Determining Anxiety Disorder in Health Workers who have received COVID-19 Vaccines: A Cross-Sectional Study at Public Health Centers in Tegal District, Indonesia

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Abstract

BACKGROUND: The COVID-19 pandemic has a major impact on health workers' mental health. Health workers in Indonesia have received COVID-19 vaccines to get protection against COVID-19 infection and reduce anxiety while on duty.

AIM: This study aims to determine anxiety disorder in health workers at public health centers who have received COVID-19 vaccines.

METHODS: A cross-sectional study was conducted at six public health centers in Tegal district, Indonesia. Data were collected using questionnaire that given to health workers who had vaccinated COVID-19. Anxiety disorder was determined with generalized anxiety disorder-7 (GAD-7) questionnaire.

RESULTS: There were 137 samples who participated in this study, consisted of 83.2% of women and 16.8% of men. The majority of the samples were 30−39 years old (41.6%), married (93.4%), and midwife (44.5%). There were 6.6% of samples had mild anxiety and others were normal (93.4%).

CONCLUSION: COVID-19 vaccination program for health workers can reduce anxiety when providing health services. However, assistance is still needed for health workers who have mild anxiety disorder to prevent prolonged symptoms and more severe mental health condition.

Introduction

The COVID-19 infection was first discovered in Wuhan, China, in December 2019 and declared by the WHO as a pandemic in March 2020 [1]. The pandemic has changed people's lives and made a huge impact on mental health. The number of people whose experienced mental disorders due to COVID-19 was greater than the number of those who were affected by the infection [2]. It was reported that many health workers had anxiety and depression during COVID-19 pandemic [3].

There were several factors associated with the high incidence of mental disorders in health workers related to COVID-19. The increase number of COVID-19 with high death rate, limited health resources, and increase workload made stressful situation. Limited knowledge about COVID-19 and infodemic caused confusion in information, panic, and fear among society, including health workers. There was also society negative stigma toward health workers related to COVID-19. They were considered to transmit diseases so that they were socially shunned, ostracized in society, and even lose friends. They also felt guilty to their families because they could transmit COVID-19. During COVID-19 pandemic, health workers are really experiencing a dilemma between professional obligations, fear of being infected, and infecting family and social relationships [3], [4], [5], [6].

The previous study found that anxiety level experienced by health workers who work in hospital, especially COVID-19 referral hospital, was higher than health workers in non-hospital because they had direct contact with COVID-19 patients [4]. However, health workers at public health centers in Indonesia have their own challenges when on duty in this COVID-19 pandemic. They not only provide services at polyclinic but also active in preventive, promotive, and case-finding activities for COVID-19 through active and passive tracing [7]. In contrast to health workers at COVID-19 referral hospital, health workers at public health center often meet with many people whose COVID-19 status is unknown. Many people also do not

comply with COVID-19 health protocols. These factors can also contribute to the incidence of anxiety disorders in health workers at public health centers in Indonesia.

The COVID-19 vaccination is one of the solutions to control COVID-19 pandemic through herd immunity [8]. Indonesia began to carry out the first stage of COVID-19 vaccination program in mid-January 2021 and health workers were the first priority to get it. Every health worker in Indonesia must participate in the COVID-19 vaccination program unless they have medical contraindication. Through vaccination, they were expected to get more protection from COVID-19 transmission and might reduce anxiety disorders [9]. However, research on this subject is very limited, especially in Indonesia. This study aims to determine anxiety disorder in health workers at public health centers who have received COVID-19 vaccines.

Methods

This research is an observational study with cross-sectional approach. It was conducted in six sub-districts of COVID-19 red zone in Tegal Regency, Indonesia. The sample was determined using cluster random sampling technique by randomly selecting one public health center (Puskesmas) to represent each sub-district. The inclusion criteria were health workers at public health center who were directly involved in providing services to patients (such as doctor, dentist, nurse, midwife, pharmacist, and laboratory staff) and have received at least one dose of COVID-19 vaccination. The samples who met the criteria and were willing to participate in this study would be given informed consent and signed a letter of consent. All data obtained are confidential and the sample has right to withdraw at any time.

Data collection was carried out from March to May 2021, through a validated self-administered questionnaire. It contained questions regarding the demographic characteristics of the respondents, COVID-19 comorbidities, anxiety disorder, and subjective feeling after getting COVID-19 vaccine. Anxiety disorder was explored using validated Indonesian version of generalized anxiety disorder-7 (GAD-7) questionnaire that consisted of seven questions with 4-point Likert scale. The total score was categorized as normal (0−4), mild anxiety (5−9), moderate anxiety (10−14), and severe anxiety (15−21) [4].

The data were analyzed using the SPSS 26 program. The difference in mean anxiety scores was analyzed using Mann–Whitney and Kruskal–Wallis test with a significance value of 0.05.
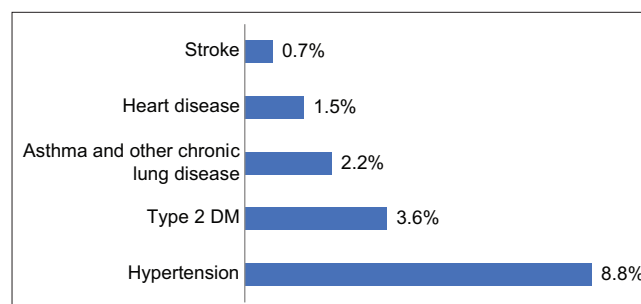
Results

There were 137 samples who participated in this study, consist of 114 (83.2%) females and 23 (16.8%) males. Based on age, the youngest sample was 23 years old, the oldest was 60 years old, mean age of 38.59 (±8.127), and the majority were 30–39 years old (41.6%). Most of them were married (93.4%) and worked as midwife (44.5%) (Table 1).

Table 1: Demographic characteristics and anxiety disorder of samples (n = 137)

Characteristics	Frequency, n (%)
Gender	
Female	114 (83.2)
Male	23 (16.8)
Age (years)	
< 30	17 (12.4)
30–39	57 (41.6)
40–49	50 (36.5)
≥ 50	13 (9.5)
Marital status	
Unmarried	9 (6.6)
Married	128 (93.4)
Occupation	
Doctor+dentist	17 (12.4)
Nurse+dental nurse	40 (29.2)
Midwife	61 (44.5)
Pharmacist	13 (9.5)
Laboratory staff	6 (4.4)
COVID-19 comorbidity	
Yes	18 (13.1)
No	119 (86.9)
Smoking	
Yes	7 (5.1)
No	130 (94.9)
Anxiety disorder	
Normal	128 (93.4)
Mild anxiety	9 (6.6)
Moderate anxiety	0
Severe anxiety	0

About 8.8% of samples had hypertension as comorbid and 5.1% were smoker. Based on the GAD-7 questionnaire, most of the samples did not have anxiety disorder (93.4%) and only 6.6% with mild anxiety. There was no sample with moderate and severe anxiety (Table 1 and Figure 1).

Figure 1: COVID-19 comorbidities of the sample

The results of this study showed that after receiving COVID-19 vaccine, most of samples subjectively felt less anxious at work (86.9%), more protected from COVID-19 infection (85.4%), and more confident in providing health service (93.4%) (Table 2).

Table 2: Subjective feelings of the sample after getting the COVID-19 vaccine (n = 137)

Subjective Feelings	No, n (%)	Yes, n (%)
I feel less anxious at work	18 (13.1)	119 (86.9)
I feel more protected from COVID-19 infection	20 (14.6)	117 (85.4)
I feel more confident in providing health services	9 (6.6)	128 (93.4)

This study found that there was no significant difference in mean anxiety scores by gender, age, marital status, occupation, and COVID-19 comorbidity. However, laboratory staff group had higher mean anxiety score (2.50 ± 2.429) compared to other occupations. There were one-third of them who had mild anxiety. We also found that there was no doctor and dentist who had anxiety disorder. Most of nurses, midwives, and pharmacists did not had anxiety disorder (Table 3).

Table 3: The anxiety disorder based on variables

Variable	Anxiety score, mean ± SD	Anxiety disorder		p
		Normal, n (%)	Mild anxiety, n (%)	
Gender				
Female	0.71 ± 1.697	108 (94.7)	6 (5.3)	0.035[a]
Male	1.39 ± 1.948	20 (87)	3 (13)	
Age (years)				
< 30	1.24 ± 1.921	15 (88.2)	2 (11.8)	0.398[b]
30–39	0.86 ± 1.747	53 (93)	4 (7)	
40–49	0.70 ± 1.776	48 (96)	2 (4)	
≥ 50	0.62 ± 1.557	12 (92.3)	1 (7.7)	
Marital status				
Unmarried	0.89 ± 1.537	9 (100)	0	0.669[a]
Married	0.82 ± 1.772	119 (93)	9 (7)	
Occupation				
Doctor+dentist	0.88 ± 1.536	17 (100)	0	0.090[b]
Nurse+dental nurse	0.72 ± 1.840	37 (92.5)	3 (7.5)	
Midwife	0.62 ± 1.462	59 (96.7)	2 (3.3)	
Pharmacist	1.23 ± 2.386	11 (84.6)	2 (15.4)	
Laboratory staff	2.50 ± 2.429	4 (66.7)	2 (33.3)	
COVID-19 comorbidity				
Yes	0.50 ± 1.465	17 (94.4)	1 (5.6)	0.163[a]
No	0.87 ± 1.792	111 (93.3)	8 (6.7)	

[a]Mann–Whitney test, [b]Kruskal–Wallis test. SD: Standard deviation.

Discussion

Anxiety disorder is the most common mental disorder, characterized by excessive fear and mood or emotional disturbances [10]. The previous studies found that anxiety disorders in health workers before COVID-19 vaccination program were high [3], [4], [11], [12], [13], [14]. Research conducted by Sujadi *et al.* showed that health workers in Indonesia had mild anxiety (27.74%), moderate anxiety (31.14%), and severe anxiety (7.78%). There were 32.98% of doctors who had mild anxiety disorder, 31.91% moderate anxiety, and 2.66% severe anxiety. There were 23.3% of other health workers (midwives, pharmacists, and biomedical engineering workers) who had mild anxiety and 33.01% moderate anxiety. There were 25.24% of nurses who had mild anxiety, 35.24% moderate anxiety, and 10.48% severe anxiety [4].

The present study found that after COVID-19 vaccination, most of health workers did not have anxiety disorder. Based on occupation, none of the doctors and dentist had anxiety disorder. There were only 7.5% nurses, 3.3% midwives, and 15.4% pharmacists who had mild anxiety. When compared to previous data, the results of this study indicate that COVID-19 vaccination can reduce anxiety disorder in health workers. The COVID-19 vaccination not only provides a protective effect against COVID-19 infection but also mental health of health workers. These are similar with a research in Japan that COVID-19 vaccination provides benefits in reducing the risk of mental health problems in hospital workers [15].

In our study, health workers subjectively felt more protected from COVID-19 infection (85.4%), less anxious at work (86.9%) and more confident in providing health services (93.4%) after receiving vaccination. These results are in accordance with the study among dentists in Turkey that COVID-19 vaccination reduced fear and anxiety. After getting vaccinated, dentists became more confident in providing health services [16].

The COVID-19 vaccination reduced anxiety level in all age groups, gender, marital status, occupation, and COVID-19 comorbidities. However, laboratory staff had a higher mean anxiety score than the others and one-third experienced mild anxiety despite being vaccinated. It might relate to the risks of direct contact with infectious specimens and high workload [17]. This result suggests that the laboratory staff group needs more attention about their mental health.

Study Limitation

This study only measured anxiety disorders after COVID-19 vaccination. There are no data on anxiety disorders before vaccination. This study also has limitation in the number of samples.

Conclusion

The results of this study found that anxiety disorder in health workers who had received COVID-19 vaccination was low, indicating that the vaccination program was successful in providing psychological support for health workers. However, mental health screening and assistance to health workers, especially laboratory staff, are still needed to prevent prolonged symptoms and more severe mental health condition.

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