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Building a healthy migrant workforce in Singapore – A cross-sectional study to understand health-seeking behaviours of male migrant workers

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ABSTRACT

Background: The healthcare policies for migrant workers in Singapore had a traditional focus on improving occupational health and preventing workplace injuries. The COVID-19 pandemic led to a rapid paradigm shift in the provision of healthcare for migrant workers, with an urgent focus on improving the accessibility and affordability of primary and preventive health services and strengthening public health surveillance. The purpose of this study is to identify areas for improvement, so that policy makers can improve the implementation effectiveness of healthcare policies for migrant workers. This is achieved by establishing a baseline understanding of (a) the health-seeking behaviours of migrant workers in Singapore, (b) how they consume primary and preventive health services, and (c) systemic gaps in the delivery of services.

Methods: A cross-sectional study was conducted at five migrant worker dormitories and two community spaces in Singapore, between August and November 2022. 1101 male migrant workers participated in a survey and 1089 valid responses were analysed. Multivariable logistic regression was used to identify sociodemographic factors associated with health service utilisation and awareness of the new healthcare financing plan introduced for migrant workers, called the Primary Care Plan (PCP).

Results: The mean age of participants was 34 years. Most of them were of Indian or Bangladeshi nationality. At least 82 % of participants reported that they could access varying health services in Singapore and 73 % were satisfied with the costs of healthcare. However, a lower percentage of the participants (54 %) had seen a doctor, mostly for respiratory, fever or musculoskeletal conditions, and only 7 % saw a dentist at least once in a year. This was attributable to their low perceived need to see a doctor (91 %) or dentist (71 %). While the prevalence of chronic diseases (4 %) was low among the participants, about one-third of participants smoked (26 %), consumed alcohol (32 %), or resorted to self-treatment or medication (39 %).

Conclusion: This study corroborated with previous observational studies where migrant workers in Singapore only sought care during an acute episode of illness. While participants perceived healthcare in Singapore to be accessible and affordable, there was limited evidence to suggest that preventive health care was prioritised. This indicates possible gaps in current outreach programmes and further development of new targeted programmes to increase the health literacy and awareness of primary and preventive health services among migrant workers in Singapore.

1. Background

Economic migration enables people to attain better employment opportunities abroad. As of June 2023, there were approximately 1.08 million non-domestic migrant workers in Singapore, which made up to about 30 % of the country's workforce, contributing substantially to the country's infrastructural development and economic growth (Ministry of Manpower, 2023a; Ministry of Manpower, 2023b). A large proportion of non-domestic migrant workers in Singapore are employed as work permit holders in jobs within the Construction, Marine Shipyard, and Process (CMP) sectors (Ministry of Manpower, 2023a; Ministry of Manpower, 2022c). These non-domestic migrant workers, henceforth

Abbreviations: MOM, Ministry of Manpower; PCP, Primary Care Plan; PHS, Primary Healthcare System.

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known as migrant workers, are at higher risk of work-related injuries, because of the laborious job scope and challenging work conditions, including long working hours (Carangan et al., 2004; Quek et al., 2021; Rajaraman et al., 2020).

The COVID-19 pandemic revealed the underserved healthcare needs of migrant workers in Singapore (Goh et al., 2020; Mattar et al., 2022; Tee et al., 2020; The Straits Times 2021). Communal living environment and barriers to care led to multiple outbreaks of COVID-19 cases in migrant worker dormitories (Koh, 2020; The Straits Times 2022). Subsequently, around 8 % to 38 % of migrant workers were found to have comorbid conditions, of which, up to 29 % were newly diagnosed to have chronic conditions, such as diabetes mellitus (DM), hypertension, and hyperlipidaemia, during their hospital admission for COVID-19, with most stating that they were unaware of their diagnoses previously (Mattar et al., 2022; Tee et al., 2020). This highlights the potential health burden that could be undetected and unaddressed amongst this group of vulnerable population. There may be negative socioeconomic impact if their health needs and underlying causes are not sufficiently addressed, leading to downstream complications that require more intervention, putting them at higher risk of workplace injuries or diseases.

The health burden revealed during the COVID-19 pandemic seemed to suggest that migrant workers in Singapore lacked good health-seeking behaviour. Health-seeking behaviour refers to "any action or inaction undertaken by individuals who perceive themselves to have a health problem or to be ill for the purpose of finding an appropriate remedy" (Gabrani et al., 2021; Oberoi et al., 2016; Olenja, 2003). Activities surrounding health-seeking behaviour are broad as they involve elements of health education, health promotion, and disease detection, prevention and treatment. Various studies had attributed poor health-seeking behaviour among migrant workers to factors such as low perceived need to seek medical care, high job demands, high opportunity cost of absenteeism, lack of appropriate resources and information, employer-related challenges, and financial, linguistic, and cultural barriers (Chan et al., 2021; Goh et al., 2020; Humanitarian Organization for Migration Economics 2020; Naicker et al., 2021; Rajaraman et al., 2020; Tan et al., 2021). Notably, migrant workers may avoid seeking medical care for non-work-related diseases, such as chronic diseases, due to a belief that they would have to pay a considerable amount of monies out-of-pocket because of their limited healthcare entitlement (Guinto et al., 2015; Hargreaves et al., 2019; Rajaraman et al., 2020; The Straits Times 2021). Ang et al. and Lee et al. reported that at least 30 % of their migrant worker respondents perceived they had to self-pay for diseases that are not work-related, and 60 % to 70 % were unaware of their entitlements for outpatient services (Ang et al., 2017; Lee et al., 2014). In Singapore, migrant workers are covered by private insurance schemes provided by their employers (Rajaraman et al., 2020). While medical coverage for inpatient care and day surgery is mandated by law, coverage for other types of health services, particularly primary health services, had been dependent on the goodwill of employers (Ang et al., 2017; Ang et al., 2020; Goh et al., 2020; Humanitarian Organization for Migration Economics, 2013; Rajaraman et al., 2020; Lee et al., 2014).

With the urgent introduction of a medical support plan for migrant workers to fight against the COVID-19 pandemic in 2020, Singapore launched a mobile application to facilitate health monitoring and teleconsultations, and established temporary regional and in-dormitory medical centres to meet migrant workers' health needs (Ministry of Manpower, 2022a; Ministry of Manpower, 2020b; Ministry of Manpower, 2020a). In 2022, this pandemic-focused medical support plan was adopted by Singapore's Ministry of Manpower (MOM) into the Primary Healthcare System (PHS) for migrant workers, to ensure continuity in the public health efforts by the government to care for the migrant workers' well-being (Ministry of Manpower, 2020b). In tandem, the Primary Care Plan (PCP), a capitation-based healthcare financing plan under the PHS, was implemented to improve the accessibility and affordability of primary and preventive health services, such as treatment for acute and chronic conditions for the former and health education for the latter, and enable surveillance for infectious disease outbreaks (Ministry of Manpower, 2021; The Straits Times, 2021). Using a capitation-based funding model means that healthcare providers will be paid a pre-determined amount per user under their charge to care for their assigned population base, thus encouraging the delivery of preventive and social health services (Ministry of Manpower, 2023).

Employers are now required to purchase the PCP for all migrant workers who work in the CMP sector or reside in a dormitory (Ministry of Manpower 2021). While the PCP is not mandatory for migrant workers working in other non-CMP sectors, such as manufacturing and services, and staying at an accommodation other than a dormitory, employers are encouraged to enrol their workers onto the PCP so that they can affordably access the health services provided (Ministry of Manpower, 2021). For an annual fee of between SGD 108 and SGD 138 per worker, accurate as of the time of writing, enrolled migrant workers can avail themselves to consultation and treatment of mental health, acute and chronic conditions commonly treated in the primary care setting, medication refills, medical examinations at medical centres, and telemedicine services equipped with multi-language capabilities (Ministry of Manpower, 2021; The Straits Times, 2021). Enrolled migrant workers will only pay a nominal fee of SGD 5 and SGD 2 each time they seek treatment or utilise telemedicine services, respectively, ensuring that out-of-pocket fees are kept low (Ministry of Manpower 2021; Ministry of Manpower 2022d; The Straits Times 2021). PCP is not only considered to be affordable and sustainable for migrant workers but also their employers due to the low annual enrolment fees that can be paid in regular instalments.

With the implementation of PCP and shift in focus for migrant health, it is an opportune time to determine the baseline of migrant workers' health-seeking behaviour and healthcare utilisation pattern, observe any short-term gains from this policy shift, and identify any systemic gaps for policy review.

2. Data and methods

A cross-sectional exploratory study was conducted between August and November 2022, 4 to 7 months after the introduction of PCP. In Singapore, an estimated 62 % of migrant workers lives in dormitories, while a small proportion of them reside in non-dormitory housing, such as workers' quarters at farms or housing in the community (Azur et al., 2011; Harirugsakul et al., 2021). Therefore, participant recruitment was done at both dormitories and community spaces where migrant workers typically congregate during their rest days to capture broad representation of their health-seeking behaviour in Singapore.

Five migrant worker dormitories, which had the capacity to house an average of 4000 to 19,000 workers, were purposefully selected to ensure there were participation by migrant workers from different countries, industries, and employers. The study's eligibility criteria for participation are, (1) migrant workers aged 21 years and above; (2) holding a government-issued work permit; and (3) of Indian, Bangladeshi, Burmese, Thai, Malaysian, Philippines, or Chinese nationality. The survey sessions were conducted on Sundays, which were usually their rest days, between 2pm and 6pm to increase participation rate. Participants received SGD 10 cash or supermarket vouchers as a token of appreciation for their time and inconvenience.

The study protocol was approved by the Institutional Review Board of National University of Singapore (NUS-IRB-2022–197). Participants were informed about all relevant aspects of the study and written consent was sought prior to survey administration.

2.1. Survey design

The survey was developed based on the available literature for this topic and in consultation with relevant stakeholders who had experience working with migrant workers in Singapore. The four key domains of the

survey include 1) work-related factors, 2) health status and behaviours, 3) healthcare access and utilisation, and 4) willingness to participate in primary healthcare services, in addition to a section for participant demographics (refer to supplementary file).

The initial survey was piloted among migrant workers at a dormitory and further refined based on feedback provided by the migrant workers. Once the survey design was finalised, it was translated into the native languages of the migrant workers to be recruited, which were Bengali, Burmese, Malay, Mandarin, Tagalog, Tamil, Thai, and Telugu. Interviewers who spoke the native languages of the migrant workers were recruited and trained on survey administration by a research team member.

2.2. Data analysis

Participant demographics, work-related factors, health status, health behaviours, and healthcare accessibility were summarised using descriptive statistics, using medians and interquartile range for numerical continuous variables, and frequencies and proportions for categorical variables. 5-Likert scale responses were regrouped into categories of 'Agree or Disagree', forming a 2-point scale for analysis. 'Neutral' response selection was combined with the 'Disagree' category.

Chi-square tests, Fisher tests and Kruskal-Wallis tests, were first carried out to assess factors associated with participants' health status, PCP awareness, and healthcare access and utilisation. Subsequently, multivariable binary logistic regressions were performed to explore the determinants of primary health service utilisation and PCP awareness, adjusting for sociodemographic factors, work-related factors, and participants' health status. A two-tailed alpha with $P < 0.05$ was considered statistically significant. Crude odds ratios (OR) and adjusted odds ratios (AOR), and their confidence intervals at 95 % were presented.

Surveys with >50 % missing data were removed from the dataset ($n = 2$). Although there were incomplete data for several variables, this proportion was very low (5 %) and occurred at random, possibly due to an oversight during survey administration. To address the issue of incomplete data, multiple imputations were performed on variables that would be analysed against the outcomes using Multiple Imputation by Chained Equations or 'MICE', a widely used statistical package (Azur et al., 2011). For sub-questions, incomplete data were categorised as 'No response', particularly for responses summarised using descriptive statistics. Data was analysed using R, on RStudio Integrated Development Environment (IDE) version 3.

3. Results

3.1. Descriptive results

A total of 1089 participant responses were analysed after removing 10 ineligible participants and 2 incomplete surveys. Most participants were between 30 and 39 years old (44 %), with a median age of 34 years (IQR: 29 – 40), were married (69 %), and had a secondary level education (65 %) (Table 1). Bangladeshi (44 %) and Indian (40 %) workers made up a large proportion of the participants, followed by other nationalities (16 %), which included Chinese, Thai, Burmese, Filipino, and Malaysian workers. Participants were mostly working in the construction sector (60 %) and residing in dormitories (95 %). Two-thirds of participants agreed that they were able to express their opinions (79 %) or were involved in decision-making at their workplace (69 %) (Table 1).

Participants were mostly non-smokers (61 %) and did not consume alcohol (57 %) (Table 1). About one-third of participants reported that they smoked (26 %) or consumed alcohol (32 %) during the study period. 61 % of participants had undergone a health check-up in the past 12 months. This includes the mandatory medical examination for the purposes of work permit application to work in Singapore.

In terms of accessibility to health services in Singapore, majority of

Table 1
Descriptive summary of participants' sociodemographic characteristics, health status, health behaviours, and work-related factors.

Variables	Categories		Median	IQR
Sociodemographic characteristics				
Age (years)			34	29 – 40
		Sample size	**Frequency**	**%**
Age (years)	21 – 29	1089	302	28
	30 – 39		483	44
	40 and above		304	28
Marital status	Single	1089	323	30
	Married		753	69
	Widower/ Divorced/ Separated		13	1
Education	Primary and below	1089	164	15
	Secondary level		713	65
	Diploma and above		212	20
Employment	Construction	1089	654	60
	Marine and Shipyard		270	25
	Process		68	6
	Others[#]		97	9
Nationality	Bangladesh	1089	479	44
	India		432	40
	Others[+]		178	16
Residence	Dormitory	1089	1032	95
	Community		57	5
Health status				
Experienced a dental problem in the past 12 months	Yes	1089	161	15
	No		928	85
Suffering from a disease presently	Yes	1089	111	10
	No		978	90
Has at least 1 form of chronic disease[£]	Yes	1089	46	4
	No		1043	96
Taking medicine for chronic condition	Yes	46	29	63
	No		16	35
	No response		1	2
Informed to visit Dr regularly for medication/follow-up	Yes	46	20	44
	No		25	54
	No response		1	2
Health behaviours				
Smoking	Non-smoker	1089	666	61
	Past smoker		143	13
	Current smoker		280	26
Alcohol consumption	Non-drinker	1089	624	57
	Past drinker		121	11
	Current drinker		344	32
Regular exercise	Never exercised	1089	381	35
	Exercised in the past		327	30
	Exercising presently		381	35
Participate in the health check-up in the past 12 months	Yes	1089	668	61
	No		421	39
Work-related factors				
I can express my opinion about things I care in my workplace	Agree	1089	860	79
	Disagree		229	21
I am involved in decision-making about things related to me or others at my workplace	Agree	1089	751	69
	Disagree		338	31
Can get different types of health services when in need				
Preventive health services[£]	Yes	1089	893	82
	No		196	18

(continued on next page)

Table 1 (*continued*)

Variables	Categories		Median	IQR
Primary health services	Yes	1089	1050	96
	No		39	4
Emergency healthcare	Yes	1089	1023	94
	No		66	6
Hospitalisation care	Yes	1089	1014	93
	No		75	7
Have self-treated or self-medicated in the past 3 to 6 months	Yes	1089	422	39
	No		667	61
Primary Care Plan (PCP)				
Aware of PCP services provided	Yes	1089	516	47
	No		573	53
Willing to visit PCP if sick	Yes	1089	962	88
	No		127	12

[#] Other employment sectors include Gardening/Landscaping, Logistics, Facility Management, Maintenance.

[+] Other nationalities include participants from Myanmar, Thailand, Malaysia, Philippines, and China.

[€] Chronic diseases include hypertension, diabetes, hyperlipidemia, heart disease, stroke, rheumatism, lung disease.

[£] In this survey, preventive health services comprised of blood tests and body screening.

participants were able to access Primary Health Services (96 %), Emergency Health Services (94 %), and Hospitalisation Care (93 %) when required (Table 1). The data indicated that 82 % of participants could access Preventive Health Services (82 %), though this was slightly lower than the other type of health services. 39 % of participants had self-treated or medicated themselves without the doctor's guidance within three to six months prior to the survey (Table 1). Among those who stated that they had self-medicated or self-treated in the past three to six months, 91 % cited that 'there was no need for me to see a doctor' as a reason for doing so (Appendix 1).

3.2. Self-reported diseases and outpatient service utilisation

10 % of participants reported that they were suffering from a disease during the study period (Table 1). The top five diseases reported were Gastrointestinal diseases (19 %), Hypertension (17 %), Diabetes (14 %), Musculoskeletal conditions (13 %), and Arthritis (7 %) (Appendix 2). Most of the diseases were reportedly diagnosed in Singapore (72 %). Across all the facilities indicated, at least 38 % more participants had received the diagnosis for their diseases after the year 2020, compared to the proportion of participants who were diagnosed before the year 2020 (Fig. 1).

The prevalence of chronic diseases among participants in this study was low, with only 4 % of participants reporting to have at least one chronic disease (Table 1). Chronic diseases were more prevalent among older participants ($p < 0.001$), with the median age being 42 years (IQR: 38 – 49). Of those who reported having chronic diseases, only 63 % of them were taking medicines and 44 % of them were visiting the doctor regularly for medication or follow-up (Table 1).

In terms of outpatient service utilisation, 54 % of the participants reported that they had fallen sick and visited a doctor at least once in a year (Table 2). Only nationality and employment sector were found to be significantly associated with visiting an outpatient doctor at least once in the past year. In the multivariable analysis, controlling for other sociodemographic factors and health status, the odds of seeing a doctor at least once a year was 1.7 (95 % CI = 1.1 – 2.6) times higher among Bangladeshi and Indian participants compared to participants of other nationalities, and 1.9 (95 % CI = 1.4 – 2.7) times higher among participants working in the Marine shipyard sector compared to those working in the Construction sector (Table 2). Respiratory conditions (30 %), Fever (29 %), and Musculoskeletal conditions (24 %) were ranked among the top 3 most common diseases participants saw the doctor for

Table 2
Factors associated with migrant workers seeing an outpatient doctor at least once in a year.

	Had seen a doctor	Had not seen a doctor	OR (95 % CI)	AOR (95 % CI)
Association with sociodemographic characteristics ($N = 1089$)				
Variables	**n (%)**	**n (%)**		
Total	587 (54 %)	502 (46 %)		
Nationality				
Bangladesh	274 (57)	205 (43)	1.6 (1.2 – 2.3) *	1.7 (1.1 – 2.6) *
India	233 (54)	199 (46)	1.4 (1.0 – 2.0) *	1.7 (1.1 – 2.5) *
Others[+,^]	80 (45)	98 (55)	1.0	1.0
Employment sector				
Marine shipyard	172 (64)	98 (36)	1.8 (1.3 – 2.4) *	1.9 (1.4 – 2.7) *
Process	37 (54)	31 (46)	1.2 (0.8 – 1.8)	1.3 (0.8 – 2.0)
Others[#]	52 (54)	45 (46)	1.2 (0.7 – 2.0)	1.4 (0.8 – 2.4)
Construction[^]	326 (50)	328 (50)	1.0	1.0
Association with self-reported health status				
	n (%)	**n (%)**		
Diseases				
Yes	82 (74)	29 (26)	2.6 (1.7 – 4.2) *	2.5 (1.6 – 4.0) *
No[^]	505 (52)	473 (48)	1.0	1.0

OR = Odds Ratio. Odds ratio was obtained via binary logistic regression without adjusting for other variable factors.

AOR = Adjusted Odds Ratio. Adjusted odds ratio was obtained via binary logistic regression adjusting for all sociodemographic variables (Age, Income, Education, Employment, Nationality, Residence), health status and work-related factors.

CI = Confidence Interval.

[*] Indicates association to be statistically significant using p-value < 0.05.

[+] Other nationalities include participants from Myanmar, Thailand, Malaysia, Philippines, and China.

[#] Other employment sectors include Gardening/Landscaping, Logistics, Facility Management, Maintenance.

[^] Reference group for logistic regression model.

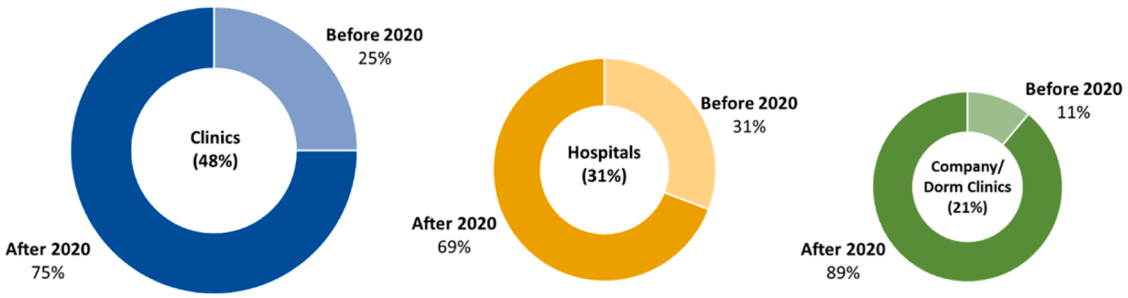

Fig. 1. Participants' responses for when and where their self-reported diseases were diagnosed.

(Appendix 3).

Of those who had seen a doctor at least once a year, the most visited outpatient facilities were the medical centres or in-dormitory clinics (48 %) provided for migrant workers by MOM, and General Practice (GP)/ Family Clinics (32 %) (Appendix 4). The former was preferred mostly due to convenience and affordability, whereas GP/Family Clinics were preferred for quick and timely services, trust, and good attitudes displayed by the healthcare staff (Appendix 5). Most of the participants' healthcare bill were paid by their company or company insurance (81 %), for which the average out-of-pocket payment was around SGD 5 (Appendix 6). 73 % of the participants were satisfied with the healthcare costs. Participants were mostly comfortable with paying SGD 0 to 5 (41 %) or SGD 5 to 10 (22 %) for their healthcare bills at a GP clinic (Appendix 7).

3.3. Self-reported dental problems and dental service utilisation

15 % of the participants reported experiencing a dental problem in the past 12 months (Table 1). The most common dental problem reported was toothache or pain from decay (69 %) (Appendix 7). However, only a small proportion of participants saw a dentist at least once a year (7 %), with most having seen a dentist every few years or almost never (93 %) (Table 3). Among participants who had experienced a dental problem in the past year, only 23 % of them saw a dentist at least once a year. In the multivariable analysis, adjusting for all sociodemographic factors, work-related factors, and health status, participants who reported experiencing a dental problem in the past year had 7.8 times (95 % CI = 4.6 – 13.5) higher odds of visiting the dentist at least once a year, compared to those who did not report experiencing any dental problems (Table 3). The odds of visiting a dentist at least once a year were lower among participants who have a secondary level education (AOR = 0.4, 95 % CI = 0.2 – 0.7) or primary level education (AOR = 0.9, 95 % CI = 0.4 – 2.0), compared to those who has a diploma level education (AOR = 2.6, 95 % CI = 1.4 – 5.0) (Table 3). However, the effect was not statistically significant for the primary level education group. The top reason for not visiting the dentist more regularly was due to their perception that they 'Do not need to see a dentist' (71 %) or because it was 'Too expensive' (8 %) (Appendix 8).

Table 3
Factors associated with migrant workers seeing a dentist at least once in a year.

	Sees a dentist at least once a year	Sees a dentist every few years or almost never	OR (95 % CI)	AOR (95 % CI)
Association with sociodemographic characteristics (*N* = 1089)				
Variables	**n (%)**	**n (%)**		
Total	74 (7 %)	1015 (93 %)		
Education				
Primary	13 (8)	151 (92)	0.7 (0.3 – 1.4)	0.9 (0.4 – 2.0)
Secondary	38 (5)	675 (95)	0.5 (0.3 – 0.8) *	0.4 (0.2 – 0.7) *
Diploma^	23 (11)	189 (89)	1.0	1.0
Employment sector				
Construction	55 (8)	599 (92)	2.4 (1.3 – 5.0) *	2.4 (1.2 – 5.3) *
Marine and Shipyard^	10 (4)	260 (96)	1.0	1.0
Process	5 (7)	63 (93)	2.1 (0.6 – 6.0)	1.8 (0.5 – 5.5)
Others#	4 (4)	93 (96)	1.1 (0.3 – 3.4)	1.3 (0.3 – 4.1)
Association with self-reported health status				
	n (%)	**n (%)**		
Dental problems				
Yes	37 (23)	124 (77)	7.2 (4.4 –11.8) *	7.8 (4.6 – 13.5) *
No^	37 (4)	891 (96)	1.0	1.0

OR = Odds Ratio. Odds ratio was obtained via binary logistic regression without adjusting for other variable factors.
AOR = Adjusted Odds Ratio. CI = Confidence Interval. Odds ratio was obtained via binary logistic regression adjusting for all sociodemographic variables (Age, Income, Education, Employment, Nationality, Residence), health status and work-related factors.
CI = Confidence Interval.
* Indicates association to be statistically significant using p-value < 0.5.
# Other employment sectors include Gardening/Landscaping, Logistics, Facility Management, Maintenance.
^ Reference group for logistic regression model.

3.4. Primary care plan (PCP) awareness

Less than half of the participants were aware of PCP (47 %) (Table 1). In the multivariable analysis, participants' employment sector, type of residence, and work-related experience were identified to be significantly associated with PCP awareness (Table 4). The odds of being aware of the PCP were lower among participants working in the Marine and Shipyard sector (AOR = 0.7, 95 % CI = 0.5 – 0.9), or living in the community (AOR = 0.5, 95 % CI = 0.3 – 0.9), compared to participants working in the Construction sector or living in dormitories respectively (Table 4). The odds were also lower among participants who were not able to express opinions at their workplace (AOR = 0.7, 95 % CI: 0.5 – 0.9), or not involved in decision-making at their workplace (AOR = 0.7, 95 % CI: 0.5 – 1.0), compared to participants who were able to do so (Table 4). Although less than half of the participants were initially aware about PCP, a large proportion of participants (88 %) expressed

Table 4
Factors associated with migrant workers awareness of PCP services available.

	Aware about PCP	Unaware about PCP	OR (95 % CI)	AOR (95 % CI)
Association with sociodemographic characteristics (*N* = 1089)				
Variables	**n (%)**	**n (%)**		
Total	516 (47 %)	573 (53 %)		
Employment sector				
Construction^	320 (49)	334 (51)	1.0	1.0
Marine Ship	113 (42)	157 (58)	0.8 (0.6 – 1.0)	0.7 (0.5 – 0.9) *
Process	37 (54)	31 (46)	1.2 (0.8 – 2.1)	1.1 (0.6 – 1.8)
Others+	46 (47)	51 (53)	0.9 (0.6 – 1.4)	0.9 (0.6 – 1.4)
Residence				
Dormitory^	500 (48)	532 (52)	1.0	1.0
Community	16 (28)	41 (72)	0.4 (0.2 – 0.7) *	0.5 (0.3 – 0.9) *
Association with work-related factors				
	n (%)	**n (%)**		
Able to express opinions at workplace				
Agree^	435 (51)	425 (49)	1.0	1.0
Disagree	81 (35)	148 (65)	0.5 (0.4 – 0.7) *	0.7 (0.5 – 0.9) *
Involved in decision-making at workplace				
Agree^	387 (52)	364 (49)	1.0	1.0
Disagree	37 (4)	891 (96)	0.6 (0.4 – 0.8) *	0.7 (0.5 – 1.0) *

OR = Odds Ratio. Odds ratio was obtained via binary logistic regression without adjusting for other variable factors.
AOR = Adjusted Odds Ratio. CI = Confidence Interval. Odds ratio was obtained via binary logistic regression adjusting for all sociodemographic variables (Age, Income, Education, Employment, Nationality, Residence), health status and work-related factors.
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* Indicates association to be statistically significant using p-value < 0.5.
^ Reference group for logistic regression model.

willingness to visit a PCP clinic when they are sick after being informed about the scheme (Table 1). The most common reasons participants provided for their willingness to visit a PCP were 'Affordability' (36 %), 'Distance to PCP or transport available' (24 %), 'Convenience or accessibility' (22 %), and 'Care quality' (19 %) (Appendix 9). It was also noteworthy that some participants stated that they were willing to visit the PCP because of 'Company influence' (6 %) or 'Trust' (5 %) (Appendix 9). For 'Company influence', participants stated that they will visit PCP as their company had instructed, suggested, or given their approval to do so, or because the cost of PCP will be covered by the company. Under the 'Trust' category, participants expressed willingness to use PCP because they have trust in the government or because they perceived PCP to be trustworthy and reliable.

4. Discussion

Chronic diseases may continue to be a hidden burden among migrant workers. Mattar et al. and Tee et al. reported that a considerable proportion of migrant workers had been newly diagnosed with chronic conditions, such as hypertension or diabetes after 2020. Similarly, Ang et al. had observed an increasing burden of chronic diseases at charity clinics that served the migrant worker population in Singapore (Ang et al., 2020; Mattar et al., 2022; Tee et al., 2020). Though the prevalence was low in this study, migrant workers in Singapore are still susceptible to developing chronic diseases as they may experience mental stress from being away from their family, develop changes in eating habits, and work long hours with few rest days (Ang et al., 2020; Mattar et al., 2022). Furthermore, about one-third of the participants currently engage in health behaviours known to increase the risk of developing chronic diseases, such as smoking or alcohol consumption.

This study also reported a considerable proportion of participants with symptomatic oral health conditions in the past year (15 %), although there were relatively low rates of utilisation of dental services among the migrant workers. The prevalence of dental problems in this study may possibly be underreported due to limited oral health awareness and infrequent dental screening. Studies conducted in India, Bangladesh, China, and Thailand found that there was a lack of understanding of the importance of oral health and a general sense of poor oral health literacy among the participants in these studies (Harirugsakul et al., 2021; Mahmud et al., 2016; Mostarin et al., 2019; Rodrigues et al., 2021; Zhou et al., 2018). In addition, dental services are currently not covered under PCP, although a few charity organisations offer subsidised dental services for migrant workers (HealthServe 2023; St. Andrew's Mission Hospital 2022). Oral health and non-communicable diseases are known to be linked to one another and thus, preventive oral care is also essential to maintain the general well-being of individuals downstream (World Health Organisation, 2023).

While participants reported that they can get different health services in Singapore if needed, it is notable that doctor visits are mostly for curative care. Migrant workers in other studies also exhibited similar health-seeking behaviour, where participants do not see a healthcare professional for minor ailments, and that doctor visits were mainly for acute symptomatic conditions which prevented them from working (Ang et al., 2017; Lee et al., 2014; Tam et al., 2017). In contrast, studies on outpatient utilisation among Singapore citizens found that while they're passive with seeking care for symptomatic illness, a higher proportion (>50 %) of them see the doctor for preventive health services. Though, notably, respondents in these studies are older, aged 40 years and older (George et al., 2012; Tan et al., 2022; MInistry of Health 2022; World Health Organisation 2023). Although there seems to be different outpatient service utilisation across nationalities, this observation may partly be attributed to the availability of health information as studies in India, Bangladesh and China reported similar health-seeking behaviours among the citizens in their study (Dang et al., 2018; van der Heijden et al., 2019; Yadav et al., 2022). In this study and the study by Ang et al. (2017), the proportion of Bangladeshi workers who saw a doctor in Singapore was higher than non-Bangladeshi workers. Bangladeshi workers in Singapore may possibly have better chance of getting culturally sensitive information through 'Probashi', which is a Facebook page for Bangladeshi migrants living in Singapore (Hildon et al., 2022).

There is an opportunity to increase the awareness of primary and preventive health services available to migrant workers in Singapore and encourage the uptake of health screening services and health education among migrant workers with the implementation of PCP. One such effort by Singapore's government is Project MOCCA, abbreviated for Management of Oral health and Chronic Conditions and Ailments, a new preventive health framework introduced in 2022 to 'enhance the care of chronic and oral diseases among migrant workers' (Ministry of Manpower). However, the effectiveness of these public health efforts for migrant workers may possibly be impeded by their health beliefs, need to make a living, such as working more to earn money, and ability to navigate the PHS and the wider healthcare system in Singapore (Transient Workers Count Too, 2017).

Low PCP awareness among participants who were not able to express their opinions or involved in decision-making at work could be influenced by the participant's ability to independently seek health information or navigate the healthcare system in Singapore. Moreover, they may perceive a level of restriction that comes as a condition of their employment. Farwin et al. (2023) summarised that employer gatekeeping is common in Singapore, such that supervisors' approval is required before the migrant workers can seek medical care (Farwin et al., 2023). Although migrant workers can increasingly access relevant health information through a mobile application that they are required to install in their personal mobile devices (Ministry of Manpower). it is also pertinent to empower the workers. This would enable them to take control of their well-being and improve their health-seeking behaviour while working in Singapore. To this end, MOM has removed the perceived barrier to care imposed by employers and migrant workers are able to book a medical appointment via a mobile application without seeking approval from their employers (Ministry of Manpower).

A key study recommendation is the need to improve health literacy of migrant workers on preventive health services and care. Preventive health services should be promoted among migrant workers, as only 7 % of them saw a dentist at least once in a year and one-third of them were smoking (26 %) or consuming alcohol (32 %). However, this study and other previous studies found that migrant workers mainly saw a doctor to address symptomatic health conditions (Ang et al., 2017, Lee et al., 2014). This necessitates the implementation of targeted outreach and health education at migrant workers' workplaces or dormitories, in addition to the health promotion efforts at health facilities.

Studies by Huang (2020) and Sun and Liu (2016) found that migrant workers have high levels of willingness to take part in workplace health programmes (Huang, 2020, Sun and Liu, 2016). However, a majority of migrant workers failed to engage in actual participation, thus highlighting the gap between intention and actual participation behaviour (Huang, 2020; Sun and Liu, 2016; Luhmann et al., 2017) identified two key dimensions of trust: interpersonal trust and institutional trust, and found that affection among people in primary and secondary groups such as families and neighbours was higher, leading to greater trust (Luhmann et al., 2017). Therefore, building trust and increasing holistic health awareness through workplace wellness initiatives, with the collective support from employers to participate in these initiatives, is essential to encourage migrant workers to seek health treatments when required.

The participant distribution in this study, in terms of nationality and demographics, is congruent with previous research on migrant workers in Singapore. In studies by Ang et al. (2017) and Lee et al. (2014), workers from Bangladesh and India each makes up at least 40 % of the total participant group (Ang et al., 2020; Chan et al., 2021). A few limitations should also be noted. This study was conducted towards the tail-end of the COVID-19 pandemic. Therefore, some positive

health-seeking factors may be amplified by the aftereffects of the pandemic. At the time of the study, there was an influx of new migrant workers to Singapore due to relaxation of border measures, so many of the workers encountered and surveyed were young or may be new to Singapore. However, this study did not capture participants' years of work experience in Singapore; the number of working hours per week; the number of rest days; and the number of family dependents supported, which may be relevant and important in understanding the health-seeking behaviours of migrant workers in Singapore.

Participants may exhibit recall or social desirability biases when reporting the diseases, workplace injuries, or dental problems they had suffered from. There may be lapses in memory for the kind of injury or diseases they had seen a doctor for. Other studies had reported a higher prevalence of chronic diseases unlike this study (Mattar et al., 2022; Tee et al., 2020). There may be some level of underreporting of diseases in this study. This cross-sectional study seeks to explore factors associated with the health-seeking behaviour of migrant workers in Singapore. Therefore, there is a risk of endogeneity, specifically the potential simultaneity between disease presence and visits to the doctor or dentists. This study may be limited by a relatively small number of individuals across subgroups, such as process and other employment sectors, and primary level of education. The lack of a statistically significant association in regular dental utilisation among the primary level education and the reference diploma education group may be due to the relatively small numbers and differences in proportions across subgroups, with 13 out of 164 in the primary level education group and 23 out of 212 in the diploma level education group reported to have seen a dentist at least once a year. Future research could explore quasi-experimental methods to mitigate these limitations.

The study's survey was administered towards the end of 2022, a few months after PCP was introduced. Thus, this study may have preliminary data on migrant worker's experience in using PCP but does not fully capture the effectiveness of PCP. There needs to be further study on the impact of PCP implementation on the health-seeking behaviour of migrant workers at the appropriate time.

Lastly, while the health-seeking behaviours of migrant workers in this study seem to be consistent with the findings of other similar studies, it is important to note that the barriers migrant workers experience in Singapore may differ across countries. Singapore is a city-state with centralised governance structure; hence our findings may not be generalisable to larger countries with vast geographies and multi-level governance structures.

5. Conclusion

This study found that health services are mostly available, accessible, and affordable for migrant workers in Singapore and that they are utilising outpatient services, other than dental services. Migrant workers' health-seeking behaviour and utilisation of health services are mostly driven by their individual health beliefs and what they perceive as diseases that require treatment from healthcare professionals. There are gaps that can be addressed to encourage the appropriate utilisation of primary and preventive health services that PCP offers migrant workers, such as their health beliefs, health literacy, and health information-seeking capabilities. Currently, migrant workers seek to remedy symptomatic diseases, however, there's growing awareness that maintenance of health starts even before the presentation of any diseases. Countries with substantial number of migrant worker population and growing reliance towards foreign labour must continue to improve healthcare accessibility to migrant workers to enable them to achieve their best health state during the course of their employment. Further longitudinal studies are required to evaluate the long-term benefits of PCP and health education programmes, including any changes in migrant workers' health-seeking behaviour and utilisation of health services.

CRediT authorship contribution statement

Nurul Amanina Binte Hussain: Writing – original draft, Visualization, Project administration, Investigation, Formal analysis. **Sheena Ramazanu:** Writing – original draft, Formal analysis. **Priscilla Ang:** Writing – review & editing, Conceptualization. **Halina Talib:** Writing – review & editing, Supervision, Conceptualization. **Si Ying Tan:** Writing – review & editing, Methodology, Investigation, Conceptualization. **Hui Xiang Chia:** Writing – review & editing, Investigation, Formal analysis. **Sharon Tan:** Writing – review & editing, Methodology. **Jeremy Fung Yen Lim:** Supervision. **Jason CH Yap:** Writing – review & editing, Supervision.

Declaration of competing interest

he authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Supplementary materials

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References

Ang, JW, Chia, C, Koh, CJ, Chua, BWB, Narayanaswamy, S, Wijaya, L, et al., 2017. Healthcare-seeking behaviour, barriers and mental health of non-domestic migrant workers in Singapore. BMJ Glob. Health 2 (2), e000213.

Ang, JW, Koh, CJ, Chua, BW, Narayanaswamy, S, Wijaya, L, Chan, LG, et al., 2020. Are migrant workers in Singapore receiving adequate healthcare? A survey of doctors working in public tertiary healthcare institutions. Singapore Med. J. 61 (10), 540–547.

Azur, MJ, Stuart, EA, Frangakis, C, Leaf, PJ., 2011. Multiple imputation by chained equations: what is it and how does it work? Int. J. Methods Psychiatr. Res. 20 (1), 40–49.

Carangan, M, Tham, KY, Seow, E., 2004. Work-related injury sustained by foreign workers in Singapore. Ann. Acad. Med. Singap. 33 (2), 209–213.

Chan, JSE, Chia, DWJ, Hao, Y, Lian, SWQ, Chua, MT, Ong, MEH., 2021. Health-seeking behaviour of foreign workers in Singapore: insights from emergency department visits. Ann. Acad. Med. Singap. 50 (4), 315–324.

Dang, Y, Zou, G, Peng, B, Ling, L., 2018. Health service seeking behavior among migrant workers in small and medium-sized enterprises in Guangdong, China: does family migration matter? Biomed. Res. Int. 2018, 3620436.

Doctor anywhere. Singaporeans are passive when it comes to taking care of their own health, according to lifebuoy & doctor anywhere survey [Internet]. 2023 [updated January 5, 2023. Available from: https://doctoranywhere.com/blog/2023/01/05/preventive-health-survey-lifebuoy-da/.

Farwin, A, Low, A, Howard, N, Yi, H., 2023. My young life, finished already?": a qualitative study of embedded social stressors and their effects on mental health of low-wage male migrant workers in Singapore. Global. Health 19 (1), 47.

Gabrani, J, Schindler, C, Wyss, K., 2021. Health seeking behavior among adults and elderly with chronic health condition(s) in Albania. Front. Public Health 9.

George, PP, Heng, BH, De Castro Molina, JA, Wong, LY, Wei Lin, NC, Cheah, JTS, 2012. Self-reported chronic diseases and health status and health service utilization - Results from a community health survey in Singapore. Int. J. Equity. Health 11 (1), 44.
Goh, OQ, Islam, AM, Lim, JCW, Chow, W-C., 2020. Towards health market systems changes for migrant workers based on the COVID-19 experience in Singapore. BMJ Glob. Health 5 (9), e003054.
Guinto, RL, Curran, UZ, Suphanchaimat, R, Pocock, NS., 2015. Universal health coverage in 'One ASEAN': are migrants included? Glob. Health Action. 8, 25749.
Hargreaves, S, Rustage, K, Nellums, LB, McAlpine, A, Pocock, N, Devakumar, D, et al., 2019. Occupational health outcomes among international migrant workers: a systematic review and meta-analysis. Lancet Glob. Health 7 (7) e872-e82.
Harirugsakul, P, Kaewkamnerdpong, I, Krisdapong, S, Prasertsom, P, Niyomsilp, K, Vejvithee, W., 2021. Social backgrounds, oral behaviors and dental service utilization among Thai older adults: data from the national oral health survey. J. Health Res. 35 (6), 506–514.
HealthServe. Healthserve unveils dental clinic for migrant workers to address growing need. [Internet] 2023 [2024 February 12]. Available from: https://www.healthserve.org.sg/healthserve-unveils-dental-clinic-for-migrant-workers-to-address-growing-need/.
Hildon, ZJ-L, Panchapakesan, C, Hasan, MT, Khaled, N, Chan, AY, Tripathi, S, et al., 2022. Exploring theory-based behavioral interventions promoting COVID-19 prevention and healthcare-seeking for migrant worker men in Singapore: a qualitative study. BMC. Public Health 22 (1), 2113.
Huang, X., 2020. Migrant workers' willingness to participate in workplace health promotion programs: the role of interpersonal and political trust in china. Front. Public Health 8.
Humanitarian Organization for Migration Economics. Coming clean: a study on the well-being of Bangladeshi conservancy workers in Singapore [Internet] 2020 [cited on 2022 Nov 8] [Available from: https://www.home.org.sg/statements/coming-clean.
Koh, D., 2020. Migrant workers and COVID-19. Occup. Environ. Med. 77 (9), 634–636.
Lee, W, Neo, A, Tan, S, Cook, AR, Wong, ML, Tan, J, et al., 2014. Health-seeking behaviour of male foreign migrant workers living in a dormitory in Singapore. BMC. Health Serv. Res. 14, 300.
Lee Kuan Yew school of public policy. The buck stops where? A trilemma on healthcare for Singapore's foreign workers [accessed on 2022 Nov 7]. 2013.
Luhmann, N, Davis, H, Raffan, J, Rooney, K, King, M, 2017. Morgner C. Trust and power. Wiley.
Mahmud, Z, Amin, M, Tarafder, M, Hossain, S., 2016. Measurement of oral health literacy level among bangladeshi adults seeking dental care and its relationship with socio-demographic characteristics. Anawer Khan Modern Med. College J. 7, 34–39.
Mattar, SAM, Kan, JYL, Goh, OQM, Tan, Y, Kumaran, SS, Shum, KL, et al., 2022. COVID-19 pandemic unmasking cardiovascular risk factors and non-communicable diseases among migrant workers: a cross-sectional study in Singapore. BMJ Open. 12 (5), e055903.
MInistry of Health. National population health survey 2022 [Internet]. 2022 [Available from: https://hpb.gov.sg/docs/default-source/default-document-library/nphs-2022-survey-report.pdf?sfvrsn=3e8530aa_8.
Ministry of Health. Capitation. Notice of question for oral answer for the sitting of parliament on or after 10 May 2023. [Internet] 2023 [2024 March 1]. Available from: https://www.moh.gov.sg/news-highlights/details/capitation#:~:text=Under%20this%20funding%20model%2C%20healthcare,per%20resident%20under%20their%20charge.
Ministry of Manpower. New primary healthcare system for eligible workers: frequently asked questions (FAQs). [Internet] n.d. [2024 March 1]. Available from: https://file.go.gov.sg/pcpfaqs.pdf.
Ministry of Manpower. New preventive care framework for migrant workers' health literacy and chronic conditions management. [Internet] [updated 2022 Nov 12. Available from: https://www.mom.gov.sg/newsroom/press-releases/2022/1112-new-preventive-care-framework-for-migrant-workers.
Ministry of Manpower. FWMOMCare [Internet] [cited on 2022 Nov 9] [Available from: https://www.mom.gov.sg/eservices/fwmomcare.
Ministry of Manpower. Work passes [Internet] n.d. [cited on 2022 Nov 7]. Available from: https://www.mom.gov.sg/passes-and-permits.
Ministry of Manpower. Foreign workforce numbers [Internet] n.d. [cited on 2023 Sep 24]. Available from: https://www.mom.gov.sg/documents-and-publications/foreign-workforce-numbers.
Ministry of Manpower. Night clinics at regional medical centres for migrant workers [Internet] 2020 [Available from: https://www.mom.gov.sg/newsroom/press-releases/2020/1009-night-clinics-at-regional-medical-centres-for-migrant-workers.
Ministry of Manpower. Comprehensive approach to take care of the well-being of foreign workers living in dormitories 2020 [updated 1 May 2020. Available from: https://www.mom.gov.sg/newsroom/press-releases/2020/0501-comprehensive-approach-to-take-care-of-the-well-being-of-foreign-workers-living-in-dormitories.
Ministry of Manpower. Key facts on primary care plan [Internet] 2021 [2022 Nov 8]. Available from: https://www.mom.gov.sg/newsroom/press-releases/2021/1129-new-primary-healthcare-system-for-migrant-workers.
Ministry of Manpower. Mandatory primary care plan to cover outpatient costs For CMP or dormitory-residing work permit and s pass holders [Internet] 2022 [cited on 2022 Nov 8] [Available from: https://www.mom.gov.sg/newsroom/press-releases/2022/0219-mandatory-purchase-of-primary-care-plans-for-certain-migrant-workers.
Ministry of Manpower. Labour market report fourth quarter 2022 [Internet]. 2023 [cited on 2022 Nov 7].
Mostarin, SZ, Khyang, P, Roy, S., 2019. Dental health care in bangladesh : prospects and challenges. Discov. Innov. 55 (280), 137–141.
Naicker, N, Pega, F, Rees, D, Kgalamono, S, Singh, T., 2021. Health services use and health outcomes among informal economy workers compared with formal economy workers: a systematic review and meta-analysis. Int. J. Environ. Res. Public Health 18 (6).
Oberoi, S, Chaudhary, N, Patnaik, S, Singh, A., 2016. Understanding health seeking behavior. J. Family. Med. Prim. Care 5 (2), 463–464.
Olenja, J., 2003. Health seeking behaviour in context. East Afr. Med. J. 80 (2), 61–62.
Quek, YJD, Vijayasrinivasan, S, Narayanan, A, Tham, KY., 2021. Retrospective review of work-related injuries sustained by foreign workers: a single centre experience over 10 years. BMJ Open. 11 (5), e042427.
Rajaraman, N, Yip, TW, Kuan, BYH, Lim, JFY., 2020. Exclusion of migrant workers from national UHC systems-perspectives from HealthServe, a Non-profit organisation in Singapore. Asian Bioeth. Rev. 12 (3), 363–374.
Rodrigues, A, Hegde, V, Hegde, AV, Shastri, SG, Ravikumar, DN, Rodrigues, R., 2021. An exploration of the oral health beliefs and behaviors of people living with HIV in Mangalore, India: a qualitative study. BMC. Oral Health 21 (1), 222.
St. Andrew's Mission Hospital. St. Andrew's migrant worker medical centre. [Internet] 2022 [2024 February 12]. Available from: https://www.samh.org.sg/wp-content/uploads/2022/03/St.-Andrews-Migrant-Worker-Medical-Centre_-16-Mar-2022.pdf.
Sun, L, Liu, T., 2016. Occupational diseases and migrant workers' compensation claiming in China: an unheeded social risk in asymmetrical employment relationships. Health Sociol. Rev. 25 (1), 122–136.
Tam, WJ, Goh, WL, Chua, J, Legido-Quigley, H., 2017. 健康是本钱 - Health is my capital: a qualitative study of access to healthcare by Chinese migrants in Singapore. Int. J. Equity. Health 16 (1), 102.
Tan, EY, Albarazi, D, Saw, YE, Buvanaswari, P, Doshi, K, Liu, JC., 2021. Confidence in government and rumors amongst migrant worker men involved in dormitory outbreaks of COVID-19: a cross-sectional survey. J. Migr. Health 4, 100069.
Tan M, Cheong G, Lim W, Straughan PT. Older adult healthcare utilization patterns and receptiveness towards healthier SG initiative. [Internet]. 2022 [Available from: https://ink.library.smu.edu.sg/cgi/viewcontent.cgi?article=1016&context=rosa_reports.
Tee, LY, Alhamid, SM, Tan, JL, Oo, TD, Chien, J, Galinato, P, et al., 2020. COVID-19 and undiagnosed pre-diabetes or diabetes mellitus among international migrant workers in Singapore. Front. Public Health 8, 584249.
The Straits Times. New healthcare system to be set up for migrant workers in S'pore; 6 medical centres planned [Internet] 2021 [cited on 2022 Nov 7] [Available from: https://www.straitstimes.com/singapore/health/new-healthcare-system-to-be-set-up-for-migrant-workers-in-spore-6-medical-centres.
The Straits Times. How S'pore tamed a Covid-19 outbreak at workers' dorms, avoiding a 'major disaster' [Internet] 2022 [cited on 2022 Nov 8] [Available from: https://www.straitstimes.com/singapore/health/how-spore-tamed-a-covid-19-outbreak-at-workers-dorms-avoiding-a-major-disaster.
Transient Workers Count Too. Straits Times: help migrant workers stand up for their own safety. [Internet] 2017 [updated 25 October 20172023 June 10]. Available from: https://twc2.org.sg/2017/10/25/straits-times-help-migrant-workers-stand-up-for-their-own-safety/.
van der Heijden, J, Gray, N, Stringer, B, Rahman, A, Akhter, S, Kalon, S, et al., 2019. Working to stay healthy', health-seeking behaviour in Bangladesh's urban slums: a qualitative study. BMC. Public Health 19 (1), 600.
World Health Organisation. Oral health 2023 [updated 14 March 20232023 Oct 3]. Available from: https://www.who.int/news-room/fact-sheets/detail/oral-health.
Yadav, R, Zaman, K, Mishra, A, Reddy, MM, Shankar, P, Yadav, P, et al., 2022. Health seeking behaviour and healthcare utilization in a rural cohort of North India. Healthcare (Basel) 10 (5).
Zhou, X, Xu, X, Li, J, Hu, D, Hu, T, Yin, W, et al., 2018. Oral health in China: from vision to action. Int. J. Oral Sci. 10 (1), 1.