWs who have a newly identified health concern will be funnelled to doctor's consultation to have them counselled, and referred to a clinic/pharmacy for medication to control these if needed (eg. metformin for newly diagnosed diabetics). MWs with acute or chronic conditions to raise to the volunteer

doctors will be asked to wait for a consultation as well.

Doctor's Consultation

MWs with conditions requiring counselling or further referrals will be able to consult our volunteer doctors. When possible, staff who speak the native language of the MWs (usually Bengali or Tamil) will be selected to assist in translation. The doctor has access to the patients' health screening data from all prior stations completed, and can thus medically advise the patients further and provide recommendations.

However, in accordance with medico-legal guidelines in Singapore, the doctors are not able to prescribe or administer medication, request for lab work, or perform invasive procedures in a community health screening setting such as this one.

The further recommendations typically revolve around:

- Whether or not formal institutional medical attention is required
- What the most appropriate port of call would be (eg. GP clinic vs A&E)
- How soon medical attention should be sought following the consult at the health screening

Data Collection & Analysis

The data collected between January 2024 and September 2024 with personal identifiers is not intended for research publication. The data collected for this study is anonymised and only includes age, as well as the geographic attendance of each participant from venue to venue. Data was stored in a password protected excel sheet with access given only to the principal researchers involved in the data analysis.

The data was analysed to gauge the reception and demographics of the migrant workers at different health screening locations within Singapore. Statistical analysis via z-test and Student's unpaired t-test was also performed to identify significant differences in the demographics of the migrant workers at different locales where applicable.

Results

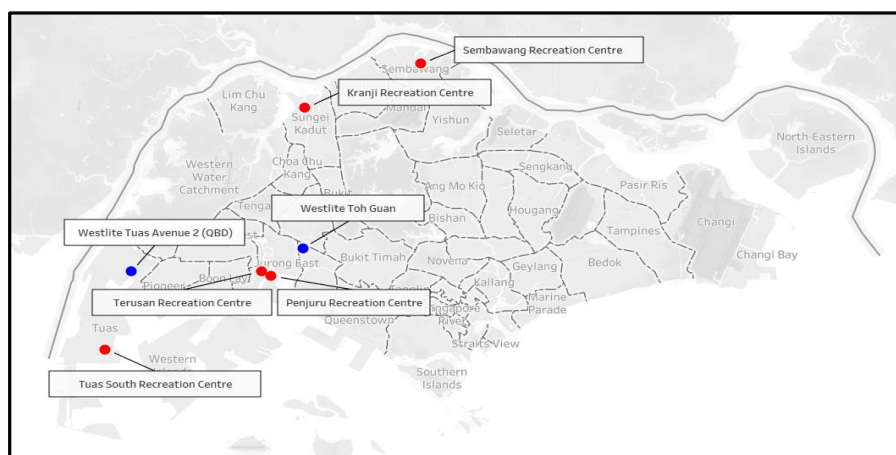


Figure 2a: Map of all health screening venues conducted in 2024. Recreational Centres are labelled in red while dormitories are labelled in blue.

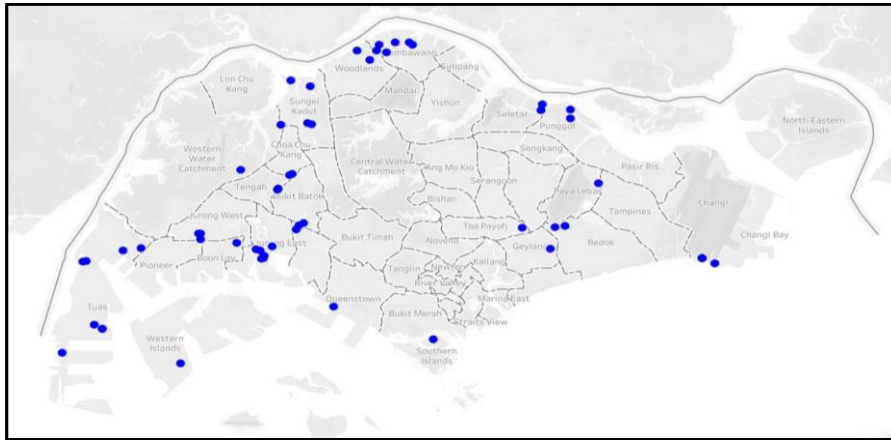


Figure 2b: Map of dormitories in Singapore that are able to accommodate more than 1000 residents in accordance with Singaporean law by the Ministry of Manpower.

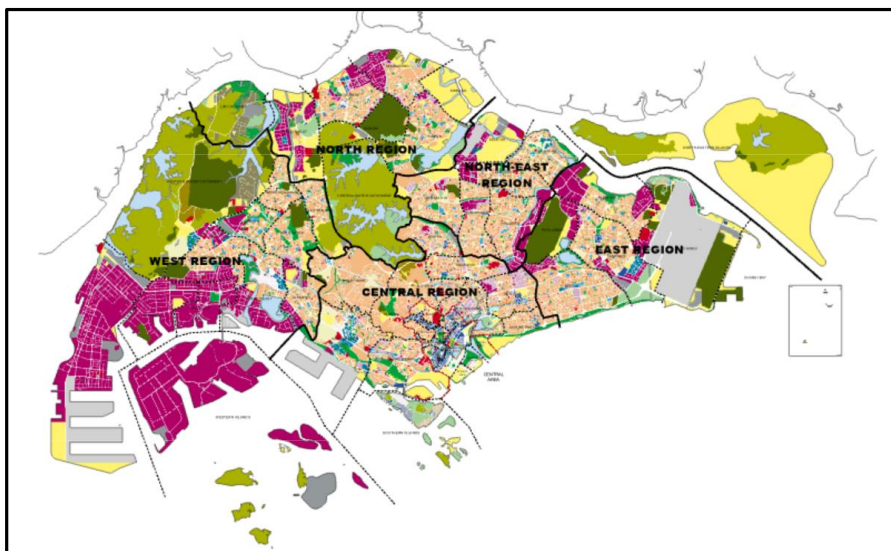


Figure 2c: Urban Redevelopment Agency (URA) Master Plan 2019 showing statutory land use assigned by URA. The purple areas correspond to areas intended for industrial use with a nuisance buffer of 50m, with special allotments for industrial machinery, shipbuilding and dry-dock industries.

The map of all health screenings (Figure 2a) shows a higher concentration of screening sites in the northern and western parts of Singapore, aligning with the map of dormitories registered under the Ministry of Manpower that are able to accommodate upwards of 1,000 residents (Figure 2b). The map of dormitories, in turn, is also largely in line with the allocated plots of industrial land in Singapore as outlined by the Urban Redevelopment Authority (Urban Redevelopment Authority, 2019) (Figure 2c).

We note that two of the screening sites, namely Westlite Toh Guan and Westlite Tuas Avenue 2 (QBD), are both screening sites and dormitories permitted to host upwards of 1,000 residents. This is opposed to the other 5 screening sites, which are held at recreation centres frequented by MWs and located in close proximity to many dormitories in Western and Northern Singapore.

Table 2: Number of MWs accommodated in health screenings (Recreation Centres). Z-tests performed on the number of MWs screened showed no significant differences ($p < 0.05$) in the number of MWs screened at any given health screening.

Location	Date of Screening	MWs Screened
Tuas South Recreation Centre	21 Jan 2024	157
12 Tuas South Street 13, Singapore	21 Jul 2024	176
Kranji Recreation Centre	19 May 2024	143
11 Kranji Close, Singapore	11 Aug 2024	152
Terusan Recreation Centre	31 Mar 2024	185
1 Jalan Papan, Singapore	2 Jun 2024	145
Penjuru Recreation Centre	18 Feb 2024	218
27 Penjuru Walk, Singapore		
Sembawang Recreation Centre	14 Apr 2024	183
301 Canberra Road, Singapore		
Mean (No. of MWs)		170

Table 3: Number of MWs accommodated in health screenings (Dormitories). No statistical analysis performed due to lack of data.

Location	Date of Screening	MWs Screened
Westlite Toh Guan	28 Apr 2024	106
28 Toh Guan Rd East, Singapore		
Westlite Tuas Avenue 2 (QBD)	30 Jun 2024	150
1A Tuas Avenue 2, Singapore	1 Sep 2024	66
Mean (No. of MWs)		107

It was found that an average of 170 migrant workers attended the 3-hour-long health screening sessions organised at recreation centres held between 21 Jan 2024 and 11 Aug 2024, with a low of 145 MWs recorded on 2 Jun 2024 at Terusan Recreation Centre and a high of 218 MWs recorded on 18 Feb 2024 at Penjuru Recreation Centre (Table 2). Z-test performed on the data showed no significant outliers ($p < 0.05$) for all points in the data set.

In comparison, we find that an average of 107 migrant workers attend similar 3-hour-long health screening sessions organised at dormitories held between 29 Apr 2024 and 1 Sep 2024, with a low of 66 MWs recorded on 1 Sep 2024 at Westlite Tuas Avenue 2 and a high of 150 MWs recorded on 30 Jun 2024 at the same location (Table 3). Due to the lack of data from dormitory based health screening sessions, no data analysis was conducted.

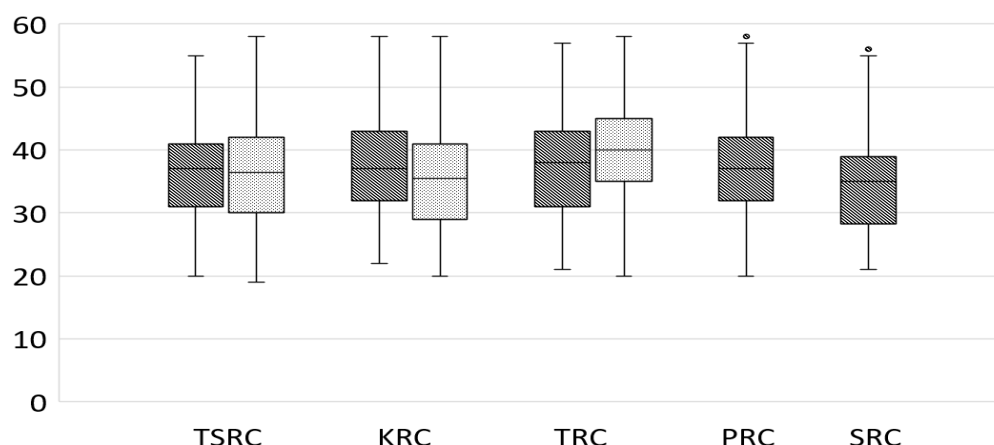


Figure 3: Graph of age ranges of MWs screened in full-scale health screening settings at (From Left to Right) Tuas South Recreation Centre (TSRC), Kranji Recreation Centre (KRC), Terusan Recreation Centre (TRC), Penjuru Recreation Centre (PRC) and Sembawang Recreation Centre (SRC).

Two timepoints are shown where applicable, early in 2024 (Shaded) and late in 2024 (Dotted). Outlier points are highlighted where needed. No significant differences ($p < 0.05$) were noted in the data sets when analysed with Student's unpaired t-test.

Analysis of the age of the MWs attending the screenings at the recreation centres showed a consistent trend of MWs aged 19 to 58 attending the screenings. Median ages at all screenings conducted remained consistent at around 35 to 40 years old and Student's t-test showed no significant differences between the datasets (Figure 3). No data from the dormitories are presented due to the small dataset.

Discussion & Conclusion

The MW population in Singapore is not insignificant, and indeed plays an extremely integral role in the industrial, manufacturing and shipping industries in Singapore, contributing in no small part to Singapore's economy (Ministry of Manpower, 2024). With these activities taking place mainly in the northern (Kranji and Sembawang) and western (Tuas and Jurong West) regions of Singapore, it is also no surprise that large-scale dormitories housing MWs are frequently found in these approximate locations.

Aside from dormitories, the government also supports the needs of the MWs by constructing facilities known as Recreation Centres. Located close by to MW dormitories for their convenience and open to all MWs from any dormitories (Ministry of Manpower, 2021), these facilities commonly contain shops and amenities like food courts, grocers, barbers, telecom facilities and more, acting as a hub and a choice destination for MWs after work for recreation and daily necessities (Goh *et al.*, 2022).

It was by design that the MHM research group selected these high-volume Recreation Centres to be the site of the health screening sessions, as greatest attendance was predicted. Indeed, sessions conducted there on Sunday afternoons frequently saw the largest number of MWs patronising the centres as compared to other timepoints in the week (Tables 2 and 3). Consequently, organising health screenings at Recreation Centres allowed each session to reach the greatest number of MWs possible and maximise the impact of each session.

Conversely, dormitories are only accessible to residents of said dormitory in question as opposed to being open to all MWs like a Recreation Centre. This is a likely explanation behind the lower attendance seen in dormitory visits in general, as the number of MWs being exposed to the screenings at all is much

lower in dormitories. Considering the socio-ecological influences of both of these screening venues, dormitories, as opposed to recreation centres, may also be less conducive for everyday tasks such as buying groceries, rest and relaxation due to the lack of amenities present as well. As such, MWs may not be as interested in dwelling within their dormitories on the weekend, preferring instead to visit the Recreation Centres for entertainment, shifting the overall footfall away from the individual dormitory.

Analysing the ages of the MWs coming to the health screening sessions, our findings are in accordance with our expectations given the legal age ranges of MWs applying for work permits by Singapore law must fall over 18 years, and under 50 (non-Malaysian) or 58 years (Malaysian). Participants at the health screenings conducted fall entirely within this age group, which signifies that our collected data is approximately representative of the entire MW population, and that the health screenings conducted are indiscriminate across all age groups.

This provides convincing evidence that there is demand for a health screening programme for MWs in a Recreation Centre setting, which assists them in providing easier access to healthcare, overcoming the realistic barriers which they may be facing such as finances or their employers' inflexibility. Not only is the level of participation promising, but the coverage of MWs across the different age groups is comprehensive, and accentuates the fact that the healthcare challenges the MWs face are not merely a geriatric issue of chronic disease management.

While this study provides meaningful insight into issues surrounding the accessibility of healthcare to the local migrant worker population, as well as the importance of health screening programmes in preventive health outreach to the migrant workers, further work is necessary to address remaining gaps within this field.

The research group's health screening programme features a wide array of medical and non-medical interventions, which altogether aim to improve, promote, and maintain the overall health of the MWs. Here, medical interventions refer particularly to non-pharmacological and non-invasive medical advice, recommendations, and mental health therapy. These medical and non-medical interventions are yet to be evaluated on a large scale. Following which, an analysis of their scalability and suitability should be done to attempt their mass adoption in public and preventive healthcare practice and policy for the MW population at large.

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Declarations

Conflict of Interest

The authors declare that they have no conflict of interest related to this work.

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Author Contribution Statement

MWRK: Conceptualized, drafted, edited, and reviewed the manuscript. JLYH, LMQN, BYT: Conceptualized, drafted, and edited the manuscript. CZXC, LSYP, NXTY, HEC, HLO, KQK, SPSC, KXK, KA, SSC, RMXL: Collected data, analysed data, and contributed to the manuscript. SYT, RA: Provided expert comments and suggestions, and reviewed the manuscript. All authors approved the

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