

The Role of Sociodemographic and Psychological Aspects in the Adherence of Prevention Behavior for COVID-19 in Indonesia: A Case Study of Risk Population in Bogor City, West Java

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Abstract

The COVID-19 outbreak initially occurred in Wuhan, China, and spread rapidly to other countries, including Indonesia. Various precautions were taken to suppress the spread of this virus, one of which was conducting prevention behavior in communities. This study aims to evaluate the adherence to COVID-19 prevention behavior associated with sociodemographic and psychological aspects. This cross-sectional study was conducted online from September 28 to October 9, 2020, with respondents from Bogor's Cohort Noncommunicable Disease Risk Factor study. Data were obtained from 1,736 respondents using the Indonesian Self-Report Questionnaire-20 (SRQ-20). The study used multiple logistic regression to analyze the data. If the result of the SRQ-20 was ≥ 6 , it was categorized as a common mental disorder. As such, prevention behavior was found to be higher in individuals who did not experience common mental disorders (AOR = 1.8; 95% CI [1.1, 2.8]). Adherence was also discovered in people who were over 55 years old and educated above junior high school (AOR = 1.5; 95% CI [1.1, 2.3]), married women (AOR = 1.4; 95% CI [1.1, 1.8]), and workers who work more at home (AOR = 3.3; 95% CI [2.3, 5.0]).

Keywords

Adherence; common mental disorders; COVID-19; prevention; psychological aspect

Introduction

The initial COVID-19 pandemic outbreak was in December 2019 in Wuhan, Hubei Province, China. Since then, many countries, including Indonesia, have tried to suppress population mobilization. However, since the discovery of the first case of COVID-19 in Indonesia in early March 2020, firm policies on health protocols were implemented as the outbreak in Indonesia continued to significantly increase daily (Rimbawati, 2021). As a result, on June 14, 2021, there were approximately 1.9 million confirmed cases of COVID-19 in Indonesia, a country of well over 275 million people, and just over 53,000 related cases (PERSI, 2021).

Indonesia is the world's fourth most populous nation, so it was predicted that Indonesia would take considerable time to handle the COVID-19 pandemic compared to other countries with smaller populations. The government took various precautions to reduce and delay the pandemic's peak, such as increasing the early detection and diagnosis of infection with reverse transcription polymerase chain reaction (RT-PCR) or antigen-antibody-based tests (Sutomo et al., 2021). Other efforts by the government were increasing the number of referral hospitals and their facilities and health workers and continuing to urge the public to change their behavior by wearing a mask, staying at home, washing hands frequently, and practicing social/physical distancing (Purnama & Susanna, 2020). Some communities were aware and obedient in implementing the behavior change, but some ignored the recommendations. Based on data from the COVID-19 Task Force, as many as 6.8 million Indonesians ignored prevention behaviors in the markets, offices, roads, at home, and at tourist attractions. This behavior was seen when the government implemented regulations that temporarily closed schools nationwide or when the work-from-home (WFH) regulation was enforced. Nevertheless, some families decided to vacation or visit their hometowns (Djalante et al., 2020).

Many factors contributed to the obedience to applying the prevention behavior of COVID-19. Interestingly, in a democratic country, citizen decisions conform to public instruction and policy; therefore, authorities must rely on persuasion and voluntary participation (Tyler & Jackson, 2014). Furthermore, the individual becomes the critical element of adherence. One of the frameworks used in public health is Bronfenbrenner's ecological theory, which shows that individual and environmental factors are related to health (Eriksson et al., 2018). Some factors include age, sex, education, marital status, and personal issues like psychological aspects.

Research finds that sociodemographic factors related to adherence to COVID-19 prevention behavior include age, sex, education, and economy-socio level (Gouin et al., 2021; Nivette et al., 2021). Other studies in large countries such as China, Iran, and Mexico showed that adults, women, and older age groups have better adherence to COVID-19 prevention behaviors, respectively (Firouzbakht et al., 2021; Sánchez-Arenas et al., 2021; Yuan et al., 2021). People with lower educational levels also have better adherence, but people with lower economic status have poor adherence to COVID-19 prevention behaviors (Yuan et al., 2021). Moreover, in the older group, people with no history of chronic diseases have better adherence to COVID-19 prevention behaviors (Firouzbakht et al., 2021).

In reference to personal issues, the psychological aspect could be associated with adherence to COVID-19 measures. One of the psychological aspects is fear, previously recognized as an effective method of persuasion if used appropriately (Witte & Allen, 2000). According to Harper et al. (2021), fear was the primary predictor of favorable behavior changes related to

avoiding COVID-19 transmission (e.g., guidelines on social distancing and personal hygiene). Fear of COVID-19 resulted in more positive and supportive sentiments regarding suggested limits than previously may have existed (Koniak & Cwalina, 2020). Research conducted by Velikonja et al. (2021) in Northern Italy stated that people with common mental disorders or high anxiety have further evolvement in prevention behavior ($p < .001$). In contrast, people with low health anxiety do not perceive their health to be threatened, so they tend to ignore personal hygiene.

While most of the research in Indonesia targets the public health domain in adherence to COVID-19 prevention rules, the evidence is still negligible, including psychological aspects. Therefore, this analysis aims to determine adherence to the implementation of COVID-19 prevention behavior associated with sociodemographic and psychological aspects.

Methodology

Study design

This study is part of the Bogor Cohort Study of Noncommunicable Diseases Risk Factors that has been ongoing since 2011 in Bogor City, West Java, Indonesia (Riyadina et al., 2018). During the COVID-19 pandemic, a cross-sectional study was conducted, and one of the objectives was to evaluate the exposure status and preventive behavior of COVID-19 in the cohort study population. The Lime Survey application compiled the questionnaire, which generated a survey link. The link was sent to the WhatsApp accounts of regional health cadres to be distributed to the respondents. Respondents filled in the online questionnaire without being accompanied by regional health cadres. Each respondent was assigned a unique five-digit code to access the online survey form to ensure data validity.

Study participants

The study population was the Bogor Cohort Study of Noncommunicable Diseases Risk Factors respondents aged 30 years and above. The selection criteria for age 30 years and over were because this age is the average age for noncommunicable diseases to develop (Riyadina et al., 2018). The research was conducted in five sub-districts of Central Bogor District, Bogor City. The sample criteria were respondents of the cohort study who had been going out of the house during the COVID-19 pandemic and ruling out the status of noncommunicable diseases suffered by the respondents.

Data collection

Before online data collection, a questionnaire pre-test was conducted on subjects similar to the research sample to determine whether the questionnaire we used was appropriate. Then once the questionnaire was updated, android ownership had to be verified with the 4,065 active respondents in the cohort study. The survey used the Lime Survey application, which can only be operated on Android OS. Based on the results, 3,432 respondents were found to have Android devices and were categorized as capable of independently filling in an online survey form.

From the 3,432 respondents who were given a link to an online survey, 2,963 filled out the questionnaire entirely and correctly from September 28 to October 9, 2020. Therefore, based on the completed data, there were 1,736 respondents ready to be analyzed.

Variables

Adherence with COVID-19 prevention behavior

The dependent variable in this study was adherence to COVID-19 prevention behavior. The COVID-19 prevention behavior consisted of eight questions, including the use of a mask, physical distancing, washing hands with soap, use of hand sanitizer, use of personal items, taking a shower immediately after traveling, and washing clothes immediately after using and spraying packages or goods. Therefore, adherence was found if at least six of these prevention behaviors were always carried out by the respondent.

The independent variables in this study were sociodemographic factors and psychological factors. Sociodemographic factors included the intellectual maturity variable, marital status variable, and type of work variable. In addition, this research studied psychological factors that were common mental disorders or mental distress. Common mental disorders include a variety of distressing conditions characterized by anxiety and depression, which are frequently observed in primary care and community settings.

Common mental disorders

The Self-Report Questionnaire-20 (SRQ-20) is frequently used to diagnose mental disorder symptoms (Beusenberg et al., 1994). Common mental disorder (CMD) variables were measured by using the SRQ-20, which was developed by the World Health Organization (WHO) to identify common mental disorders or mental distress (Beusenberg et al., 1994). The Indonesian version of the SRQ-20 has five factors: Energy, Cognitive, Depression, Physiological, and Anxiety. The results of testing the one-factor model using CFA (Beusenberg et al., 1994) and EFA results of the five-factor model suggested that the SRQ-20 is sufficient to measure general mental disorders, without or with the factors (Prasetio et al., 2022). This instrument has been tested and developed in many languages; based on Chipimo and Fylkesnes (2010), the area under the curve (AUC) of 0.95 for the SRQ-20 instrument is categorized as a valid instrument. In Indonesia, the SRQ-20 has been implemented by the Indonesian Ministry of Health from the inaugural Riskesdas in 2007 and has been domestically validated for use with individuals aged 15 and older with a positive predictive value (PPV) of 60% and a negative predictive value (NPV) of 92% (Ganikhartono, 1996). The CMDs were assessed by 20 yes/no questions on mental conditions, and the cut-off point was six or more affirmative answers to categorize the presence or absence of CMDs.

Intellectual maturity

The variable of intellectual maturity was compiled from the combination of age and education conditions. The categories were separated into > 55 years old with education below junior high school, 30–55 years old with education below junior high school, > 55 years old with education above junior high school, and 30–55 years old with education above junior high school.

Sex and marital status

The marital status variable is a variation of combinations of sex and marital status variables, which is believed to be more related to adherence to COVID-19 prevention behavior. Three categories were obtained: divorced women, married women, and others (men of any marital status and single women).

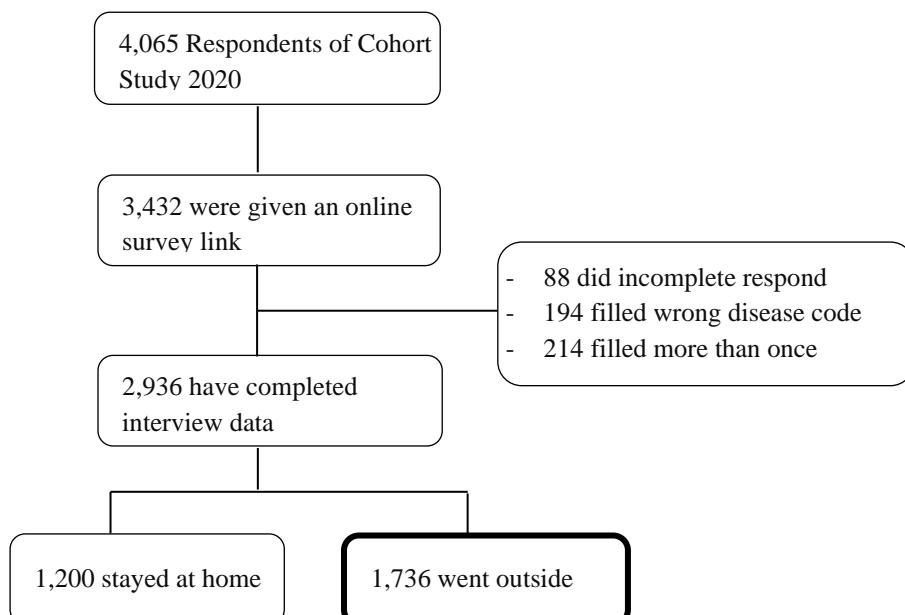
Types of work

The variable of types of work was categorized concerning the frequency of going out during the pandemic; four categories were obtained, namely work from home (WFH), work outside of the home, not working but rarely leaving the house, and not working but often leaving the house. Workers who rarely go out tend to be formal employees who have rules. Workers who usually go out tend to be informal employees who do not have rules, such as traders. Not working and rarely leave the house, such as housewives. Not working and often leave the house, for example, unemployment.

Statistical analysis

Data were analyzed using multiple logistic regression. Initially, the data were analyzed univariately to find the percentage of each variable. Pearson chi-square value from the bivariate test with a p value of $< .25$ was placed into the multivariate model. The analysis used the backward elimination method. The results showed an adjusted odds ratio (AOR) and 95% confidence intervals that explained the adherence of COVID-19 prevention behavior with sociodemographic and psychological factors. If the result of the SRQ-20 was > 6 , it would be categorized as CMDs, and if the adherence score was $> = 6$, then it would be categorized as adherence with COVID-19 prevention behavior.

Figure 1: Selection of the Subjects of the Study



Ethical approval

All processes complied with the applicable ethical norms to respect the respondent's information and privacy. This research received ethical approval from the Health Research Ethics Committee, National Institute of Health Research and Development, Indonesia Ministry of Health (KEPK-BPPK) (Reg. No: LB.02.01/2/KE.511/2020).

Results

Eight behaviors were studied in the research on adherence to COVID-19 prevention behavior. As shown in Table 1, the most compliant behavior was wearing a mask, considered the most efficient COVID-19 prevention behavior (97.4%). The other behaviors were washing hands with soap (87.55%), using personal items (79.5%), maintaining one-meter physical distancing (78.3%), using hand sanitizer (76%), taking a shower after going out of the house (72.1%), washing used clothes after arriving home from the outside (77.4%), and spraying disinfectant on packages or things (49.4%). Most respondents obeyed these eight behaviors on COVID-19 prevention behavior (70.7%).

Table 1: Adherence to COVID-19 Prevention Behavior in Respondents Who Leave the House

COVID-19 Prevention Behavior		<i>n</i>	%
Use of mask	Yes, always	1,691	97.4
Maintaining a 1-meter distance	Yes, always	1,359	78.3
Washing hands with soap	Yes, always	1,519	87.5
Use of hand sanitizer	Yes, always	1,320	76.0
Use of personal items when leaving the house	Yes, always	1,380	79.5
Taking a shower immediately after traveling	Yes, always	1,252	72.1
Washing clothes immediately after used	Yes, always	1,344	77.4
Spraying packages or goods	Yes, always	861	49.6
Adherence with COVID-19 prevention behavior	Yes	1,228	70.7
Total		1,736	100

Referring to Table 2, based on intellectual maturity, the most compliant respondents with COVID-19 prevention behavior were > 55 years old with education above junior high school (77.1%). The least compliant were > 55 years old with education below junior high school and 30–55 years old with education above junior high school. Based on marital status, the most compliant respondents with COVID-19 prevention behavior were divorced women (73.2%) and married women (73%). The lowest adherence was among all men with any marital status and single women.

As seen in Table 2, based on the types of work, the highest adherence to COVID-19 prevention was among respondents who work from home, such as formal employees (75.0%), and respondents who do not work but rarely leave the house, such as housewives (75.3%). Furthermore, based on their common mental disorder, respondents who did not have CMDs were more compliant with implementing COVID-19 prevention behavior (71.2%) than respondents with CMDs.

Table 2: Adherence to COVID-19 Prevention Behavior Based on Sociodemographic and Psychological Aspects in Respondents Who Leave the House

Variable	Adherence with COVID-19 Prevention Behavior		p value*
	Adherence n (%)	Non-Adherence n (%)	
Intellectual maturity	> 55 years old, below junior high school	158 (68.7)	72 (31.3)
	30–55 years old, below junior high school	165 (73.7)	59 (26.3)
	> 55 years old, above junior high school	219 (77.1)	65 (22.9)
Marital status	30–55 years old, above junior high school	686 (68.7)	312 (31.3)
	Others (men of any marital status and single women)	370 (66.0)	191 (34.0)
	Married women	691 (73.0)	256 (27.0)
Type of work	Divorced women	167 (73.2)	61 (26.8)
	not working but often leave the house	98 (51.0)	94 (49.0)
	not working but rarely leaving the house	776 (75.3)	255 (24.7)
Common mental disorders	work outside of the home	111 (58.7)	78 (41.3)
	work from home (WFH)	243 (75.0)	81 (25.0)
	Yes	51 (60.7)	33 (39.3)
	No	1,177 (71.2)	475 (28.8)

Note: *significance level of .05; AOR = adjusted odds ratio

Based on Table 3, those who do not experience common mental disorders were more compliant in implementing COVID-19 prevention behavior as 1.8 times higher (AOR = 1.752; 95% CI [1.101, 2.790]; $p = .018$) than those who experience CMDs after being controlled with other variables. Those older than 55 years old and educated above junior high school were 1.5 times more adherent to implementing COVID-19 prevention behavior (AOR = 1.524; 95% CI [1.016, 2.287]; $p = .042$) than those with education below junior high school at the same age.

Table 3 also shows that married women were 1.4 times more compliant in implementing COVID-19 prevention (AOR = 1.411; 95% CI [1.031, 1.843]; $p = .011$) than women and men with any marital status. Those who work from home were more compliant than those who do not but often go out (unemployed). Those who work from home were 3.4 times more compliant with COVID-19 prevention behavior (AOR = 3.373; 95% CI [2.271, 5.009]; $p < .000$) than those who do not work but often leave the house.

Table 3: The Role of Sociodemographic and Psychology Aspects to the Adherence of the Prevention Behavior for COVID-19 in Respondents Who Leave the House

Variable	p value*	AOR	95% CI
Intellectual maturity	> 55 years old, below junior high school	1	
	30–55 years old, below junior high school	.369	1.216 0.793, 1.865
	>55 years old, above junior high school	.042	1.524 1.016, 2.287
Marital status	30–55 years old, above junior high school	.709	0.939 0.676, 1.305
	Others (men of any marital status and single women)		1
	Married women	.011	1.411 1.031, 1.843
Type of work	Divorced women	.141	1.327 0.911, 1.933
	not working but often leave the house		1
	not working but rarely leaving the house	.000	2.890 2.098, 3.983
	work outside of the home	.023	1.644 1.072, 2.520

	Variable	<i>p</i> value*	AOR	95% CI
Common mental disorders	work-from-home (WFH)	.000	3.373	2.271, 5.009
	Yes		1	
	No	.018	1.752	1.101, 2.790

Note: *significance level of .05; AOR = adjusted odds ratio

Discussion

The study depicted that wearing masks was the prevention behavior that most respondents obeyed. According to a study, the use of masks has the most significant relative impact in controlling the transmission of COVID-19. Nevertheless, wearing masks would be even more effective if complemented by other preventive behaviors such as maintaining cleanliness, physical distancing, and increasing testing (Stuart et al., 2021).

Looking in more detail, respondents over 55 years old with education above junior high school are more in adherence with the implementation of COVID-19 prevention behavior than respondents educated below junior high school at the same age. This finding is in line with Sobkow et al. (2020), who also found that efforts of COVID-19 prevention increased along with a person's age ($p = .014$). Likewise, a study of older adults in Portugal also shows higher adherence to prevention behavior. The findings are related to their health vulnerability. They may be caused by higher exposure to information from news broadcasts on television or any media because, at this age, they will mostly retire and spend more time at home (Pasion et al., 2020). Education also affects adherence to prevention behavior. Another research also showed that older age and higher education increase adherence to COVID-19 measures (Abeya et al., 2021). Overall, a lack of knowledge impacts people's ignorance of obeying health protocols, seeing as the public lacks understanding of how vulnerable they are to being infected by COVID-19, how severe the disease is, the benefits of prevention, and the lack of instructions for action.

In line with previous studies, married women show more compliance in implementing COVID-19 prevention behavior. Research has shown that women's adherence to prevention behavior is higher than men's (Sobkow et al., 2020; Velikonja et al., 2021). This result is in line with other studies in Hong Kong during severe acute respiratory syndrome (SARS) in 2003, which showed that married women had higher adherence to the rule of wearing masks (Tang & Wong, 2004). Another study also concluded that women with children were more conscientious than their male counterparts in adherence to COVID-19 rules (Uddin et al., 2021). In addition, research in the United States revealed that women were more likely to regard COVID-19 as a very significant health issue, to agree with restrictions on public policy, and to comply with these restrictions (Galasso et al., 2020).

Another result in the type of work concluded that workers who work at the home are more compliant in carrying out COVID-19 prevention behavior than those who do not work but often leave the house. This compliance is because the home workers are generally formal employees who carry out the work-from-home (WFH) policy. Generally, WFH actors are a community group who are well educated with relatively stable finances during this pandemic. On the contrary, non-adherence usually occurs in informal workers, and the economic factor is why people still have a high mobilization level, so prevention behavior is challenging to implement. This finding is in line with a study in Jordan that concluded income security became a barrier in following the home quarantine adherence (Al-Sabbagh et al.,

2022). Another African study showed that adherence to COVID-19 in informal workers like construction sites is upsetting (Olukolajo et al., 2022). Challenges of an informal worker to follow the COVID-19 measures are lack of adherence, ignorance about COVID-19, the resources of substandard protective equipment, improper sanitization of construction materials, workers commuting via public transportation, difficulty in sharing work tools and equipment, the superstitious belief on COVID-19, and the difficulty in adhering to social distancing rules were identified as obstacles to the implementation of safety protocols on working sites (Amoah & Simpeh, 2021).

Research on the public community in China showed that adherence to COVID-19 prevention behavior was associated with a better psychological aspect; lower stress levels, anxiety, and depression ($p < .05$) (Wang et al., 2020). In contrast, in a Polish study, the best COVID-19 prevention behavior was among those with a psychological problem or high anxiety. Individuals with high health concerns considered themselves to have a higher infection risk, so they were more obedient to strict hygiene and social distancing rules (Sobkow et al., 2020). Fear of being infected with COVID-19 is an excellent benchmark for adherence to public health behaviors such as washing hands with soap and physical distancing (Harper et al., 2021). In summary, functional anxiety may facilitate adherence to particular rules.

Due to cognitive biases, people with mental disorders have difficulties accurately categorizing information (Beck & Clark, 1997). According to a Taiwanese study by Chang et al. (2020), people with mental disorders were susceptible to believing any information. Therefore, it is risky for them to accept misleading information from unreliable sources. Furthermore, due to a lack of comprehension, they could be unable to differentiate between accurate and incorrect information. Moreover, they lack the resources and expertise necessary to sort through useful information. People who experience common mental disorders are also associated with avoiding information related to COVID-19 and lowering the level of adherence due to missing important information about COVID-19 prevention behavior carried out by the government (Siebenhaar et al., 2020).

Individuals with high mental health problems will show various irrational behaviors; for example, they will not access health services when sick because they assume that health services are a source of disease transmission (Taylor, 2019). In addition, people with severe psychological problems during an outbreak will often be surprised by uninformative things that make them panic excessively about being infected with the disease (Hedman et al., 2016).

Study limitations

Our study had several limitations; first, the survey method was conducted online. Therefore, it is not known whether the questionnaire was filled out by the target respondents or represented by their families. However, according to Ekman et al. (2006), the bias caused by online questionnaires is not any more significant than paper questionnaires. Another limitation is that common mental disorder symptoms self-reported by respondents may not be consistent with a professional mental health assessment.

Conclusion

Prevention behavior was more prevalent among individuals who did not have psychological issues, such as those over 55 with education beyond the junior high level, married women, and home-based workers. Psychological issues contribute to non-adherence with COVID-19 preventive behavior implementation. To prevent the spread of the COVID-19 virus, risk communication must be preceded by actions aimed at decreasing psychological effects so that everyone can make reasonable decisions and behave appropriately.

According to the findings, one strategy for preventing outbreaks in Indonesia is to disseminate research findings and inform decision-makers to monitor the community's mental health status and socioeconomic vulnerability factors during COVID-19.

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