

ISSN 2597- 6052DOI: <https://doi.org/10.56338/mppki.v7i8.5913>**MPPKI****Media Publikasi Promosi Kesehatan Indonesia**
*The Indonesian Journal of Health Promotion***Research Article****Open Access**

Analysis of Sociodemographic Factors and Perception of Side Effects Based on Differences in Covid-19 Risk Factors in Pati District

Desyana Indira Putri^{1*}, Budiyo², Ayun Sriatmi³¹Master of Public Health, Public Health Faculty, Diponegoro University | desyanaindira@gmail.com²Public Health Faculty, Diponegoro University | budiyonofkm@lecturer.undip.ac.id³Public Health Faculty, Diponegoro University | ayunsriatmi@gmail.com* Corresponding Author: desyanaindira@gmail.com

ABSTRACT

Introduction: The COVID-19 pandemic has had a significant impact on public health, including in Pati District. Sociodemographic factors such as age, gender, education, employment, and economic status, as well as perceptions of vaccination side effects play an important role in determining the level of COVID-19 risk. An in-depth understanding of these different risk factors is essential to formulate effective and targeted mitigation strategies.

Objective: This study aims to analyze how sociodemographic factors (age, gender, education, employment and marital status) and perceptions of vaccination side effects contribute to differences in COVID-19 risk factors in Pati District.

Method: The type of research used in this study is quantitative research with a cross sectional approach. The sample size was 210 respondents. The instrument used was a questionnaire with an interview method. Data were analyzed using the Mann Whitney test for numerical data (knowledge and perception of side effects) and using the Chi-Square test for categorical data (age, gender, education, occupation and marital status).

Result: The results of the relationship test show that the p value <0.05 between gender and perception of side effects on COVID-19 risk factors

Conclusion: Sociodemographic factors and perceived side effects of vaccination play an important role in determining the level of COVID-19 risk in Pati District. Better education on the safety and benefits of vaccination and approaches tailored to sociodemographic characteristics can help reduce risk and increase vaccination participation in the community.

Keywords: Sociodemographic Factors; Perceived Side Effects; COVID-19 Risk Factors

INTRODUCTION

The COVID-19 pandemic has had a very significant impact on various aspects of life worldwide, including in Indonesia. Pati Regency, as one of the regions in Indonesia, also faces great challenges in handling the spread of COVID-19. The level of COVID-19 infection risk in Pati Regency is influenced by various factors, including sociodemographic factors and public perception of the side effects of vaccination (1).

Before the COVID-19 pandemic hit, Pati Regency was known as an agricultural area with the majority of its population working in the agricultural sector. The demographic structure in Pati is dominated by a productive-age population that is mostly involved in traditional agriculture, but with relatively limited levels of education and access to information (2). The economic condition of the community, which relies on the informal sector, causes the population in this region to have low resilience to economic and health shocks, such as those that occurred during the pandemic (3). In addition, the strong local culture and community perceptions of health and disease risk also play a role in how they respond to and assess health risks, including perceptions of the side effects of preventive health measures such as vaccination (4).

Sociodemographic factors such as age, gender, education level, employment, and economic status are known to play an important role in determining an individual's susceptibility to COVID-19 infection. These sociodemographic factors influence how residents of Pati District respond to the COVID-19 pandemic differently compared to other regions in Indonesia. For example, the level of trust in medical information and government policies may vary based on educational background and access to valid sources of information (5).

Previous studies have shown that individuals who are older, with lower education levels, or who are in a low economic status, have a higher risk of developing COVID-19. On the other hand, perceptions of side effects from vaccinations or other health measures may be influenced by previous experiences and people's level of knowledge about health risks (6). This puts Pati District in an unusual situation, where the challenges faced stem not only from the medical risk factors inherent to the pandemic, but also from the sociodemographic complexities and people's perceptions of such risks.

Public perception of the COVID-19 vaccine refers to the response or acceptance of information obtained regarding beliefs about the vaccine's halal status, willingness to be vaccinated, and the capacity of healthcare workers administering the COVID-19 vaccine. This is due to the many issues that influence information about the COVID-19 vaccine. As of March 25, 2020, a total of 414,179 confirmed cases had been reported, including 18,440 deaths (CFR 4.4%), with 192 countries/regions reporting cases. Of this number, 93,039,441 people have recovered and 2,606,888 people have died (3,6)

Indonesia ranks 18th among the countries confirmed to have COVID-19. Various countries are competing to obtain a vaccine that can effectively prevent COVID-19 through a series of scientifically rigorous, evidence-based stages. The goal of the COVID-19 vaccination is to reduce COVID-19 transmission, lower the rate of illness and death due to COVID-19, achieve herd immunity in the community, and protect people from COVID-19 so they can remain socially and economically productive (7,8)

METHOD

The type of research used was quantitative research with a cross-sectional approach. This research was conducted in Pati Regency in April-May 2024. The sample in this study was 210 respondents. The sampling technique used in this study was stratified random sampling. This technique was chosen to ensure that each subgroup (stratum) in the population, such as age group, gender, education level, and region of residence, is proportionally represented in the sample. Each stratum will be randomly sampled, thus allowing comparisons between different groups in the population.

The instrument used was a questionnaire with an interview method. Data were analyzed using the Mann Whitney test for numerical data (knowledge and perception of side effects) and using the Chi-Square test for categorical data (age, gender, education, occupation and marital status). These tests were used according to the results of the normality test which showed that the data were not normally distributed. Therefore, a non-parametric test was chosen which is more suitable for data that does not meet the assumption of normality.

The conceptual framework used as the basis for this study is the HBM model. The respondents' ages in this study range from 20 to 59 years. The gender of the respondents is categorized into male and female. The respondents' occupational status in this study includes teacher/civil servant, farmer, healthcare worker, and entrepreneur. Based on the respondents' educational status, they are categorized as low (no schooling-elementary), medium (junior high-high school), and high (associate-bachelor/master's degree). The marital status in this study includes married and unmarried. The knowledge category is grouped into low and high knowledge. Perception of side effects and COVID-19 risk factors are categorized as (poor-good) and (low-high).

RESULTS

The number of Community Health Centers (Puskesmas) in Pati Regency, according to health profile data, is 29, consisting of 12 inpatient Puskesmas and 17 non-inpatient Puskesmas. Additionally, there are 48 auxiliary Puskesmas and 29 mobile Puskesmas. Based on this study, univariate analysis is a statistical test used to describe gender, age, education level, occupation, marital status, knowledge, perception of side effects, and COVID-19 risk factors. The results of the normality test in this study are as follows:

Table 1. Tests of Normality

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Knowledge	.125	210	.000	.943	210	.000
Perception	.256	210	.000	.792	210	.000
Risk Factor	.142	210	.000	.946	210	.000

Descriptives

		Statistic	Std. Error
Knowledge	Mean	6.32	.158
	Median	6.00	
	Std. Deviation	2.292	
Perception	Mean	11.51	.122
	Median	11.00	
	Std. Deviation	1.764	
Risk Factor	Mean	3.19	.113
	Median	3.00	
	Std. Deviation	1.637	

Based on the results of the data normality test above, it shows that the data distribution of the variables of knowledge, perception and risk factors for COVID-19 is not normal so that the determination of the data category uses the median value as the cut of point. The results of the univariate analysis in this study are presented in Table 1.

Table 2. Respondents Frequency Distribution Table

Characteristics	f	%
Gender		
Male	72	34.3
Female	138	65.7
Age		
20-40 years old	117	55.7
41-59 years old	93	44.3
Education Level		
SMP-SMA	146	69.5
D3-S1/S2	64	30.1
Occupation		
Teacher/Civil Servant	68	32.4
Farmer	45	21.4
Health worker	12	5.7
Self-employed	85	40.5
Marital Status		
Married	167	79.5
Not Married	43	20.5
Knowledge		
Low	73	34.8
High	137	65.2
Perception of Side Effects		
Not good	95	45.2
Good	115	54.8
COVID-19 Risk Factors		
High	79	37.6
Low	131	62.4

Based on the data in table 1 above, the frequency distribution of respondents is as follows, most of the respondents in this study were female (65.7%) aged 20-40 years (55.7%) with the highest level of education in junior high school (69.5%). The characteristics of respondents in this study that dominate others are that most respondents work as self-employed (40.5%) and are married (79.5%) with high knowledge (65.2%), have a good perception of side effects (54.8%) against low COVID-19 risk factors (62.4%).

The results of the bivariate analysis (group difference test) in this study are as follows: Because the results of the normality test showed abnormal data distribution, the group difference test was carried out using the Mann-Whitney Test for numeric scale data and using the Chi-Square test for categorical scale data.

Table 3. Grouping Variable numeric scaled data

		Ranks		
	Risk Factor Category	N	Mean Rank	Sum of Ranks
Knowledge	High	79	97.75	7722.00
	Low	131	110.18	14433.00
	Total	210		
Perception	High	79	70.01	5530.50
	Low	131	126.90	16624.50
	Total	210		

Test Statistics ^a			
		Knowledge	Perception
Mann-Whitney U		4562.000	2370.500
Wilcoxon W		7722.000	5530.500
Z		-1.453	-6.932
Asymp. Sig. (2-tailed)		.146	.000

Based on the results of the table above, in the group with high COVID-19 risk factors, it is known that the group of respondents aged 20-40 years is only slightly larger in percentage (39.3%) than the 41-59 years old group (35.5%). Also, in the low COVID-19 risk factor group, the percentage aged 41-59 years was slightly greater than the 20-40 years group. Although there was a difference, it was not statistically proven because the p value was >0.05.

Table 4. Grouping Categorical Data Variables

	Variable	Risk Factor Category		P. Value Chi-Square
		High	Low	
Gender	Male	27.8%	72.2%	0.048
	Female	42.8%58	57.2%	
Age	20-40 years old	39.3%	60.7%	0.670
	41-59 years old	35.5%	645%	
Education	Intermediate (junior high school-high school)	38.4%	616%	0.858
	Higher (D3, S1 / S2)	35.9%	64.1%	
Occupation	Teacher/Civil Servant	39.7%	60.3%	0.062
	Farmer	22.2%	77.8%	
	Self-employed	41.2%	58.8%	
Marital status	Unmarried	30.2%	69.8%	0.345
	married	39.5%	60.3%	
Knowledge	Low	4.1%	58.9%	0.542
	high	35.8%	64.2%	
Perception	Poor	57.9%	42.1%	0.000
	Good	20.9%	79.1%	

Based on the results in the data above, it can be seen that the female group has a greater proportion of high COVID-19 risk factors than men. Statistically proven there is a significant difference with a value of $p < 0.05$ between gender and risk factors.

In the age group, there was no statistically significant difference between the age groups of 20-40 years and 41-59 years in terms of the risk of COVID-19, although there was a slight percentage difference with a value of $p > 0.05$. In the education group, there was no statistically significant difference between secondary and tertiary education levels in terms of COVID-19 risk, although there was a slight percentage difference with a $p > 0.05$ value ($p = 0.858$).

In occupation, respondents with occupations as health workers had the largest proportion in the group with high COVID-19 risk, but there was no statistically significant difference between type of occupation and COVID-19 risk factors ($p = 0.062$ or $p > 0.05$). In the marital status variable, there was no statistically significant difference between married and unmarried status in terms of COVID-19 risk, although there was a difference that the married group had a greater chance of having high COVID-19 risk factors, but it was not statistically proven ($p > 0.05$).

In the knowledge variable, it appears that differences in knowledge will differentiate COVID-19 risk factors, but this assumption was not proven because the Mann Whitney test carried out

DISCUSSION

Based on the results of statistical analysis in the study, it shows that there is no significant difference in terms of age based on the COVID-19 risk factor group, with a value of $p = 0.670$. This indicates that age does not significantly affect the difference in COVID-19 risk among the groups studied. This factor suggests that in Pati District, although there is a significant elderly population, age is not a major determinant in the risk of COVID-19 infection. This could be attributed to the social and cultural characteristics of Pati District. For example, while advanced age is commonly associated with increased disease severity, social behaviors and environmental conditions may play a greater role in determining infection risk. For example, high social interaction between generations and uneven awareness of health protocols across age groups may be the reason why age is not a significant factor in differences in infection risk. This is in line with previous research, namely according to Shahid et al., 2021 which shows that although advanced age can increase the severity of disease, this does not necessarily mean differences in infection risk among various age groups.¹

Based on gender as a risk factor, statistical analysis in this study showed a significant difference based on gender with a p value of 0.048, indicating that gender has an effect on the risk of COVID-19 infection. This finding indicates that in Pati, biological factors associated with gender, such as differences in immune response, play a role in influencing infection risk and symptom severity. This can be attributed to gender-specific social roles and behaviors in Pati district. This is because men are more often involved in activities outside the home, such as working in the agricultural or informal sectors, which increases their exposure to the virus.²⁵ This finding is in line with the research of Peckham et al., 2020 which shows that men have a higher risk of experiencing severe symptoms of COVID-19 than women, possibly due to biological factors such as different immune responses.²

Based on education and COVID-19 risk, there was no significant difference in education level by COVID-19 risk factor group, with a $p = 0.858$. This indicates that education level is not a determinant of infection risk among the groups studied. Although education is often associated with better knowledge about disease prevention, this study suggests that other factors may be more influential in determining the risk of infection.¹⁰

In terms of occupation and marital status, there were no significant differences in terms of occupation and marital status based on the COVID-19 risk factor group, with p values of 0.062 and 0.345, respectively. This suggests that employment and marital status do not play a significant role in differentiating the risk of COVID-19 infection in the population studied. This may be due to homogeneity in the population or other external factors that were not measured accordingly in the study conducted by Mutambudzi et al., 2020. 9,11

Based on the perception of vaccine side effects factor, there was a significant difference in the perception of vaccine side effects by COVID-19 risk factor group, with a $p = 0.000$. Negative perceptions of vaccine side effects are associated with increased risk of infection, which highlights the importance of effective education and risk communication to increase vaccine acceptance. These contextual factors can be attributed to the level of knowledge, access to information, and trust of the community towards the vaccination program in Pati District. For example, community perceptions towards vaccination may be influenced by inaccurate information or lack of understanding about the benefits and risks of vaccines.²⁷ For example, fear of exaggerated side effects or misconceptions about vaccine safety may lead to hesitancy or refusal of vaccination, especially among certain risk groups. This is in accordance with research conducted by Freeman et al., 2021, which states that appropriate education can help overcome unfounded fears and increase participation in vaccination programs.¹²

CONCLUSION

The conclusion of this study is that although the community's knowledge of the COVID-19 vaccine in Pati District is good, there are still negative perceptions related to vaccine side effects, especially in high-risk groups who have unfavorable views towards vaccination. Sociodemographic factors, such as gender, age, education, occupation and marital status, influence people's knowledge and perception of COVID-19 and associated risks. This suggests that understanding the relationship between sociodemographic factors, knowledge, and perceptions of side effects is critical to increasing participation in vaccination programs and the success of public health programs in the area.

SUGGESTION

To enhance the effectiveness of the COVID-19 vaccination program in Pati Regency, it is crucial to address the existing negative perceptions regarding vaccine side effects, particularly among high-risk groups. Public health campaigns should focus on providing clear, evidence-based information to counteract misconceptions and build trust in the vaccine's safety. Additionally, targeted interventions should be developed to reach different sociodemographic groups, considering factors such as gender, age, education, occupation, and marital status, which influence knowledge and perceptions of COVID-19 and its associated risks. By tailoring communication and outreach efforts, it is possible to improve overall participation in vaccination programs and reduce the risk of virus transmission within the community.

REFERENCES

1. Shahid, Z., Kalayanamitra, R., McClafferty, B., Kepko, D., Ramgobin, D., Patel, R., Aggarwal, C. S., Vunnam, R. R., Sahu, N., Bhatt, D., Jones, K., Golamari, R., & Jain, R. (2020). COVID-19 and Older Adults: What We Know. *Journal of the American Geriatrics Society*, 68(5), 926–929.
2. Peckham, H., de Gruijter, N. M., Raine, C., Radziszewska, A., Ciurtin, C., Wedderburn, L. R., Rosser, E. C., Webb, K., & Deakin, C. T. (2020). Male sex identified by global COVID-19 meta-analysis as a risk factor for death and ICU admission. *Nature Communications*, 11(1), 6317.
3. Zisi, L. 2021. Persepsi Masyarakat Terhadap Vaksin Covid-19 Di Sumatera Selatan. Fakultas Kesehatan Masyarakat Universitas Sriwijaya. Palembang.
4. Argista, Z. L. (2021). *Persepsi masyarakat terhadap vaksin COVID-19 di Sumatera Selatan*. Unpublished manuscript.
5. Enitan, S. S., Oyekale, A. O., Akele, R. Y., Olawuyi, K. A., Olabisi, E. O., Nwankiti, A. J., & Adejumo, E. N. (2020). Assessment of knowledge, perception, and readiness of Nigerians to participate in the COVID-19 vaccine trial. *Journal of Vaccines*, 8(1), 1-12. <https://doi.org/10.3390/vaccines8010001>
6. Hasyifah, N. (2021). *Gambaran persepsi masyarakat terhadap pemberian vaksinasi COVID-19 di Kecamatan Rappocini Kota Makassar tahun 2021*. [Thesis, Universitas Hasanuddin]. UNHAS Repository. <http://repository.unhas.ac.id/id/eprint/12567>
7. Malik, A. A., McFadden, S. M., Elharake, J., & Omer, S. B. (2020). Determinants of COVID-19 vaccine acceptance in the US. *EClinicalMedicine*, 26, 100495.
8. Mohamed, N. A., Solehan, H. M., Rani, M. D. M., Ithnin, M., & Isahak, C. I. C. (2021). Knowledge, acceptance, and perception on COVID-19 vaccine among Malaysians: A web-based survey. *PLoS ONE*, 16(8), e0256110. <https://doi.org/10.1371/journal.pone.0256110>
9. Rumahorbo, K. N. (2021). *Hubungan tingkat pengetahuan terhadap sikap dan perilaku masyarakat Kecamatan Medan Denai tentang vaksinasi COVID-19*. [Undergraduate thesis, Universitas Sumatera Utara]. USU Repository. <http://repository.usu.ac.id/handle/123456789/10045>
10. Mishra, S. V., Gayen, A., & Haque, S. M. (2021). COVID-19 and urban vulnerability in India. *Habitat International*, 103, 102230.
11. Mutambudzi, M., Niedwiedz, C., Macdonald, E. B., Leyland, A., Mair, F., Anderson, J., Celis-Morales, C., Cleland, J., Forbes, J., Gill, J., Hastie, C., Ho, F., Jani, B., Mackay, D. F., Nicholl, B., O'Donnell, C., Sattar, N., Welsh, P., & Pell, J. P. (2020). Occupation and risk of severe COVID-19: prospective cohort study of 120 075 UK Biobank participants. *Occupational and Environmental Medicine*, 78(5), 307–314.
12. Freeman, D., Waite, F., Rosebrock, L., Petit, A., Causier, C., East, A., Jenner, L., Teale, A.-L., Carr, L., Mulhall, S., Bold, E., Lambe, S., & Bennett, K. (2021). Coronavirus conspiracy beliefs, mistrust, and compliance with government guidelines in England. *Psychological Medicine*, 51(10), 1763–1774.
13. Aryani, dkk. 2021. Persepsi Masyarakat Desa Muktiwari Terhadap Vaksinasi Covid-19. *Muktiwari Society Perception Of Covid 19 Vaccination*. Proceedings UIN Sunan Gunung Djati Bandung Vol: I No: XXVIII (November 2021).

14. Indriyanti, D. (2021). Persepsi Petugas Puskesmas terhadap Pelaksanaan Vaksinasi Covid-19 pada Era *New Normal Perceptions of Public Health Center Officers on the Implementation of Covid-19 Vaccination in the New Normal Era*. *Jurnal Inspirasi*, 12 (1), 29.
15. Kementerian Kesehatan Republik Indonesia. (2020). Pencegahan dan Pengendalian Coronavirus Disease (COVID-19). 1–214.
16. Kevin, N. 2021. Hubungan Tingkat Pengetahuan Terhadap Sikap Dan Perilaku Masyarakat Kecamatan Medan Denai Tentang Vaksinasi Covid-19. Fakultas Kedokteran Universitas Sumatera Utara. Medan.
17. Pfizer. (2020). *Pfizer and BioNTech Conclude Phase 3 Study of COVID-19 Vaccine Candidate, Meeting All Primary Efficacy Endpoints*
18. Suryanto, A., & Sari, Y. (2020). *Tingkat Kepercayaan Masyarakat Terhadap Informasi Kesehatan Selama Pandemi COVID-19: Studi Kasus di Kabupaten Pati*. *Jurnal Komunikasi*, 12(3), 178-189.
19. Rayclif, dkk. 2022. Gambaran Persepsi Masyarakat Terhadap Vaksinasi COVID-19 di Desa Kamanga Dua Kecamatan Tompaso Kabupaten Minahasa. *Jurnal KESMAS*, Vol. 11, No. 1, Januari 2022. Fakultas Kesehatan Masyarakat Universitas Sam Ratulangi Manado.
20. Rothan, dkk. 2020. *The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak*. *Journal of Autoimmunity*. USA
21. Robbins, dkk. 2013. *Organizational Behavior*. 15th Edition. New Jersey.
22. World Health Organization. (2020). *Naming the coronavirus disease (COVID-19) and the virus that causes it cited on 10 May 2021*
23. World Health Organization. (2020). *Global Advisory Committee on Vaccine Safety (GACVS) review of latest evidence of rare adverse blood coagulation events with AstraZeneca COVID-19 Vaccine (Vaxzevria and Covishield)*.
24. World Health Organization. (2021). *Indonesia: WHO Coronavirus Disease (COVID-19) Dashboard With Vaccination Data / WHO Coronavirus (COVID-19) Dashboard With Vaccination Data cited on 2nd June 2021*.
25. Badan Pusat Statistik. (2020). *Kabupaten Pati dalam Angka 2020*. BPS Kabupaten Pati.
26. Rahayu, T. N., Setiawan, D., & Wicaksono, T. (2019). *Ketahanan Ekonomi Rumah Tangga di Daerah Pedesaan: Studi Kasus di Kabupaten Pati*. *Jurnal Ekonomi dan Pembangunan*, 27(1), 65-78.
27. Kurniasari, M., & Wibowo, A. (2020). *Persepsi Masyarakat Terhadap Kesehatan dan Implikasinya pada Respons Pandemi COVID-19 di Kabupaten Pati*. *Jurnal Kesehatan Masyarakat*, 15(2), 101-110.
28. Santoso, B., Nugroho, A., & Lestari, D. (2021). *Pengaruh Tingkat Pendidikan Terhadap Persepsi Risiko Vaksinasi di Kabupaten Pati*. *Jurnal Penelitian dan Pengembangan Kesehatan*, 13(4), 233-240.