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# Articles

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# The Stigma of COVID-19 and Its Influence on the Management of COVID-19

Nany Hairunisa† [1]*, Husnun Amalia[2], Isra Sabrina[3], Nashita Amira Zaina[4], Laila Musfirah[5], Yasmine Mashabi[6], Emad Yousif[7]

1.Department of Occupational Medicine, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia
2.Department of Ophthalmology, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia.
3.Department of Cardiology, Siloam Hospital, Banten, Indonesia
4. Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia
5. The National Narcotics Board Pratama Clinic, Banda Aceh, Indonesia
6. Department of Clinical Pathology, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia
7. Department of Chemistry, College of Science, Al-Nahrain University, Baghdad, Iraq

**Abstract:-** Background: Negative stigma related to COVID-19, which has a social impact, among others, can cause an individual to hide their illness to avoid discrimination, prevent people from seeking immediate health care when experiencing symptoms, prevent individuals from developing healthy behaviors, and contribute to more severe health problems, ongoing transmission, and difficulties in controlling the spread of the COVID-19 virus. Objectives: The purpose and aim of conducting this research are to determine the effect of the stigma of COVID-19 on health care for individuals infected with COVID-19. Materials and methods: This research is descriptive research with quantitative and qualitative methods as a complement. Respondents involved in the quantitative method were 291 people, and qualitative (in-depth interviews) were 21 key informants. The research was carried out in 4 cities in Indonesia from December 2022 to June 2023.

Results: Most were women (69.8%), aged 26-35 years (37.1%), Diploma/Undergraduate (66.7%), and worked as government employees (28.9%). This research founds that 59.1% of respondents have moderate knowledge about COVID-19, and 83.8% answered that they really need information related to COVID-19. Regarding trust in information sources, most respondents (83.8%) responded that they trust it. We also found 79.4% of the respondent has moderate behavior towards the pandemic, and 74.6% has average emotional well-being. Stigma was evaluated through questionnaires distributed in a guided manner with the result that 6.19% of the 291 respondents experienced stigma, while 93.8% had no stigma related to COVID-19. Multiple linear regression test found that the significance value for the influence of knowledge, the need for information, trust in information sources, behavior towards pandemics and emotional well-being simultaneously for stigma is 0.000 < 0.05. The calculated F value is 4.716 > F table 2.25, so it can be concluded that the above factors significantly influence simultaneous Stigma.

Conclusion: This study found that knowledge, need for information, trust in information sources, attitudes towards pandemics and emotional well-being simultaneously have a significant effect on Stigma.

**Keyword:-** COVID-19, Knowledge, Behavior, Stigma.



**Supplementary information** The online version of this article (https://doi.org/xx.xxx/xxx.xx) contains supplementary material,which is available to autho-rized users.

**Corresponding Author:** Nany Hairunisa†, Department of Occupational Medicine, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia
*ORCID ID: https://orcid.org/0000-0003-2414-9224

## Introduction

The COVID-19 pandemic caused by infection with the SARS-CoV-2 virus was first discovered in Wuhan, China, at the end of 2019 and was later declared a pandemic by WHO in March 2020. Since it first appeared until March 2022, 440,807,756 cases have been found worldwide, and precisely as many as 5,639,702 cases in Indonesia. [1], [2] Globally, the COVID-19 pandemic is causing health problems that impact a person's physical condition and emotional well-being.[3] Individuals infected with SARS-CoV-2 may have psychiatric comorbidities as well as problems related to depression, anxiety, stress, as well as negative stigma, which refers to disapproval or negative attitudes towards people infected with COVID-19.[4] Stigma is closely related to mental health problems, especially depression, so this social stigma then becomes an important part influencing public discourse and social phenomena towards the COVID-19 pandemic.[5]

During the COVID-19 pandemic, stigma has become a public health challenge. Stigma related to COVID-19 refers to disapproving or negative self-attitudes stemming from individuals infected with, or who have close contact with, COVID-19.[6], [7] Recent findings indicate that some survivors of COVID-19 and their family members are rejected by neighbors, landlords, and even their employers.[8] Certain subpopulations, such as people suspected of having a high risk of contracting COVID-19, such as foreign travelers and individuals returning home from quarantine, also experience various forms of stigmatization, including social exclusion, stereotyping, and even humiliation.[9]

The social impacts of negative stigma related to COVID-19 include causing an individual to hide their illness to avoid discrimination, preventing people from seeking immediate health care when experiencing symptoms, preventing individuals from developing healthy behaviors, and contributing to more serious health problems. Severe, ongoing transmission and difficulties in controlling the spread of the COVID-19 virus.[9]

Social stigma in health is a negative association between a person or group of people with certain characteristics and certain diseases. In this case, labels, stereotypes, or discrimination against people infected with the COVID-19 virus exist.[10] Stigma can encourage someone to tend to hide their illness to avoid discrimination, prevent people from seeking immediate health care, and prevent them from adopting healthy behaviors. The magnitude of a discriminatory social stigma will hinder the discovery and treatment of COVID-19 sufferers.[9]

This then also has a negative impact on the treatment and care of patients. The current COVID-19 pandemic has triggered social stigma and discriminatory behavior towards individuals from certain ethnic backgrounds as well as individuals who are considered to have had contact with the virus.[9] A prejudiced and discriminatory public view of COVID-19 can lead to reduced access to treatment, inability to make decisions regarding treatment, and treatment being enforced. In addition, stigma also has a negative impact on coping policies and programs aimed at overcoming the COVID-19 pandemic.[11], [12]

The COVID-19 pandemic has caused serious threats to human physical health and life. This triggers various psychological problems; panic disorder, anxiety, and depression.[13]

## Materials and Methods

The research design was cross-sectional and conducted from September 2022 to July 2023. The research locations were in 4 cities/districts in 4 regions of Indonesia (Jakarta, Aceh, Bali, and Maluku). The selection of samples was consecutively non-random sampling. The questionnaire-based survey (quantitative) and qualitative methodologies were nested into it.

Data were collected from December 2022 to March 2023 in 4 cities/districts in Indonesia. Quantitative data comprised 291 respondents, with the sample population from each province calculated using the proportion of qualitative respondents. In addition, a total of 21 respondents were conducted in in-depth interviews (in-depth interviews), which will still be carried out with several respondents in Greater Jakarta.

The questionnaire was built with survey tools and COVID-19 guidelines from WHO (WHO, 2020).[14] The questionnaire includes six significant dimensions, knowledge, need for information, trust in information sources, behavior towards the pandemic, emotional well-being, and stigma. In addition to primary demographic details,

respondents were also asked to determine the distance to a health facility, positive Covid-19 status, prevention and treatment, and treatment-seeking behavior for COVID-19.

**Statistical Analyses**

Univariate and multivariate analyzes were performed with IBM SPSS Statistics 25.0 (Statistical Package for Social Sciences, New York, USA) program. In multivariate analysis, multiple linear regression was used to determine the effect of several factors on stigma. The t-test was used to determine the partial effect of several factors on stigma, and the F test to determine the simultaneous effect of several factors on stigma. The coefficient of termination is also used to determine the percentage of influence that several factors simultaneously have on stigma.

## Results

Data collection was carried out from December 2022 to March 2023 in 4 cities/regencies in Indonesia for quantitative data consisting of 291 respondents. In addition, 21 respondents conducted in-depth interviews, which complemented this study.

***Table 1. The Demographics of Respondent***

| Characteristic | N | % |
|---|---|---|
| Age | | |
| 18–25-year-old | 104 | 35.7 |
| 26–35-year-old | 108 | 37.1 |
| 36–45-year-old | 50 | 17.2 |
| >45-year-old | 29 | 10 |
| Gender | | |
| Male | 88 | 30.2 |
| Female | 203 | 69.8 |
| Education | | |
| High school | 91 | 31.3 |
| Diploma/Undergraduate | 194 | 66.7 |
| Postgraduate | 6 | 2.1 |
| Marital Status | | |
| Married | 153 | 52.6 |
| Not married/Divorced | 138 | 47.4 |
| Occupation | | |
| Government employee | 84 | 28.9 |
| Health care worker | 66 | 22.7 |
| Student | 69 | 23.7 |
| Private employee | 49 | 16.8 |
| Businessman | 15 | 5.2 |
| Others | 8 | 2.7 |
| Religion | | |
| Islam | 222 | 76.3 |
| Christian/Catholic | 18 | 6.2 |
| Hindu | 47 | 16.2 |
| Buddhist | 4 | 1.4 |
| Residence | | |
| Aceh | 67 | 23.0 |
| Bali | 73 | 25.1 |
| JABODETABEK | 78 | 26.8 |
| Maluku | 73 | 25.1 |

Most of the respondents in this study were women, as much as 69.8% and aged 22-35 years, as much as 37.1%. The age of respondents ranged from 18–58 years, with a mean age of 30.47. At the same time, the median and mode were 29 and 21 years, respectively. The highest age group was 26-35 years (37.1%). Around two-thirds of the

participants were female. And 52.6% of individuals were married. Most respondents' educational level is Diploma/Undergraduate 66.7% and as much as 28.9% are government employees. While the religion that is followed by the majority is Islam, 76.3%.

**Univariate analysis**

In our questionnaire, we assessed several factors related to COVID-19, such as knowledge, need for information, trust in information sources, behavior toward the pandemic, emotional well-being and the stigma of COVID-19 with the results we can see in Table 2.

A total of 29 questions in the questionnaire related to knowledge about COVID-19, ten questions related to the need for information about COVID-19 and seven questions about trust in sources of information were asked of the respondents. The majority of respondents have moderate knowledge about COVID-19, as much as 59.1%. When asked whether they felt they needed more detailed information about COVID-19, 83.8% of respondents answered that they needed it. Regarding trust in sources of information, respondents were asked how much they trust doctors, the mass media, hospitals, the Ministry of Health and the role of community leaders or religious leaders in properly handling Covid-19, and 83.8% of respondents answered they trust. This was reinforced by the results of our in-depth interviews with key informants in collecting qualitative data, almost all of whom responded that the role of doctors down to the community level, in this case, religious leaders, plays a significant role in efforts to reduce transmission and in efforts to minimize the stigma that exists in society against COVID-19 patients so that management can be carried out properly. The following is one of the key informant comments from Bali. "*They work hand in hand. They coordinate well in Bali. Suppose there is this case, for example. We have officers at the Puskesmas doing surveillance; we communicate directly with Klian. In Bali, Klian is the head of the village. They have officials in their respective villages. In their village, there is an officer handling covid; they immediately went down to survey the place." Said Mrs D, 54 years old from Bali.*

***Table 2. Univariate analysis***

| Variable | N | % |
|---|---|---|
| Knowledge about COVID-19 | | |
| Good | 24 | 8.2 |
| Moderate | 172 | 59.1 |
| Lack | 95 | 32.6 |
| The Need for Information on COVID-19 | | |
| Really need | 244 | 83.8 |
| Simply need | 23 | 7.9 |
| Did not need | 24 | 8.2 |
| Trust in information sources | | |
| Trust | 244 | 83.8 |
| Did not trust | 47 | 16.2 |
| Behavior towards the Pandemic | | |
| Good | 42 | 14.4 |
| Average | 231 | 79.4 |
| Poor | 18 | 6.2 |
| Emotional Well-being | | |
| Good | 69 | 23.7 |
| Moderate | 217 | 74.6 |
| Poor | 5 | 1.7 |
| Stigma on COVID-19 | | |
| Yes | 18 | 6.2 |
| No | 273 | 93.8 |

The questionnaire also asked 13 questions about behavior towards a pandemic and ten questions about emotional well-being. The majority of respondents have relatively good behavior, namely 79.4%. The behavior here includes asking families not to visit during a pandemic and buying personal protective equipment (gloves, masks) etc.; almost

all respondents have mediocre behavior, namely 79.4%. As for the emotional well-being aspect, 74.6% of respondents have average emotional well-being.

Regarding stigma, we asked 31 questions related to stigma, and the result was 93.8% of respondents did not experience stigma associated with COVID-19, but 6.2% did experience stigma.

**Multivariate analysis**

The analysis was carried out using Multiple Linear Regression with the results as we can see in Table 3.

***Table 3. Multiple linier regression for stigma***

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| Knowledge about COVID-19 | 0.062 | 0.070 | 0.059 | 0.889 | 0.375 |
| The Need for Information on COVID-19 | 0.045 | 0.041 | 0.078 | 1.105 | 0.270 |
| Trust in information sources | 0.155 | 0.054 | 0.192 | 2.885 | 0.004 |
| Behavior towards the Pandemic | -0.029 | 0.072 | -0.026 | -0.399 | 0.690 |
| Emotional Well-being | 0.063 | 0.071 | 0.054 | 0.879 | 0.380 |

a. Dependent Variable: Stigma

From the calculations that have been done, the t-table value is 1,968. Analysis using multiple linear regression shows that the effect of knowledge on stigma is 0.375 > 0.05, and the t-value is 0.889 <1.968, so it can be concluded that there is no significant effect between knowledge and stigma. The effect of the Need for Information on COVID-19 on stigma is 0.270 > 0.05, and the t count is 1.105 <1.968, so it can be concluded that there is no significant effect of the need for information on stigma. The effect of behavior on stigma is 0.690 > 0.05, and the t value is -0.399 < 1.968, so it can be concluded that behavior towards the pandemic has no effect on stigma. Likewise, the effect of emotional well-being on stigma is 0.380 > 0.005, and the t-value is 0.879 <1.968, so it can be concluded that emotional well-being does not affect stigma. Meanwhile, the effect of Trust in information sources is 0.004 <0.05, and the t-value is 2.885 <1.968, so it can be concluded that Trust in information sources significantly affects stigma.

***Table 4. ANOVA[a]***

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 4127.995 | 5 | 825.599 | 4.716 | 0.000[b] |
| Residual | 49897.448 | 285 | 175.079 | | |
| Total | 54025.443 | 290 | | | |

a. Dependent Variable: Stigma

b. Predictors: (Constant), Emotional Well-being, Information Needs, Behavior, Knowledge, Trust in Information Sources

Calculations have been made for the value of the F table, and the result is 2.25. As seen in Table 4, the ANOVA test obtained the value of Sig. 0.000 <0.05 and calculated F value of 4.716 > F table 2.25 so that it can be concluded that there is an effect of variable knowledge about COVID-19; the need for information on COVID-19; trust in information sources; behavior towards the pandemic and emotional well-being simultaneously towards stigma.

***Tabel 5. The coefficient of termination***

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.276[a] | 0.076 | 0.060 | 13.232 |

a. Predictors: (Constant), Emotional Well-being, Information Needs, Behavior, Knowledge, Trust in Information Sources

In the results of the subsequent analysis, we can see in Table 5, which shows the R square value of 0.076, which states that the effect of the variable, emotional well-being, information needs, behavior, knowledge, and trust in information sources simultaneously on stigma is 7.6%.

## Discussion

The spread of the coronavirus and its global reach has become a critical concern and calls for action to prevent further spread of the virus collectively. Even though most people are worried about staying safe during this pandemic, minimizing the stigma associated with the coronavirus because it can exacerbate this quite tense situation is very important.[15]

The World Health Organization (WHO) emphasizes the effectiveness of interventions to reduce stigma, pointing to activities related to building trust in health care, providing timely and proven information, showing empathy to people affected by illness and creating an environment that facilitates an open discussion between people and health professionals. Promoting an understanding of the disease and taking adequate and practical precautions to ensure the safety of oneself and loved ones is crucial. How we communicate about COVID-19 is critical to helping us take effective action to fight the disease and avoid the fear and stigma it triggers. An environment must be created in which diseases and related problems can be discussed and dealt with in an open, honest and compelling manner. CIFRC, UNICEF, WHO. Social Stigma Associated with COVID-19.[16], [17]

In a multivariate analysis, it was found that knowledge about COVID-19 did not significantly affect the stigma of COVID-19. However, the univariate results found that most respondents from the four cities studied had moderate knowledge about COVID-19. This is in line with the results of a study conducted by Singh et al. on the Indian population, where it was found that most respondents had a moderate level of covid related knowledge.[18] In addition, the level of knowledge about COVID-19 shown in this study is higher than the Bangladeshis.[19]

In this study, it was found that 83.8% of respondents stated that they really needed information related to COVID-19. However, in the multivariate analysis, it was found that the need for information did not have a significant effect on stigma. In a study conducted by Bhanot et al., it was found stigma produces long-term emotional and social consequences that stigma produces beyond the infection itself. The main reason for the stigma attached to the disease is ignorance. When the COVID-19 pandemic emerged, information about the causative agent, the nature of the virus, the severity of the infection, and the mode of transmission and management was lacking because the virus was still new, so there was a lot of misinformation. Today, in the era of social media, many statements are spread that are not verified, and then they go "viral". The need for accurate information is urgently needed by the community so that stigma can be suppressed. All parties must be committed to providing valid and correct details on COVID-19.[20]

The role of community leaders or traditional leaders in certain areas significantly reduces the stigma in the community related to COVID-19, especially the stigma against health workers who treat COVID-19 patients or provide health services during a pandemic. This has more or less affected the incidence of COVID-19 in Indonesia. Information from sources that are unreliable, either through word of mouth, mass media and social media, still dominates among the public, causing distrust of the dangers of COVID-19 which then affects compliance with health protocols.[21] This is in line with the results of our research, the sources of information are very important. In a univariate analysis, it was found that 83.8% of respondents stated that they trusted sources of information such as doctors, health services, traditional leaders, and religious leaders up to the level of the Ministry of Health. In the multivariate analysis results, it was found that trust in information sources has a significant effect on stigma.

In this study, statistical testing showed behavior has no significant effect on stigma. This aligns with research conducted by Devantoro et al. in a cross-sectional epidemiological study involving 2,240 Indonesian population. Statistical tests showed that there was no significant relationship between behavior and stigma.[22] The pandemic and how it can affect people's behavior towards health workers are still of little concern to researchers. Stigma is a predictable problem, but of course, it can lead to more direct severe consequences for the performance of health workers.[23] When health workers experience stigma, which results in increased stress, this can result in patients not getting proper care.[24]

In our study, most of the respondents had fairly good emotional well-being. In the multivariate analysis, it was found that emotional well-being did not have a significant effect on stigma. This aligns with research conducted by Lades et al. that researched differences in emotional well-being and how people spend their time during the pandemic. They found that most time spent at home and outside the home was associated with increased positive affect and

decreased negative emotions. These findings highlight activities that may play a protective role concerning well-being during a pandemic and the importance of limiting exposure to media coverage related to COVID-19.[25]

We also conducted a multivariate analysis to assess the effect of knowledge about COVID-19, need for information, trust in information sources, behavior towards COVID-19 and emotional well-being simultaneously on stigma. Our research found a significant effect of all these variables on COVID-19. In a study conducted by Danborno et al., the same results were found that there was a significant effect between the knowledge, attitudes, practices (KAP), fear and stigma of the population towards COVID-19 from state to state.[26]

**Limitation of the study**

In answering the questionnaire, the respondents answered themselves, so the results depended on the respondents' honesty and their ability to remember it might create a memory bias. The mixed research design (quantitative and qualitative) makes it less possible for us to conduct statistical validity and reliability analysis. Furthermore, the research was conducted in 4 cities with only 291 respondents, so it does not represent the diverse Indonesian population.

## Conclusion

This study found that knowledge, need for information, trust in information sources, attitudes towards pandemics and emotional well-being simultaneously have a significant effect on Stigma. The role of community leaders or traditional leaders in certain areas significantly reduces the stigma in the community related to COVID-19, especially the stigma against health workers who treat COVID-19 patients or provide health services during a pandemic. This has more or less affected the incidence of COVID-19 in Indonesia.

## Ethical Declarations

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**Ethics Approval and Consent to Participate**

Ethical clearance from the Faculty of Medicine Universitas Trisakti Research Ethics Committee No. 180/KER/FK/X/2022 and research permits from the Ministry of Home Affairs No.400.5/7800/Polpum were obtained. All respondents filled out informed consent and had the right to resign whenever the respondent wanted. The interviews' results were kept confidential and strictly protected by removing all personal identifiers from the form to protect the respondents' privacy.

**Consent for Publication**

Not applicable (no individual personal data included).

**Availability of Data and Material**

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

**Competing Interests**

The authors declare that there is no conflict of interest.

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**Authors' Contributions**

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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# The Stigma of COVID-19 And Its Influence on The Management of COVID-19

*by* Husnun Amalia

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# The Stigma of COVID-19 And Its Influence on The Management of COVID-19

Nany Hairunisa [1*], Husnun Amalia[2], Isra Sabrina[3], Nashita Amira Zaina[4]

[1] Department of Occupational Medicine, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia
[2] Department of Ophthalmology, Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia.
[3] Department of Cardiology, Siloam Hospital, Banten, Indonesia
[4] Faculty of Medicine, Universitas Trisakti, Jakarta, Indonesia
[*]Corresponding author: Nany Hairunisa
E-mails address: nanyhairunisa@trisakti.ac.id
Phone number: 0062 8215417 1253
[*]ORCID ID: https://orcid.org/0000-0003-2414-9224

## ABSTRACT

**Background:** Negative stigma related to COVID-19, which has a social impact, among others, can cause an individual to hide their illness to avoid discrimination, prevent people from seeking immediate health care when experiencing symptoms, prevent individuals from developing healthy behaviors, and contribute to more severe health problems, ongoing transmission, and difficulties in controlling the spread of the COVID-19 virus.

**Objectives:** The purpose and aim of conducting this research are to determine the effect of the stigma of COVID-19 on health care for individuals infected with COVID-19.

**Materials and methods:** This research is descriptive research with quantitative and qualitative methods as a complement. Respondents involved in the quantitative method were 291 people, and qualitative (in-depth interviews) were 21 key informants. The research was carried out in 4 cities in Indonesia from December 2022 to June 2023.

**Results:** Most were women (69.8%), aged 26-35 years (37.1%), Diploma/Undergraduate (66.7%), and worked as government employees (28.9%). This research founds that 59.1% of respondents have moderate knowledge about COVID-19, and 83.8% answered that they really need information related to COVID-19. Regarding trust in information sources, most respondents (83.8%) responded that they trust it. We also found 79.4% of the respondent has moderate behavior towards the pandemic, and 74.6% has average emotional well-being. Stigma was evaluated through questionnaires distributed in a guided manner with the result that 6.19% of the 291 respondents experienced stigma, while 93.8% had no stigma related to COVID-19. Multiple linear regression test found that the significance value for the influence of knowledge, the need for information, trust in information sources, behavior towards pandemics and emotional well-being simultaneously for stigma is $0.000 < 0.05$. The calculated F value is $4.716 >$ F table 2.25, so it can be concluded that the above factors significantly influence simultaneous Stigma.

**Conclusion:** This study found that knowledge, need for information, trust in information sources, attitudes towards pandemics and emotional well-being simultaneously have a significant effect on Stigma.



**Keywords**: COVID-19, Knowledge, Behavior, Stigma.

## INTRODUCTION

The COVID-19 pandemic caused by infection with the SARS-CoV-2 virus was first discovered in Wuhan, China, at the end of 2019 and was later declared a pandemic by WHO in March 2020. Since it first appeared until March 2022, 440,807,756 cases have been found worldwide, and precisely as many as 5,639,702 cases in Indonesia. [1], [2] Globally, the COVID-19 pandemic is causing health problems that impact a person's physical condition and emotional well-being.[3] Individuals infected with SARS-CoV-2 may have psychiatric comorbidities as well as problems related to depression, anxiety, stress, as well as negative stigma, which refers to disapproval or negative attitudes towards people infected with COVID-19.[4] Stigma is closely related to mental health problems, especially depression, so this social stigma then becomes an important part influencing public discourse and social phenomena towards the COVID-19 pandemic.[5]

During the COVID-19 pandemic, stigma has become a public health challenge. Stigma related to COVID-19 refers to disapproving or negative self-attitudes stemming from individuals infected with, or who have close contact with, COVID-19.[6], [7] Recent findings indicate that some survivors of COVID-19 and their family members are rejected by neighbors, landlords, and even their employers.[8] Certain subpopulations, such as people suspected of having a high risk of contracting COVID-19, such as foreign travelers and individuals returning home from quarantine, also experience various forms of stigmatization, including social exclusion, stereotyping, and even humiliation.[9]

The social impacts of negative stigma related to COVID-19 include causing an individual to hide their illness to avoid discrimination, preventing people from seeking immediate health care when experiencing symptoms, preventing individuals from developing healthy behaviors, and contributing to more serious health problems. Severe, ongoing transmission and difficulties in controlling the spread of the COVID-19 virus.[9]

Social stigma in health is a negative association between a person or group of people with certain characteristics and certain diseases. In this case, labels, stereotypes, or discrimination against people infected with the COVID-19 virus exist.[10] Stigma can encourage someone to tend to hide their illness to avoid discrimination, prevent people from seeking immediate health care, and prevent them from adopting healthy behaviors. The magnitude of a discriminatory social stigma will hinder the discovery and treatment of COVID-19 sufferers.[9]

This then also has a negative impact on the treatment and care of patients. The current COVID-19 pandemic has triggered social stigma and discriminatory behavior towards individuals from certain ethnic backgrounds as well as individuals who are considered to have had contact with the virus.[9] A prejudiced and discriminatory public view of COVID-19 can lead to reduced access to treatment, inability to make decisions regarding treatment, and treatment being enforced. In addition, stigma also has a negative impact on coping policies and programs aimed at overcoming the COVID-19 pandemic.[11], [12]

The COVID-19 pandemic has caused serious threats to human physical health and life. This triggers various psychological problems; panic disorder, anxiety, and depression.[13]

## MATERIALS AND METHODS

The research design was cross-sectional and conducted from September 2022 to July 2023. The research locations were in 4 cities/districts in 4 regions of Indonesia (Jakarta, Aceh, Bali, and Maluku). The selection of samples was consecutively non-random sampling. The questionnaire-based survey (quantitative) and qualitative methodologies were nested into it.

Data were collected from December 2022 to March 2023 in 4 cities/districts in Indonesia. Quantitative data comprised 291 respondents, with the sample population from each province calculated using the proportion of qualitative respondents. In addition, a total of 21 respondents were conducted in in-depth interviews (in-depth interviews), which will still be carried out with several respondents in Greater Jakarta.

The questionnaire was built with survey tools and COVID-19 guidelines from WHO (WHO, 2020).[14] The questionnaire includes six significant dimensions, knowledge, need for information, trust in information sources, behavior towards the pandemic, emotional well-being, and stigma. In addition to primary demographic details, respondents were also asked to determine the distance to a health facility, positive Covid-19 status, prevention and treatment, and treatment-seeking behavior for COVID-19.

### Statistical Analyses

Univariate and multivariate analyzes were performed with IBM SPSS Statistics 25.0 (Statistical Package for Social Sciences, New York, USA) program. In multivariate analysis, multiple linear regression was used to determine the effect of several factors on stigma. The t-test was used to determine the partial effect of several factors on stigma, and the F test to determine the simultaneous effect of several factors on stigma. The coefficient of termination is also used to determine the percentage of influence that several factors simultaneously have on stigma.

## RESULTS

Data collection was carried out from December 2022 to March 2023 in 4 cities/regencies in Indonesia for quantitative data consisting of 291 respondents. In addition, 21 respondents conducted in-depth interviews, which complemented this study.

Table 1. The Demographics of Respondent

| Characteristic | N | % |
|---|---|---|
| Age | | |
| 18–25-year-old | 104 | 35.7 |
| 26–35-year-old | 108 | 37.1 |
| 36–45-year-old | 50 | 17.2 |
| >45-year-old | 29 | 10 |
| Gender | | |
| Male | 88 | 30.2 |
| Female | 203 | 69.8 |
| Education | | |
| High school | 91 | 31.3 |
| Diploma/Undergraduate | 194 | 66.7 |
| Postgraduate | 6 | 2.1 |
| Marital Status | | |
| Married | 153 | 52.6 |
| Not married/Divorced | 138 | 47.4 |
| Occupation | | |
| Government employee | 84 | 28.9 |
| Health care worker | 66 | 22.7 |
| Student | 69 | 23.7 |
| Private employee | 49 | 16.8 |
| Businessman | 15 | 5.2 |
| Others | 8 | 2.7 |
| Religion | | |
| Islam | 222 | 76.3 |
| Christian/Catholic | 18 | 6.2 |
| Hindu | 47 | 16.2 |
| Buddhist | 4 | 1.4 |
| Residence | | |
| Aceh | 67 | 23.0 |
| Bali | 73 | 25.1 |
| JABODETABEK | 78 | 26.8 |
| Maluku | 73 | 25.1 |

Most of the respondents in this study were women, as much as 69.8% and aged 22-35 years, as much as 37.1%. The age of respondents ranged from 18–58 years, with a mean age of 30.47. At the same time, the median and mode were 29 and 21 years, respectively. The highest age group was 26-35 years (37.1%). Around two-thirds of the participants were female. And 52.6% of

individuals were married. Most respondents' educational level is Diploma/Undergraduate 66.7% and as much as 28.9% are government employees. While the religion that is followed by the majority is Islam, 76.3%.

**Univariate analysis**

In our questionnaire, we assessed several factors related to COVID-19, such as knowledge, need for information, trust in information sources, behavior toward the pandemic, emotional well-being and the stigma of COVID-19 with the results we can see in Table 2.

A total of 29 questions in the questionnaire related to knowledge about COVID-19, ten questions related to the need for information about COVID-19 and seven questions about trust in sources of information were asked of the respondents. The majority of respondents have moderate knowledge about COVID-19, as much as 59.1%. When asked whether they felt they needed more detailed information about COVID-19, 83.8% of respondents answered that they needed it. Regarding trust in sources of information, respondents were asked how much they trust doctors, the mass media, hospitals, the Ministry of Health and the role of community leaders or religious leaders in properly handling Covid-19, and 83.8% of respondents answered they trust. This was reinforced by the results of our in-depth interviews with key informants in collecting qualitative data, almost all of whom responded that the role of doctors down to the community level, in this case, religious leaders, plays a significant role in efforts to reduce transmission and in efforts to minimize the stigma that exists in society against COVID-19 patients so that management can be carried out properly. The following is one of the key informant comments from Bali. "*They work hand in hand. They coordinate well in Bali. Suppose there is this case, for example. We have officers at the Puskesmas doing surveillance; we communicate directly with Klian. In Bali, Klian is the head of the village. They have officials in their respective villages. In their village, there is an officer handling covid; they immediately went down to survey the place." Said Mrs D, 54 years old from Bali.*

Table 2. Univariate analysis

| Variable | N | % |
|---|---|---|
| Knowledge about COVID-19 | | |
| Good | 24 | 8.2 |
| Moderate | 172 | 59.1 |
| Lack | 95 | 32.6 |
| The Need for Information on COVID-19 | | |
| Really need | 244 | 83.8 |
| Simply need | 23 | 7.9 |
| Did not need | 24 | 8.2 |
| Trust in information sources | | |

| | | |
|---|---|---|
| Trust | 244 | 83.8 |
| Did not trust | 47 | 16.2 |
| Behavior towards the Pandemic | | |
| Good | 42 | 14.4 |
| Average | 231 | 79.4 |
| Poor | 18 | 6.2 |
| Emotional Well-being | | |
| Good | 69 | 23.7 |
| Moderate | 217 | 74.6 |
| Poor | 5 | 1.7 |
| Stigma on COVID-19 | | |
| Yes | 18 | 6.2 |
| No | 273 | 93.8 |

The questionnaire also asked 13 questions about behavior towards a pandemic and ten questions about emotional well-being. The majority of respondents have relatively good behavior, namely 79.4%. The behavior here includes asking families not to visit during a pandemic and buying personal protective equipment (gloves, masks) etc.; almost all respondents have mediocre behavior, namely 79.4%. As for the emotional well-being aspect, 74.6% of respondents have average emotional well-being.

Regarding stigma, we asked 31 questions related to stigma, and the result was 93.8% of respondents did not experience stigma associated with COVID-19, but 6.2% did experience stigma.

**Multivariate analysis**

The analysis was carried out using Multiple Linear Regression with the results as we can see in Table 3.

Table 3. Multiple linier regression for stigma

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| Knowledge about COVID-19 | 0.062 | 0.070 | 0.059 | 0.889 | 0.375 |
| The Need for Information on COVID-19 | 0.045 | 0.041 | 0.078 | 1.105 | 0.270 |
| Trust in information sources | 0.155 | 0.054 | 0.192 | 2.885 | 0.004 |
| Behavior towards the Pandemic | -0.029 | 0.072 | -0.026 | -0.399 | 0.690 |
| Emotional Well-being | 0.063 | 0.071 | 0.054 | 0.879 | 0.380 |

a. Dependent Variable: Stigma

From the calculations that have been done, the t-table value is 1,968. Analysis using multiple linear regression shows that the effect of knowledge on stigma is 0.375 > 0.05, and the t-value is 0.889 <1.968, so it can be concluded that there is no significant effect between knowledge and stigma. The effect of the Need for Information on COVID-19 on stigma is 0.270 > 0.05, and the t count is 1.105 <1.968, so it can be concluded that there is no significant effect of the need for information on stigma. The effect of behavior on stigma is 0.690 > 0.05, and the t value is -0.399 < 1.968, so it can be concluded that behavior towards the pandemic has no effect on stigma. Likewise, the effect of emotional well-being on stigma is 0.380 > 0.005, and the t-value is 0.879 <1.968, so it can be concluded that emotional well-being does not affect stigma. Meanwhile, the effect of Trust in information sources is 0.004 <0.05, and the t-value is 2.885 <1.968, so it can be concluded that Trust in information sources significantly affects stigma.

Table 4. ANOVA[a]

| Model | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 4127.995 | 5 | 825.599 | 4.716 | 0.000[b] |
| Residual | 49897.448 | 285 | 175.079 | | |
| Total | 54025.443 | 290 | | | |

a. Dependent Variable: Stigma
b. Predictors: (Constant), Emotional Well-being, Information Needs, Behavior, Knowledge, Trust in Information Sources

Calculations have been made for the value of the F table, and the result is 2.25. As seen in Table 4, the ANOVA test obtained the value of Sig. 0.000 <0.05 and calculated F value of 4.716 > F table 2.25 so that it can be concluded that there is an effect of variable knowledge about COVID-19; the need for information on COVID-19; trust in information sources; behavior towards the pandemic and emotional well-being simultaneously towards stigma.

Tabel 5. The coefficient of termination

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | 0.276[a] | 0.076 | 0.060 | 13.232 |

a. Predictors: (Constant), Emotional Well-being, Information Needs, Behavior, Knowledge, Trust in Information Sources

In the results of the subsequent analysis, we can see in Table 5, which shows the R square value of 0.076, which states that the effect of the variable, emotional well-being, information needs, behavior, knowledge, and trust in information sources simultaneously on stigma is 7.6%.

## DISCUSSION

The spread of the coronavirus and its global reach has become a critical concern and calls for action to prevent further spread of the virus collectively. Even though most people are worried about staying safe during this pandemic, minimizing the stigma associated with the coronavirus because it can exacerbate this quite tense situation is very important.[15]

The World Health Organization (WHO) emphasizes the effectiveness of interventions to reduce stigma, pointing to activities related to building trust in health care, providing timely and proven information, showing empathy to people affected by illness and creating an environment that facilitates an open discussion between people and health professionals. Promoting an understanding of the disease and taking adequate and practical precautions to ensure the safety of oneself and loved ones is crucial. How we communicate about COVID-19 is critical to helping us take effective action to fight the disease and avoid the fear and stigma it triggers. An environment must be created in which diseases and related problems can be discussed and dealt with in an open, honest and compelling manner. CIFRC, UNICEF, WHO. Social Stigma Associated with COVID-19.[16], [17]

In a multivariate analysis, it was found that knowledge about COVID-19 did not significantly affect the stigma of COVID-19. However, the univariate results found that most respondents from the four cities studied had moderate knowledge about COVID-19. This is in line with the results of a study conducted by Singh et al. on the Indian population, where it was found that most respondents had a moderate level of covid related knowledge.[18] In addition, the level of knowledge about COVID-19 shown in this study is higher than the Bangladeshis.[19]

In this study, it was found that 83.8% of respondents stated that they really needed information related to COVID-19. However, in the multivariate analysis, it was found that the need for information did not have a significant effect on stigma. In a study conducted by Bhanot et al., it was found stigma produces long-term emotional and social consequences that stigma produces beyond the infection itself. The main reason for the stigma attached to the disease is ignorance. When the COVID-19 pandemic emerged, information about the causative agent, the nature of the virus, the severity of the infection, and the mode of transmission and management was lacking because the virus was still new, so there was a lot of misinformation. Today, in the era of social media, many statements are spread that are not verified, and then they go "viral". The need for accurate information is urgently needed by the community so that stigma can be suppressed. All parties must be committed to providing valid and correct details on COVID-19.[20]

The role of community leaders or traditional leaders in certain areas significantly reduces the stigma in the community related to COVID-19, especially the stigma against health workers who treat COVID-19 patients or provide health services during a pandemic. This has more or less

affected the incidence of COVID-19 in Indonesia. Information from sources that are unreliable, either through word of mouth, mass media and social media, still dominates among the public, causing distrust of the dangers of COVID-19 which then affects compliance with health protocols.[21] This is in line with the results of our research, the sources of information are very important. In a univariate analysis, it was found that 83.8% of respondents stated that they trusted sources of information such as doctors, health services, traditional leaders, and religious leaders up to the level of the Ministry of Health. In the multivariate analysis results, it was found that trust in information sources has a significant effect on stigma.

In this study, statistical testing showed behavior has no significant effect on stigma. This aligns with research conducted by Devantoro et al. in a cross-sectional epidemiological study involving 2,240 Indonesian population. Statistical tests showed that there was no significant relationship between behavior and stigma.[22] The pandemic and how it can affect people's behavior towards health workers are still of little concern to researchers. Stigma is a predictable problem, but of course, it can lead to more direct severe consequences for the performance of health workers.[23] When health workers experience stigma, which results in increased stress, this can result in patients not getting proper care.[24]

In our study, most of the respondents had fairly good emotional well-being. In the multivariate analysis, it was found that emotional well-being did not have a significant effect on stigma. This aligns with research conducted by Lades et al. that researched differences in emotional well-being and how people spend their time during the pandemic. They found that most time spent at home and outside the home was associated with increased positive affect and decreased negative emotions. These findings highlight activities that may play a protective role concerning well-being during a pandemic and the importance of limiting exposure to media coverage related to COVID-19.[25]

We also conducted a multivariate analysis to assess the effect of knowledge about COVID-19, need for information, trust in information sources, behavior towards COVID-19 and emotional well-being simultaneously on stigma. Our research found a significant effect of all these variables on COVID-19. In a study conducted by Danborno et al., the same results were found that there was a significant effect between the knowledge, attitudes, practices (KAP), fear and stigma of the population towards COVID-19 from state to state.[26]

## Limitation of the study

In answering the questionnaire, the respondents answered themselves, so the results depended on the respondents' honesty and their ability to remember it might create a memory bias. The mixed research design (quantitative and qualitative) makes it less possible for us to conduct statistical validity and reliability analysis. Furthermore, the research was conducted in 4 cities with only 291 respondents, so it does not represent the diverse Indonesian population.

## CONCLUSION

This study found that knowledge, need for information, trust in information sources, attitudes towards pandemics and emotional well-being simultaneously have a significant effect on Stigma. The role of community leaders or traditional leaders in certain areas significantly reduces the stigma in the community related to COVID-19, especially the stigma against health workers who treat COVID-19 patients or provide health services during a pandemic. This has more or less affected the incidence of COVID-19 in Indonesia.

## ETHICAL DECLARATIONS


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### Ethics Approval and Consent to Participate

Ethical clearance from the Faculty of Medicine Universitas Trisakti Research Ethics Committee No. 180/KER/FK/X/2022 and research permits from the Ministry of Home Affairs No.400.5/7800/Polpum were obtained. All respondents filled out informed consent and had the right to resign whenever the respondent wanted. The interviews' results were kept confidential and strictly protected by removing all personal identifiers from the form to protect the respondents' privacy.

### Consent for Publication

Not applicable (no individual personal data included).

### Availability of Data and Material

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

### Competing Interests

The authors declare that there is no conflict of interest.

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## Authors' Contributions

All authors listed have made a substantial, direct, and intellectual contribution to the work, and approved it for publication.

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