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Original Article

KNOWLEDGE, ATTITUDE, AND PRACTICE TOWARD COVID-19: COMMUNITY-BASED CROSS-SECTIONAL STUDY

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ABSTRACT

Objective: The novel coronavirus disease 2019 (COVID-19) pandemic is a significant global health crisis affecting countries worldwide, including Indonesia. Enhancing the information, attitudes, and practices about COVID-19 prevention among the general community is crucial for preventing the spread of the pandemic. This study aimed to assess the Knowledge, Attitude, and Practice (KAP) regarding COVID-19 and associated factors among the general public in Central Java, Indonesia.

Methods: A community-based cross-sectional study was conducted in two districts in Central Java Province from August to September 2020. The research questionnaire inquiries concerned the demographic data, knowledge, attitudes, and practices associated with COVID-19. Descriptive analysis was performed to evaluate demographic data. Bivariable and multivariable logistic regression models were used to determine the factors associated with KAP.

Results: A total of 425 participants completed the survey questionnaire. Television and radio are the primary sources of information the public utilizes to acquire information regarding the COVID-19 pandemic. The participants showed a prevalence of 36% for good knowledge, 69% for a positive attitude, and 40.5% for adequate practice. Factors significantly associated with knowledge were gender [p = 0.038], level of education (primary school or below [p = 0.005], junior high school [p =<0.001, high school [p = 0.005]), and government employee [0.001]). Pensioners [p = 0.040], government employees [p = 0.000], and a good level of knowledge [p = 0.000] were significant factors influencing positive attitudes. Meanwhile, good knowledge [p =0.001], positive attitude [p=0.000], and being a housewife [p=0.035] were crucial determinants of practice.

Conclusion: This study found that the population's knowledge and practice level are sufficient, but they have a positive attitude. To address this, targeted health education and interventions from healthcare professionals are necessary to improve their understanding.

Keywords: COVID-19, Knowledge, Attitude, Practices

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INTRODUCTION

The COVID-19 was initially identified in Wuhan, China. It is believed to have originated from bats and transferred to humans through unidentified intermediary hosts at the Wuhan seafood market in December 2019 [1]. The COVID-19 pandemic is a global issue characterized by a persistent daily rise in cases. Engaging in hostilities towards individuals irrespective of their age or gender, this phenomenon has been classified as a worldwide pandemic. The primary clinical manifestations are fatigue, dry cough, dyspnea, myalgia, and in more serious cases, COVID-19 infection can lead to renal failure, severe pneumonia, acute respiratory syndrome, and eventually mortality [2]. Until September 2020, Cumulatively, nearly 27 million COVID-19 cases and 900,000 deaths have been reported to WHO to date. Over 1.8 million new cases and 37,000 new deaths were reported for the week ending 6 September 2020, a 5% increase in cases and a 2% decrease in deaths [3].

Success in mitigating the COVID-19 pandemic relies on the collective effort, discipline, and understanding of the community, which is essential to achieving positive outcomes. The most effective measure is to minimize exposure to COVID-19, and educating the public on information, attitudes, and behavior related to the virus is crucial. The implementation in the community relies on the use of preventive measures. The community can take preventive measures such as practicing good hand hygiene through the use of hand sanitizer or washing hands with soap, refraining from touching the eyes, nose, and mouth, and following proper cough and sneeze etiquette by covering the nose and mouth with the inner upper arm, wearing a mask, and maintaining a minimum distance of 1 meter from others [4].

Previous studies on infectious disease epidemics have found that factors such as awareness, knowledge, perceptions of risk, and effectiveness beliefs significantly motivate individuals to adopt preventive behaviors [5]. Infection prevention is significantly associated with individuals' knowledge and perceived disease risk, attitudes, beliefs about preventive measures, and trust in the government health department [6]. Recent research on COVID-19 has found that factors such as knowledge, controllability, optimistic beliefs, emotions, and risk perception can influence the preventive behavior of the general public [7–10]. Insufficient understanding of COVID-19 and established preventive measures can impact people's attitudes and behaviors, raising their susceptibility to infection [11]. Given the lack of research in the country and the absence of scientific evidence in this specific area of study, this study aimed to assess the knowledge, attitudes, practices, and associated factors of COVID-19 infection among the general public in Central Java province.

MATERIALS AND METHODS

Study design and setting

This research project utilized a cross-sectional survey design, implementing a validated self-administered questionnaire to collect data from the general public in two districts. The survey was conducted in two districts in Central Java Province, Karanganyar and Kendal, between August and September 2020.

Sample size and sampling method

The sample size was estimated using the single population proportion formula, considering the following assumptions [12] = $\frac{\left(Z\alpha_{/2}\right)^2 * p(1-p)}{d^2}$ Zα/2 represents the value of the standard normal variable at the (1-α) % confidence level. In this case, α is 0.05, corresponding to a 95% confidence interval. The value of Zα/2 is 1.96. To estimate the proportion of knowledge, attitude, and

preventative activity, a value of 50% was used since no analogous research had been undertaken. A margin of error of 5% was also taken into account. The initial sample size was adjusted to 384, taking into account a 10% non-response rate. Consequently, the final sample size required for the study is 425.

Data was collected using non-probability sampling with convenience sampling, following the specified inclusion criteria: adult over 18 years old, willing to be a participant and not employed in the healthcare field, or never obtained education in healthcare.

Data collection and instrument

The questionnaire used in this study had been validated and evaluated for reliability in the previous study [13]. It was distributed to participants and written in Indonesian. The questionnaire was divided into four sections: Section 1 comprised the participants' socio-demographic information, such as gender, age, marital status, education, etc. Section 2 of the questionnaire included twelve statements to assess knowledge of the disease's cause, the nature of the COVID-19 disease, the route of transmission, and risk factors for COVID-19. These items were answered with "yes," "no," or "I do not know" responses from participants. An accurate response to an item is worth one point, whereas an incorrect/I do not know the response is worth zero points. The highest possible knowledge score is 12 points. Section 3 included thirteen statements about attitudes toward COVID-19 disease fear, prevention, and optimism. The attitude was assessed using five Likert scales ranging from strongly disagree to agree, with scores ranging from 1 to 5 strongly. One item question underwent reverse scoring. The maximum attainable score for the attitudinal level is 65 points. Section 4 included seven statements about precautionary behavior practices, which primarily focused on preventing COVID-19. The practice section was evaluated using a scale ranging from never to always, with scores ranging from 1 to 5, and this score reaches the maximum value at 35 points. Overall knowledge, attitude, and practice were classified as 'good' (for knowledge and practice) and 'positive' (for attitude), using a more than 80% cut-off point. They were classified as 'poor' for knowledge, 'negative' for attitude, and 'bad' for attitude if the score was below 80% [14].

Analysis

Data was entered into Excel and exported to SPSS software version 25. To analyze the overall distribution, we produced descriptive statistics for categorical variables, including frequencies and percentages, and for continuous variables, we calculated the mean and standard deviations. Then, cross-tabulation was performed to compare these frequencies. The relationships between independent factors and knowledge, attitudes, and preventative practice outcomes regarding COVID-19 were evaluated using a binary logistic regression model with a 95% confidence interval (CI). The study employed bivariable analysis using Crude Odds Ratio (COR) and multivariable analysis using Adjusted Odds Ratio (AOR). Variables with p-value<0.05 in the multivariable analysis were considered factors that significantly influenced knowledge, attitude, and practices concerning COVID-19.

Ethical approval

The Faculty of Medicine of Universitas Muhammadiyah Surakarta Health Research Ethics Committee approved the study protocol, with reference number 3014/B.1/KEPK-FKUMS/IX/2020. Before the study was conducted, all participants had to obtain and sign the informed consent form.

RESULTS AND DISCUSSION

Participants characteristic

This survey comprised a total of 425 respondents. Out of the total, more than half of the participants are female, 234 (55%) of the population. The average age of the participants was 38.25 y, with a standard deviation of 13.68 y. Most participants have completed high school education or below; the study consists of 319 (77.2%) participants. Out of the participants, 283 (66.6%) individuals were married and had occupations as government employees; 156 (36.7%) and 173 (40.7%) had low incomes. Table 1 presents a summary of the demographic characteristics of the participants.

Table 1: Demographic characteristics of participants

Variables	N = 425	Percentage (%)
Gender		
Male	191	44.9
Female	234	55.1
Age		
18-29	147	34.8
30-39	76	17.9
40-49	96	22.6
50-59	79	18.6
≥60	27	6.4
Level Education		
Primary school or below	49	11.5
Junior high school	93	21.9
High school	186	43.8
Diploma	36	8.5
Undergraduate/Graduate	61	14.4
Marital status		
Single	109	25.6
Married	283	66.6
Widow/widower	33	7.8
Occupation		
Unemployed	51	12.0
Retired	13	3.1
Housewife	67	15.8
Government employee	156	36.7
Private sector employee	59	13.9
Self-employed	79	18.6
Income		
<1.800.000	173	40.7
>1.800.000	135	31.8
Don't have any income	117	27.5

Sources of information about COVID-19

Fig. 1 displays the frequency distribution of the respondents' sources of information regarding the COVID-19 epidemic. The most often mentioned sources of information were television or radio, accounting for 314 (73.8%) of responses, followed by social media like WhatsApp, Instagram, or the Internet, with 232 (54.6%). The percentage of respondents who obtained information on COVID-19 from their relatives, doctors, and pharmacists was 44.2%, 11.1%, and 4.9%, respectively.

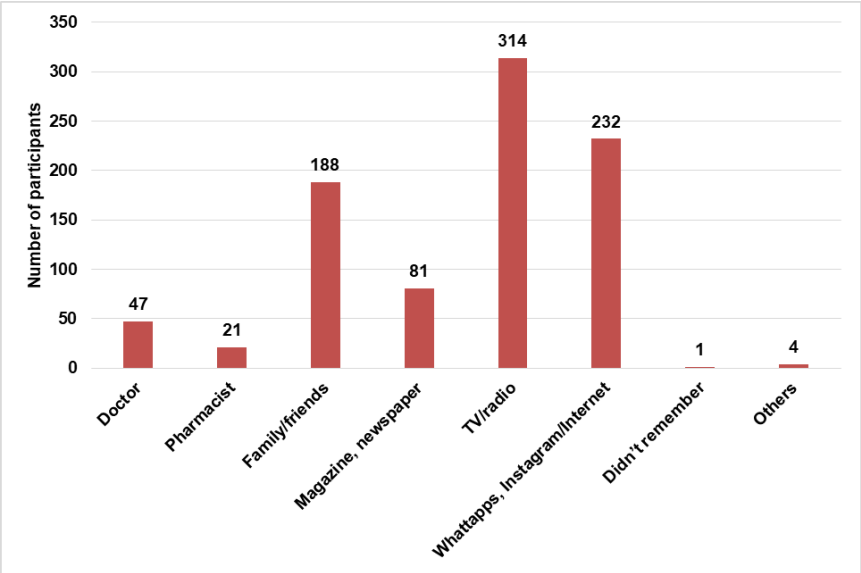

Fig. 1: Distribution of source of information about COVID-19

Knowledge of COVID-19 and associated factors

The data shows that 153 (36%) individuals have a good level of knowledge, with an average score of 8.51±2.07. According to the data presented in table 2, nearly all participants know that COVID-19 can be transmitted from person to person (96%). They believe COVID-19 is transmitted through contact with droplets emitted by an infected individual (91.5%). COVID-19 can infect other people, though it has no fever (86.6%). Approximately 96.7% of participants know symptoms of COVID-19, which are fever, cough, sore throat, and shortness of breath. About two-thirds of participants know it can occur in people who have diabetes, stroke, and heart disease. Additionally, only 26.4% of participants know that COVID-19 can be transmitted through faeces.

Table 2: Knowledge score of COVID-19

Statements	Frequency (N=425)	Percentage
A bacterial infection causes the COVID-19 disease	135	31.8
People can be infected by touching objects that a COVID-19 patient has splashed	389	91.5
COVID-19 can be transmitted through patient feces	112	26.4
COVID-19 can be transmitted from person to person	408	96.0
Patients infected with COVID-19 can infect other people even though the patient does not have a fever	368	86.6
COVID-19 can only enter the body through the nose only	301	70.8
Symptoms of COVID-19 include fever, cough, sore throat, and shortness of breath	411	96.7
Everyone infected with COVID-19 will show symptoms of fever, cough, and shortness of breath	164	48.6
Older people are more prone to experiencing severe COVID-19 symptoms	352	82.8
More severe symptoms of COVID-19 can occur in people who have diabetes mellitus, stroke, and heart disease	307	72.3
Physical contact with other people is not at risk of transmitting COVID-19	313	73.6
Children and adolescents are not at risk of being infected with COVID-19	346	83.8

As indicated by the information in table 3, gender, degree of education, occupation, and monthly income were found to be bivariate correlated and incorporated into the multivariate regression analysis. Good COVID-19 knowledge measures were associated with gender, degree of education, and occupation, as determined by multivariable binary logistic regression. In comparison to diploma and higher education, participants in the last level of education are primary, junior, and high school students, were 2 to 5 times more likely to have good COVID-19 knowledge, respectively; AOR at 95%CI: 3.73 (1.48-9.58), 5.07 (2.25-11.41) and 2.55 (1.32-4.96).

Attitude toward COVID-19 and associated factors

The results indicated that 296 (69%) 50% of participants had a positive attitude, with an average attitude score of 54.51±5.73. The participants' attitude-related responses are consolidated in table 4.

According to the data presented in table 4, over 50% of the participants believed that the COVID-19 pandemic will end soon. Almost all the participants believe that our country, Indonesia, can handle COVID-19 well. Over 90% of the participants were willing to wear masks when they went outside. The majority of respondents believed that they could prevent the transmission of the COVID-19 virus by employing hand sanitizers or soap to cleanse their hands. Moreover, 92.2% and 89.2% of participants believed COVID-19 is a dangerous disease and were worried COVID-19 would infect them or their families. Meanwhile, around 61.7% of participants will remain at home to prevent the spread of COVID-19.

Table 3: Factors associated with knowledge among participants

Variables	Knowledge		COR (95%CI)	AOR (95%CI)	P value
	Good	Poor			
Gender					
Male	57	134	1.63 (1.09-2.45)	1.64 (1.02-2.63)	0.038*
Female	96	138	1	1	
Level Education					
Primary school or below	12	37	4.15 (1.81-9.47)	3.73 (1.48-9.58)	0.005*
Junior high school	23	70	4.09 (2.05-8.18)	5.07 (2.25-11.41)	0.000*
High school	65	121	2.50 (1.38-4.52)	2.55 (1.32-4.96)	0.005*
Diploma	18	18	1.34 (0.58-3.07)	1.49 (0.62-3.56)	0.370
Undergraduate/Graduate	35	26	1	1	
Occupation					
Unemployed	17	34	1.51 (0.72-3.14)	0.53 (0.39-7.39)	0.641
Retired	8	5	0.47 (0.142-1.57)	0.44 (0.16-2.23)	0.447
Housewife	28	39	1.05 (0.54-2.03)	0.36 (0.02-5.49)	0.464
Government employee	48	108	1.70 (0.97-2.97)	2.78 (1.49-5.49)	0.001*
Private sector employee	18	41	1.72 (0.84-3.50)	1.68 (0.79-3.58)	0.172
Self-employed	34	45	1	1	
Income					
<1.800.000	47	126	1.61 (0.97-2.67)	0.43 (0.03-6.03)	0.532
>1.800.000	62	73	0.71 (0.42-1.17)	0.23 (0.01-3.44)	0.289
Don't have any income	44	73	1	1	

*Statistically significant

Table 4: Attitudes towards COVID-19

Questions	Frequency (Percentage)				
	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Fear:					
In my opinion, COVID-19 is a dangerous disease	4 (0.9)	6 (1.4)	23 (5.4)	207 (48.7)	185 (43.5)
I am worried that my family or I will infect with COVID-19	9(2.1)	16 (3.8)	21 (4.9)	230 (54.1)	149 (35.1)
If I have COVID-19 symptoms, I will tell the doctor, nurse, or pharmacist or go to the hospital	3 (0.7)	17 (4.0)	39 (9.2)	184 (43.3)	182 (42.8)
Prevention:					
I will often wash my hands with soap or hand sanitizer so I don't catch COVID-19	2 (0.5)	2 (0.5)	34 (8.0)	197 (46.4)	190 (44.7)
Before washing my hands, I would not touch my eyes, nose, and mouth	2 (0.5)	3 (0.7)	41 (9.6)	209 (49.2)	170 (40)
I will eat nutritious food so that my immune system increases.	-	1 (0.2)	43 (10.2)	191 (44.9)	190 (44.7)
When I go outside, I wear a mask	1 (0.2)	2 (0.5)	21 (4.9)	198 (46.6)	203 (47.8)
If I meet other people, I will keep a minimum distance of 1 meter	1 (0.5)	6 (1.4)	95 (22.4)	193 (45.4)	129 (30.4
When I met friends or relatives, I would shake hands or hug them	104 (24.5)	147 (34.6)	125 (29.4	36 (8.5)	12 (2.8)
I will stay at home to reduce the spread of COVID-19	12 (2.8)	44 (10.4)	107 (25.2)	181 (42.6)	81 (19.1)
Optimism:					
I believe the COVID-19 outbreak will end soon	12 (2.8)	44 (10.4)	107 (25.2)	181 (42.6)	81 (19.1)
I believe Indonesia can handle COVID-19 well	7 (1.6)	3 (0.7)	28 (6.6)	233 (54.8)	154 (36.2)

Table 5: Factors associated with attitude among participants

Variables	Knowledge		COR (95%CI)	AOR (95%CI)	P value
	Good	Poor			
Gender					
Male	57	134	1.63 (1.09-2.45)	1.64 (1.02-2.63)	0.038*
Female	96	138	1	1	
Level Education					
Primary school or below	12	37	4.15 (1.81-9.47)	3.73 (1.48-9.58)	0.005*
Junior high school	23	70	4.09 (2.05-8.18)	5.07 (2.25-11.41)	0.000*
High school	65	121	2.50 (1.38-4.52)	2.55 (1.32-4.96)	0.005*
Diploma	18	18	1.34 (0.58-3.07)	1.49 (0.62-3.56)	0.370
Undergraduate/Graduate	35	26	1	1	
Occupation					
Unemployed	17	34	1.51 (0.72-3.14)	0.53 (0.39-7.39)	0.641
Retired	8	5	0.47 (0.142-1.57)	0.44 (0.16-2.23)	0.447
Housewife	28	39	1.05 (0.54-2.03)	0.36 (0.02-5.49)	0.464
Government employee	48	108	1.70 (0.97-2.97)	2.78 (1.49-5.49)	0.001*
Private sector employee	18	41	1.72 (0.84-3.50)	1.68 (0.79-3.58)	0.172
Self-employed	34	45	1	1	
Income					
<1.800.000	47	126	1.61 (0.97-2.67)	0.43 (0.03-6.03)	0.532
>1.800.000	62	73	0.71 (0.42-1.17)	0.23 (0.01-3.44)	0.289
Don't have any income	44	73	1	1	

*statistically significant

In bivariate correlates, gender, level of education, occupation, monthly income, and level of knowledge were found and incorporated into the multivariate regression analysis, as shown in table 5. In this analysis, occupation and knowledge level significantly impact a positive attitude. The multivariate analysis revealed that government employees and pensioners were 3.94 and 4.30 times more likely to have a positive attitude with AOR at 95%CI: 3.94 (1.94-7.99) and 4.30 (1.06-17.40), respectively. In addition, participants with a good level of knowledge are 0.24 more likely to have a positive attitude, and the AOR at 95% CI: 0.24 (0.13-0.43).

Practice toward COVID-19 and associated factors

The findings revealed that 172 (40.5%) participants had adequate COVID-19-related practice, as measured by a median practice score of 26.94±3.80. According to the findings of this study in table 6, over 90% of participants wash their hands with soap or hand sanitizer frequently, 85% of participants reported consistently applying a mask to prevent the spread of COVID-19, and 54.6% of them avoid frequent contact with their eyes, nose, and mouth. Additionally, 52.5% of individuals in this survey keep a minimum distance of 1 meter from one another. Nearly half of the participants eat more nutritious food, vegetables, fruit, vitamin C, ginger, or another herb to improve their immune system.

Table 6: Practice toward COVID-19

Questions	Frequency (Percentage)				
	Never	Seldom	Sometimes	Often	Always
I go outside wearing a mask	2 (0.5)	5 (1.2)	57(13.4)	175 (41.2)	186 (43.8)
I wash my hands with soap or hand sanitizer to prevent COVID-19 transmission.	-	-	38 (9.2)	216 (50.8)	170 (40.0)
I visit busy places such as markets, social gatherings, reunions, weddings	83 (19.5)	85 (20.0)	223 (52.5)	17 (4.0)	17 (4.0)
I eat more nutritious food, such as vegetables and fruit.	-	1 (0.2)	102 (24.0)	207 (27.1)	115 (27.1)
I take vitamin C, ginger, or other herbs which can increase my immune system	2 (0.5)	21 (4.9)	175 (41.2)	141 (33.2)	86 (20.2)
I don't touch my eyes, nose, and mouth if my hands are dirty	39 (9.2)	23 (5.4)	131 (30.8)	133 (31.3)	99 (23.3)
I keep a minimum distance from other people 1 meter	9 (2.1)	13 (3.1)	180 (42.4)	138 (32.5)	85 (20.0)

In the prevention practice of COVID-19, as shown in table 7, factors performed in multivariate regression analysis from bivariate correlative are gender, degree of education, occupation, monthly income, level of knowledge, and attitude. With AOR at 95%CI: 1.80 (1.10-2.93), the male gender, compared to the female, has 1.8 times a good practice. Individuals who possessed adequate knowledge scores and positive attitudes were 0.45 and 0.27 times more likely to implement COVID-19 prevention practices compared to those who scored low on the knowledge scale and negative attitude (AOR at 95%CI: 0.45 (0.28-0.72) and 0.27 (0.15-0.48), respectively).

Table 7: Factors associated with practice among participants

Variables	Practice		COR (95%CI)	AOR (95%CI)	P value
	Good	Bad			
Gender					
Male	60	131	2.00 (1.34-2.98)	1.80 (1.10-2.93)	0.017*
Female	112	122	1	1	
Level Education					
Primary school or below	15	34	2.85 (1.29-6.29)	2.351 (0.90-0.61)	0.081
Junior high school	27	66	3.07 (1.56-6.04)	1.40 (0.39-4.95)	0.007*
High school	75	111	1.86 (1.03-3.34)	0.85 (0.25-2.81)	0.051
Diploma	21	15	0.89 (0.39-2.06)	0.69 (0.21-2.21)	0.985
Undergraduate/Graduate	34	27	1	1	
Occupation					
Unemployed	18	33	1.78 (0.86-3.68)	0.000	0.999
Retired	7	6	0.83 (0.25-2.71)	0.866 (0.23-3.21)	0.866
Housewife	33	34	1.00 (0.52-1.92)	2.03 (1.05-3.91)	0.035*
Government employee	51	105	2.00 (1.15-3.49)	1.23 (0.57-2.63)	0.587
Private sector employee	24	35	1.42 (0.71-2.81)	0.000	0.999
Self-employed	39	40	1	1	
Income					
<1.800.000	61	112	1.32 (0.81-2.14)	0.000	0.999
>1.800.000	62	73	0.84 (0.51-1.39)	0.000	0.999
Don’t have any income	49	68	1	1	
Knowledge					
Good	92	61	0.27 (0.18-0.41)	0.45 (0.28-0.72)	0.001*
Poor	80	192	1	1	
Attitude					
Positive	150	146	0.20 (0.12-0.33)	0.27 (0.15-0.48)	0.000*
Negative	22	107	1	1	

DISCUSSION

We conducted a cross-sectional study to examine the level of knowledge, attitudes, preventive practices, and associated factors toward COVID-19 in the general public in two districts in Central Java. We selected these two districts for our study because, according to Central Statistics Agency data, their COVID-19 incidence rates rank among the top 10 highest in Central Java [15].

This study's findings imply that women have more excellent knowledge than males, consistent with prior research findings [7, 10]. A minimum of 2 and a maximum of 12 points comprised the average

knowledge scores. Age did not significantly influence knowledge ratings, although the mean score for knowledge was lowest among respondents aged 60 y and older. The range of minimum scores is 34 and 17, and the maximum scores are 65 and 35 for attitude and practice, respectively. It shows the same result for affecting age-to-knowledge scores. This result differs from one study in India, where age significantly influences knowledge [16].

The results of this study indicated that 69.3% of the participants possessed good knowledge regarding COVID-19. Conversely, the results of this research were comparatively lower than those of another study in a community in East Nusa Tenggara, Indonesia (79.8%) [17], Ethiopia resident (69.3%) [18], Malaysian public (80.5%) [7] and in India (70%) [19] and the highest score of knowledge level found in China (90%) [20]. Variations in the sociodemographic characteristics of the study population and the sources of information about COVID-19 could account for this deviation. The participants possessed knowledge and information regarding preventive measures, including hand washing, personal hygiene, cough hygiene, mask usage, and social distancing. These findings align with the results of previous studies [21, 22].

The present study revealed that most individuals exhibited favorable opinions about COVID-19, with a positive attitude of 69%. The study conducted in Turkey showed similar results [23]. This percentage is comparatively lower than the findings from a study conducted in Nigeria (79.5%) [24]. The difference could be attributed to alterations in the socio-demographic makeup of the study participants and the level of dedication exhibited by the government in addressing the COVID-19 situation. Conversely, most participants (91%) believed that the Indonesian government can prevent the transmission of COVID-19.

The study indicated a prevalence of adequate practice at 175 (44%), above the rates reported in previous studies conducted in Uganda (21%) [25]. Within our study, a notable proportion of 61.7% of the individuals tended to avoid crowded environments actively. The prevalence rates reported in this study were lower than those found in previous studies conducted in Ethiopia (70%) [18]. In this study, almost all participants reported wearing a mask when leaving home (94.4%). This value is high, although it surpasses the prevailing practice in Saudi Arabia regarding wearing masks in public spaces, reaching 98.6% [28]. By putting on a medical mask, one can effectively prevent the transmission of specific respiratory illnesses, which include COVID-19 [29]. Another data in Surakarta, only 51.58% had complied with health protocol [26] and public awareness is still low in consuming nutritious food [27].

From the UNICEF report, Indonesia had confirmed 6,719,815 COVID-19 cases by the end of December 2022. After a slight rise in mid-June, the number of COVID-19 cases steadily declined in the last three months of the year due to several public health initiatives and epidemiological factors. Simultaneously, the testing rate fell below the standard of conducting one test per 1,000 individuals every week. The Indonesian government initiated an enormous effort in 2021 to immunize 234.6 million individuals, encompassing youngsters ranging from 6 to 17 y old. By the end of December 2022, 204 million individuals had been administered their initial dosage, encompassing 47.2 million children. An additional 174.7 million individuals, comprising 39.9 million children, received complete immunization by administering two doses of the COVID-19 vaccine [30]. Rapid vaccination campaigns have been instrumental in reducing the fatality toll attributable to this pernicious infection [31]. In June 2023, the President of the Republic of Indonesia, Jokowi, declared that the COVID-19 pandemic status in Indonesia was officially revoked, and the country is now entering an endemic phase [32].

LIMITATION

The participants were selected using nonprobability sampling, specifically convenience sampling, due to the pandemic outbreak in the central Java province.

CONCLUSION

Health education programs targeting those with lower educational levels are crucial for enhancing public comprehension of COVID-19 and promoting adherence to acceptable practices.

ACKNOWLEDGMENT

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AUTHORS CONTRIBUTIONS

TY and HY developed the research concept. TY, HK, and LM developed the research design; AS and TS collected the research data and recapitulation and drafted the initial manuscript. TY analyzed the data. All authors have read and approved the manuscript.

CONFLICTS OF INTERESTS

All authors report no conflicts of interest

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