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Stigma towards alcohol use disorder: Comparing healthcare workers with the general population

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1. Introduction

The World Health Organization (WHO) has defined stigma as "a mark of shame, disgrace or disapproval that results in an individual being rejected, discriminated against and excluded from participating in a number of different areas of society" [1]. WHO has identified stigma to be a significant concern within the entire domain of mental illness, which can pose a barrier in the way of efforts by individuals and their families to reach out for help and seek treatment. Compared to other mental disorders, alcohol use disorder has been found to be severely stigmatized [2]. Such findings are not limited to adults, and have even been consistently described in studies examining the perception of adolescents [3]. These persons suffering from alcohol use disorder provoke more negative emotions and social rejection. They are less frequently regarded as mentally ill and held much more responsible for their condition. From the perspective of people without problematic use of alcohol, its consumption may be perceived as volitional and hence readily within one's control. It is not difficult to see how alcohol use disorder can thus be perceived as a moral flaw or character deficit.

Findings from the population of Singapore have not differed from the rest of the world. A multi-ethnic, cross-sectional population study conducted from March 2014 to April 2015 on mental health literacy showed that among other results, alcohol abuse was perceived more as a form of weakness rather than an actual illness [4]. Those with such a condition were deemed to be more dangerous and unpredictable compared to people with other mental health conditions (such as dementia, depression, obsessive-compulsive disorder and schizophrenia).

Lack of awareness about alcohol use disorder might partly account for such sentiments. When the general public in Singapore was surveyed in the Mind Matters study [5], only slightly more than one in two respondents (57.1%) were able to recognize the condition of alcohol abuse, and most recommended talking to family or friends as a help-seeking intervention. Singapore is not alone in that regard, with results from Japan likewise indicating poor awareness of, and stigma associated with, alcohol use disorders [6]. There is still much work to be done in the domain of mental health awareness for alcohol use disorders.

In spite of the poor awareness, alcohol remains one of the most commonly available and consumed psychoactive substances around the world. The impact of alcohol use is undeniably significant, with 5.1% of the global burden of disease and injury attributable to problematic alcohol use [7]. People suffering from alcohol use disorder are likely to end up hospitalized for various reasons, with up to a third of patients in the UK admitted in medical and surgical wards found to have alcohol-related conditions [8]. This can be due to alcohol-related matters, such as complications from its direct consumption or downstream health problems. Alternatively, people might simply be hospitalized due to other healthcare needs such as unrelated elective surgical procedures. Either way, this provides abundant opportunities for people with alcohol use disorder to come into contact with the healthcare system and have direct interactions with healthcare workers.

Negative attitudes towards alcohol use disorders are also present within the healthcare setting. A multi-centre European study of 866 healthcare professionals (physicians, psychiatrists, psychologists, nurses and social workers) demonstrated lower levels of staff regard when working with alcohol and drug users, compared to patients with other conditions such as depression and diabetes [9]. In a survey of US psychiatry residents, only a minority (31.6%) opined that addiction psychiatrists work with a patient population that they would like to work with [10]. However, there is no corresponding local data about the attitudes of hospital-based local healthcare workers towards this patients suffering from alcohol use disorder, or information about how such attitudes may differ from the sentiments of the general population. Understanding the attitudes of healthcare workers would be important as such attitudes may directly or indirectly influence care rendered to patients with alcohol use disorders when they are hospitalized.

This study examines hospital-based healthcare workers' attitudes towards patients with alcohol use disorder, and compares them to the population's perspectives. Compared to the general population, healthcare workers are required to take on a more empathic and understanding role in dealing with patients. The authors hypothesized that in relation to the general population, healthcare workers would demonstrate less stigmatizing beliefs towards patients with alcohol use disorder.

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2. Methods

2.1. Study population

The Department of Psychological Medicine conducted training for hospital staff on the recognition and management of alcohol withdrawal. The training sessions for doctors and nurses were conducted through separate modalities. Surveys on health beliefs were disseminated during these training sessions, without any form of incentive offered for participation in the survey.

A face-to-face training session was conducted for the doctors in the Department of General Medicine, where survey forms in hard copies were handed out. Survey forms were handed out prior to the training session, and collected back after the session. Out of the 121 doctors in attendance, 69 (57%) completed the survey.

Inpatient nurses working in all hospital wards were required to complete an online electronic learning module for alcohol withdrawal, in which the survey form was presented in a soft-copy format. The electronic learning module was structured in such a way that survey responses were gathered prior to the nurses beginning on the learning module. Of the 1309 nurses who completed the electronic learning module, 674 nurses (51.5%) completed the survey.

2.2. Instruments and procedures

Data was collected about the gender, ethnicity, marital status, age range, job designation and years of work experience. In addition, participants were asked if their family members, close friends or themselves had suffered from alcohol use disorder.

Due care was taken to ensure that participant identifiers were omitted from the data set. The doctors' survey forms were left anonymized and did not allow the investigators to identify the individual respondents. Similarly, a de-identified version of the nurses' collated survey responses was sent to the investigators for their analysis. The nurses' response were collated by the website administrator of the electronic learning module, who was not involved in the study.

In terms of outcomes measures, participants completed the Depression Stigma Scale (DSS; Personal and Perceived scales - excluding the last question for purposes of analysis, about whether they would vote for a politician if they knew the person had a mental illness) and the Social Distance Scale (SDS) [11,12]. The questions for both scales were modified to suit the context of person(s) with alcohol abuse (henceforth adapted DSS and adapted SDS respectively).

2.3. Ethical issues

This study surveyed only healthcare workers. No patients were involved in the study, and there was no direct impact on patient care. Participants were duly informed about the study and the voluntary role of their involvement, with acknowledgment that their participation in the study was taken to indicate the presence of informed consent. The trial was approved by the relevant ethical review board.

2.4. Data analysis

A biostatistician was consulted prior to analysis. Statistical power calculation to determine the requisite sample size was performed. A minimum of 334 healthcare workers were required to provide sufficient precision for the study, with a 5% margin of error and a 95% confidence level.

The study population was first analyzed internally, comparing doctors with nurses, and then collectively pooling the results for comparison against a population sample. The latter population sample was derived from a prior nationwide cross-sectional study during March 2014 to April 2015 [4], with a subset of 626 Singapore Citizens and Permanent Residents aged 18 to 65 that were surveyed on alcohol abuse.

Table 1
Demographic Profile of Study Participants.

	Doctors n = 69	Ward nurses n = 674
Job designation (doctors)		
House officer	10 (14.5%)	–
Medical officer	32 (46.4%)	–
Registrar-equivalent	7 (10.1%)	–
Specialist (associate consultant and above)	20 (29.0%)	–
Job designation (nurses)		
Enrolled/assistant nurse	–	153 (22.7%)
Staff nurse	–	395 (58.6%)
Senior staff nurse	–	101 (15.0%)
Nurse manager/nurse clinician/advanced practice nurse	–	18 (2.7%)
Gender		
Male	32 (46.4%)	45 (6.7%)
Female	37 (53.6%)	627 (93.0%)
Age range		
18 to 24 years old	9 (13.0%)	106 (15.7%)
25 to 34 years old	40 (58.0%)	477 (70.8%)
35 to 49 years old	16 (23.2%)	82 (12.2%)
50 years old and above	3 (4.3%)	5 (0.7%)
Years of professional experience		
3 years or less	20 (29.0%)	270 (40.1%)
4 to 6 years	10 (14.5%)	201 (29.8%)
7 to 9 years	10 (14.5%)	100 (14.8%)
10 years or more	13 (18.8%)	93 (13.8%)
Marital status		
Married	33 (47.8%)	229 (34.0%)
Never married	34 (49.3%)	431 (63.9%)
Separated/widowed/divorced	0	5 (0.7%)
Ethnicity		
Chinese	42 (60.9%)	212 (31.5%)
Indian	12 (17.4%)	100 (14.8%)
Malay	0	52 (7.7%)
Others	14 (20.3%)	303 (45.0%)
Personal experience with alcohol abuse		
Ever had alcohol abuse	2 (2.9%)	104 (15.4%)
Not had alcohol abuse, but close family/friend had alcohol abuse	13 (18.8%)	65 (9.6%)
Not had alcohol abuse, no close family/friend had alcohol abuse	52 (75.4%)	500 (74.2%)

2.5. Statistical analysis

Statistical analyses were performed using a chi-square calculator for a contingency table at the Social Science Statistics website (http://www.socscistatistics.com/tests/chisquare2/Default2.aspx), in conjunction with biostatistician input.

3. Results

Table 1 reflects the demographic profiles of the doctors and ward nurses who had responded to the survey.

The doctors and nurses were collated to form a Healthcare Workers group. The methodology for data collection of the general population sample is detailed in Appendix A. The baseline demographic profile of the general population, obtained by the authors of that study, are compared against the demographic profiles of the healthcare workers from this study. Comparatively, the healthcare workers were younger in age, more predominantly female and of higher educational background.

Table 2 compares results from doctors and ward nurses, with statistically significant differences annotated. For the adapted DSS, a higher proportion of nurses agreed to most of the statements listed compared to doctors, with the exception of the first and last statements

Table 2
Survey Responses from Doctors and Nurses.

Personal stigma	Doctors			Ward nurses			Doctors vs nurses (p-value)
	Disagree	Neither agree nor disagree	Agree	Disagree	Neither agree nor disagree	Agree	
Patients with alcohol abuse could get better if they wanted to.	7 (10.1%)	0 (0%)	62 (89.9%)	44 (6.5%)	15 (2.2%)	615 (91.2%)	0.32
A problem of alcohol abuse is a sign of personal weakness.	44 (63.8%)	0 (0%)	25 (36.2%)	197 (29.2%)	5 (0.7%)	472 (70.0%)	< 0.0001
Alcohol abuse is not a real medical illness.	63 (91.3%)	0 (0%)	6 (8.7%)	349 (51.8%)	8 (1.2%)	317 (47.0%)	< 0.0001
People with alcohol abuse are dangerous to others.	17 (24.6%)	0 (0%)	52 (75.4%)	76 (11.3%)	14 (2.1%)	584 (86.6%)	0.0039
It is best to avoid people with alcohol abuse, so that you do not also get this problem.	55 (79.7%)	2 (2.9%)	12 (17.4%)	367 (54.5%)	11 (1.6%)	296 (43.9%)	< 0.0001
People with a problem of alcohol abuse are unpredictable.	18 (26.1%)	1 (1.4%)	50 (72.5%)	80 (11.9%)	13 (1.9%)	581 (86.2%)	0.0023
If I had a problem of alcohol abuse, I would not tell anyone.	46 (66.7%)	0 (0%)	23 (33.3%)	459 (68.1%)	14 (2.1%)	201 (29.8%)	0.68

Social distance	Doctors			Ward nurses			Doctors vs nurses (p-value)
	Willing	Neither willing nor unwilling	Unwilling	Willing	Neither willing nor unwilling	Unwilling	
How willing would you be to move next door to a person with alcohol abuse?	17 (24.6%)	1 (1.4%)	51 (73.9%)	117 (17.4%)	5 (7.4%)	552 (81.9%)	0.14
How willing would you be to spend an evening with a person with alcohol abuse?	35 (50.7%)	0 (0%)	34 (49.3%)	141 (20.9%)	9 (1.3%)	524 (77.7%)	< 0.0001
How willing would you be to make friends with a person who has alcohol abuse?	42 (60.9%)	1 (1.4%)	26 (37.7%)	237 (35.2%)	7 (1.0%)	430 (63.8%)	< 0.0001
How willing would you be to have a person with alcohol abuse start working closely with you on a job?	25 (36.2%)	0 (0%)	44 (63.8%)	156 (23.1%)	14 (2.1%)	504 (74.8%)	0.028
How willing would you be to have a person with alcohol abuse marry into your family?	3 (4.3%)	1 (1.4%)	65 (94.25%)	37 (5.5%)	9 (1.3%)	628 (93.2%)	0.91

in the set of questions. In the adapted SDS, statistically significant differences were found in three of the five statements – ward nurses were less willing than doctors to spend an evening, make friends, or work closely with a person suffering from alcohol abuse. Doctors and ward nurses were similar in terms of their willingness to move next door to a person with alcohol abuse, and have such a person marry into their family.

The results for doctors and ward nurses were collated into a Healthcare Workers group, with their responses compared to those from a sample of the general public in Table 3. Statistically significant differences were found in healthcare workers' adapted DSS responses for seven of the eight statements, which demonstrated greater awareness among healthcare workers about the nature of the alcohol abuse. However, no statistically significant difference was found in the willingness of healthcare workers to disclose their condition to others, compared to the general public, if they were to suffer from alcohol abuse. The differences in the adapted SDS were more pronounced, with statistically significant differences across all five domains in the same direction – healthcare workers preferred a greater social distance with a person who had alcohol abuse, compared to the general public.

Two additional questions were posed to the ward nurses – 371 (55.1%) expressed that they would rather not have a patient with alcohol abuse under their direct care, while 447 (66.7%) opined that patients with alcohol abuse were troublesome to manage.

4. Discussion

The results of this study revealed that there is considerable stigma towards alcohol use disorder in the healthcare workers studied. This is in keeping with prior studies which have demonstrated similar stigmatized beliefs towards patients with mental health concerns, held by doctors and nurses alike [13,14]. The extent of this study did not manage to provide a basis for comparison of the stigma towards alcohol use disorder, as opposed to other mental health conditions.

In particular, stigmatized beliefs were stronger among nurses as compared to doctors. Other corresponding local studies have already identified similar differences earlier on during the course of their respective studies, where nursing students were found to display more negative attitudes towards persons with mental illness than medical students [15]. While doctors attend to hospitalized patients on a consultative basis, ward nurses take on a frontline role which involves a more constant degree of contact and care. It is plausible that nurses might have more skewed and negative sentiments towards patients with acute medical illness in general, and not just those suffering from alcohol use disorder. It might be possible that such role differences amplify the pre-existing gaps in negative attitudes, causing them to widen over time.

There were almost ten times as many nurses as compared to doctors in the study sample. In the absence of any statistical weighting, the disparity in the sizes of the two groups results in the pooled views of the healthcare workers to be far more representative of the nurses rather than the doctors. Given that nurses had stronger stigmatized beliefs than doctors, this leads to the difference in opinions between healthcare workers and the general population to become more apparent.

Compared to the general population, healthcare workers exhibited a greater degree of stigma towards patients with alcohol use disorder. The public's perspective of such a condition is rather diverse; a small minority have secondhand or even firsthand experiences, while others may draw their conclusions based on media depictions. While healthcare workers are equally subject to these influences, their work tends to offer a more uniform exposure to the condition. Comparing the views of healthcare workers with those of the general population is able to shed light on the impact of exposure, in their line of work.

Some of the differences in opinions between healthcare workers and

Table 3
Survey Responses from Healthcare Workers (Doctors and Nurses combined), in relation to the General Population.

Personal stigma	Healthcare workers (doctors and ward nurses)			General population			Healthcare workers vs population (p-value)
	Disagree	Neither agree nor disagree	Agree	Disagree	Neither agree nor disagree	Agree	
Patients with alcohol abuse could get better if they wanted to.	51 (6.9%)	15 (2.0%)	677 (91.1%)	12 (1.9%)	22 (3.5%)	592 (94.6%)	< 0.0001
A problem of alcohol abuse is a sign of personal weakness.	241 (32.4%)	5 (0.7%)	497 (66.9%)	113 (18.1%)	141 (22.6%)	369 (59.2%)	< 0.0001
Alcohol abuse is not a real medical illness.	412 (55.5%)	8 (1.1%)	323 (43.5%)	227 (36.3%)	80 (12.8%)	319 (51.0%)	< 0.0001
People with alcohol abuse are dangerous to others.	93 (12.5%)	14 (1.9%)	636 (85.6%)	116 (18.5%)	103 (16.5%)	407 (65.0%)	< 0.0001
It is best to avoid people with alcohol abuse, so that you do not also get this problem.	422 (56.8%)	13 (1.7%)	308 (41.5%)	367 (58.6%)	122 (19.5%)	137 (21.9%)	< 0.0001
People with a problem of alcohol abuse are unpredictable.	98 (13.2%)	14 (1.9%)	631 (84,9%)	106 (16.9%)	113 (18.1%)	407 (65.0%)	0.0008
If I had a problem of alcohol abuse, I would not tell anyone.	505 (68.0%)	14 (1.9%)	224 (30.1%)	372 (59.7%)	82 (13.2%)	169 (27.1%)	0.85

Social distance	Healthcare workers (doctors and ward nurses)			General population			Healthcare workers vs population (p-value)
	Willing	Neither willing nor unwilling	Unwilling	Willing	Neither willing nor unwilling	Unwilling	
How willing would you be to move next door to a person with alcohol abuse?	134 (18.0%)	6 (0.8%)	603 (81.2%)	306 (48.9%)	0 (0%)	320 (51.1%)	< 0.0001
How willing would you be to spend an evening with a person with alcohol abuse?	176 (23.7%)	9 (1.2%)	558 (75.1%)	441 (70.4%)	0 (0%)	185 (29.6%)	< 0.0001
How willing would you be to make friends with a person who has alcohol abuse?	279 (37.6%)	8 (1.1%)	456 (61.3%)	459 (73.3%)	0 (0%)	167 (26.7%)	< 0.0001
How willing would you be to have a person with alcohol abuse start working closely with you on a job?	181 (24.4%)	14 (1.9%)	548 (73.8%)	300 (48.2%)	0 (0%)	323 (51.8%)	< 0.0001
How willing would you be to have a person with alcohol abuse marry into your family?	40 (5.4%)	10 (1.3%)	693 (93.3%)	106 (16.9%)	0 (0%)	520 (83.1%)	< 0.0001

the general population could be accounted for by demographic differences instead of vocational exposure of the healthcare workers. Older people in the general population might have a greater degree of life experience, which could lead them to be less judgemental of others. However, it is interesting that the general population contains more males and has a lower level of education, as these are factors which tend to favour having more stigmatizing beliefs.

It would be less likely for healthcare workers, who are equipped with some level of medical knowledge, to be completely unaware about mental health conditions. This might help to explain why healthcare workers are agree less readily with the first question of the DSS, about how these patients could get better if they wanted to, as they are more familiar with avenues of external support available and utilized by patients with alcohol use disorder. On the other hand, such a response could reflect therapeutic nihilism akin to learned helplessness, where nothing which such patients do might help them get better. This could be the case if a healthcare worker has encountered a patient with alcohol use disorder getting readmitted multiple times for alcohol-related health conditions.

Healthcare workers may plausibly still be misinformed or bring their unconscious biases into the work domain, which may shape their attitudes towards people with mental health conditions [16]. A source of such biases may derive from healthcare workers' direct experience in providing care for people with mental health disorders [17]. Seeing these patients during the course of their hospital admission, when the illness is most acute and care needs are most onerous, may skew the overall outlook of healthcare workers towards them. In addition, healthcare workers may also perceive themselves to be ill-equipped to handle mental health conditions [18], when behavioural difficulties manifest as a result of confused mental states related to delirium or alcohol withdrawal. Furthermore, by seeing some of these patients who frequently present to the hospital such as through repeat admissions may engender an excessively negative perception about the prognosis of alcohol use disorders. This may give rise to a sense of hopelessness, culminating in therapeutic pessimism [19].

Over the recent years, there has been a fair deal of emphasis on our language and the corresponding attitudes that the choice of our words convey towards addictive disorders. The sustained initiative towards veering away from the use of dehumanizing, value-laden terms (such as “alcoholic” and “alcohol abuser”) is not without reason [20]. Implicit cognitive biases with the use of such terms have been shown to favour blame and punitive judgments towards the affected individuals, which may in turn perpetuate stigmatizing attitudes. Such an effect has been demonstrated even in doctoral-level mental health clinicians [21], and to a greater extent in the general population as well [22]. Instead, opting to use “person-first”, medically-accurate language serves to convey the notion of a medical malfunction instead of willful misconduct. Such a move is evident in DSM-5's nomenclature for the entire chapter of substance-related and addictive disorders, demonstrating respect for personhood. This seeks to identify the problem as one which the affected individual suffers from, as opposed to identifying the affected individual as the problem itself. Much as the authors are in favour of supporting this initiative, retaining the “alcohol abuse” terminology was required to provide a level basis for comparison with the

prior population study.

Beyond providing routine clinical care, mental health professionals are charged with the additional responsibility to advocate for persons with mental illness. In a healthcare landscape where stigmatized perceptions of mental illnesses invariably exist, mental health professionals have a role in educating both the public (social stigma) and their colleagues (structural stigma) about the impact of stigma. Various interventions targeting the general public, medical students and other professional groups have been promising [23].

Such interventions could have positive knock-on effects in the community at large. Healthcare providers are often seen as leaders in the community, and can have significant influence on how others perceive and treat socially-oppressed populations of patients [24]. Initiatives to alter attitudes and perceptions tend to require sustained efforts before results can be seen. It is heartening to note results from population surveys in Germany [25], which indicate that the image of a person receiving treatment for alcohol use disorder has improved over the course of time spanning two decades.

4.1. Limitations

The adoption of the DSS for patients with alcohol use disorder might have caused some of the intended points in question to have been lost in translation. For instance, agreeing with the first item (persons with the disease could get better if they wanted to) in the context of depression might imply weak will and thus signify a sign of stigma, but for alcohol use disorder this might in turn demonstrate therapeutic optimism. Other instruments evaluated to be psychometrically and theoretically sound for measuring perceived alcohol stigma, such as the alcohol-adapted Perceived Devaluation-Discrimination (PDD) [26], might have been able to yield more meaningful responses. Nevertheless, the decision to remain with the DSS was in order to have a common platform for comparison with the general population's responses.

The questionnaires elicited self-reported responses. Although participants were aware that their responses were given anonymously, results may be prone to biases such as the Hawthorne effect. However, this bias is expected to be affect results in the conservative direction as participants would be keen to portray themselves as possessing a more benevolent attitude towards people suffering from alcohol use disorder.

Participants' responses were collected differently from doctors and nurses. Logistical difficulties on the ground necessitated for the questionnaire to be administered via different modalities for doctors and nurses. Doctors' responses might have been influenced by the educational content of the training presentations. Through reviewing their knowledge on alcohol withdrawal and how to manage it, the doctors might be more attuned to the difficulties of patients with alcohol use disorder and this might result in lessening of stigmatized responses. Such an effect was averted for the nurses, by the design of the electronic learning module. In view of their larger numbers, nurses could also have perceived a greater assurance of the anonymity of their responses compared to doctors.

Beyond their occupational role, demographic variables of the doctors and nurses (as seen in Appendix A) are also likely to contribute to the differences in their responses.

4.2. Future directions

This study provides a platform for further studies on stigma by healthcare workers to be similarly compared with the sentiments in the community. This can be examined for other mental health conditions and other members of the multi-disciplinary team.

While not included in the scope of the current study, valuable insights can result from future studies examining how negative perceptions of healthcare workers towards patients with mental health conditions translate into clinical outcomes. Developing awareness within healthcare workers about inherent biases may allow them to actively monitor such sentiments, to prevent them from translating into compromised care. Measuring the tangible impact of healthcare workers' stigmatized beliefs may serve to provide a pragmatic outcome indicator.

5. Conclusions

The current study demonstrated substantial differences in the attitudes towards persons suffering from alcohol use disorder, when examining such beliefs in doctors and nurses. These differences exist both internally, across the doctors and nurses, and externally in comparison to the general population. It remains to be seen how the presence of such stigma translates into the quality of clinical care rendered and, ultimately, patient outcomes.

Author contributions

The lead author led the design and implementation of the research study, had full access and took responsibility for the integrity of the data, and had approved the final version submitted for publication. All authors contributed to critically revising the data. The authors thank A/Prof Mythily Subramaniam from the Institute of Mental Health, for graciously allowing the general population data to be used for comparison, and the hospital biostatistician Ms. Wang Jiexun, for providing statistical consultations to facilitate evaluation of the data.

Declaration of conflicting interests

The authors have no competing interests or potential conflicts of interest to declare with respect to the research, authorship, and publication of this article.

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Appendix A. Methodology of study involving sample of general population

The following paragraph is reproduced from the original study involving the general population [4], with permission from the author: The study population comprised Singapore Residents (Singapore Citizens and Permanent Residents) aged 18–65 years who were living in Singapore at the time of the survey. The sample was derived using the sampling frame from an administrative database in Singapore that maintains data on age, gender, ethnicity and residential address of all those residing in Singapore. Residents who were living outside the country and not contactable due to incomplete or incorrect addresses were excluded from the study. The study was approved by the relevant Institutional and Ethics Committees. Written informed consent was taken from all respondents who were 21 years and above as well as from parents or guardians of participants who were aged 18–20 years.

Table 4
Demographic comparisons between the healthcare workers and the nationally-representative sample of the general population.

	Healthcare workers	General population	Chi-square (p-value)
Age			
18 to 34 years old	632 (85.6%)	231 (38.3%)	< 0.0001
35 to 49 years old	98 (13.3%)	168 (27.9%)	
50 to 65 years old	8* (1.1%)	204 (33.8%)	
Gender			
Female	664 (90.8%)	319 (52.9%)	< 0.0001
Male	67 (9.2%)	284 (47.1%)	
Education			
6 years or less	0	88 (14.6%)	< 0.0001
Secondary-level (N-level and O-level)	0	172 (28.5%)	
Tertiary (A-level, Polytechnic, University, Other)	743 (100%)	343 (56.9%)	

* Category labelled as 50 years and above in the study population.

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