

ORIGINAL ARTICLE

Association Between Perceived Risk Towards Exposure to Covid-19 Infection and Depressive Symptoms Among Hospital Frontliners During Covid-19 Pandemic in Kota Kinabalu, Sabah

Ramalingam Thulasiraman, Nelbon Giloi, Zulhairul Naim Bin Sidek Ahmad, Rudi Bin Nasib, Nabihah Ali, Priya Dharishini A/P Kunasegaran, Loganathan Salvaraji, Lim Mei Ching

Department of Public Health Medicine, Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah, 88400 Kota Kinabalu, Sabah, Malaysia

ABSTRACT

Introduction: During the Covid-19 pandemic, hospital frontliners faced serious risks of getting infected with the potentially fatal Covid-19 infection and their perception of Covid-19 exposure and depressive symptoms could affect their health and reduce their work quality and their productivity as hospital frontliners. The study aimed to determine the prevalence of depressive symptoms and their association with the perceived risk of exposure to Covid-19 infection. **Materials and methods:** A cross-sectional study was designed and carried out from May to June 2021. The universal sampling method was applied, and 454 people took part, giving a response rate of 98.7 per cent. Patient Health Questionnaire-9 items were used as a validated self-administered questionnaire, and the data were analysed using the Statistical Package for Social Sciences (SPSS) version 27. **Results:** Age, female gender, ethnicity, level of education, marital status, and chronic medical ailment had a statistically significant relationship with depressive symptoms. Perceived factors such as difficulty getting the mask ($p=0.01$), discomfort wearing the mask ($p=0.01$), and feeling vulnerable to infection after close contact with confirmed/suspected Covid-19 patients ($p=0.04$) were found to have a statistically significant association with depressive symptoms among the hospital frontliners. In this study, 40.2 percent of hospital frontliners were found with depression symptoms. **Conclusion:** The prevalence of depression symptoms among hospital frontliners indicates the need for it to be highlighted and measures to be taken accordingly. *Malaysian Journal of Medicine and Health Sciences* (2024) 20(5): 93-98. doi:10.47836/mjmhs20.5.13

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Corresponding Author:

Ramalingam A/L Thulasiraman, MD
Email: saijaiarwin@gmail.com
Tel : +6088-320000

INTRODUCTION

An unidentified pneumonitis with the official name Coronavirus illness 2019, also known as Covid-19 was discovered on December 31, 2019, in Wuhan City, Hubei Province, China (1). It propagated quickly through droplets and human contact and had the potential to spread through the air in small spaces[3] before being classified as a pandemic on 11 March 2020 (2,3,4). According to earlier studies, the population is more susceptible to depressive symptoms and panic attacks when faced with highly contagious diseases. According to a study on the avian flu conducted in France, 39.0% of participants had depression symptoms as a result of the illness, and 20.0% of those who were aware of the illness altered their behaviour throughout the epidemic (5). Chinese respondents reported mild to severe depression symptoms in the early phases of the Covid-19 crisis (6). Symptoms of depression among hospital staff

can have catastrophic repercussions, including death, if undiagnosed and mistreated (7). Given the high levels of stress in Sabah, healthcare personnel are especially vulnerable to burnout. Therefore, this matter was further looked into to understand the many sociodemographic and cultural factors in Sabah that are linked to depression symptoms (8). It is important to monitor the psychological well-being of frontline workers during an epidemic since the outbreak brought attention to the vulnerability of psychological resilience (9). Our goals were to identify the incidence of depression symptoms and the contributing factors among Sabah's frontline hospital workers.

MATERIALS AND METHODS

This cross-sectional study intended to examine the association between the perceived risk of Covid-19 infection exposure and the prevalence of depressive symptoms among hospital frontline staff. All of the physicians, nurses, medical assistants, attendants, ambulance drivers, and cleaners at the three government Covid-19 referral hospitals in the Malaysian state of Sabah received a set of online self-administered questionnaires.

These individuals were responsible for treating, taking care and transporting Covid-19 patients. The study's aims, procedures, advantages, and data confidentiality were all thoroughly explained to the participants before they consented and signed the consent form.

The number of respondents required for this study, using single proportion dichotomous sampling, is 470 based on a 57.6% positive response rate for depression symptoms among hospital frontliners during the pandemic Covid-19 at a 95% confidence interval (CI) and a 20% drop-out rate (10,11). Three elements of the pretested questionnaires—sociodemographic factors, perceived individual risk of Covid-19 infection factor, and patient health questionnaires (9 items) (PHQ-9) were accessible in both Malay and English.

Statistical analysis

Statistical Package for Social Sciences (SPSS) version 26 of IBM was used to analyse the data. The collected data were recoded into a categorical set for Fisher's Exact Test and chi-square test. At a 95% confidence level, a p-value of 0.05 was deemed significant. Then, to determine the risk factors for respiratory symptoms, variables with p-values less than 0.25 were chosen for multivariate logistic regression analysis. During analysis, the backward and forward stepwise method was used. The model's fitness was further examined for multicollinearity, interaction, Hosmer-Lemeshow goodness of fit, and ROC curve (receiver operator characteristic). P-values less than 0.05 together with adjusted odds ratios and a 95% confidence interval were used to identify significant data.

We were granted ethical permission by the National Medical Research Registry with the reference number NMRR-21-511-58629. The Medical Research Ethics Committee granted study approval, and the town council granted official approval. In this investigation, there is no conflict of interest. Before any data was collected, individual consents were obtained.

RESULTS

The needed sample size was 470, while the total number of replies received was 460, yielding a response rate of 98.7% (454/460). Six replies were eliminated as a result of exclusion criteria. In 454 responders, the prevalence of depressive symptoms was determined to be 40.2%. The socio-demographic analysis is based on the respondent's age, gender, ethnicity, level of education, marital status, presence of a chronic condition, and work experience. These factors were all included in the questionnaire and frequency tables for each category in SPSS as shown in Table I. A total of 454 adults (272 women and 182 men) participated.

Table I: Sociodemographic characteristics and their association with depressive symptoms among Hospital Frontliners in Kota Kinabalu, Sabah (n=454)

Variables	Depressive Symptoms		χ ²	p-value
	YES	NO		
Age (years)^a			20.745	<0.01*
<40	163 (88.1%)	188 (69.9%)		
≥40	22 (11.9%)	81 (30.1%)		
Gender^a			3.923	0.04*
Female	121 (65.4%)	151 (56.1%)		
Male	64 (34.6%)	118 (43.9%)		
Ethnicity^a			16.038	<0.01*
Non Bumiputera Sabah	73 (39.5%)	62 (23%)		
Bumiputera Sabah	112 (60.5%)	207 (77%)		
Level of Education^a			15.651	0.03*
Lower Education	49 (26.5%)	108 (40.1%)		
Higher Education	136 (73.5%)	161 (59.9%)		
Marital Status^a			26.665	<0.01*
Unmarried	29 (15.7%)	12 (4.5%)		
Married	156 (84.3%)	257 (95.5%)		
Chronic Medical Illness^a			4.414	0.03*
Yes	17 (9.2%)	43 (16%)		
No	168 (90.8%)	226 (84%)		
Types of Job^a			11.928	<0.01*
Non-Medical	51 (27.6%)	117 (43.5%)		
Medical	134 (72.4%)	152 (56.5%)		
DEPRESSIVE SYMPTOMS				
	Yes	No		
	Mean (SD)	Mean (SD)		
Working Experience^a			5.295	<0.01
	6.16 (5.15)	10.38 (7.88)		

^a Analysed using Pearson Chi-Square test- p<0.05

[†] Analysed using an Independent T-test.

^{**} Analysed using Fisher Exact Test

There was a statistically significant association between the age group of the participants and depressive symptoms among hospital frontliners at Kota Kinabalu, Sabah (p<0.01).

Among the participants less than 40 years old were reported to have greater overall depressive symptoms (n=163; 88.1%) than in the age group of more than 40 years old (n=22; 11.9%).

There was a statistically significant association between gender and depressive symptoms among hospital frontliners at Kota Kinabalu, Sabah (p=0.04) . The

prevalence of depressive symptoms was higher for female (n=121; 65.4%) if compared to male (n=64; 34.6%).

There was a statistically significant association between depressive symptoms and ethnicity group among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms was higher among Bumiputera Sabah (n=112; 60.5%) than Non Bumiputera Sabah (n=73; 39.5%) among hospital frontliners at Kota Kinabalu, Sabah (p<0.01).

There was a statistically significant association between depressive symptoms and level of education among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms was higher among Higher Education (n=136; 73.5%) than Lower Education (n=49; 26.5%) among hospital frontliners at Kota Kinabalu, Sabah (p=0.03).

There was a statistically significant association between depressive symptoms and marital status among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms was higher among married respondents (n=95; 51.4%) than unmarried respondents (n=90; 48.6%) among hospital frontliners at Kota Kinabalu, Sabah (p<0.01).

There was statistically significant association between depressive symptoms and chronic medical illness among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms was among respondents who had chronic medical illness (n=17; 9.2%) among hospital frontliners at Kota Kinabalu, Sabah (p=0.03).

There was a statistically significant association between working experience and depressive symptoms among hospital frontliners at Kota Kinabalu, Sabah. The mean years of working experience were 6 years (SD=5.15) that associated with depressive symptoms among hospital frontliners at Kota Kinabalu, Sabah (p=<0.01).

Each of the seven independent factors is covered in further depth below. It was discovered that they all had a statistically significant relationship with depressive symptoms. Age, gender (female), ethnicity (Bumiputera Sabah), marital status, and (with) greater overall depressive symptoms all showed statistically significant associations. Among hospital frontliners in Kota Kinabalu, Sabah, those with a higher level of education, a history of a chronic medical condition, and a longer employment history were shown to be statistically linked with depressive symptoms (p=0.01).

The relation between three independent variables - occupation, close contact with confirmed or suspected Covid-19 patients, and working experience with depressive symptoms was shown to be statistically

significant. There was a statistically significant correlation between depressive symptoms and close interaction with known or suspected Covid-19 patients among hospital frontliners in Kota Kinabalu, Sabah. People with frequent contact with confirmed or suspected Covid-19 patients were likelier to have depressive symptoms (p=0.07). In Kota Kinabalu, Sabah, there was a statistically significant correlation between depressive symptoms and work experience among hospital frontliners.

Table II lists the aspects of risk perception and how they relate to hospital staff. It was discovered that three aspects of risk perception had a statistically significant association with depressive symptoms. There was a statistically significant correlation between depressive symptoms and close contact with proven COVID-19 infection, perception of a very difficult to obtain mask at work, and feeling uncomfortable wearing masks among hospital frontliners in Kota Kinabalu, Sabah. (p<0.01).

Table II: Risk perceptions characteristic associated with depressive symptoms among participants.

Variables	Depressive Symptoms		x ²	p-value
	YES	NO		
Do you feel vulnerable to contracting Covid-19 infection?			0.152	0.697
No	5 (2.7%)	9 (3.3%)		
Yes	180 (97.3%)	260 (96.7%)		
Do you have any close contact with confirmed Covid-19 patients? *			3.872	0.04*
No	64 (34.6%)	199 (74%)		
Yes	121 (65.4%)	70 (26%)		
Do you have any symptoms similar to Covid-19 infection? *			3.618	0.057
No	164 (88.6%)	252 (93.7%)		
Yes	21 (11.4%)	17 (6.3%)		
Do you feel fearful of contracting the Covid-19 infection? *			0.654	0.419
No	9 (4.9%)	18 (6.7%)		
Yes	176 (95.1%)	251 (93.3%)		
Worried house residence at Covid-19 outbreak zone? *			1.073	0.30
No	11 (5.9%)	23 (8.6%)		
Yes	174 (94.1%)	246 (91.4%)		
Is it very difficult to get a mask at the workplace? *			12.182	<0.01*
No	108 (58.4%)	199 (74%)		
Yes	77 (41.6%)	70 (26%)		
Do you feel discomfort wearing a mask for a longer period? *			22.623	<0.01*
No	13 (7%)	65 (24.2%)		
Yes	172 (93%)	204 (75.8%)		
Do u have adequate knowledge about Covid-19 infection?*			0.901	0.34**
No	1 (0.5%)	4 (1.5%)		
Yes	184 (99.5%)	265 (98.5%)		

CONTINUE

Table II: Risk perceptions characteristic associated with depressive symptoms among participants. (CONT.)

Variables	Depressive Symptoms		χ ²	p-value
	YES	NO		
Do you believe you can wear a face mask properly? ^a			0.840	0.36**
No	2 (1.1%)	1 (0.4%)		
Yes	183 (98.9%)	268 (99.6%)		
Do you feel satisfied after attending infection control training provided by the hospital?^a				
Very unsatisfied	17 (9.2%)	15 (5.6%)		
Very satisfied	168 (90.8%)	254 (94.4%)		

^a Analysed using Pearson Chi-Square test.

* Analysed using Independent T-test.

* Valid Chi-square.

** Analysed using Fisher Exact Test

The risk perceptions characteristics and its association among hospital frontliners in Kota Kinabalu, Sabah has been summarized in Table II as shown below. Three risk perception characteristics showed statistically significant association with depressive symptoms and the elaboration of each assumption were written in detail as shown below.

There was a statistically significant association between depressive symptoms and close contact with confirmed COVID-19 infection patients among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms was higher among those who had a perception of close contact with confirmed COVID-19 infection patients (n=121; 65.4%) than no perceptions thought of close contact with confirmed COVID-19 infection patients (n=64; 34.6%) among hospital frontliners at Kota Kinabalu, Sabah (p=0.04).

There was a statistically significant association between depressive symptoms and perception of difficulty in getting masks at the workplace among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms higher among those who had a perception of very difficult to get a mask at the workplace (n=108; 58.4%) than not difficult to get a mask at the workplace (n=77; 41.6%) among hospital frontliners at Kota Kinabalu, Sabah (p<0.01).

There was a statistically significant association between depressive symptoms and feeling discomfort wearing masks among hospital frontliners at Kota Kinabalu, Sabah. The prevalence of depressive symptoms was higher among those who had perception of feeling discomfort wearing a mask (n=172; 93%) than not feeling discomfort wearing mask (n=13; 7%) among hospital frontliners at Kota Kinabalu, Sabah (p<0.01).

DISCUSSION

According to this study, the prevalence of depressive symptoms among hospital frontliners in Kota Kinabalu, Sabah was 40.2% was low compared to the prevalence

of depression symptoms in China was 57.6% (12). In Oman, 368 (32.3%) of healthcare frontline workers with the pandemic Covid-19 were reported to have depression symptoms (13). Among 475 hospital frontliners in Nepal who participated in their mental health impact study, the prevalence of depressive symptoms was 37.5, which was slightly lower than this study (14).

The high prevalence of depressive symptoms among healthcare frontline workers could be attributed to exhaustion from overwork, discrimination among frontline workers, and a lack of contact with friends and family members (15). Furthermore, increased patient numbers and staff shortages, as well as wearing PPE for an extended period, had all contributed to the mental health impact on healthcare frontline workers (16). In Singapore, 470 hospital frontliners (94%) took part in the study and reported 42 (8.9%) depressive symptoms, which was very low when compared to neighbouring countries. It could be because their awareness of the psychological mental health impact and coping methods was very high (17).

According to this study, respondents with a chronic medical illness had no association with depression symptoms, which could be attributed to the small prevalence of those with a chronic medical illness. However, a Nepalese study concluded that those with a chronic medical illness were three times more likely (AOR: 3.40; 95% CI:1.31-8.81) to have mental health issues than those who did not have it (18). Studies in Singapore as well as in India found that females were more likely to experience depression symptoms than males (19). Gender female has repeatedly proved to be a risk factor for developing mental disorders when facing the Covid-19 crisis among healthcare professionals due to worried they will be contagious to their other family members at home, especially children (20,21).

Depressive symptoms were reported by hospital frontliners with adequate PPE (n=129;69.7 %) in this study. This data contradicts a study conducted in Korea, which found that those with inadequate PPE had a high prevalence of depressive symptoms (22). A Malaysian study also discovered that a lack of access to PPE and negative perceptions of healthcare workers are linked to a negative impact on psychological and mental health[(23). A study in Pakistan found that depressive symptoms were more common among healthcare frontline workers who treated suspected or confirmed cases every day (OR = 3.47, 95% CI: 2.4–5.40) and who were currently involved with Covid positive cases or suspects (OR = 2.73, 95% CI: 1.80–4.14) (24).

CONCLUSION

This study found a prevalence of 40.2% of depression symptoms among hospital front-liners in the government hospital in Kota Kinabalu, Sabah, and it was found to

be significantly associated with age, female gender, perception of feeling uncomfortable wearing the mask, difficulty getting the mask, married status, and perception of close contact with confirmed/suspected Covid-19 patients. This study helps provide gives an idea of the mental health impact of the Covid-19 pandemic among hospital frontliners and helps to justify the need for appropriate measures to maintain healthcare system quality and productivity, which can increase morbidity and mortality in the individual, society, and nation.

This study gives a general idea of the mental health impact of the Covid-19 pandemic among hospital frontliners, which helps to justify the need for appropriate measures to limit the increase in morbidity and mortality of the individual, as well as to maintain the healthcare system's quality and productivity in hospitals.

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