





# Knowledge, attitudes, and practice against COVID-19 in West Nusa Tenggara, Indonesia

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## ABSTRACT

**Introduction:** COVID-19 spread rapidly, but little is known regarding knowledge, attitudes, and practices (KAP) against COVID-19 among residents from various regions in Indonesia. This study aims to determine the level of knowledge, practice and attitudes related to COVID-19 to provide a scientific basis for the prevention and control of this major outbreak in Indonesia.

**Methods:** Online survey with convenience sampling was conducted among urban and rural residents in West Nusa Tenggara Province, and collected 523 questionnaires through online media. The instruments used in this research are demographic information, such as age, gender, educational level, marital status and area of residence (urban or rural) and knowledge, attitude and practice questionnaires.

**Results:** The results of multiple linear regression analysis showed that education level ( $p=0.01$ ), gender ( $p=0.00$ ) and age ( $p=0.03$ ) had a significant effect on knowledge about COVID-19. Residential area (urban) affects practices related to COVID-19 ( $p=0.00$ ). Furthermore, knowledge of COVID-19 ( $p=0.00$ ) and area of residence (urban) ( $p=0.00$ ) are closely related to residents' attitudes toward preventive measures that can control this disease.

**Conclusions:** Both urban and rural residents of West Nusa Tenggara Province displayed moderate levels of knowledge as well as the practice of COVID-19 and showed the disease with a positive attitude. Developing suitable education programs targeted at the general residents in West Nusa Tenggara Province is essential to increase knowledge, attitudes, as well as practices of COVID-19, especially for rustic and low-educated citizens.

**Keywords:** attitude, COVID-19, knowledge, practice, residents

## Introduction

Ever since the COVID-19 pandemic was declared in 2020, there have been 6,730,016 confirmed cases and 160,814 deaths recorded in Indonesia (as per 31 January, 2023) (Chen *et al.*, 2020). Although categorized as a class B (clinical disease frequent, few deaths, high pathogenesis, and low virulence) infectious disease, its high transmission resulted in a prevention and control management level of A (inapparent infection). The virus disseminates mainly through contact with infected individuals and droplets. Similarly, common symptoms

include difficulty breathing, dry cough, myalgias, and fever. Other less common symptoms include losing smell or taste and diarrhea. The varied symptom severity is influenced by older age and co-morbidities being risk factors for more severe disease (Wiersinga *et al.*, 2020; Albahri *et al.*, 2021).

The number of confirmed cases of COVID-19 in Indonesia will increase every month in 2022. The transmission of COVID-19 is estimated to be similar to that of previous cases of MERS and SARS, which mainly occur through droplets and contact with infected surfaces. To prevent the spread of the infection, it is

recommended to practice good cough and sneeze etiquette, wash hands regularly with soap, cook meat and eggs thoroughly, and avoid close contact with people exhibiting respiratory disease symptoms, such as coughing and sneezing (Ministry of Health Republic Indonesia, [2020](#)).

The most effective strategy presently used in containing the COVID-19 pandemic is prevention methods including washing hands continually, keeping physical distance, as well as using masks (Adhikari *et al.*, [2020](#); Lewnard and Lo, [2020](#); Gadarian, Goodman and Pepinsky, [2021](#)). Knowledge, attitudes, and practices toward disease are important factors in determining health decisions and health outcomes (Szymona-Pałkowska *et al.*, [2016](#)). Effective control of the virus's spread relies on individuals taking necessary precautions and following health protocol guidelines. The study has demonstrated that people's adherence to disease prevention measures is strongly influenced by their knowledge, attitude, and practice levels. Earlier studies accomplished on the SARS outbreak during 2002-2004 as well as the MERS outbreak in 2012 showed that levels of stress, anxiety, panic emotions, as well as coping skills were particularly related to their knowledge and attitudes against infectious diseases. Additionally, attitudes and knowledge also impact an individual's efforts to stop the disease's infection (Clements, [2020](#); Zhong *et al.*, [2020](#)).

The trend of increasing positive cases in West Nusa Tenggara Province continues to occur, therefore it needs to be seriously anticipated. Community active participation in controlling the spread of the coronavirus (COVID-19) is very important. Currently, people in West Nusa Tenggara Province are facing various challenges related to COVID-19, including limited knowledge, low public attitudes, and inadequate disease control practices. Despite the precarious situation, the status of community attitudes, knowledge, and practices regarding COVID-19 in the province remains largely unknown, and no national data have yet been found to address this issue. Therefore, this research aims to assess the level of attitudes, knowledge, as well as practices related to COVID-19 among residents of West Nusa Tenggara Province to provide a scientific basis for the prevention and control of this major outbreak.

## Materials and Methods

### *Study design and participant*

This is a cross-sectional analytical observational study that was conducted in June 2022 in Central Lombok District and Mataram City in West Nusa

Tenggara. The sample size was obtained by the rule of thumb by means of 10 times the number of questions in the questionnaire so that 310 were obtained. The sample size was increased by 20% to make it more representative so that the sample in this study was 523 respondents. Convenience sampling has been used in this study in order to reach the respondents quickly. People aged 17 years or older with access to the computer and/or mobile phone were invited to participate in the study. The variables under investigation are knowledge, attitudes, and practice toward COVID-19.

### *Measurement tool*

We designed an online questionnaire created with Google Forms for data collection. The questionnaire consists of two parts: 1. the demographic characteristics of age, education level, gender, marital status, occupation, as well as residence area (urban or rural), 2. KAP questionnaire consists of 31 items assessing knowledge, attitudes, and behavior. The knowledge instrument contains 14 items asking about the etiology of COVID-19, signs and symptoms, prevention, transmission, and risk factors. The attitude instrument consisting of six questions was used to evaluate participants' attitudes toward COVID-19, their willingness to take preventive measures, isolate when infected, and their confidence in reducing the pace of the pandemic. The practice instrument contained 11 questions about the evaluation of participants' infection control during a pandemic. The questionnaires were tested for validity with the Pearson Product formula and were considered valid with a correlation value of  $\geq 0.5$ . All knowledge and attitude questions achieved good validity. The reliability was tested with Cronbach's alpha formula and considered reliable with a coefficient  $\geq 0.7$ . (Syakurah and Moudy, [2020](#); Limbong, Kuswinarti and Sitorus, [2021](#)). The results of validity and reliability for the KAP questionnaire were Knowledge ( $r=.601$ ; Cronbach's  $\alpha=.809$ ), Attitude: ( $r=.437$ ; Cronbach's  $\alpha=.926$ ). Behavior: ( $r=.623$ ; Cronbach's  $\alpha=.826$ ).

### *Data collection*

Due to the pandemic and home quarantine, participants could not be contacted directly; data collection was carried out by distributing online questionnaires through several social networking platforms, such as WhatsApp and Telegram. The data collection process took four months in order to achieve the targeted sample size.

### *Statistical analysis*

Table 1. Participants' demographic characteristics

Demographic characteristics	Number of participants (%)
<b>Age</b>	
Mean	36.65 years old
<b>Gender</b>	
Female	316 (60.4%)
Male	207 (39.6%)
<b>Area of residence</b>	
Urban	294 (45.9%)
Rural	347 (54.1%)
<b>Education level</b>	
Primary school	7 (1.3%)
Middle school	12 (2.3%)
Senior high school	150 (28.7%)
Higher Education	354 (67.7%)
<b>Marital status</b>	
Never married	103 (19.7%)
Married	353 (67.5%)
Divorced	5 (1%)
Widowed	62 (11.9%)

Descriptive analysis is used to present demographic characteristics as well as the level and distribution of knowledge, attitudes and practices toward COVID-19 consisting of frequency (N), proportion (%) and mean. Binary logistic regression analysis was used to identify factors related to knowledge, attitude, and practice of COVID-19.

#### Ethical statements

Informed consent was obtained from all participants involved in this study, which has been deemed ethically feasible by the health research ethics commission of the UNIQHBA Faculty of Health (No:015/EC/FKES-UNIQHBA/YPPQH/VII/2022).

## Results

### Descriptive characteristics

A total of 523 questionnaires were distributed using Google Forms, and all participants recruited filled out the questionnaire to completion. Urban residents were 294 (45.9%) and 347 (54.1%) were rural residents. Of the total sample, 207 (39.6%) were males, while 316 (60.4%) were females. [Table 1](#) displays the distribution of demographic characteristics.

The knowledge, attitude as well as practice of COVID-19 measures

The mean scores for knowledge and behavior among participants who answered correctly were 89% and 84%, respectively. In terms of knowledge, almost all

participants (98.8%) recognized the effectiveness of isolating and treating infected individuals as a strategy to reduce the spread of COVID-19. Regarding behavior, 57.3% of respondents believed that the virus only spreads through objects contaminated with the SARS-CoV-2 virus and not through the air. Additionally, 95.7% of respondents reported using masks when in crowded places, and 64.4% of respondents stated that they exercise regularly. In terms of attitudes, all respondents acknowledged the severity of COVID-19, and 98.2% believed that people with COVID-19 who self-isolate are responsible for preventing the virus's transmission. Moreover, 51.8% of respondents stated that those who violate government advice in efforts to stop the virus's spread are the only ones who suffer from COVID-19. Finally, 96.7% of respondents believed that it is essential to follow information related to government appeals regarding efforts to prevent COVID-19 in the community.

The affecting factors of knowledge, attitude as well as practice on COVID-19

Based on the results of the binary logistic regression test, it was found that factors related to knowledge about COVID-19 were age, gender, education level, and area of residence. Factors related to attitudes toward COVID-19 are gender, education level, and area of residence. Meanwhile, actions against COVID-19 are influenced by gender and area of residence (as shown in [Table 2](#)).

## Discussions

The percentage levels of sufficient knowledge and sufficient practice were 60% and 69%. This shows that the level of knowledge and practice of urban and rural residents in West Nusa Tenggara Province is at a sufficient level. A cross-sectional study in India showed similar results (Roy *et al.*, 2020). As more and more countries experience COVID-19 outbreaks and with the efforts made by WHO and local governments, knowledge regarding COVID-19 is growing. Our study found that all respondents were aware of the seriousness of this disease and were concerned about the worsening of the epidemic. Most residents believe that preventive measures can prevent infection with COVID-19 and think that the community should immediately report or cut contact with those around them who are positive for COVID-19. The results regarding attitudes toward COVID-19 are similar to those found in previous studies conducted in China (Zhong *et al.*, 2020). Residents' self-protection awareness still needs to be strengthened, and the

Table 2. The binary logistic regression analysis result of COVID-19 knowledge, attitudes, practice and its associated factors

Variable	Knowledge	Attitudes	Practice
Age	0.00*	0.65	0.51
Gender	0.02*	0.02*	0.00*
Education level	0.00*	0.01*	0.80
Marital status	0.09	0.15	0.33
Area (urban v rural)	0.00*	0.00*	0.00*

\*P &lt; 0.05

protective measures taken by residents still need to be improved. Studies have shown that health education interventions can increase knowledge about communicable diseases and adherence to healthy living habits among both urban and rural residents (Fan *et al.*, [2021](#)).

Based on this study, age, gender level of education and area (rural vs urban) affect knowledge about COVID-19. Greater education level is positively correlated with higher knowledge levels regarding COVID-19 in line with the findings of previous studies. Hence, it is crucial to prioritize health education for the general public, particularly for individuals with lower education levels (Abdelhafiz *et al.*, [2020](#)). The level of knowledge of women is higher than that of men, which is the same as the survey carried out by Kumar, Pinky, and Nurudden ([2021](#)). The possible explanation for this finding could be the fact that 68% of the females surveyed held a bachelor's degree or higher. Prior discussion has demonstrated females tend to have a higher literacy level in preventing as well as controlling infectious diseases compared to males, who are more prone to engaging in risky behavior (Kumar, Pinky, and Nurudden, [2021](#); Yue *et al.*, [2021](#)).

The results of our study found that both urban and rural residents have an adequate attitude toward COVID-19. It should be noted that a score of knowledge of COVID-19 is associated with an optimistic attitude to take protective measures, and people living in urban areas are more likely than people in rural areas to seek medical advice if they suspect infection. This actually illustrates the importance of increasing knowledge and awareness of the COVID-19 outbreak among the population, especially people who live in rural areas (Geldsetzer, [2020](#); Luo, Zeng and Liao, [2020](#)).

The study found that both rural and urban residents had moderate attitudes toward COVID-19. However, it revealed that a higher score in COVID-19 knowledge is related to a more optimistic attitude toward taking defensive efforts, and urban residents tend to follow medical recommendations when they suspect an infection. This highlights the importance of increasing knowledge and awareness of the COVID-19 outbreak among the population, particularly in rural areas (Geldsetzer, [2020](#); Luo, Zeng and Liao, [2020](#)). Based on the multiple linear regression analysis, urban citizens had better prevention techniques, which could be attributed to their high levels of health literacy and exposure to extensive health information (Zheng, Zhang and Xu, [2020](#)).

In contrast, rural residents generally have lower levels of education, inadequate health services, and less exposure to health information, highlighting the need for increased prevention and control measures in rural areas (Abdelhafiz *et al.*, [2020](#)).

### Strength and limitation of the study

This study describes the knowledge, attitudes and actions of the community toward infectious diseases and the factors that influence them. The findings of this study can be used as a reference in developing promotive and preventive programs for infectious diseases. However, there are some limitations in this study. Knowledge of COVID-19 in respondents with a low education level cannot be described in this study because most of the respondents are at the higher education level. In this study, the involvement of the elderly was minimal, so information about knowledge, attitudes and behavior regarding COVID-19 in the elderly could not be described.

### Conclusions

Practice towards COVID-19 is strongly influenced by gender and region (rural vs urban). Urban area has sufficient practice against COVID-19. This study found that attitudes toward COVID-19 were generally fair between urban and rural residents. Knowledge of COVID-19 has been influenced by age, gender and level of education. The need to strengthen and increase the level of knowledge, attitudes and health behavior is very important to prevent infectious diseases. Health education can help prepare individuals and communities to implement effective health protocols in the future and prevent rapid transmission.

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### Conflict of Interest

There is no conflict of interest.

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