

ORIGINAL ARTICLE

COVID-19: COMPARISON OF SITUATIONAL FACTORS BETWEEN HEALTHCARE WORKERS AND NON-HEALTHCARE WORKERS IN EAST MALAYSIA

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ABSTRACT

COVID-19 is one of the worst global pandemics in the last 20 years caused by Severe Acute Respiratory Syndrome Coronavirus 2. To control the pandemic in Malaysia, on 18th March 2020 the government implemented the Movement Control Order (MCO), a non-pharmaceutical intervention (NPI) under Malaysia's Prevention and Control of Infectious Diseases Act 1988. Despite a high rate of compliance to the MCO in East Malaysia, a month after its implementation, a new cluster of infections among hospital healthcare workers (HCW) had emerged. This paper reports the early findings of a multinational study involving Malaysia, Thailand, Italy, and the United Kingdom. Our early analysis seeks to understand two main situational factors in the states of Sabah and Sarawak in East Malaysia - testing rates and household composition between HCW and non-healthcare workers (non-HCW). Our results showed that there were higher testing rates and smaller-sized households among HCW when compared to non-HCW workers.

Keywords: COVID-19, SARS-CoV-2, health care worker, household, non-pharmaceutical interventions, quarantine, isolation, screening, testing, Sabah, Sarawak, East Malaysia

INTRODUCTION

Coronavirus Disease 2019 (COVID-19) is the largest Coronavirus outbreak in the last 20 years¹. As of 5th June 2020, there were over 6.5 million infections and almost 390,000 deaths due to COVID-19². In Malaysia, there was a gradual increase in the number of cases after the first case was detected on 25th January 2020 that was linked to a religious gathering in Sri Petaling, Kuala Lumpur Federal Territory. Following this, there was an exponential surge from 29 cases on 1st March 2020 to 673 cases on 17th March 2020³. In response to the rise in COVID-19 cases, the Malaysian government imposed the Movement Control Order (MCO) under the Malaysia's Prevention and Control of Infectious Diseases Act 1988 on 18th March 2020. The MCO, a non-pharmaceutical intervention (NPI), prohibits inter-state movement, mass gatherings, and overseas travel for Malaysians; restricts entry for foreigners; and requires closure of all educational institutions and non-essential services⁴. East Malaysian states of Sabah and Sarawak have special provisions in the Malaysian law for control over immigration and are empowered to refuse entry to citizens who are not born in those states⁵. Before the national MCO, both states had enforced travel

restrictions. They banned foreigners from or with travel history to mainland China and implemented compulsory 14-day home quarantine for state citizens returning from China^{6,7}.

NPIs are effective methods to prevent and control infection while vaccines and other preventive treatments are being developed⁸. Contact tracing and early detection of cases, medical resource management and enhanced public health education are crucial in addition to NPIs to eliminate the disease¹. Before the MCO, Malaysia had concentrated on testing symptomatic individuals with epidemiology link and faced challenges from inadequate testing facilities and reagents.

High MCO compliance rates were observed among the general public in Sabah and Sarawak, on the island of Borneo, East Malaysia at 96.8% and 97.3% respectively^{9,10}. Despite that, clusters of COVID-19 cases related to healthcare workers (HCW) have been reported in several government hospitals in Sabah and Sarawak, whereby 70% of the cases were related to the HCW's social activities or travel history^{11,12}. Whilst the conventional NPIs would work

on the public, it is possible that a different approach is needed to address disease transmission between HCW.

This short report aims to investigate two situational factors - testing rates and household compositions between HCW and non-healthcare workers (non-HCW) in Sabah and Sarawak. This study is a part of an ongoing multinational study involving Malaysia, Thailand, Italy, and the United Kingdom¹³.

METHODS

Data collection commenced on 1st May 2020 via a self-administered online survey. Ethical approval for this study was obtained from the Medical Research and Ethics Committee (NMRR-20-595-54437 IIR), Ministry of Health Malaysia. Adults residing in Malaysia were recruited via email, social media, and recruitment posters. The data was analysed using Stata 15.0 software. Fisher's exact tests were used to assess associations between categorical variables, and Z-test for trend to test associations between binary and ordinal categorical variables with a 5% significance level.

RESULTS

The demographic characteristics of the 262 respondents in Sabah and Sarawak who completed the online survey between 1st and 31st May are shown in Table 1. The key variables were balanced between the states.

Table 2 illustrates that overall, in terms of testing, a higher percentage of HCW have been tested for COVID-19 (44%) compared to the non-HCW group that reported only 5% in Sabah and Sarawak combined. The difference was statistically significant ($p < 0.001$). This trend was also true in both states. A higher proportion of HCW (66%) in Sarawak reported they have been tested compared to HCW in Sabah (26%) ($p < 0.001$). There were no significant differences in the reported testing rates between Sarawak and Sabah for non-HCW.

Table 3 shows that overall, there was a significant difference in household composition between HCW and non-HCW, with HCW reporting 26% as being either single or living with spouse alone compared to 11% in the general population ($p = 0.013$). Overall, there was a difference in the number of people in a household between HCW and non-HCW ($p = 0.009$),

with HCW reporting about 41% as having three or fewer people in the household compared to about 29% in the general population.

DISCUSSION

The results shed some light on two important themes. First is regarding testing for COVID-19. Our data showed that more HCW were tested compared to non-HCW or the public in both states, and more HCW in Sarawak were tested compared to Sabah. HCW are regarded as having a higher risk to contract COVID-19, and thus protocols are in place for testing HCW. The higher number of HCW tested in Sarawak could be attributed to the mass screening in Sarawak General Hospital on 6th May, 2020¹⁴. About 1% HCW with no exposure to COVID-19 patients were reported to have contracted COVID-19 in the Netherlands and China in the beginning of the year 2020¹⁵. Another concern is that the public has not been widely tested. With cases of asymptomatic infection, low testing rates among the public may raise the numbers and burden the health care system. Wide testing was extensively employed by South Korea and Taiwan coupled with contact tracing to identify and isolate infected individuals early have proven to be effective¹⁶.

Secondly, the data showed that HCW in Sabah tend to live alone or have small-sized households. This could be because HCW realised they may potentially be infected, and voluntarily quarantined or distanced themselves from family members. The Malaysian public have been found to be concerned about transmitting the disease to others, and having their loved ones getting infected with COVID-19¹⁷.

The limitation of this study is that it only captured data from smart phone or computer users with internet access. It did not include people that are computer-illiterate or without good internet connection, such as those living in the rural areas of Borneo or lower income population. Face-to-face data collection is ideal to reach out to these groups, but it is logistically difficult due to social distancing and travel restrictions during the MCO. In addition, our survey was not designed to be representative of the population. The policy implications of this research include creating regulations to protect HCW from being infected such as working in bubble systems, providing lodging for self-isolation, managing of HCW's number of household members, and regular risk-guided testing.

Table 1: Baseline characteristics of respondents from Sabah and Sarawak.

Variable	Sabah N = 158 n (%)	Sarawak N = 104 n (%)	P-value
Work status			
HCW	58(36.7)	47(45.2)	0.269
Non-HCW	70(44.3)	41(39.4)	
Missing	30(19.0)	16 (15.4)	
Education			
Primary	0 (0)	0 (0)	0.813
Secondary	11 (7.0)	8 (7.7)	
Tertiary	147 (93.0)	96 (92.3)	
Gender			
Female	106 (67.1)	67 (64.4)	0.816
Male	50 (31.7)	35 (33.7)	
Other	2 (1.3)	2 (1.9)	
Age (years)			
18 - 24	8 (5.1)	15 (14.4)	0.003
25 - 34	57 (36.1)	49(47.1)	
35 - 44	46 (29.1)	18 (17.3)	
45 - 54	28 (17.7)	10 (9.6)	
55 - 64	16 (10.1)	8 (7.7)	
65 - 74	3 (1.9)	3 (2.9)	
75 - 84	0 (0)	1 (1.0)	

Table 2: Comparison of the proportion of participants tested in Sabah and Sarawak.

State	Sabah		Sarawak		Combined		HCW		Non-HCW	
	Non-HCW	HCW	Non-HCW	HCW	Non-HCW	HCW	Sabah	Sarawak	Sabah	Sarawak
Tested n (%)	2 (3.2)	15 (25.8)	3 (7.3)	31 (66.0)	5 (4.5)	46 (43.8)	2 (3.2)	3 (7.3)	15 (25.8)	31 (66.0)
Not Tested n (%)	68 (97.1)	43 (74.1)	38 (92.7)	16 (34.0)	106 (95.5)	59 (56.2)	68 (97.1)	38 (92.7)	43 (74.1)	16 (34.0)
Total	70 (100)	58 (100)	41 (100)	47 (100)	111 (100)	105 (100)	70 (100)	41 (100)	58 (100)	47 (100)
Fisher's exact p-value	<0.001		<0.001		<0.001		0.356		<0.001	

Table 3: Comparison of number of people in household and household composition status (living alone, with spouse or other) between non-HCW and HCW.

State	Sabah			Sarawak			Combined		
	Non-HCW	HCW	p-value	HCW	Non-HCW	p-value	HCW	Non-HCW	p-value
Alone n (%)	3 (4.3)	7 (12.1)	<0.001	3 (7.3)	3 (6.4)	1.000	6 (5.4)	10 (9.5)	0.013
Spouse only n (%)	2 (2.9)	13 (22.4)		4 (9.8)	4 (8.5)		6 (5.4)	17 (16.2)	
Other groups n (%)	65 (92.9)	38 (65.5)		34 (82.9)	40 (85.1)		99 (89.2)	78 (74.3)	
#in HH=1 n (%)	3 (4.3)	6 (10.3)	0.001*	4 (9.8)	3 (6.4)	0.746*	7 (6.3)	9 (8.6)	0.009*
#in HH=2 n (%)	5 (7.1)	18 (31.0)		2 (4.9)	3 (6.4)		7 (6.3)	21 (20.0)	
#in HH=3 n (%)	13 (18.6)	7 (12.1)		5 (12.2)	6 (12.8)		18 (16.2)	13 (12.4)	
#in HH=4 n (%)	10 (14.3)	8 (13.8)		9 (22.0)	13 (27.7)		19 (17.1)	21 (20.0)	
#in HH=5 n (%)	12 (17.1)	8 (13.8)		5 (12.2)	5 (10.6)		17 (15.3)	13 (12.4)	
#in HH=6 n (%)	9 (12.9)	4 (6.9)		5 (12.2)	8 (17.0)		14 (12.6)	12 (11.4)	
#in HH>=7 n (%)	18 (25.7)	7 (12.1)		11 (26.8)	9 (19.2)		29 (26.1)	16 (15.2)	

All p-values are from Fisher's exact test, except * which means Z-test for trend (#in HH, number in household)

CONCLUSION

In conclusion, the situational factors among HCW and non-HCW were higher testing rates and smaller-sized households among HCW when compared to non-HCW workers. Differences between HCW and non-HCW warrants further research in terms of their perceptions and attitudes towards this pandemic. Research may uncover different strategies applied by HCW in preventing infection, which if feasible, may be recommended for the public as well. Our early data that focuses on the comparison of HCWs and non HCWs would be able to guide the refinement of government policy and direct future

infection prevention and control plans including strategies on widespread testing of the public. This is important as the government is gradually easing restrictions in Sabah and Sarawak, and nationwide.

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