

Original Research**How Knowledge Shapes Public Perception of the Covid-19 Vaccine****Anisah Azzah Mumtazah¹, Athanasia Budi Astuti², Koko Wahyu Tarnoto³,
Ros Endah Happy Patriyani⁴**¹ D-IV Nursing Student, Poltekkes Kemenkes Surakarta, Indonesia^{2,3,4} Department of Nursing, Poltekkes Kemenkes Surakarta, Indonesia**ABSTRACT**

Background: In 2021, Covid-19 cases in Indonesia decreased by 82% following the implementation of a mass vaccination program. The Covid-19 vaccine, which uses a weakened virus, helps prevent transmission, reduce morbidity and mortality, and increase immunity to the virus. This study analyzes the relationship between the level of knowledge and public perception of the Covid-19 vaccine.

Methods: This quantitative study employed a cross-sectional design. A purposive sampling technique was used, resulting in 154 respondents. Data were collected via an online questionnaire, and analyzed using the Spearman Rank correlation test.

Results: The Spearman Rank test revealed a significant relationship between the level of knowledge and public perception of the Covid-19 vaccine, with a p -value of 0.025 ($p < 0.05$).

Conclusion: Higher levels of public knowledge about Covid-19 are associated with more positive perceptions of the vaccine. Public education through reliable sources is essential to enhance understanding and encourage effective Covid-19 prevention practices.

ARTICLE HISTORYReceived: April 24th, 2025Accepted: April 24th, 2025**KEYWORDS**

Covid-19 vaccine, knowledge, public perception

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Cite this as: Mumtazah, A. A., Astuti, A. B., Tarnoto, K. W., & Patriyani, R. E. H. (2023). How Knowledge Shapes Public Perception of the Covid-19 Vaccine. *Interest: Jurnal Ilmu Kesehatan*, 12(2), 140–146. <https://doi.org/10.37341/10.37341/interest.v12i2.723>

INTRODUCTION

The Covid-19 pandemic has become one of the biggest challenges in global health. The virus was first identified in late 2019 in Wuhan, China, and has rapidly spread throughout the world, including Indonesia. The rapid spread is due to the high infection rate and the characteristics of the virus that are able to mutate, causing new variants that are more contagious. In Indonesia, the increase in the number of Covid-19 cases peaked in mid-2021, prompting the government to accelerate the national vaccination programme to reduce the transmission and mortality rate due to this virus infection (Ministry of Health of Republic Indonesia, 2020).

Vaccination is a key strategy in pandemic control aimed at increasing herd immunity and reducing morbidity and mortality from Covid-19 (CDC, 2021). Various types of vaccines have been provided and widely distributed in Indonesia including Sinovac, AstraZeneca, Pfizer, and Moderna. The effectiveness of vaccines has been proven in various studies, where vaccination can reduce infection rates and reduce the

risk of severe complications in individuals exposed to the virus. The effectiveness of vaccines has been scientifically proven, but there are still different perceptions in the community regarding the safety, efficacy, and long-term impact of the Covid-19 vaccine (Pellegrini & Vilouta Rando, 2024; Rzymiski et al., 2021; Zheng et al., 2022).

Lack of accurate information and misinformation about vaccination are the main factors affecting the level of public acceptance of the Covid-19 vaccine. Some groups still have concerns about the side effects of vaccines, even though research has shown that vaccines have a high level of safety and the benefits far outweigh the risks. Other factors such as social, economic and cultural factors also contribute to shaping people's attitudes and behaviour towards vaccination (Kelp et al., 2022; Zaid & Pratondo, 2021).

People's knowledge about Covid-19 and vaccination plays an important role in shaping their attitude and behaviour towards immunisation programmes. Previous studies have shown that individuals with high levels of knowledge tend to have positive perceptions of vaccines. Lack of information can trigger doubts and resistance to vaccination. Negative perceptions of vaccination can lead to a decrease in vaccination coverage, which in turn has the potential to hamper pandemic control efforts and increase the risk of future spikes in Covid-19 cases (Lyu et al., 2022; Zaid & Pratondo, 2021).

This study aims to analyse the relationship between the level of knowledge about Covid-19 and the public perception of the Covid-19 vaccine. A better understanding of the factors that influence vaccine acceptance in the community is expected to be the basis for formulating more effective and evidence-based health policies. The results of this study are also expected to provide recommendations for health workers and policy makers in developing more effective communication strategies to increase public awareness and acceptance of Covid-19 vaccination.

MATERIALS AND METHOD

This study used a quantitative method with a cross-sectional approach to determine the relationship between the level of knowledge of Covid-19 and people's perceptions of the Covid-19 vaccine (Dahlan, 2021). The research was conducted in Pesanggrahan Village, Kwanyar District, Bangkalan Regency, Madura through online media in the form of WhatsApp groups. The research implementation time lasted from November to February 2022. The population in this study were the people of Pesanggrahan Village aged 18-60 years and had been vaccinated against Covid-19, with a total population of 250 people (Dahlan, 2020).

The sampling technique used was non-probability sampling with a purposive sampling approach based on specific inclusion and exclusion criteria. The inclusion criteria were: (1) residents of Pesanggrahan Village who consented to participate as respondents, (2) ownership of an Android-based smartphone with internet access, and (3) completion of the first and second doses of the Covid-19 vaccine. Exclusion criteria included individuals who could not receive both vaccine doses due to medical contraindications. The sample size was calculated using the Slovin formula with a 5% margin of error, resulting in a sample of 154 respondents.

This study involved two variables: the independent variable was the level of public knowledge about Covid-19, and the dependent variable was public perception of the Covid-19 vaccine (Polit & Beck, 2018). Data were collected using a structured questionnaire consisting of 15 items assessing knowledge and 10 items assessing perception. Instrument validity was tested using the Pearson Product Moment correlation with a significance level of 5% and an r-table value of 0.360; all items were declared valid

as r-count values exceeded the threshold. Reliability testing using Cronbach's Alpha yielded a coefficient of 0.859 for the knowledge scale and 0.695 for the perception scale, indicating high and acceptable reliability, respectively.

The collected data were then analysed using univariate analysis and bivariate analysis. Univariate analysis was conducted to describe the characteristics of respondents based on gender, age, education, and occupation. Meanwhile, bivariate analysis used the Rank Spearman test to determine the relationship between the level of knowledge of Covid-19 and public perception of vaccines. This research has passed the ethical feasibility of Dr. Moewardi Hospital with number 62/I/HREC/2022 dated 15 March 2022.

RESULTS

Table 1. Characteristics of Respondents Based on Gender, Age, Education, and Work (n = 154 people)

Student Characteristics	n	%
Gender		
Male	59	38.3
Women	95	61.7
Total	154	100
Age		
Late Adolescence (17-25 years old)	104	67.5
Early Adulthood (26-36 years old)	40	25.9
Late Adult (37-45 years old)	6	3.8
Early Elderly (46-55 years old)	4	2.8
Total	154	100
Education		
Not in School	2	1.3
Elementary school	10	6.5
Junior high school	42	27.3
High school or equivalent	90	58.5
Higher Education	10	6.4
Total	154	100
Jobs		
Not Employed	144	93.5
Work	10	6.5
Total	154	100

Note: n = number; % = percentage

The majority of respondents in this study were female (61.7%), which indicates that more female participants were involved in this survey than males. In the age classification, the late teenage group (17-25 years old) dominated with a percentage of 67.5%, indicating that the young age group participated more in this study. Most of the respondents had a high school education or equivalent (58.5%) and the majority were unemployed (93.5%), reflecting that the respondents were mostly students.

Table 2. Level of Knowledge and Perception of the Community about the Covid-19 Vaccine (n = 154 people)

Variables	n	%
Level of Knowledge about Covid 19		
Less	0	0
Simply	30	19.48
Good	124	80.52
Total	154	100
Public Perception of Covid Vaccines 19		
Less	15	9.74
Simply	28	18.19
Good	111	72.07
Total	154	100

Table 2. Describes the level of knowledge and public perception of the Covid-19 vaccine. The study showed that the level of public knowledge about Covid-19 was classified as good with 80.52% of respondents having a high level of knowledge. Based on the perception of the Covid-19 vaccine, the majority of respondents (72.07%) had a good perception of the Covid-19 vaccine.

Table 2. Relationship between Knowledge and Public Perception of Vaccine (n = 154 people)

Variables	<i>p value*</i>	<i>r**</i>
The relationship between knowledge and public perception of the Covid-19 vaccine	0.02	0.20

Notes: * Spearman Rank Test; **Correlation Coefficient

Statistical analysis using the Spearman Rank test showed a significant relationship between the level of knowledge and public perception of the Covid-19 vaccine, with a p-value = 0.02 and a correlation coefficient of 0.20. The correlation between the level of knowledge and public perception of the Covid-19 vaccine is in the weak category. The results of this study still show that people with better knowledge tend to have a more positive perception of vaccines.

DISCUSSION

The results showed that the majority of respondents had a good level of knowledge about Covid-19. This reflects that information about Covid-19 has been widely accessed by the public through various media, both from the government, health workers, and digital platforms. In line with previous research, individuals with higher education levels tend to have a better understanding of Covid-19 and vaccination, which then contributes to a more positive attitude towards vaccination (Jairoun et al., 2022).

The results also showed that the majority of respondents had a favourable perception of the Covid-19 vaccine. This finding shows that although most people accept the vaccine well, there are still a small number of individuals who have concerns about the side effects and effectiveness of the vaccine. This is in line with Kelp et al. (2022) research, which states that mistrust of vaccines is often caused by misinformation and unfavourable personal experiences with vaccination.

Analysis of the relationship between the level of knowledge and perception of the Covid-19 vaccine showed a significant correlation, although with a low level of correlation. The higher a person's level of knowledge about Covid-19, the more positive their perception of vaccination. This result corroborates previous findings stating that adequate knowledge can increase vaccine acceptance in the community (Vergara et al., 2021). Therefore, increased education about Covid-19 and vaccination is needed to reduce doubts and increase vaccination coverage in the future (Ahiakpa et al., 2022; Cáceres et al., 2022; Dhanani & Franz, 2020).

This research has several advantages, one of which is the use of quantitative methods with a cross-sectional approach that allows the analysis of the relationship between the level of knowledge and public perception of the Covid-19 vaccine objectively. The research instruments used have gone through validity and reliability tests, thus ensuring that the data obtained has a high level of reliability. This study also involved a fairly large sample size (154 respondents), which allows the research results to be more representative in describing the level of knowledge and public perception of the Covid-19 vaccine.

Despite its strengths, this study has limitations. The use of purposive sampling may introduce selection bias, and online data collection could result in inaccurate responses due to lack of supervision. Furthermore, the study did not explore other potential influences on vaccine perception, such as social, economic, and cultural factors. Future research is recommended to employ qualitative or mixed-method approaches to provide a more nuanced understanding of the factors affecting vaccine acceptance in diverse communities.

CONCLUSION

This study shows that there is a significant relationship between knowledge and public perception of the Covid-19 vaccine. The higher the level of public knowledge about Covid-19, the more positive the perception of the Covid-19 vaccine. The public is expected to increase their knowledge about Covid-19 and vaccination through reliable sources of information.

ACKNOWLEDGEMENT

Director of Poltekkes Kemenkes Surakarta who has facilitated this research.

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