

Factors associated with COVID-19 test willingness in Indonesia: tele-survey study after 'new normal' policy in risk groups

Mutiara Widawati^{1,2*}, Firda Yanuar Pradani¹, M. Ezza Azmi Fuadiyah¹, Hubullah Fuadzy¹, and Rohmansyah W. Nurindra¹

¹Pangandaran Health Research and Development Center, National Institute of Health Research and Development, Ministry of Health of Indonesia, Pangandaran KM. 3, Babakan, Kabupaten Pangandaran

²School of Public Health, Edward Ford Building, A27 Fisher Rd, University of Sydney NSW 2006, Australia

Abstract: Data about testing for COVID-19 is important to be recognized since disease diagnostic tests are useful as a foundation for various purposes. Therefore, to obtain comprehensive data regarding the willingness of the Indonesian people to test for COVID-19, a study was carried out. This study is a population-based quantitative study with a cross-sectional design conducted on risk groups located in Pangandaran Regency, Indonesia in 2020. Data collection used a tele-survey technique (telephone interview) with a closed electronic questionnaire instrument. and 400 people as samples. A multivariate analysis was applied between factors such as age group, gender, income, confirmed COVID-19 environment, intensity of information seeking, social media exposure, and willingness to test for COVID-19. The results showed that there were more respondents who stated they did not want to take the COVID-19 test than those who did. The majority of respondents stated that the reason for not wanting to take the COVID-19 test was because they felt it was unnecessary and considered expensive. This study also shows that factors such as the latest level of education, monthly income before the new normal, confirmed COVID-19 environment, intensity of information seeking, and exposure to social media have the potential to affect willingness to test for COVID-19.

1 Introduction

COVID-19, a disease caused by the novel coronavirus (Severe Acute Respiratory Syndrome Coronavirus 2, [SARS-CoV-2]) is rapidly spreading and affecting 216 countries worldwide. This disease already infected 98 million people and caused death to 1.9 million people. [1] Approximately all world's population is at risk of COVID-19 infection, and Indonesia is one of them. This country already has 836,718 positive COVID19 cases and 24,343 deaths because of it. [2] Indonesia is one of the countries with the fastest COVID-19 infection rate in Asia. During this situation, the World Health Organization (WHO) advised every country to implement multiplication of the COVID-19 confirmation test [3] to produce more appropriate and efficient disease control.

The increasing number of COVID-19 cases in Indonesia shows that the control and prevention implemented in Indonesia are not effective enough to overcome the fast rate of this disease spread. Recently, the COVID-19 vaccine has been approved to be included in several countries' health programs including Indonesia. The government has launched a gradual provision of

vaccines for all Indonesian citizens. [4] Despite the vaccine launching, vaccines do not necessarily eliminate this disease in a short time, especially by taking into account the uncertainty of public acceptance of vaccines due to various media attacks published by anti-vaccines and distrust spread by social media. [5]

Besides the vaccine, another effort implemented by the Indonesian government to deal with this disease is the implementation of the Large-Scale Social Restriction (PSBB) policy in early 2020. This effort is aimed to reduce the spread of COVID-19 by maintaining distance between individuals. This effort is thought to be more realistic to be implemented in Indonesia compared to the 'lockdown' efforts which have been done in other countries because these efforts still allow people's economic activities to be held as long as they applied health protocol. [6] After several months of implementing the PSBB, the Indonesian government began implementing a new policy called AKB (New Normal Adaptation). During this period, the government permitted people to perform several activities (which previously were not allowed) under certain conditions. [7] The implementation of a new, "weaker" policy more

* Corresponding author: mutiarawidawati@litbang.kemkes.go.id

likely gave an impact on people's willingness to be tested and if it goes wrong, then it could lead to the second wave of disease spread. [8]

The COVID-19 test is an initial step to control the spread of this disease. [9] The awareness of individuals who knows that they have COVID-19 will make them take more active prevention of transmission than individuals who do not know about it. Furthermore, this test can also be used as an asymptomatic transmission in population overview for the government and the community. [10] The delay in public and Indonesian government awareness of the COVID-19 test at the start of the pandemic is probably one of the reasons why some studies doubt the incidence of COVID-19 in Indonesia. [11,12] Although now Indonesia has performed widespread PCR testing by utilizing the coordination of various institutions, the total number of tests performed is not sufficient to describe the actual conditions occurring in Indonesia. [12]

Until recently, the most accurate test recommended determining a person's COVID-19 status is still the PCR test. [13] A person's willingness for a PCR test can be influenced by many things. Indonesia and other lower-middle-income countries residents would not think that taking a paid PCR test is such an easy matter. The high cost is likely to affect the willingness of both the government and the community, let alone wishing that the community will carry out this test independently without government assistance. Studies conducted by Grossman and Van der Weele show that ignorance in society might emerge towards positive actions when those actions are high cost. [14]

Other possibilities can also influence people's willingness to take the PCR test as a confirmation test for COVID-19. Individual characteristics are one of them. Characteristics of a person can influence their behaviour and their viewpoint on a disease. Information circulating in the community is also one of the factors that can influence society's willingness. The government needs to develop a strategy to optimize communication with the public regarding the risk of infectious diseases so that the various factors that cause negative behaviour towards diseases circulating in the community can be mitigated. [10]

So far, there are very limited articles discussing the willingness to take a disease prevention effort that involve the willingness to pay in Indonesia [15] and as far as we know, there has been no study that specifically addresses the willingness for a COVID-19 disease test in Indonesian residents. It is important to acknowledge that data about disease diagnostic tests are useful as a foundation for various purposes. Therefore, to acquire comprehensive data regarding the COVID-19 test willingness of Indonesian people, a study has been conducted. This study underlines factors that might influence a person, who are at high risk of COVID-19, to be willing to test for COVID-19 independently in a developing country like Indonesia. The data in this study will be very useful as a foundation for the government to create policies that can support the widespread COVID-19 test for all Indonesians. In the future, this study can also be used as a

basis for policies that can support initial diagnostic testing to prevent other diseases.

2 Methodology

This study is a part of the project titled "Information Seeking Behaviour and Covid-19 Prevention Measures in Risk Groups during AKB (Adaptation to New Normal)". [16] This research is a quantitative population-based study with a cross-sectional design. The research was conducted from October to December 2020 and was conducted in Pangandaran district, west java province, Indonesia.

The study population was taken from the data of people who were at high risk of contracting COVID-19 listed in the Pangandaran District Health Office and the Pangandaran Regional Health Laboratory. The high-risk community population consists of tourism personnel (Pangandaran residents who are involved in the tourism sector), crowd subjects (Pangandaran residents taken in crowded places), health workers (Pangandaran residents who are health workers), religious leaders (Pangandaran residents who are religious figures such as the head of the *pesantren* (moslem's religious school) or the teacher of the *pesantren*), and people who had close contact with the patient confirmed positive for Covid-19. The total population obtained was 3923 people. The sample size is calculated using the sample calculation formula for the randomized stratified sampling method. [17] The sampling method is used considering the proportion of each risk group. The sample size obtained was 400 people. To anticipate sample shortages due to exclusion criteria, the same sample calculation was used to select 150 people as a sample reserve.

Ethical approval was provided by the Ethical Committee for Health Research, National Institute of Health Research and Development, the Ministry of Health of Indonesia (Number: LB.02.01/2/KE.553/2020). The data was collected using a tele-survey technique (telephone interview) with a closed-ended electronic questionnaire as an instrument. Interviews were conducted by trained data collectors. Every participant was informed about and understood the purpose of our investigation before entering the study. Before being interviewed, each participant was asked for their consent to participate in this research. Approval is obtained from each respondent without coercion and the respondent can pull out their consent at any time. Respondents who refused, resigned, disconnected, could not be contacted again during telephone interviews, came from outside the Pangandaran district, as well as respondents who were less than 17 years old were excluded from this study sample and replaced with respondents who had been prepared from the reserve. Consent from parents or guardians of those participants aged under 18 was not required. This has been approved by the Ethical Committee for Health Research, National Institute of Health Research and Development, the Ministry of Health of Indonesia.

This research instrument was made based on the framework of the CMIS (Comprehensive Model of

Information Seeking) model [18] and Theory of Planned Behaviour. [19] The questionnaire contains close-ended and multiple-choice questions which are designed to be as simple as possible to be filled. Before being used in data collection, the reliability test was carried out on 30 people using the questionnaire prepared. The questionnaire was revised and retested until the reliability coefficient (Cronbach alpha) was 0.655 (> 0.5). The data in the preliminary test were not included in the final analysis.

To acquire comprehensive data regarding the description of respondents who did not want the COVID-19 to test independently, respondents were also given open questions regarding the reasons why they did not want to take the COVID-19 test independently. The same answers are grouped and then the percentage of all respondents is made. Multivariate analysis was performed using logistic regression with backward Wald method to determine the relationship of the response variable (willingness to test) and each explanatory variable (age group, gender, education, income before the 'new normal' period, intensity of information seeking, and social media exposure). The relationship between variables is

described by the value of the Odd ratio (OR) along with the value of the confidence interval (95% CI). The analysis is carried out to find the most optimal equation model. The difference in OR > 10% between the previous model and the model after the variable was removed is used to determine whether the variable can be included in the final model or not. All data were analysed using SPSS version 15 (IBM Inc., Chicago, IL,USA).

3 Findings

The results of the logistic regression analysis quantifying the effect of various factors on willingness to do tests independently are presented in table 1. Based on multivariable analysis, predictors of willingness to do test independently were last education level, income per month before new normal, positive COVID-19 neighbourhood, Information seeking intensity, and social media exposure. While age group and gender did not significantly affect the response variable.

Table 1. Factors that influence people to get vaccinated

Factors	Test willingness		OR	95%CI	p-value
	Yes (%)	No (%)			
Age groups					0.178
< 21 years old	0.8	3.5	NA	NA	NA
21 - 40 years old	13.3	45.8	NA	NA	NA
41 - 60 years old	6.3	25.5	NA	NA	NA
> 60 years old	1.5	3.5	NA	NA	NA
Gender					0.125
Men	11.3	50.0	NA	NA	NA
Women	10.5	28.3	NA	NA	NA
Last education level					0.033
Elementary	1.5	10.3	0.480	0.172-1.336	0.160
High school	7.8	47.5	0.455	0.248-0.835	0.011
University/college	12.5	20.5	1		
Income per month					0.009
< Rp 2 million	7.3	46.5	0.311	0.117-0.826	0.160
Rp 2 -5 million	11.3	28.0	0.696	0.274-1.772	0.448
> Rp 5 million	3.3	3.8	1		
Positive COVID-19 neighborhood					<0.001
Yes	5.0	5.8	4.369	2.055-9.289	< 0.001
No	16.8	72.5	1		
Information seeking intensity					0.005
Rarely	7.5	47.5	0.354	0.189-0.663	0.001
Sometimes	3.3	11.8	0.465	0.204-1.058	0.068
Often	11.0	19.0	1		
Social media exposure					0,016
Often	12.3	35.5	2.035	1.143-3.625	0,016
Not often	9.5	42.8	1		

NA: Not Applicable (were not included in the multivariate analysis)

Table 1 showed that respondents who have university/college degree education tend to be more willing to do the test independently compared to the ones

who have lower degrees of education. High school level of education respondents is 0.455 times less likely to be willing to do the test compared to the one who has

university level of education (CI= 0.248-0.835; p=0.011). Elementary school level of education respondents is 0.480 times less likely to be willing to do so as well (CI= 0.172-1.336; p=0.160).

The result also showed that respondents who have an income higher than 5 million IDR tend to be more willing to do the test independently compared to the ones who have a lower monthly income. Respondents who have a monthly income of less than 2 million IDR are 0.311 times less likely to be willing to do the test compared to the ones who have the highest salary (CI= 0,117-0.826; p=0.160). Similar to the lower salary, respondents who have a monthly income between 2 million and 5 million are 0.696 times less likely to be willing to do the test compared to the ones who have the highest salary (CI=0.274-1.772; p=0.448).

Respondents who have positive COVID-19 neighbours are 4.369 times more likely to be willing to do the test compared to the one who does not have it (CI= 2.055-9.289; p<0.001). Similar to this behaviour, respondents who often got information from social media are 2.035 times more likely to be willing to do the test independently compared to those who do not often get it (CI=1.143-3.625; p=0.016).

The results also showed that respondents who rarely seek information about COVID-19 tend to have lower test willingness (0.354 times) compared to the ones who often seek it (CI=0.189-0.663; p=0.001). Similar to this, respondents who seek information 'sometimes' also tend to have lower test willingness (0.465 times) compared to the ones who often seek it (CI=0.204-1.058; p=0.068).

Table 2 shows an overview of the reasons for respondents who did not want to take the COVID-19 test independently. More respondents stated that they did not want to take the COVID-19 test (78.5%) than those who did. The majority of respondents answered that the reason they did not want to take the COVID-19 test was that they felt it is unnecessary (49.75%). In addition, the second largest answer related to reasons for not wanting to be tested was because the COVID-19 test was considered expensive (17.5%).

Table 2. Reasons that influence people to get vaccinated

Reasons	Total	Percentage of all respondents (%)
Unnecessary	199	49.75
Expensive	70	17.5
Afraid to be tested	33	8.25
Don't understand anything about the COVID-19 test	10	2.5
The test place distance is too far	1	0.25
Later, if I got close contact with the COVID-19 confirmed case	1	0.25
Total	314	78.5

4 Discussion

This study is inseparable from several limitations. This research was conducted using a closed questionnaire so that the answers given by respondents were not explored

further. There is a possibility that there will be hypothesis bias because the analysis is based on survey data. Respondents can answer the survey with a different answer from what they did. This bias is common in studies that measure a person's positive behaviour [20] Besides hypothetical bias, this study also does not describe Indonesia as a whole. This study was conducted in only one district in Indonesia and does not necessarily represent the whole of Indonesian society, especially since this study was conducted in the Pangandaran district that still consists of many villages. Certainly, the individual characteristics will be somewhat different from urban communities such as Jakarta (the capital city of Indonesia).

A person's willingness to take a COVID-19 test is probably caused by various factors, similar to other behavioural changes that can be influenced by several factors. Those factors include the expensive PCR test for COVID-19, changes in policies implemented by the government, anxiety, concern, boredom due to continuous exposure to information [21], socio-demographic characteristics [22], social norms [23], information-seeking behaviour, facility availability, and other factors. [10,24]

The results in this study indicate that the majority of respondents do not want to take the COVID-19 test because they feel it is unnecessary and they feel that the COVID-19 test is expensive. The minimum costs incurred for taking one test is 900,000 IDR (equivalent to 60 USD) [25], in addition, costs can also be incurred during self-isolation which is a direct effect of the COVID-19 test if the test results are positive. [10] This research shows that the majority of respondents have an income of less than 2 million IDR (equivalent to around 140 USD) per month, and indeed to spend 60 USD per test will be quite difficult for people with this income. As shown in the results, income is one of the factors of individual characteristics that has a significant effect on a person's willingness to take a COVID-19 test. Respondents who have a monthly income of less than 5 million IDR (equivalent to 340 USD) are more likely to refuse to do a COVID-19 test than respondents who have an income of more than 5 million.

Another factor that can influence behavioural change is individual characteristics. [22,26] This study result showed that the individual characteristics, which are the level of education and income, influenced the willingness of the COVID-19 test. Similar conclusions have been drawn from other studies in Pakistan. [22] This is probably because individuals with higher education have a greater tendency to increase knowledge related to disease risk and have a higher probability to digest information from health promotion. Therefore, prevention efforts can be more adapted to their daily lives. The insignificance association between the willingness to test for COVID-19 and ages or genders is probably because the will tends to be random across all ages and genders, so these factors have no effect on this behaviour.

The low percentage of respondents who want to take a COVID-19 test after the new normal period might also be because the community is bored and tired of taking prolonged prevention. Several studies state that prolonged

intervention is one of the challenges that may occur in a community and can cause psychological fatigue of the individual that affects the practice they would take. [21,27] The low willingness for a COVID-19 test may also be because respondents choose not to care and choose to avoid information by hardly seeking it. This information-seeking ignorance behaviour is also demonstrated by a study done by Grossman. [28] The rarity of individuals who seeks information about COVID-19 in this study might also be explained by previous research that suggests if a person already knows their medical diagnosis and knows that this diagnosis is important as their basis for improving their health behavior, there is still the possibility that they will consciously do not care about it. [10,29]

The level of public compliance to health recommendations in several places in Indonesia is still in question. Several studies conducted in various regions in Indonesia have shown that the level of community compliance tends to be less than good, moreover, there is one study that reported that the disinfection activities carried out by people who should know health protocols is have not met the correct standard of health protocols. [30,31] In contrast to several countries that have implemented penalties due to violations of COVID-19 prevention protocol standard [32], penalties due to COVID-19 prevention violations are not discussed both in PSBB and AKB policies. The light penalty is only applied by a few regions depending on the local policies applied there, and still, it did not show a significant impact on public compliance in Indonesia. [33]

This study shows that although the number of individuals who frequently seek information is less than those who rarely do it, the ones who frequently seek information are more likely to be willing to take the COVID-19 test compared to the ones who rarely seek it. It might be due to their concern which was affected by the high intensity of information seeking that they performed. [34]

Respondents who frequently access social media are also more likely to be willing to take tests than those who do not. A large number of social media usage by people as a form of their concern for COVID-19 was also reported by descriptive research conducted in China. [35] Probably people feel that it is a necessity to look for news related to cases of an infectious disease. News related to the number of cases is a topic that can help people to be more aware of the disease. Furthermore, information related to the topic of disease epidemiology can also help people in promoting disease prevention and control for their families and their social life. [36] This is also supported by the results which show that respondents whose aware of their positive COVID-19 neighbours were more likely to have a will in the COVID-19 test compared to respondents who do not. This study also shows that the more exposed someone is to information, the more prudent his subconscious will be, which will lead to curiosity to get more information. The amount of information obtained can cause concern and a willingness to change behaviour.

Hopefully, the result of this study is going to be useful for the government in developing countries such as

Indonesia. It can be used as a foundation and complement for the body of literature in formulating policies to support COVID-19 widespread testing for all populations. The various factors presented can be used as the base data to achieve a focused and compatible connection between health promotion intervention and the population targets. Both individuals who have a will for testing and those who have not might be directed toward more positive behaviour.

5 Conclusion

This study concludes that the number of people who did not want to be tested for COVID-19 is greater than the number of people who did want to be tested for COVID-19. The majority of respondents' reason why they did not want to take the COVID-19 test was that they felt it was unnecessary and the test was considered expensive. This research also shows that risk factors such as last education level, income per month before new-normal policy, positive COVID-19 neighbourhood, information seeking intensity, and social media exposure are related and have the potential to influence the willingness for a COVID-19 test.

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