

# Factors related to Post Traumatic Stress Symptoms in Indonesian adults during quarantine of the COVID-19 pandemic

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## Abstract

**Background:** COVID-19 is an unprecedented public health event. It started from Wuhan, China, in late December of 2019 and later spread worldwide. During the pandemic, negative impacts on mental health were found in all groups, including adults of their productive age.

**Objective:** This study aimed to search for factors related to Post Traumatic Stress Symptoms (PTSS) during the quarantine due to the COVID-19 pandemic in Indonesia, specifically about the demographic background of respondents and its relation to PTSS.

**Methods:** This study employed a cross-sectional design involving 257 Indonesian adults aged 26-67 years from 26 out of 34 provinces in Indonesia. The questionnaire used in this study consists of demographic questions and an Indonesian version of the Impact of Event Scale-Revised (IESR). The questionnaire was distributed through a link attached to the social media platform from 17 September to 5 October 2020. Data were analyzed using t-test, one-way ANOVA, and multiple linear regression using SPSS 25.0.

**Results:** The data analysis showed a significant relationship between age and mean IES-R score during quarantine time in Indonesia (p-value 0.001). Other demographic factors such as gender, education level, marital status, work from home, income during the pandemic, and pandemic effects to income showed no significant relation to the IES-R score of the respondents. Adults aged 25-44 years old tend to have higher IES-R scores than those aged 45-64 and 65+ years old.

**Conclusion:** Age was related to the IES-R score, while the other five independent variables included in the linear regression analysis were found to be confounders in this study.

Keywords: PTSS; quarantine; COVID-19; demographic factors; IES-R score

## Background

COVID-19 is an unprecedented public health event. It started from Wuhan, China, in late December 2019

and later spread worldwide (Tosepu, Effendy, Lestari, et al., 2020; Y.-C. Wu, Chen, & Chan, 2020). The COVID19 has infected 216 countries across the globe, with 40.251.950 confirmed cases per 20

October 2020 (Tosepu, Effendy, & Ahmad, 2020; World Health Organization, 2020). This infectious disease can cause various symptoms, starting from respiratory and non-respiratory symptoms (Vetter et al., 2020).

In Indonesia, physical distancing has been implemented for some time, starting from 10 April 2020 in the capital city of Jakarta, followed by other provinces in Indonesia (Pemerintah Provinsi DKI Jakarta, 2020). As a result, per 20 October 2020, a total of 368.842 positive cases, 293.653 people recovered, and 12.734 death cases were discovered (Covid19.go.id, 2020). As a result of physical distancing, most activities outside of the house have become very limited, and it triggers fear and anxiety, which could impact people's mental health (World Health Organization, 2020). In addition, several factors may affect people's mental health during this pandemic, such as being too worried that they or closest relatives around them could be infected with the COVID-19, loss of jobs, and loss of income, resulting in a financial crisis. In addition, lack of food resources, unreliable sources of information, social distancing, which might lead to loneliness and isolation, the closing of public places, indefinite time of home quarantine, and the difficulty to seek medical care during the pandemic could impact persons' mental health during this health-related disaster time. These could negatively impact an individual's mental health condition and, in more severe forms, could lead to depression, anxiety, stress symptoms, and even disorders (McAlonan et al., 2007; Pfefferbaum & North, 2020).

These negative impacts on mental health during the pandemic were found in all groups, including adults of their productive age. A mental disorder that could occur during this time was *Post Traumatic Stress Disorder* (PTSD). PTSD is a chronic mental disorder experienced by people exposed to a significant traumatic event, including health-related disasters (Bisson, Cosgrove, Lewis, & Roberts, 2015). PTSD has been reported during previous pandemic events such as SARS, H1N1, and the MERS pandemic (Imaningsih, Asriati, & Tosepu, 2021; Lee, Kang, Cho, Kim, & Park, 2018; K. K. Wu, Chan, & Ma, 2005; Xu et al., 2011).

The mental health status during the COVID-19 pandemic has been studied in China, but there is little to no data on the Indonesian population. Thus,

this study aimed to assess PTSD amongst Indonesian adults during quarantine due to the pandemic and its factors. In addition, this study can also be used to help prevent PTSD among adults if another total physical distancing is conducted again in the future. While PTSD is a clinical diagnosis and thus cannot be diagnosed using a questionnaire, it is common to conduct a population-based study using a psychometric instrument to evaluate Post-Traumatic Stress Symptoms (PTSS).

## Methods

### Study Design

This study employed a cross-sectional study design.

### Sample/ Participants

This study used convenience sampling to obtain the samples using online questionnaires that spread using social networking networks. The inclusion criteria were Indonesian adults living within Indonesia, fluent in Indonesian, and were doing physical distancing. According to provisional guidelines on Standard International Age Classifications, being an adult means being above 15 years old. Age is divided to 6 broad population groups, which are aged <1 (infancy), 1-14 (youth), 15-24 (young adulthood), 25-44 (middle adulthood), 45-64 (older adulthood) and 65+ years old (average retirement age) (United Nations, 1982). The participants who were health professionals and those who did not complete the survey were excluded.

### Instrument

Data were taken using the IES-R questionnaire, translated into Indonesian to measure PTSD. The Indonesian version of the IES-R questionnaire was validated by a previous study (Wijovi et al., 2021). in 2021 with a Cronbach alpha of 0.90 for the test and 0.92 for a retest. The test-retest reliability results were 0.75 (95% Confidence Interval); therefore, it is reliable to be used in this study (Wijovi et al., 2021). IES-R consists of 22 questions with minimal scoring of 0 and maximum scoring of 4 in each number. The results ranged from 0 to 88, and the scoring system uses a 5 Likert score. It is significant if it is scored 24 points or more, which means a clinical concern of partial PTSD. A score of 33 points or more is the best cut-off of probable PTSD. A score of 37 points or more means that PTSD is high enough to cause

suppression of the immune system (Horowitz, Wilner, & Alvarez, 1979).

### Data Collection

Data were collected online using social networking services from 21 April to 10 May 2020 using the IES-R questionnaire to measure PTSD during health-related disasters. The questionnaire includes an electronic statement of informed consent, demographic data, and the Indonesian version of the IES-R questionnaire.

### Data Analysis

Collected data were analyzed using SPSS 25.0 using ANOVA, t-test, and multiple linear regression to determine factors related to PTSS in Indonesian adults during the COVID-19 quarantine.

### Ethical Consideration

Ethical approval was given by the Review Committee of Faculty of Medicine Pelita Harapan University (141/K-LKJ/ETIK/IV/2020). The authors ensured that each author in this study has signed an appropriate informed consent prior to data collection process.

## Results

A total of 257 Indonesian adults (147 men (57.2%), 110 women (42.8%)) aged 26 to 67 years old were included in this study (Mean age: 38.91±11.094). In this study, the researchers only focused on adults in Indonesia, and this study was dominated by respondents who are 25-44 years old (N = 171, 66.5%), have bachelor's degree (N = 130, 50.6%), married (N = 150, 58.4%), and were working partly from home (N: 101, 39.3%). During the pandemic, most of the respondents got less than Rp 5.000.000 (N = 99, 38.5), and they admitted that their salary was reduced during working from home due to physical distancing. The complete demography of the respondents can be seen in **Table 1**.

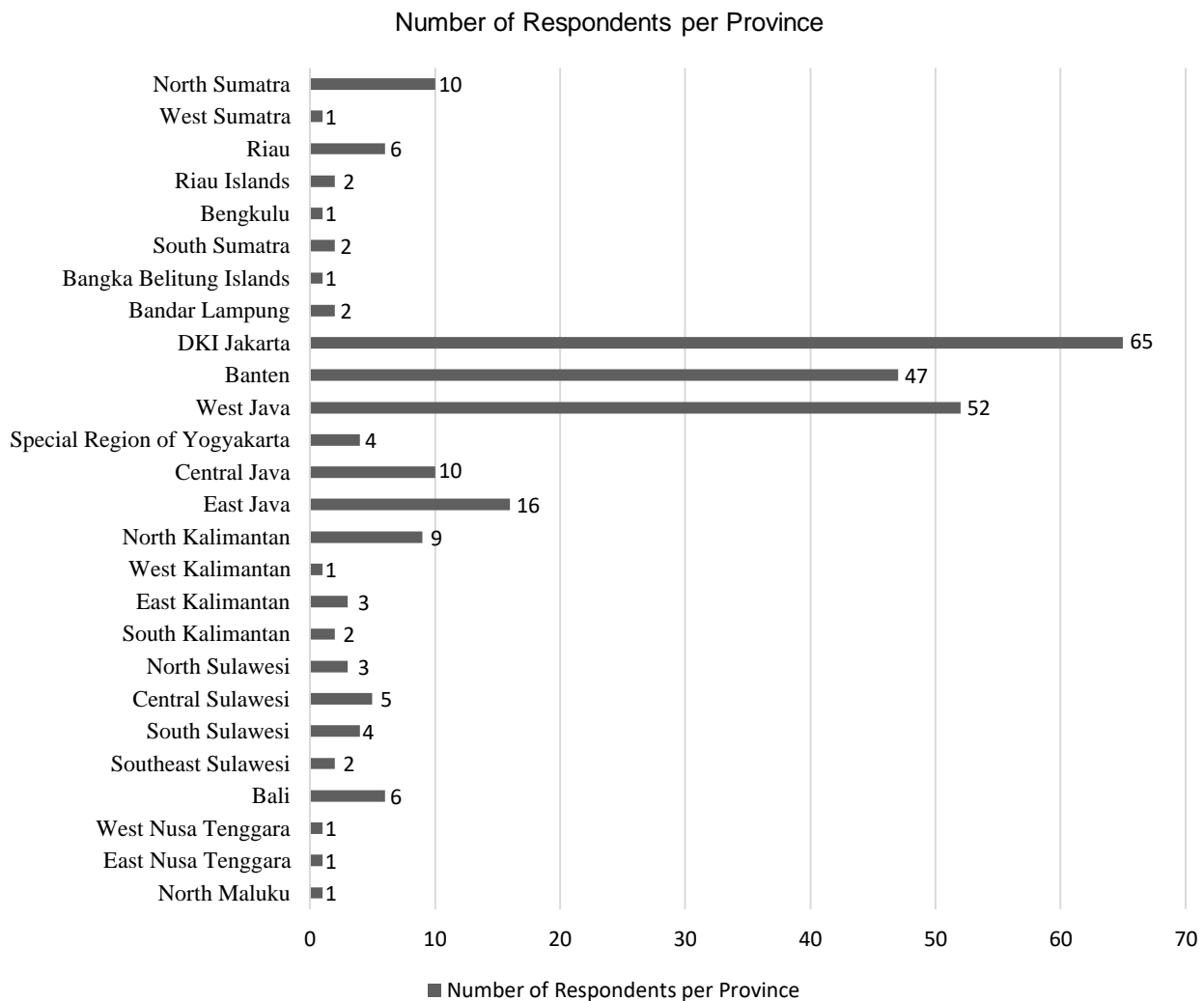
Due to distributing questionnaires through social media platforms, we were able to get respondents from 26 out of 34 provinces in Indonesia. Most of the respondents live in the capital city of Indonesia, DKI Jakarta (N:65 (25.29%)). Complete information about the number of respondents per province can be seen in **Figure 1**.

**Table 1** Demographic data of respondents

Variable	N	%
<b>Gender</b>		
Men	149	57.2%
Women	110	42.8%
<b>Age</b>		
25-44 years old	171	66.5%
45-64 years old	83	32.3%
65+ years old	3	1.2%
<b>Education</b>		
Elementary	2	0.8%
Junior High School	5	1.9%
Senior High School	63	24.5%
Diploma	32	12.5%
Bachelor	130	50.6%
Master	25	9.7%
<b>Marital Status</b>		
Never married	94	36.6%
Married	150	58.4%
Widow or Widower	13	5.1%
<b>Work From Home</b>		
Currently unemployed	33	12.8%
No	30	11.7%
Partly	93	36.2%
Yes	101	39.3%
<b>Income during Pandemic</b>		
No Income	41	16.0%
<Rp 5.000.000	99	38.5%
Rp 5.000.000 – Rp 10.000.000	27	10.5%
>Rp 10.000.000	90	35.0%
<b>Pandemic Effect on Income</b>		
No Income	41	16.0%
Unstable Income	27	10.5%
Lower Income	99	38.5%
Stable Income	90	35.0%
<b>The Impact of Event Scale-Revised</b>		
No PTSD	95	37.0%
Partial PTSD	58	22.6%
Probable PTSD	29	11.3%
<b>PTSD can suppress the immune system</b>	75	29.2%

### Results from Indonesian Version of IES-R

The results from the Indonesian version of the IES-R questionnaire were as follows: 95 (37%) of the respondents probably did not suffer from PTSD, 58 (22.6%) respondents scored 24-32 points and were classified to have partial PTSD. About 29 (11.3%) respondents scored 33-38 points and were classified into a probable diagnosis of PTSD, and 75 (29.2%) participants scored higher than 39 and met the instrument's criteria for PTSD that could suppress the immune system's function.



**Figure 1** Number of respondents from the 26 provinces in Indonesia

### Factors Affecting IES-R Score

From the analysis, males (Mean:  $31.35 \pm 15.024$ ) had a higher IES-R score than females (Mean  $27.31 \pm 14.926$ ) with a p-value of 0.34. Age group analysis showed that respondents aged 25-44 years had the highest mean score compared to other age groups (Mean  $32.46 \pm 14.528$ ). There was a significant relationship between age and mean score between the three age groups (p-value  $< 0.0001$ ). In the education level, junior high school graduates' respondents had the highest mean score (Mean  $33.60 \pm 21.314$ ). There was no significant difference between the IES-R score and the education (p-value 0.33).

From marital status aspects, respondents that never married have the highest mean IES-R score of  $32.69 \pm 14.270$ . There was no significant difference between the mean IES-R score in each marital

status group (p-value 0.38). Respondents who were not working from home had the highest mean IES-R score of  $33.31 \pm 16.052$  compared to other groups. The p-value between each group working from home aspects showed a significant difference between the IES-R score and the respondents working from home status (p-value 0.007).

Respondents with income around Rp 5.000.000-Rp 10.000.000 during pandemic had the highest mean IES-R score scored  $35.67 \pm 17.146$ . On the other hand, the pandemic's effect on income results showed that respondents with lower income had the highest IES-R score than before the pandemic (Mean  $34.99 \pm 15.340$ , p-value  $< 0.0001$ ) (**Table 2**). After bivariate analysis, multiple linear regression was conducted to see the relationship between independent variables and the IES-R score.

**Table 2** Factors affecting the IES-R results

Variables	Mean	SD	p-value
<b>Gender</b>			0.035
Male	31.35	15.024	
Female	27.31	14.926	
<b>Age</b>			0.000
25-44 years old	32.46	14.528	
45-64 years old	24.11	14.627	
65+ years old	22.0	16.462	
<b>Education</b>			0.334
Elementary	23.50	7.778	
Junior High School	33.60	21.314	
Senior High School	33.10	15.019	
Diploma	29.19	14.385	
Bachelor	28.63	14.994	
Master	26.44	15.081	
<b>Marital Status</b>			0.038
Never married	32.69	14.270	
Married	27.66	14.980	
Divorced	30.38	18.693	
<b>Work From Home</b>			0.007
Currently Unemployed	26.29	14.937	
No	33.31	16.052	
Partly	31.93	11.971	
Yes	27.45	12.701	
<b>Allowance During Pandemic (in Rupiah)</b>			0.172
No Income	29.20	12.316	
<Rp 5.000.000	29.03	16.139	
5.000.000-10.000.000	35.67	17.146	
>Rp 10.000.000	28.10	15.995	
<b>Pandemic Effect on Income</b>			0.000
No Income	24.70	13.969	
Unstable Income	31.04	13.590	
Lower Income	34.99	15.340	
Stable Income	26.21	14.783	

**Table 3** Linear regression of independent variables

Variables	$\beta$ -Coefficient	Standard Error	t	p-value	R <sup>2</sup>	ANOVA Sig.
Gender	-1.935	2.068	-0.936	0.350	0.089	0.001
Age	-7.181	2.069	-3.471	0.001		
Marital Status	0.705	1.942	0.363	0.717		
Work from Home	0.721	1.045	0.690	0.491		
Allowance during Pandemic	1.885	1.171	1.609	0.109		
Pandemic Effect on Income	-0.820	1.174	-0.699	0.485		

From the analysis, the R<sup>2</sup> was 0.089, which means factors such as gender, age, marital status, WFH, allowance during the pandemic, and pandemic effect to income explain 8.9% of the IES-R score for PTSD screening. The ANOVA significance was 0.001. 5 out of 6 variables with p-value >0.05 leave only one independent variable with a p-value <0.5, as seen in

**Table 3.** There was no other significant variable found after exclusion of the independent variables one by one from the highest p-value. The authors saw no more than 10% changes in the  $\beta$ -Coefficient when each of those independent variables was removed from the linear regression model.

## Discussion

From the bivariate analysis, out of 7 demographic factors, six factors passed the criteria for multivariate analysis, which were gender (p-value 0.034), age (p-value 0.000), marital status (p-value: 0.038), working from home (p-value 0.007), allowance during pandemic (in rupiah, p-value: 0.172) and pandemic effect to income (0.000). These six independent variables could explain 8.9% of the IES-R score of the respondents in this study. Amongst these variables, only age had a significant relationship with the IES-R score. Based on the unstandardized  $\beta$ -Coefficient analysis, five of six independent variables were confounding factors. Thus, the only factor that is not a confounder in this study is only age.

In the previous study done in Tunisia, younger people tend to have a higher prevalence of probable PTSD ( $r = -0.141$ ,  $p < 0.001$ ) (Fekih-Romdhane, Ghrissi, Abbassi, Cherif, & Cheour, 2020). In our study, respondents aged around 25-44 have a higher mean of IES-R score than those aged 45-64 and 65+ years old. It is also in line with the study done in Egypt, where respondents aged 30 years or less have a higher mean IES-R score than those aged >30 years old. Their study states that a higher IES-R score in younger adults than older adults was due to the higher stressors surrounding them (El-Zoghby, Soltan, & Salama, 2020)

Moreover, we found out that in this study, the respondents who are not working at home during pandemic time have the highest mean IES-R score, followed by respondents who are partly working from home. A study states that low-wage workers who must continue their work on-site may have higher fears and anxiety due to fear of a higher risk of contracting the disease and spreading it to people around them (Boyras & Legros, 2020).

This study failed to show the relationship between income during the pandemic and the IES-R score. As a comparison, we used a study that was done during the previous pandemic of SARS, which states that lower household income was associated with higher PTSD symptomatology, but the study that was done in Liaoning Province, China, also states that 76.8% of their respondents did not experience increased in financial stress arising from the COVID-19 pandemic (Fawaz & Samaha, 2020; Zhang & Ma, 2020)

There was no relationship between gender and IES-R score in this study. A study in Liaoning Province, China, also shows no association between the IES-R score and gender (p-value 0.478). A study in the Lebanese population also showed similar results; there was no difference among gender and PTSD symptoms (p-value 0.07) (Fawaz & Samaha, 2020). Inconsistent with our findings, another study conducted in Hubei, Wuhan, China, states that female respondents had statistically significant PTSS scores compared to male respondents (Liu et al., 2020). Another study in Saudi Arabia also stated the same as the study done in Liaoning Province, China (Joseph, Lucca, Alshayban, & Alshehry, 2021).

The analysis in this study also failed to show the significance between each of the education levels and IES-R score in Indonesian adults. The study in Liaoning, China, also states the same as our findings where their analysis result shows no relation between education level on the IES score of the respondents (Zhang & Ma, 2020).

A study states that financial loss is one of the specific stressors in quarantined people that could lead to mental health problems (Boyras & Legros, 2020). However, this study shows no relationship between how much allowance respondents got per month during the pandemic and their IES-R score.

In this critical situation, everyone must help each other for the country to recover faster from the COVID-19 pandemic, and all Indonesian citizens must comply more with the protocols that have been set by the government so that the pandemic situation in Indonesia could be controlled better, which hopefully could positively affect everyone's mental health after the pandemic. Therefore, if one experiences any problems with their mental health, do seek help from the professionals because our mental health matters.

The study aims to search for the factors related to PTSD screening using the IES-R score but is not concerned about the history of mental illness within the respondents that could affect the results. The authors are also aware that biopsychosocial factors can cause PTSD, but our study only limited the analysis to the demographic factors.

## Conclusion

In conclusion, only age was related to the IES-R score, while the other five independent variables included in the linear regression analysis were found to be confounders in this study. Thus, age was a significant factor that might affect the IESR-score to determine the PTSS. However, further study about this topic throughout Indonesia is still needed.

### Declaration of Conflicting Interest

All authors declare no conflict of interest in this study.

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None.

### Author Contribution

NNE: Principal investigator and article writing as the first author; FW: Statistical data analysis and interpretation, article writing as co-author; SO, SA, CJ, AH: Article writing as co-authors; DAH: Article writing as co-author and language approval; DAC: Substantial supervisor; AK and NPHL: Statistical and substantial supervisors. All authors approved the final version of the article to be published.

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