Physician's hesitancy in treating COVID-19 patients and its associated occupational risk factors in Indonesia: an online cross-sectional survey

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Abstract

This cross-sectional survey aims to investigate physician hesitancy in treating COVID-19 patients in Indonesia, particularly among those who have already contracted the disease, along with associated occupational risk factors. The study involved distributing a questionnaire to physicians across the country, using contact information from the Indonesian Physician Association database.

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©Copyright: the Author(s),2023 Journal of Public Health in Africa 2023; 14:2558 doi:10.4081/jphia.2023.2558 The results show that out of the 383 participants, 25.6% experienced moderate symptoms of COVID-19, and 2.9% required critical care. The study found that 20.3% of physicians demonstrated hesitancy to treat suspected, probable, or confirmed COVID-19 patients. Interestingly, older physicians and those with less experience in treating COVID-19 patients were found to have a higher hesitancy rate, while specialist trainees and those working in public hospitals demonstrated the lowest hesitancy. These findings highlight the significant hesitancy among physicians who have suffered from COVID-19 and underline the need for management and policymakers to take further action to address this issue. Understanding the effects and benefits of physician hesitancy in treating COVID-19 patients is crucial for ensuring the effective delivery of healthcare services during pandemics like COVID-19.

Introduction

COVID-19 is an infectious disease that attacks the respiratory system, causing symptoms such as fever, cough, and shortness of breath.^{1,2} The World Health Organization declared COVID-19 a global pandemic due to its rapid spread, and Indonesia quickly became one of the countries with a high incidence and mortality rate. Frontline healthcare workers are particularly at risk of contracting the disease, especially as they come into direct contact with asymptomatic and symptomatic COVID-19 patients. This risk is exacerbated by a lack of preparedness during the pandemic, such as limited personal protective equipment, diagnostic test tools, and information on infection management. As a result, healthcare workers are also vulnerable to psychosocial stress, excessive workload, and fatigue.³⁻⁵

Contracting COVID-19 can be a traumatic experience that leaves survivors with physical and psychological scars. The severity of symptoms at the beginning of the pandemic, combined with continuous isolation, has made the disease particularly challenging. Furthermore, some patients may experience prolonged symptoms, known as long COVID-19, such as prolonged anosmia, fatigue, and shortness of breath, which can last for months after a negative COVID-19 result. This can lead to psychological problems such as anxiety and depression. Even doctors who have survived COVID-19 are not immune to these issues and may experience hesitancy when treating COVID-19 patients.⁶

Despite their own traumatic experiences, doctors are still needed on the frontlines of the fight against the pandemic.⁷ Therefore, it is crucial to assess their hesitancy in treating COVID-19 patients, particularly those who have survived the disease. This study aims to investigate the presence of hesitancy in treating COVID-19 patients among physicians who have survived COVID-19 infections, as well as the individual and occupational risk factors associated with this hesitancy. The results of this study can be used to prepare doctors to return to duty after surviving COVID-19 and to develop intervention strategies to support their return. Furthermore, the findings may also be used to prepare physicians for future pandemics. Understanding the effects and benefits of addressing physicians' hesitancy in treating COVID-19 patients is of the utmost importance to ensure effective healthcare delivery during a pandemic.

Materials and Methods

Study design

This cross-sectional survey aimed to explore the hesitancy of physicians to treat COVID-19 patients after experiencing at least

one episode of COVID-19. This study also investigated individual and occupational risk factors (*e.g.*, age, gender, marital status, type of health facility, working hours, experience in treating COVID-19 patients) that may lead to hesitancy. This research was part of a core study titled *The Behavioral Adaptation Survey of Doctors After Being a COVID-19 Survivor in Indonesia*, which sought to identify changes in the behavior of doctors following COVID-19 infection. The study was conducted by distributing online survey forms through social media between October and December 2020.

Questionnaire design

An expert panel comprising specialists and consultants from internal medicine, occupational medicine, and community medicine developed the questionnaire used in this study. Before its distribution, the questionnaire was pretested and revised accordingly. Hesitancy was assessed by asking participants "after being cured of COVID-19, are you willing to treat suspected, probable,

Table 1. Characteristics of physicians who survived COVID-19 (n=383).

Characteristics	n	(%)
		(70)
Physician type General Practitioners Specialist Specialist trainee	190 120 73	(49.6) (31.3) (19.1)
Gender Male Female	166 217	(43.3) (56.7)
Marriage status Married Divorced Never married	286 12 85	(74.7) (3.1) (22.2)
Age <40 years 40-59 years > 60 years	249 116 18	(65.0) (30.3) (4.7)
Type of health facility private primary clinic public health care private hospital public hospital	28 57 140 158	(7.3) (14.9) (36.6) (41.3)
Location Sumatera Java excluding Jakarta Jakarta Kalimantan Sulawesi Papua, Bali and Nusa Tenggara	59 101 176 18 25 4	(15.4) (26.4) (46.0) (4.7) (6.5) (1.0)
Total working hours per week < 40 hours > 40 hours	225 158	(58.7) (41.3)
Are you the main provider in your family?	178	(46.5)
Subject's work in COVID-19 referral hospital	240	(62.7)
COVID-19 occupational risk exposure level in the workplace Low Middle High Very high	18 162 158 45	(4.7) (42.3) (41.3) (11.7)
Duty in office/administration besides health services Duty in emergency ward Duty in outpatient ward Duty in isolation ward	157 159 91 115	(41.0) (41.5) (23.8) (30.0)
Duty in high critical unit (HCU/ICU/ICCU/PICU/NICU)?	122	(31.9)
Involve in treating suspected, probable, or confirmed COVID-19 patient before infected?	267	(69.7)

HCU, high care unit; ICU, intensive care unit; ICU, intensive coronary care unit; PICU, pediatric intensive care unit; NICU, neonatal intensive care unit.

or confirmed COVID-19 patients?". The study also assessed individual risk factors, including physician type (GP, specialist, or specialist trainee), age, marital status, and gender. The medical practice locations included Java, Sumatra, Kalimantan, and Jakarta, the capital city, which was the primary *locus* of COVID-19 in Indonesia.

This study also identified occupational risk factors, such as the type of health facility where the physician worked (hospital or primary care clinic, private or public, COVID-19 referral hospital or non-referral), working hours (above or below 40 hours per week), responsibility in clinical services (emergency, outpatient, isolation, and high critical unit), and managerial duty. Physicians subjectively determined the level of COVID-19 occupational risk exposure in their workplace, ranging from low to very high. This study also evaluated disease morbidity characteristics, including symptoms (asymptomatic, mild, moderate, or critical), illness duration, treatment in the hospital or self-isolation, and whether other family members were infected with COVID-19.

Participants

The target population for this study is represented by doctors who have been infected with COVID-19 in Indonesia. Inclusion criteria were: i) a registered physician in the Indonesian Doctors Association database; ii) actively conducting medical practice (handling patients directly); iii) having a history of confirmed COVID-19 infection based on a nasopharyngeal or oropharynx swab RT-PCR examination and having been declared COVID-19 negative before participating in this study. All participants are asked to give their consent and fill out the survey form from start to finish.

Data collection

The study utilized non-probability sampling using the consecutive sampling method. All subjects who fulfilled the inclusion criteria accepted the invitation, and gave their consent to be included in the study. An invitation to join the study was distributed *via* social media groups containing members of associations of doctors or specialists. Data collection was carried out for three months, from October 2020 to December 2020. The sample size was calculated using the estimated 50% proportion of doctors who are proven to have been infected with COVID-19 and an absolute error of 5%, resulting in a minimum sample size of 380 subjects.

Statistical analysis

Data processing utilizes SPSS (Statistical Product for Social Science) version 20.0 program. In this study, categorical data are presented in frequency distribution and 95% confidence intervals. The proportion of hesitancy was presented with data that includes and excludes specialist trainees (since their status as trainees and work obligation to be reassigned to a hospital might interfere with the result). Bivariate analysis was done using Chi-square and Fisher analysis to determine the relationship between individual risk factors, disease severity, occupational risk factors, and physician hesitancy to treat COVID-19 patients after COVID-19 infection. Binary logistic regression was done using significant factors found in bivariate analysis. Results were then presented using the adjusted odds ratio (aOR), 95% confidence interval, and R square to show the relations of risk factors to variation in outcome.

Results

Among the 383 participants included in this study, 49% were general practitioners, 31% were specialists, and 19% were specialist trainees. Most participants worked in a hospital (77%), especially in a COVID-19 referral hospital (62%). Large numbers of participants reside in Jakarta (46%), Java (26%), and Sumatera (15%), while small portions live in Kalimantan, Sulawesi, and others. 41% of the participants work more than 40 hours per week. Most subjects were female and less than 40 years old. Only 4% of subjects work in low-risk COVID-19 exposure areas, while 11% and 41% work in very high- and high-risk health facilities (Table 1). Most COVID-19 survivors experienced mild (47%) and moderate (25%) symptoms, with 3% suffering from critical illness. The

COVID-19 morbidity characteristics	n	(%)
Disease symptoms Asymptomatic Mild Moderate Critical	93 181 98 11	(24.3) (47.3) (25.6) (2.9)
COVID-19 illness duration 1-7 days 8-14 days > 14 days	182 107 94	(47.5) (27.9) (24.5)
Type of treatment after COVID-19 diagnosis Self-isolation In-ward in hospital	211 172	(55.1) (44.9)
No. of family members with positive COVID-19 (including subject) None 1 member More than 1 member	240 81 62	(62.7) (21.1) (16.2)
Suspected of source of infection Patient treated in health facility Other health worker in health facility Family Other non health-worker in workplace During transportation Unknown	183 90 43 18 7 40	$(48.0) \\ (23.6) \\ (11.3) \\ (4.7) \\ (1.8) \\ (10.5)$

source of COVID-19 infection comes from either a patient they treated (48%) or other health workers (23%). More than 50% of subjects had >7 days of illness duration and were self-isolated. Almost 70% of physicians treating COVID-19 patients are either suspected, probable, or confirmed to have COVID-19 (Table 2).

Physicians' hesitancy to treat COVID-19 patients was divided into two groups: including and excluding specialist trainees. When a specialist trainee was included, the hesitancy was 18%. When the trainee is excluded, hesitancy slightly increases to 20.3%. (Table 3). All the risk factors associated with hesitancy to treat COVID-19 patients are presented in Table 4. In bivariate analysis, significant risk factors associated with hesitancy included marital status and age over 40. In terms of occupational risk, hesitancy to treat COVID-19 patients is seen in general practitioners, specialists, and physicians who have never treated COVID-19 patients. In terms of the workplace, participants who work in a private primary clinic, non-COVID-19 referral hospitals, and lower COVID-19 occupational risk were more likely to have hesitancy in treating COVID-19 patients after they have survived the disease. In multivariate analysis, the most dominant factor of risk was age over 60 years (aOR 9.2; CI 95% 2.8-30.1) and inexperience in treating COVID-19 patients (aOR 5.8; CI 95% 3.1-10.9). Binary logistic regression was performed with an R-square of 31.2%. The detailed bivariate and multivariate results can be seen in Table 4.

Table 3. Physicians' hesitancy to treat COVID-19 patients after surviving COVID-19 infection; excluding and including specialist trainees.

After you are declared cured, are you willing to treat COVID-19 patients?	Without specialist trainee (n=310) n % (CI 95%)			ysicians including alist trainee 33) % (CI 95%)
No	63	20.3 (16.2-25.1)	69	18.0 (14.5-22.2)
Yes	247	79.7 (74.8-83.8)	314	82.0 (77.8-88.5)

CI, confidence interval.

Table 4. Identified risk factors associated with hesitancy to treat COVID-19 patients.

Risk factors	rs Hes Yes					VID-19 No	р	OR (CI 95%)	р	aOR (CI 95%)
	n	%	n	%						
Physician type										
General practitioners	40	(21.1)	150	(78.9)	Reference	1				
Specialist	23	(19.2)	97	(80.8)	0.772	0.8 (0.5-1.6)				
Specialist trainee	6	(8.2)	67	(91.8)	0.017	0.3 (0.1-0.8)				
Type of health facility				01						
private primary clinic	13	(46.4)	15	(53.6)	< 0.001	11.9 (4.5-31.9)				
Public health care	13	(22.8)	44	(77.2)		4.1 (1.7-9.9)				
Private hospital	23	(16.4)	117	(83.6)		2.7 (1.2-5.9)				
Public hospital	20	(12.7)	138	(87.3)		I				
Total working hours per week										
< 40 hours	50	(22.2)	175	(77.8)	0.011	2.1 (1.2-3.7)				
> 40 hours	19	(12.0)	139	(88.0)		1				
Marriage status										
Married	60	(21.0)	226	(79.0)	0.027	2.9 (1.3-6.7)				
Divorced	2	(16.7)	10	(83.3)		2.2 (0.4-12.2)				
Unmarried	7	(8.2)	78	(91.8)		1				
Age										
<40 years	31	(12.4)	218	(87.6)	< 0.001	1	0.001	1		
40-59 years	28	(24.1)	88	(75.9)		2.2 (1.3-3.9)		1.6 (0.8-3.1)		
> 60 years	10	(55.6)	8	(44.4)		8.8 (3.2-23.9)		9.2 (2.8-30.1)		
No. of family members with po	ositive CO	VID-19 (inclu	ding subject)							
None	35	(14.6)	205	(85.4)	0.020	1				
1 member	23	(28.4)	58	(71.6)		2.3 (1.3-4.2)				
More than 1 member	11	(17.7)	51	(82.3)		1.2 (0.6-2.6)				
Involve in treating suspected,			l COVID-19 pa		ected?					
No	47	(40.5)	69	(59.5)	< 0.001	7.6 (4.3-13.4)	< 0.001	5.8 (3.1-10.9)		
Yes	22	(8.2)	245	(91.8)		1		1		
Subject's workplace is in COV	ID-19 refe	erral hospital								
No	39	(27.3)	104	(72.7)	< 0.001	2.6 (1.5-4.5)				
Yes	30	(12.5)	210	(87.5)		1				
COVID-19 occupational risk ex	xposure le									
Low	9	(50.0)	9	(50.0)	< 0.001	14 (3.1-62.2)				
Middle	44	(27.2)	118	(72.8)		5.2 (1.5-17.7)				
High	13	(8.2)	145	(91.8)		1.2 (0.3-4.6)				
Very high	3	(6.7)	42	(93.3)		1				

OR, odds ratio; aOR, adjusted odds ratio; CI, confidence interval.

Discussion

The study's novelty lies in gathering data from Indonesian physicians who had survived COVID-19. Even though the study utilizes an online survey, it still manages to collect data on survivors' locations, types of health facilities where they work (hospitals or primary health centers), age, gender, and location of clinical service (emergency, outpatient, or isolation). Most COVID-19 physician survivors are asymptomatic and have mild symptoms with less than 14 days of treatment, which are in line with the characteristics of COVID-19 survivors among health workers or doctors in developing countries like Indonesia.8 A higher proportion of survivors of severe symptoms was found in countries with more advanced health and treatment systems.9 In our study, the number of doctors who have survived COVID-19 and required treatment at the hospital is nearly equal to those who only needed self-isolation (45:55). Most infection sources were transmitted from patients and other health workers, as per similar studies in health workers.^{10,11}

Hesitancy to re-treat COVID-19 patients may indicate a problem in doctors' productivity when returning to work after being infected. The physician's hesitancy rate of up to 20% shows that COVID-19 impacts the doctor's thoughts and perspective when they are returning to work. A doctor usually has the ability and responsibility to treat all patients with any condition; hesitancy will lead doctors to presenteeism, where doctors can return to work but underperform because of reluctance or refusal to provide services under certain conditions.¹² A possible consequence of refusal is an increase in the referral of COVID-19 patients, resulting in an accumulation of patients to units and doctors who are still (either by choice or by default) conducting COVID-19 services, thereby increasing the risk of transmission to health workers at that particular institution.

Bivariate analysis for individual risk factors found that hesitancy to treat COVID-19 patients was more common in married doctors, possibly because of the impact on their families. This condition is especially true if the doctor is the backbone of the family economy, where they strongly prefer to avoid the risk of treating COVID-19 patients (isolation or death), all of which will significantly impact the family's financial condition. Hesitancy was also found in physicians older than 60 years, associated with the potential for more comorbidities with increasing age.¹³

Multivariate analysis found that age was the most dominant factor causing hesitancy to treat COVID-19 patients directly. One potential solution is technical training in providing telemedicine health consultations to older expert doctors to provide safe remote services from home, although this is limited to non-surgical/surgical consultation services.^{14,15} With the current rise in telemedicine platforms and applications in Indonesia, it could be a practical solution to reduce hesitancy among older physicians.¹⁶

Bivariate analysis for occupational risk factors found that hesitancy was more common in general practitioners (21%) and those working in primary care (46%), which may be related to the low readiness of personal protective equipment facilities in smaller clinics; this is in line with the fact that hesitancy is also more commonly found in workplaces where the risk of COVID-19 transmission is low, resulting in somewhat lower real experience and knowledge of COVID-19 among its physicians.

The possibility of limited COVID-19 skills and knowledge among physicians would also need to be considered because hesitancy is much higher for doctors who were not previously involved in treating COVID-19 patients, which is the most dominant factor based on multivariate analysis. Tackling this problem can be done *via* lectures and online classes explicitly catered to primary healthcare clinicians; this is especially important considering the increasingly unspecific or asymptomatic symptoms of COVID-19 with increasing variants of the COVID-19 virus.¹⁷

The limitation of this study is that although the distribution of the location of the subject area is widespread with a large sample size, it is carried out with a non-probability sampling design, resulting in an absolute error as wide as 10%. Although steps have been taken to ensure reliability, the assessment of variables was done based on an online survey without direct confirmation from the respondent.

Although the number of COVID-19 cases seems to have decreased, the disease is still prevalent, and patients with post-COVID-19 symptoms require medical attention. The global COVID-19 pandemic has highlighted the need for healthcare professionals to be prepared for future pandemics. Physician hesitancy in treating COVID-19 patients can negatively impact their ability to treat other infectious diseases, emphasizing the importance of identifying and addressing the root causes of this hesitancy. Doctors who have survived COVID-19 and are hesitant to treat COVID-19 patients may benefit from psychological support to restore their confidence. Hospital management should consider implementing policies that reduce the risk of COVID-19 transmission for physicians who have survived COVID-19, such as assigning them to areas with lower transmission rates or reducing their service hours. Understanding and addressing physician hesitancy is crucial for the successful management of COVID-19 patients and for the preparation for future pandemics.^{18,19}

Conclusions

Although 20% of physicians exhibit hesitancy when treating COVID-19 patients, they still play a crucial role in combating the ongoing pandemic and any potential future pandemics. Therefore, healthcare management must support physicians and provide them with the necessary resources to prepare for and handle COVID-19 patients. It is also vital to address their emotional well-being, particularly after the COVID-19 infection. Future research should consider involving psychology experts to manage this hesitancy and ensure that physicians are adequately prepared to fulfill their critical roles in healthcare management worldwide.

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