Indonesian Journal for Health Sciences
Vol. 9, No. 2, September 2025, pp. 133-140
ISSN 2549-2721 (Print), ISSN 2549-2748 (Online)

UNDERSTANDING THE BEHAVIOR OF PONOROGO COMMUNITY IN RECEIVING COVID-19 VACCINATION: A HEALTH BELIEF MODEL PERSPECTIVE

Eka Permata Sari[1], Lina Ema Purwanti[2*], Ririn Nasriati[3]
[1,2,3]Department of Nursing, Universitas Muhammadiyah, Ponorogo, Ponorogo, Indonesia

Article History:
Submitted: 18/01/2025
Accepted: 22/07/2025
Published: 25/09/2025

Keywords:
Behavior,
Community,
Vaccine COVID-19,
Health Belief Model

ABSTRAK

Abstract:
Community behavior in accepting the COVID-19 vaccination still contains a lot of controversy. Negative news causes differences in the community's perception and response to behavior. This study aims to analyze the perception and behavior of the community in receiving the COVID-19 vaccination with the health model theory approach. The design of this study is cross-sectional, with the population of the Banaran Village, Pulung District, Ponorogo Regency, a total of 2,220 people. The number of respondents in this study was 100 people chosen by purposive sampling techniques. Research instruments using a questionnaire. In addition, data were analyzed using the Chi-Squared test. The results showed the relationship between the perception and behavior of the people receiving the COVID-19 vaccination, with a value of 0,000 <0.05. Increasing public perception and behaviors, the importance of COVID-19 vaccination can be applied using the theory of health belief models. The role of health workers is vital in educating the public about the significance of COVID-19 vaccination in suppressing transmission, severity, to death from COVID-19.

***Abstrak*:**
Perilaku masyarakat dalam menerima vaksinasi COVID-19 masih banyak mengandung kontroversi. Hal ini disebabkan karena banyak berita negatif, sehingga menimbulkan perbedaan persepsi dan respon perilaku dikalangan masyarakat. Penelitian ini bertujuan untuk menganalisis persepsi dan perilaku masyarakat dalam menerima vaksinasi COVID-19 dengan pendekatan teori Health Belief Model. Desain penelitian ini cross-sectional., dengan populasi masyarakat Desa Banaran, Kecamatan Pulung, Kabupaten Ponorogo yang berjumlah 2.220 orang. Jumlah responden dalam penelitian ini adalah 100 orang yang diambil dengan teknik sampling purposive sampling. Instrumen penelitian menggunakan kuesioner. Selanjutnya data dianalisis menggunakan uji Chi-Square. Hasil penelitian menunjukkan terdapat hubungan antara persepsi dengan perilaku masyarakat saat menerima vaksinasi COVID-19 dengan p-value = 0,000 < (0,05). Peningkatan persepsi dan perilaku positif masyarakat terhadap pentingnya vaksinasi COVID-19 dapat diterapkan dengan menggunakan teori Health Belief Model. Peran tenaga kesehatan sangat penting dalam mengedukasi masyarakat mengenai pentingnya vaksinasi COVID-19 dalam menekan penularan, keparahan, hingga kematian akibat COVID-19.

Corresponding Author:
Lina Ema Purwanti,
Department of Nursing,
Universitas Muhammadiyah Ponorogo,
Ponorogo, Indonesia.
Email: emapurwantilina@umpo.ac.id

How to Cite:
E.P. Sari, L.E. Purwanti R. Nasriati, "Understanding The Behavior of Ponorogo Community in Receiving Covid-19 Vaccination: A Health Belief Model Perspective", Indonesia. J. Heal. Sci., vol. 9, no. 2, pp. 133-140, 2025.

INTRODUCTION

The Covid-19 pandemic is still not over. Since the virus emerged from Wuhan, it has spread worldwide [1] . Efforts to reduce the spike in cases due to COVID-19, apart from implementing health protocols, are vaccinations [2]. The COVID-19 vaccination is the government's breakthrough in dealing with it, especially in Indonesia [3]. The government struggles to prevent a spike in COVID-19 cases because many controversies about the COVID-19 vaccine have arisen. Most people are worried about the safety of the vaccine, its effectiveness, and its halalness of the vaccine [3]. The Covid-19 vaccine is relatively new, and the manufacturing process is relatively short [3].

The report on total world vaccination doses for September 29, 2021. In 2021, the first dose reached 3,569,217,258 (45.8%), and the second dose reached 2,645,983,758 (33.9%) [4]. Based on updated data as of September 26, 2021, around 86,460,685 (41.51%) people received the first COVID-19 vaccination, and 48,526,648 or 23.30% had received the second dose of vaccination [5]. As of the vaccination data update of the East Java Provincial Health Office as of August 17, there were 2021,343,665 people (26.22%) who had received the first vaccination dose, and 4,411,885 (13.86%) had received the second dose of vaccination [6]. Based on updated data from the Ponorogo Health Service in August 2021, vaccination achievements reached 30% of all Ponorogo or non-Ponorogo residents. Banaran Village, Pulung District, Ponorogo Regency, as of September 28, 2021, the total number of vaccinations for the first dose reached 18.79%, and the second dose reached 9.51%.

Public skepticism about the Covid-19 vaccination is a pressing issue for public health authorities worldwide. The spread of wrong information will affect public perception regarding the COVID-19 vaccination policy [7]. The more fake news spreads, the more negative public perception regarding the COVID-19 vaccine will be. If the public perception of the COVID-19 vaccination is negative, it will impact the rejection of the COVID-19 vaccination program. It is a government effort to reduce morbidity and mortality due to Covid-19. Things that affect the low acceptance of COVID-19 vaccination in the community cannot be separated from several factors, one of which is the community's perception. Individual perceptions of doing something related to their health are studied in the theory of the Health Belief Model. The theory states that a person will take health actions when he is susceptible to chronic diseases that aggravate the disease. There is great benefit from the action taken, and the barriers are low [3].

The solution taken by the government to straighten people's perceptions is to conduct extensive education through various media related to the COVID-19 vaccine by experts who are competent in their fields [8]. They will provide education according to their respective fields of expertise regarding the level of safety, effectiveness, and halalness and straighten out hoax news that is widespread in the community related to the COVID-19 vaccine through the addition of the "Hoax Boster" column on the Covid19.go.id . With these efforts, public perception regarding the COVID-19 vaccine will be positive. It is hoped that all circles of society can accept the COVID-19 vaccination program, reducing the incidence and mortality due to COVID-19 [9].

RESEARCH METHOD

This research was quantitative research using a cross-sectional design. This study was conducted with 100 respondents from Banaran Village, Pulung District, Ponorogo. The data collected by questionnaire based on Health Belief Model theory. The ethical license, number 134/ER/KEPK/2022, was obtained from the Health Research Ethics Committee of

the University of Muhammadiyah Ponorogo.

RESULT AND ANALYSIS

This study included 100 respondents aged 21-74, 34 males and 66 females. Fifteen respondents had not been vaccinated, and 85 had been vaccinated. The respondents came from various occupations: civil servants, entrepreneurs, employees, farmers, and students (Table 1).

Table 1.
Demographic data (n=100)

Characteristics	n	%
Age (year)		
21-26	18	18
27-32	13	13
33-38	23	23
39-44	13	13
45-50	12	12
51-56	11	11
57-62	7	7
63-68	1	1
69-74	2	2
Gender		
Male	34	34
Female	66	66
Educational Background		
Elementary school	32	32
Junior high school	30	30
High school	34	34
Bachelor	4	4
Occupancy		
Civil servant	1	1
entrepreneur	23	23
Employee	14	14
Farmer	44	44
College student	3	3
Other	15	15
Vaccination status		
Not yet	15	15
Done	85	85

The result of positive vulnerability perception is that there are 62 respondents (62%). Most respondents with a positive perception of vulnerability are from the age group of 45-50, totaling 12; 75.0% of respondents have a positive vulnerability perception. Other results are 66.7% of respondents of the female gender, 67.6% of respondents came from a high school education level, 63.6% of respondents work as farmers, and 72.9% of respondents vaccinated against COVID-19 have a positive perception of vulnerability. The negative perception of vulnerability felt by the community was obtained by 38 respondents (38%). It consists of 25.5% of respondents from 45-50 years of age, 33.3% are female, 32.4% are from high school education level, 36.4% work as farmers, and 27.1 % came from respondents who had received the COVID-19 vaccination.

Table 2.
Perception and Community Behavior (n=100)

Variable	n	%
Perception		
Negative	31	31.0
Positive	69	69.0
Community Behavior		
Bad	37	37.0
Good	63	63.0

The study's results showed that 63 respondents (63.0%) had good behavior related to COVID-19 vaccination, 72.7% of whom were female, 100% had an undergraduate education, and 73.9% were entrepreneurs. Seventy-nine percent of respondents were from respondents who had been vaccinated against COVID-19.

Based on the results of the study, 37 respondents (37.0%) had bad behavior related to COVID-19 vaccination, consisting of 100% of respondents aged 63-68 years old, 27.3% of female respondents, 53.1 % came from respondents with a final education level of elementary school, and 27.1% came from respondents who had vaccinated against Covid-19

DISCUSSION

Community Perceptions Regarding COVID-19 Vaccination Based on The Health Belief Model Theory

The Health Belief Model (HBM) is a psychological framework that helps understand individuals' attitudes and behaviors towards health interventions, including vaccination. It comprises several constructs: perceived susceptibility, perceived severity, perceived benefits,

perceived barriers, cues to action, and self-efficacy. In Indonesia, community perceptions regarding COVID-19 vaccination have been significantly influenced by various HBM constructs. These constructs can significantly influence community perceptions and acceptance of COVID-19 vaccination. First key constructs of HBM and community perceptions are Perceived Susceptibility and Severity. Individuals who believe they are susceptible to COVID-19 and perceive the disease as severe are more likely to accept vaccination [10]; [11]; [12]. Many studies highlight that individuals' perception of their risk of contracting COVID-19 (susceptibility) and the seriousness of the disease (severity) are crucial in shaping their vaccination decisions. For instance, those who had previously tested positive for COVID-19 or had family members hospitalized due to the virus showed higher acceptance rates [12].

Second, perceived benefits**,** The belief in the benefits of vaccination, such as protection against COVID-19, significantly influences vaccine uptake. The belief in the benefits of vaccination, such as protection against severe illness, is a strong motivator for vaccine acceptance. This perception significantly influences individuals' decisions to receive booster doses [10]. Third, perceived barriers, such as fear of side effects, misinformation, and logistical challenges can hinder vaccine acceptance. Addressing these barriers through targeted communication and education is crucial [13]. Fourth, cues to action, external cues, such as government campaigns, healthcare provider recommendations, and witnessing others getting vaccinated, play a critical role in prompting individuals to get vaccinated. Cues to action were found to be the most dominant factor influencing booster vaccine acceptance. Fifth, self-efficacy: confidence in one's ability to get vaccinated and overcome barriers is essential for vaccine uptake. Higher self-efficacy is associated with greater acceptance of vaccination [14].

Trust in health authorities and exposure to misinformation significantly impact community perceptions. Mis-information can lead to vaccine hesitancy, while trust in health authorities can enhance acceptance. Sociodemographic factors**:** age, education level, income, and occupation influence vaccine acceptance. Older adults, those with higher education, and healthcare workers are more likely to accept vaccination. Cultural and religious beliefs also play a role in shaping perceptions. For example, concerns about the halal status of vaccines can affect acceptance among Muslim communities [15].

Understanding and addressing the various HBM constructs and community-specific factors are crucial for improving COVID-19 vaccination acceptance in Indonesia. Public health interventions should focus on enhancing perceived benefits, reducing barriers, leveraging cues to action, and building trust through effective communication and education. Developing a risk communication model that involves the public as partners in risk management can enhance trust and participation. This model should include enlightenment, trust-building, participative processes, and behavioral change [16]. Tailoring vaccination programs to address the unique challenges of different regions, including logistical and cultural barriers, can improve uptake. This includes ensuring vaccine availability and accessibility in rural areas [17].

Community Behavior Regarding COVID-19 Vaccination

Trust in health authorities significantly impacts vaccine acceptance is factors influencing community behaviour. Communities with higher trust in health authorities are more likely to accept vaccination, whereas exposure to misinformation can lead to hesitancy [13]; [18]; [19]. Misinformation and distrust in government and science are major barriers to vaccine uptake, particularly in regions

with historically low vaccination rates [20]; [21]. Socioeconomic status, education level, and religious beliefs play crucial roles in shaping attitudes towards vaccination. For instance, higher socioeconomic vulnerability is associated with less vaccine support, while higher vulnerability in racial and ethnic minority groups correlates with more positive vaccine attitudes [22] [23]. Younger age, female gender, and lower education levels are commonly associated with higher vaccine hesitancy [24]. Positive attitudes towards vaccines, prior vaccination behaviors (e.g. influenza vaccination), and perceived community behaviors (e.g. mask-wearing) are strong predictors of vaccination intentions [18] [25]. Fear of side effects and concerns about vaccine safety and efficacy are prevalent reasons for hesitancy [26] [27].

Effective communication strategies tailored to address specific community concerns and misinformation are essential. Public health messages emphasizing the benefits and safety of vaccines, and involving trusted community leaders, can enhance vaccine acceptance [28]. Community-based approaches, such as pharmacy-led vaccination and outreach programs, have shown success in increasing vaccine uptake among hard-to-reach populations [29]. Strategies to Improve Vaccine Uptake with Targeted Messaging to address specific fears and misinformation, and highlighting the benefits and safety of vaccines, can improve acceptance. For example, emphasizing the social and health benefits of vaccination can be effective. Engaging local political parties, community leaders, and organizations in vaccination campaigns can build trust and facilitate community mobilization. Programs co-designed with community leaders and influencers have led to significant engagement and vaccine uptake among vulnerable populations [30].

Public health interventions should focus on reducing disparities by addressing socioeconomic and household vulnerabilities. Ensuring vaccine affordability and accessibility is crucial. Utilizing behavior change theories and strategies, such as leveraging prior positive behaviors and perceived community norms, can enhance communication and promote vaccination [31].

Community behavior regarding COVID-19 vaccination is influenced by a complex interplay of trust, misinformation, socio-demographic factors, and behavioral attitudes. Effective strategies to improve vaccine uptake include targeted communication, community engagement, addressing socioeconomic barriers, and employing behavioral interventions. These approaches can help build trust, dispel misinformation, and ultimately increase vaccination rates. The limitation of this study is the number of populations that are still lacking. The perception factor that arises in different society allows widespread behavioral content.

CONCLUSION

Based on data analysis, it was found that for most of the respondents studied, 69 respondents (69.0%) had a positive perception regarding the COVID-19 vaccination in Banaran Village, Pulung District, Ponorogo Regency. Of the respondents studied, 63 respondents (63.0%) had good behavior related to COVID-19 vaccination in Banaran Village, Pulung District, Ponorogo Regency. The research results on the relationship between perception and the behavior of people receiving COVID-19 vaccination through a health belief model theory are evidenced by statistical tests using Chi-Square with a p-value (0.000). Then, the p-value < (0.05), which means rejecting H0, the results of the analysis show that there is a relationship between perception and the behavior of people receiving the COVID-19 vaccination. From the analysis results, the OR value of 8.8 (95% CI: 3.357 – 23.068) means that respondents with positive perceptions are 8.8 times more

likely to have good behavior than those with negative perceptions.

ACKNOWLEDGEMENTS

The author would like to thank the entire community of Banaran Village, Pulung Ponorogo, the Faculty of Health Sciences and the Institute for Research and Community Service, Muhammadiyah University of Ponorogo, for their support in this research.

REFERENCES

[1] C. Martín-Blanco, M. Zamorano, C. Lizárraga, and V. Molina-Moreno, "The Impact of COVID-19 on the Sustainable Development Goals: Achievements and Expectations," *Int. J. Environ. Res. Public Health*, vol. 19, no. 23, 2022, doi: 10.3390/ijerph192316266.

[2] M. Peng, "Outbreak of COVID-19: An emerging global pandemic threat," *Biomed. Pharmacother.*, vol. 129, no. July, p. 110499, 2020, doi: 10.1016/j.biopha.2020.110499.

[3] R. K. Sinuraya, R. F. Nuwarda, M. J. Postma, and A. A. Suwantika, "Vaccine hesitancy and equity: lessons learned from the past and how they affect the COVID-19 countermeasure in Indonesia," *Global. Health*, vol. 20, no. 1, p. 11, Feb. 2024, doi: 10.1186/s12992-023-00987-w.

[4] E. Mathie *et al.*, "Explore the global data on COVID-19 vaccinations," Our World in Data.

[5] R. Tanoto, "COVID-19 vaccination post introduction evaluation (cPIE) in Indonesia," WHO.

[6] P. (Perry) Li, "Annual Report 2022," *AIMS Energy*, vol. 11, no. 1, pp. 135–139, 2023, doi: 10.3934/energy.2023007.

[7] I. Skafle, A. Nordahl-Hansen, D. S. Quintana, R. Wynn, and E. Gabarron, "Misinformation About COVID-19 Vaccines on Social Media: Rapid Review," *J. Med. Internet Res.*, vol. 24, no. 8, p. e37367, Aug. 2022, doi: 10.2196/37367.

[8] A. Susilo *et al.*, "Coronavirus Disease 2019: Tinjauan Literatur Terkini," *J. Penyakit Dalam Indones.*, vol. 7, no. 1, p. 45, 2020, doi: 10.7454/jpdi.v7i1.415.

[9] WHO, "WHO's response to COVID-19 - 2021 Annual Report," *World Heal. Organ.*, no. March, 2022, [Online]. Available: https://www.who.int/publications/m/item/who-s-response-to-covid-19-2021-annual-report

[10] R. A. Dewi, J. H. Sutawardana, and A. Nistiandani, "Perception of COVID-19 Vaccination Based on Health Belief Model and the Acceptance of COVID-19 Booster Vaccination," *Nurse Media J. Nurs.*, vol. 13, no. 1, pp. 121–131, Apr. 2023, doi: 10.14710/nmjn.v13i1.47694.

[11] I. Hidayana, S. Amir, D. C. Pelupessy, and Z. Rahvenia, "Using a health belief model to assess COVID-19 vaccine intention and hesitancy in Jakarta, Indonesia," *PLOS Glob. Public Heal.*, vol. 2, no. 10, p. e0000934, Oct. 2022, doi: 10.1371/journal.pgph.0000934.

[12] A. R. Mohi, I. Y. Kusuma, M. N. Massi, and M. A. Bahar, "Factors related to first COVID-19 booster vaccine acceptance in Indonesia: A cross-sectional multi-center study," *Narra J*, vol. 4, no. 2, p. e858, Jul. 2024, doi: 10.52225/narra.v4i2.858.

[13] D. I. Putri, A. Sriatmi, Desyana Indira Putri, Budiyono, and Ayun Sriatmi, "Public Perception of the COVID-19 Vaccine: Literature Review," *Media Publ. Promosi Kesehat. Indones.*, vol. 7, no. 7, pp. 1788–1796, Jul. 2024, doi: 10.56338/mppki.v7i7.5490.

[14] T. Lidia, A. Widayati, and P. E. Nirmala Dewi, "Health Belief Model for Public Acceptance of Implementing COVID-19 Vaccination in Singkawang City, Indonesia," *New Emirates Med. J.*, vol. 5, Feb. 2024, doi: 10.2174/0102506882279402231223055256.

[15] M. I. Nurmansyah *et al.*, "Challenges of COVID-19 vaccination program in rural areas of Eastern Indonesia: A qualitative study from a multistakeholder perspective," *World Med. Heal. Policy*, vol. 16, no. 2, pp. 134–152, Jun. 2024, doi: 10.1002/wmh3.592.

[16] G. A. Yudarwati, I. A. Putranto, I. N. Ratriyana, and P. Parera, "Towards an Interactive and Participatory Risk Communication: Lessons Learned from COVID-19 in Indonesia," *Cogent Soc. Sci.*, vol. 9, no. 1, Dec. 2023, doi: 10.1080/23311886.2023.2221594.

[17] F. Efendi *et al.*, "Policies and cultural beliefs: Community perceptions about COVID-19 vaccine hesitancy in Indonesia," *Public Health Nurs.*, vol. 41, no. 4, pp. 736–744, Jul. 2024, doi: 10.1111/phn.13318.

[18] Y. Lama, A. Budenz, A. Gaysynsky, I. A. Iles, and W.-Y. Sylvia Chou, "Factors Associated With COVID-19 Behavioral Intentions: Findings From an Online Survey," *Am. J. Heal. Promot.*, vol. 36, no. 7, pp. 1183–1192, 2022, doi: 10.1177/08901171221093036.

[19] S. Al-Dahir *et al.*, "COVID-19 Testing Behavior as a Predictor of COVID-19 Vaccination in Southeastern Louisiana: A Longitudinal Cohort Study," *Vaccines*, vol. 12, no. 12, 2024, doi: 10.3390/vaccines12121338.

[20] G. Capurro, R. Maier, J. Tustin, C. G. Jardine, and S. Michelle Driedger, "'They're trying to bribe you and taking away your freedoms': COVID-19 vaccine hesitancy in communities with traditionally low vaccination rates," *Vaccine*, vol. 40, no. 50, pp. 7280–7287, 2022, doi: 10.1016/j.vaccine.2022.10.058.

[21] J. O. Chilongola, K. M. Rwegoshola, O. H. Balingumu, H. S. Semvua, and E. T. Kwigizile, "COVID-19 Knowledge, Attitudes, Practices, and vaccination hesitancy in Moshi, Kilimanjaro Region, Northern Tanzania," *Tanzan. J. Health Res.*, vol. 23, no. 1, 2022, doi: 10.4314/thrb.v23i1.3.

[22] Y. Kim, R. Iachan, J. Boyle, and Y. Deng, "Association Between County-Level Social Vulnerability and Vaccine-Related Attitudes and Hesitancy Toward COVID-19 Vaccination in the United States," *Vaccines*, vol. 12, no. 12, 2024, doi: 10.3390/vaccines12121368.

[23] R. K. Oladapo *et al.*, "COVID-19 vaccination in low and middle-income countries: Creating a sustainable roadmap for promoting public health intervention," *Int. J. Health Plann. Manage.*, vol. 39, no. 5, pp. 1612–1625, 2024, doi: 10.1002/hpm.3834.

[24] P. Lun *et al.*, "A social ecological approach to identify the barriers and facilitators to COVID-19 vaccination acceptance: A scoping review," *PLoS One*, vol. 17, no. 10 October, 2022, doi: 10.1371/journal.pone.0272642.

[25] M. M. Patwary *et al.*, "Determinants of covid-19 vaccine acceptance among the adult population of bangladesh using the health belief model and the theory of planned behavior model," *Vaccines*, vol. 9, no. 12, 2021, doi: 10.3390/vaccines9121393.

[26] J. Peng *et al.*, "High likelihood of accepting COVID-19 Vaccine in a Latinx community at high SARS-CoV-2 risk in San Francisco," *Open Forum Infect. Dis.*, vol. 8, no. 10, 2021, doi: 10.1093/ofid/ofab202.

[27] K. Griva *et al.*, "Evaluating rates and determinants of covid-19 vaccine hesitancy for adults and children in the singapore population: Strengthening our community's resilience against threats from emerging infections (socrates) cohort," *Vaccines*, vol. 9, no. 12, 2021, doi: 10.3390/vaccines9121415.

[28] I. Berrou *et al.*, "Leaving No One Behind: Interventions and Outcomes of the COVID-19 Vaccine Maximising Uptake Programme," *Vaccines*, vol.

10, no. 6, 2022, doi: 10.3390/vaccines10060840.

[29] A. Mahafzah, M. Sallam, F. G. Bakri, and M. S. Mubarak, "The Worrying Phenomenon of COVID-19 Vaccine Hesitancy and Its Negative Impact on Pandemic Control Efforts: Common Themes that Emerged in the Middle East and North Africa (MENA) Region," in *Advances in Experimental Medicine and Biology*, vol. 1457, Department of Pathology, Microbiology, and Forensic Medicine, School of Medicine, The University of Jordan, Amman, 11942, Jordan: Springer, 2024, pp. 299–322. doi: 10.1007/978-3-031-61939-7_17.

[30] A. P. Fiebelkorn *et al.*, "The role of funded partnerships in working towards decreasing COVID-19 vaccination disparities, United States, March 2021—December 2022," *Vaccine*, vol. 42, 2024, doi: 10.1016/j.vaccine.2023.12.061.

[31] T. O'Rourke and N. Iammarino, "The COVID-19 Challenge Now Is Getting Into Heads, Arms Will Follow," *Am. J. Heal. Educ.*, vol. 52, no. 6, pp. 352–359, 2021, doi: 10.1080/19325037.2021.1973619.