Knowledge and Perception on Overclaim against the Behaviors of Implementing the COVID-19 Prevention Protocol Communities in Indonesia

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Abstract

Background: COVID-19 occurs in various countries and has been declared a pandemic by WHO. Multiple efforts have been made to reduce the number of cases of COVID-19. However, the incidence of COVID–19 continues to increase, along with control efforts carried out by various parties, causing overclaims for the prevention or treatment of COVID–19. Objective This study aimed to determine the relationship between knowledge and public perception of the behavior of implementing the COVID-19 prevention protocol in Central Java Province. Methods: This cross-sectional study used primary data collected online via WhatsApp, Telegram, Instagram, and Facebook in December 2020. A total of 1,098 of 1,115 respondents passed the inclusion and exclusion criteria. Backward Elimination is used to determine factors related to behavior in the multivariable model stage using multiple logistic regression. Results: The knowledge, perception, and behaviors prevalence of implementing COVID-19 prevention protocols were good & enough 79.1% (95% CI 76.63 – 81.45), 96.6% (95% CI 95.38 – 97.55), and 92.3% (95% CI 90.62 – 93.78) respectively. The result revealed that Knowledge (adjOR = 2.034, 95% CI 1.253 - 3.302, P = 0.004) and Perception (adjOR = 4.064, 95% CI 1.859 - 8.882, P = < 0.001) were possibly associated with behaviors of implementing COVID-19 prevention protocols among communities in Central Java Province. Conclusion This study found a slight prevalence of good & enough knowledge, perception, and behaviors of implementing COVID-19 prevention protocols in a representative sample among Communities in Central Java Province. Knowledge and perceptions were statistically significant with behaviors.

Keywords: knowledge, perception, behaviors, COVID–19

INTRODUCTION

COVID-19 (Corona Virus Disease 2019) is a deadly disease, and the number of patients continues to increase rapidly throughout the world (Manchia *et al.*, 2022; WHO, 2020). It was originally discovered in Hubei Province, China, and quickly spread to 215 other countries around the world. Furthermore, on March 20, 2020, WHO declared COVID-19 a pandemic. The number of cases of COVID-19 continues to increase. As of 4 October 2020, there were 34 million cases and more than 1 million deaths worldwide. In Indonesia, on November 2022, there were 6,627,538 confirmed cases of COVID-19 with 159,524 deaths, reported to WHO. In Central Java Province, 23,521 confirmed cases and 2,018 confirmed deaths. The positive number for COVID-19 in Indonesia is 17.51%, this figure is the highest in Southeast Asia (Johns Hopkins University and Medicine, 2022; WHO, 2022).

Control of COVID-19 in Indonesia has been pursued by issuing the 5th revision of the Corona Virus Disease (COVID-19) Prevention and Control Guidelines by the Ministry of Health of the Republic of Indonesia. One of the keys to breaking the chain of transmission of COVID-19 is not to create a source of transmission by implementing new habits or by implementing health protocols in every activity (MoH Indonesia, 2020). However, data showed that the incidence and mortality due to COVID-19 continue to increase. The implementation of protocols and screening programs has not provided optimal results. This is demonstrated by the number of COVID-19 cases that have occurred since September 8, 2020, which is consistently greater than 3,000 cases per day (Islam *et al.*, 2020; Susanna, 2020; WHO, 2020).

Ineffective COVID-19 control has led to many control measures that have resulted in overclaims that can mislead and harm the public (Cheng *et al.*, 2021; Stewart *et al.*, 2022; Vijaykumar et al. 2021). This is evidenced by claims of prevention and treatment that do not yet have a solid scientific basis, including; The Corona Herbavid-19, a herbal medicine by the DPR-RI COVID-19 Resistance Task Force claimed to have succeeded in curing positive COVID-19 patients (Garnesia, 2020). Various Indonesian spices such as ginger and turmeric are believed to increase the body's immunity to ward off the coronavirus transmission. The Ministry of Agriculture claims that eucalyptus necklaces or eucalyptus plants can ward off the coronavirus (Wibowo, 2020). Eucalyptus is still in the research-based stage of computational analysis (in silico). Hydroxychloroquine (an antimalaria drug) is claimed to be effective as a COVID-19 drug but has not shown significant resultsUniversitas Airlangga's COVID-19 combination drug, which was declared capable of curing COVID-19 patients, has not yet gone through the clinical trial stage (Mawalia, 2020; Wibowo, 2020). The news about "The COVID-19 vaccine test in Indonesia was successful" shows that the vaccine test has not been completed (Li, 2021; PT Bio Farma, 2020).

To put it another way, claiming to be able to prevent and cure COVID-19 can lead to various interpretations in society. These exaggerated claims can potentially influence risk perception patterns and public behavior. Studies on the relationship between risk perception patterns and responsive behaviors that emerged during the pandemic yield inconsistent and insignificant results, which influence people's behavior in response to COVID-19 (Xu & Peng, 2015). Previous research claimed that inaccurate information could mislead the public. Besides, people can lose their sense of crisis, so they do not want to prevent, treat, or participate in vaccinations, and even lose trust in health workers and the government (Cha *et al.*, 2021; Fanelli 2009). This could make the COVID-19 pandemic worse and more difficult to control (Islam *et al.*, 2020; Tangcharoensathien *et al.*, 2020). Since it was declared a pandemic, COVID-19 has become the biggest threat to society and has been exacerbated by the overclaims made by various parties. This can make the community feel safe and neglect the COVID-19 prevention protocol so that the Overclaim can affect people's perception and behaviors in implementing the COVID-19 transmission prevention protocol.

MATERIALS AND METHODS
Tools

This study will determine the relationship between knowledge and public perception of the behavior of implementing the COVID-19 prevention protocol in Central Java Province. After reviewing the literature, the researcher designed this research questionnaire. Communities in other provinces outside Central Java province carried out validation. Evaluation of the reliability of the questionnaire was carried out using a pilot study on 40 respondents (Riwidikdo & Setiawan 2006). Test the validity and internal consistency of the questionnaire using Cronbach Alpha and set the minimum acceptable validity value $\alpha = 0.32$ (Budiman & Riyanto 2013). The validity test results on the knowledge, perception and behavior questionnaire were 0.539 - 0.773; 0.525 - 0.644; 0.592 - 0.808. The results

of the reliability test on the knowledge, perception and behavior questionnaire were 0.912, 0.786, and 0.919.

The final questionnaire consisted of four sections. The first part of the questionnaire contains demographic information of the respondents, including gender, age, education level, and profession. The second part contains 15 statements to evaluate respondents' knowledge about the overclaiming of COVID-19 prevention and treatment. The third part consists of 6 statements assessing respondents' perceptions of overclaiming COVID-19 prevention and treatment. The last section contains ten statements about the respondent's behavior regarding the behavior of implementation COVID-19 health prevention. All questions were closed except for the demographic questionnaire.

Respondents were asked to choose the option "True" or "False" for the statements of knowledge and perception. The correct answer (yes) is given a score of one (1), while the wrong answer (no) is given a score of zero. A three-point Likert scale was used for behavioral statements (constantly = 3, sometimes = 2, never = 1). Therefore, the minimum and maximum scores for knowledge, perception, and behavior are 0 to 15, 0 to 6, and 10 to 30, respectively. The questionnaire was distributed online via WhatsApp, Telegram, Instagram and Facebook in December 2020. The behavior, knowledge, and perception were calculated from the total score as a continuous data and then transformed by x-tile (3q) into a categorical data (ordinal) good, enough, and poor. The variable category was regenerated to good & enough and poor (dichotomous).

Method

Study design and sampling

A cross-sectional study design was applied in this study. Data collection in this study was conducted online from communities in Central Java Province in December 2020. About 1,098 of 1,115 respondents passed the inclusion and exclusion criteria selection. The sampling technique used is non-probability sampling with an accidental sampling method. The sample size was calculated using the Rao software online sample size calculator with a 95% CI and 5% margin of error. A total of 1,098 respondents participated in the survey. Analysis was performed on 385 usable forms.

Inclusion criteria in this study were people who live in the Central Java Province are over the age of 18 years, are willing to be a respondent, and have read or heard the news about the prevention or treatment of COVID-19, which is claimed to be excessive (Overclaim),

smartphone users, can read and fill out questionnaires, and have a telephone number that can be contacted. The exclusion criteria were health workers, or the respondent's occupation is related to health sciences.

Overclaimed is that various forms of misinformation during a pandemic, as well as science communication strategies that confuse the public, fake news and misinformation or exaggerated information about the outbreak, can thrive on social media with potentially dangerous consequences.

All questionnaires were labelled, including the respondent's date, time, and location. Informed consent was taken before distributing the questionnaire to each respondent, and the confidentiality of the respondent's information was maintained. No incentives are given to any respondent. Informed consent was done through online media before filling in the data. Respondents were explained and filled out a consent form before being able to access the questionnaire.

Statistical analysis

This study used an observational analytic study with a cross-sectional design. The descriptive stage was used to determine the characteristics of this study, and comparative statistics were used to define whether differences between both (good and poor behavior) groups existed. Furthermore, the inferential stage is used to determine the relationship between knowledge and public perception of the behavior of implementing the COVID-19 prevention protocol in Central Java Province. In the bivariate stage, we used chi-square analysis to evaluate the association of knowledge and perception on behavior. The backward elimination method was used to determine factors related to behavior in the multivariable model stage using multiple logistic regression using the SPSS version 23. The results are presented as an adjusted odds ratio (adjOR) and 95% confidence interval (CI).

RESULTS AND DISCUSSION

Demographic characteristic

Among a total of 1,098 respondents who passed our inclusion and exclusion criteria, most of them were female (65.3%), aged 18 - 29 years old (92.5%), finishing their secondary school (53.5%), and their current status as a student (73.4%) (Table 1). Generally, there are no statistical differences in characteristics between people with excellent and poor behavior (*p-value* of > 0.05).

Table 1. The Respondent characteristics between good and poor behaviors groups implementing COVID-19 Prevention protocols in Central Java

Variable	Behaviors				Total (%) (n = 1134)		P-value
	Good (%) (n = 1,014)		Poor (%) (n = 84)				
Gender							
Male	348	34.32	33	39.29	381	34.70	0.358
Female	666	65.68	51	60.71	717	65.30	
Age (years)							
18 – 29	938	92.50	78	92.86	1016	92.53	0.956
30 – 59	75	7.40	6	7.14	81	7.38	
≥ 60	1	0.10	0	-	1	0.09	
Education level							
Primary education	10	0.99	2	2.38	12	1.09	0.377
Secondary education	541	53.35	46	54.76	587	53.46	
University education	76	7.50	3	3.57	79	7.19	
Post graduation	387	38.17	33	39.29	420	38.25	
Occupation							
Student	750	73.96	56	66.67	806	73.41	0.671
Govt. Employee	50	4.93	5	5.95	55	5.01	
Private employee	181	17.85	20	23.81	201	18.31	
Military	1	0.10	0	-	1	0.09	
Housewife	32	3.16	3	3.57	35	3.19	

Table 2. Factor associated with behaviors of implementing COVID-19 prevention protocols in Central Java Province

Variable	Behaviors (%)				OR	P-value
	Good (n = 1,014)		Poor (n = 84)			
Knowledge						
Good & enough	815	80.37	54	64.29	2.275	< 0.001
Poor	199	19.63	30	35.71		
Perception						
Good & enough	987	97.34	74	88.10	4.940	< 0.001
Poor	27	2.66	10	11.90		

Table 3. Factor associated with behaviors of implementing COVID-19 prevention protocols among communities in Central Java Province by using multiple logistic

Variable	Model	
	1 Pseudo R2 = 0.0392	2 Pseudo R2 = 0.0353
Perception	4.30 (1.95 – 9.50) ***	4.06 (1.86 – 8.88) ***
Knowledge	2.05 (1.26 – 3.33) **	2.03 (1.25 – 3.30) **
Gender	0.78 (0.49 – 1.24)	
Age	0.83 (0.34 – 2.03)	
Education level	0.62 (0.23 – 1.65)	
Occupation	1.58 (0.60 – 4.18)	

Factor associated with behaviors

Our study showed that although more people have better knowledge (80.37% vs. 64.29%) and perception (97.34% vs. 88.10%) among both good and poor behavior groups, those minor differences in knowledge (OR of 2.275, p-value 0.000) and perception (OR of 4.940, p-value 0.000) resulting significant increase on how much people will have good behavior on implementing COVID-19 prevention protocols on their daily life (Table 2).

Multiple logistic regression was used for multivariable analysis to define the relationship between respondent characteristics, knowledge, perception, and behavior in implementing the COVID-19 prevention protocol. The initial result showed that respondent characteristics do not significantly influence their behavior (Table3). Furthermore, the final result revealed that Knowledge (adjOR = 2.034, 95% CI 1.253 - 3.302, P = 0.004) and Perception (adjOR = 4.064, 95% CI 1.859 - 8.882, P = < 0.001) were possibly associated

with behaviors of implementing COVID-19 prevention protocols among communities in Central Java Province.

Discussion

The knowledge, perception, and behaviors prevalence of implementing COVID-19 prevention protocols was Good & Enough 79.1% (95% CI 76.63 – 81.45), 96.6% (95% CI 95.38 – 97.55), and 92.3% (95% CI 90.62 – 93.78) respectively. It was different from the previous study in Cameron that showed the result of the prevalence of high overall knowledge score, perception, and behaviors/practice towards COVID-19 were 84.19%, 69%, and 60.8%, respectively (Ngwewondo *et al.*, 2020). A study in Ethiopia found that 62.3% of respondents had good knowledge, 56.6% had positive attitudes/perceptions of COVID-19, and 47.5% had good behavior/practices towards COVID-19 (Adhena & Hidru 2020). Cross-Sectional Study from Nigeria found that 88.59% of respondents had good knowledge about COVID-19, and most of the health workers had bad attitudes (n = 101, 25.06%) or were indifferent toward work (n = 233, 57.82). %) in the COVID-19 era, and 81.39% have a high level of practice to prevent COVID-19 infection. (Pauline *et al.*, 2020) Previous research from Uganda showed that 91% of research respondents had good knowledge, 74% had positive attitudes/perceptions towards COVID-19, and 57% had good practices/behaviors towards COVID-19 (Olum *et al.*, 2020) It may be different from this research because the research from Cameron, Ethiopia, Nigeria, and Uganda has a different region and culture from Indonesia. Indonesia is an archipelagic country with hundreds of cultures in it. Information is often biased due to the acceptance of understanding between each tribe. The prevalence of Knowledge, Perception, and Behavior has comparable numbers compared to previous studies. This is important to consider for handling pandemic in Indonesia.

The importance of knowledge impacting attitudes and behavior in the application of health protocols during the COVID-19 pandemic (Zegarra-Valdivia *et al.*, 2020). Previous studies have shown evidence of a high prevalence of COVID-19-related knowledge among all participants included in this study. Similar to this study, there are still significant gaps in perception and behavior towards COVID-19 (Nwagbara *et al.*, 2021). Research from North Sulawesi Indonesia revealed that most respondents had good knowledge, positive attitudes, and good practices toward COVID-19 prevention. However, knowledge of specific topics is still insufficient (Simanjorang *et al.*, 2021).

This present study revealed that Knowledge (adjOR = 2.034, 95%CI 1.253 - 3.302, P = 0.004) and Perception (adjOR = 4.064, 95%CI 1.859 - 8.882, P = <0 .001) were possibly associated with behaviors of implementing COVID-19 prevention protocols among communities in Central Java Province. This study is similar to previous study, which stated that most students had inadequate knowledge about COVID-19 (good knowledge about COVID-19 = 23.5%, 95% CI 19.5% to 28.1%) and were less involved in COVID-19 prevention behavior (Handebo *et al.*, 2021). Risk perception and knowledge related to COVID-19 can influence protective behavior (Rattay *et al.*, 2021). Perception of cognitive and particularly effective risk is a further significant predictor of behavior in the face of COVID-19 (Betsch *et al.*, 2021). Previous studies in China highlighted the usefulness of cognitive assessment (i.e., perceived severity, perceived controllability, and knowledge of COVID-19), as a core process in dealing with stress, in explaining public emotions and behaviors in the face of public health issues (Li *et al.*, 2020). A qualitative study in Ghana found that health knowledge has increased due to COVID-19 regarding access to health information and increased understanding of health issues. Increased knowledge and access to information reduce the risk of being misinformed or claimed to be redundant from pandemic protocols (Saah *et al.*, 2021).

Sufficient knowledge provides an understanding of certain situations, including dealing with the COVID-19 pandemic. Understanding the situation provides self-confidence so that it is not easily provoked or manipulated by invalid or overclaimed information (Mao *et al.*, 2021) Behavioral changes require information about potential threats to the health of oneself or others. Valid information and increased knowledge affect handling the COVID-19 pandemic (Azlan *et al.*, 2020; Chesser *et al.*, 2020; Šuriņa *et al.*, 2021).

This knowledge investigation of a new infectious disease (COVID-19) is needed to identify knowledge gaps and sources of misinformation that can assist public health efforts in designing and implementing more focused intervention measures (Sallam *et al.*, 2020). Sufficient knowledge, and accurate understanding, can minimize the occurrence of misinformation and overclaims and speed up the completion of the pandemic (Guan *et al.*, 2020; Rothan & Byrareddy, 2020; Sallam *et al.*, 2020).

A previous study among university students in the UK found that perception (β = 0.13, p = 0.016) was statistically significant for the unique variance in hand

hygiene behavior during the pandemic (Barrett & Cheung 2021). Previous study with 633 participants revealed that better understanding shapes perceptions that affect behavior (Lim *et al.*, 2021). Another previous study revealed that the perception of COVID-19 can positively predict behavior indirectly (Mahmoud *et al.*, 2021).

Public perception of COVID-19 affects health behavior. Previous qualitative studies conducted among communities in Kathmandu, Kanchanpur, Bajura and Jhapa districts in Nepal revealed a very good general understanding among respondents about COVID-19, personal precautions and population level strategies. Respondents recognized the important role of the media in increasing awareness, knowledge, and straightening perceptions. Participants also expressed concern over the misleading (overclaimed) news that was spread by several media (Bhatt *et al.*, 2020).

Planning an effective educational intervention for handling the COVID-19 pandemic requires knowledge, perception, and preventive behavior as awareness of the health risks posed by this disease (Albaqawi *et al.*, 2020). This is important to increase the general public's knowledge in preventing the spread of COVID-19. Knowledge can make people aware of the seriousness of this pandemic situation (Gohel *et al.*, 2021). Human behavior plays an important role as the world grapples with public health threats such as the COVID-19 pandemic. Appropriate behavior can be an important factor in reducing cases of the COVID-19 pandemic (Jalloh *et al.*, 2021).

CONCLUSION

This study found a slight prevalence of good & enough knowledge, perception, and behaviors of implementing COVID-19 prevention protocols in a representative sample among Communities in Central Java Province. Knowledge and perceptions were statistically significant with behaviors.

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AUTHOR CONTRIBUTIONS

Conceptualization, E. C., D. S.; Methodology, E. C., D. S.; Sotfware, E. C., D. S.; Validation, D. S., D. R. J.; Formal Analysis, E. C., D. R. J.; Investigation, D. S., D. R. J.; Resources, E. C., D. R. J., L.; Data Curation, E. C..; Writing - Original Draft, E. C.; Writing - Review & Editing, D. S., D. R. J., L.; Visualization, D. S., D. R. J., L.; Supervision, D. S., D. R. J.; Project Administration, D. S., L.; Funding Acquisition, D. S.

CONFLICT OF INTEREST

The authors declared no conflict of interest.

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