



Original Research

## Factors Related to Vaccine Hesitancy in Anti-vaccine Group on Facebook

Aisyah Nur Izzati, Budi Utomo, Retno Indarwati

Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

### ABSTRACT

**Introduction:** The current controversial issue regarding the anti-vaccine movement is the biggest challenge in implementing immunization in Indonesia because it influences the stagnation in the coverage of complete basic immunization. The World Health Organization (WHO) also states that the anti-vaccine group is one of the ten major threats to global health in 2019 since this phenomenon can cause rare diseases to become epidemic. This study aims at factors related to vaccine hesitancy in the anti-vaccine group on Facebook.

**Methods:** This study used a descriptive correlational method with a quantitative approach. The sample in this study was 150 mothers who were members of the anti-vaccine group on Facebook social media, selected using a purposive sampling technique.

**Results:** Demographic characteristics include religion, ethnicity, education, and income. Perceived susceptibility and perceived severity were assessed using Hwang's Health Belief Model questionnaire, while vaccine hesitancy was assessed using Saphiro's Vaccine Hesitancy Scale questionnaire, then analyzed using Spearman Rho ( $\alpha < 0.05$ ). The results of this study showed that there was a correlation between perceived susceptibility and perceived severity of vaccine hesitancy ( $p = 0.000$ ), while demographic characteristics were not related to vaccine hesitancy.

**Conclusion:** Certain religions and ethnicities which have caused concern have proven unrelated to parent's hesitance in immunization, as well as the level of education and income. The vulnerability and severity of a disease emerged as most parents' overriding concern when making decisions about vaccine

### ARTICLE HISTORY

Received: Feb 27, 2020

Accepted: April 1, 2020

### KEYWORDS

perceived susceptibility; perceived severity; vaccine hesitancy; anti-vaccine

### CONTACT

Retno Indarwati

✉ [retno-i@fkip.unair.ac.id](mailto:retno-i@fkip.unair.ac.id)

📍 Faculty of Nursing, Universitas Airlangga, Surabaya, Indonesia

**Cite this as:** Izzati, A. N., Utomo, B., & Indarwati, R. (2020). Factors Related to Vaccine Hesitancy in Anti-vaccine Group on Facebook. *Jurnal Ners, Special Issues*, 40-44. doi: <http://dx.doi.org/10.20473/jn.v15i2.18907>

### INTRODUCTION

The controversial problem regarding vaccines, especially the recent vaccine hesitancy, is the biggest challenge in implementing immunization in Indonesia (Depkes RI, 2018). According to the Strategic Advisory Group of Experts (SAGE) Vaccine Hesitancy working group of WHO, vaccine hesitancy refers to delay in acceptance or refusal of vaccines despite the availability of vaccine services. This certainly affects the stagnation of complete basic immunization coverage in Indonesia. Meanwhile, to be able to provide effective protection, immunization coverage must be maintained high and evenly distributed throughout the regions to avoid extraordinary events (KLB) (Depkes RI, 2018). The

World Health Organization (WHO, 2018) also stated that the anti-vaccine group is one of the ten major threats to global health in 2019 because this phenomenon can cause rare diseases to become epidemic again (WHO, 2018).

The achievement of complete basic immunization must pass various challenges, one of which is the public's trust in the immunization program. Schalkwyk (2019) explained that most of the anti-vaccine group movement use social media to spread misleading information about vaccines to strengthen the hesitancy of others in giving vaccines to their children (Schalkwyk, 2019). Social media is chosen because it is the only media currently used by everyone to interact, search for information, and to become part of a community (Joubert, 2019). The

Table 1. Percentage distribution of demographic characteristics of the respondents

Demographic Characteristics	Category	n	%
Age	18-25 years old	21	14
	26-30 years old	51	34
	31-35 years old	47	31.3
	36-40 years old	31	20.7
Religion	Islam	146	97.3
	Christian	3	2
	Catholic	1	0.7
	Java	133	88.7
Ethnicity	Madura	4	2.7
	Batak	6	4
	Chinese	3	2
	Osing	2	1.3
Area of residence	Bali	2	1.3
	Urban	80	53.3
	Rural	70	46.7
Level of education	Primary school	2	1.3
	Junior high school	3	2
	Senior high school	53	35.4
	College	92	61.3
Occupation	Housewife	84	56
	Wiraswasta	36	24
	PNS	21	14
Level of income	Pedagang	9	6
	<2.500.000	70	46.7
	>2.500.000	80	53.3

most widely used type of social media to spread anti-vaccine propaganda is the Facebook Group (Chiou & Tucker, 2018).

Indonesia is the fourth highest user of Facebook social media in the world with 130 million active users per month (Hootsuite and We Are Social, 2018). The results of the study by the Ipsos-Centre for International Governance Innovation (CIGI) showed that 65% of internet and social media users in Indonesia believe in the truth of the information in cyberspace without making confirmation beforehand. Various arguments about the pros and cons of vaccination that are widely communicated on social media make ordinary people directly accept the information and are more influenced by counter statements about vaccination (Sundoro et al., 2018). Trust and legitimacy are crucial concepts for understanding why some sources of information on vaccination can lead to vaccine hesitancy because the fear of disease, which we term perception of susceptibility and severity, has been replaced by fear of vaccines for some people... The phenomenon that is happening in the midst of the community surely becomes a concern of all health workers in the world, including in Indonesia. A number of studies on cons of vaccination have been examined in several other countries, but there are still very few studies in Indonesia. The background underlies this study's intent to analyze the hesitancy of basic immunization in the anti-vaccine groups on Facebook social media.

## MATERIALS AND METHODS

The data of this study have been collected by distributing questionnaires through Google Form to 150 mothers who joined the anti-vaccine Facebook Group and were selected with a purposive sampling

technique. A section of the questionnaire consists of religion, race disparities, level of education, level of income, perceived susceptibility, and perceived severity. A scale from one to four has been used in the questionnaires to determine the level of vaccine hesitancy. The questionnaires were distributed on the first of December 2019 and collected on the fifth of February 2020. After the questionnaires were collected, experts' answers were extracted using coding method and transferred to an Excel spreadsheet. The data were transferred to the coding Excel spreadsheet and grouped to summarize similar opinions in tables to present the percentages. This study has received ethical approval from The Research Ethic Committee, Faculty of Nursing Universitas Airlangga with Letter of Approval No: 1837-KEPK.

## RESULTS

The first section of this study explains basic information regarding age, area of residence, occupation, religion, ethnicity, education level, and income level of the respondents. The data show that 34% of the respondents are in the age range of 26-30 years, 31% of them are in the age range of 31-35 years, 21% of them are in the age range of 36-40 years, and the rest are under 25 years old. A Of the respondents, 53.3% live in urban areas and the remaining 46.7% live in villages. Housewives account for 56% of the respondents, 24% of them are self-employed, 14% of them are civil servants, and the remaining 9% work as merchants. Almost all of them are predominantly Muslim with a percentage of 97.3%, 2% are Christians, and the remaining 0.7% are Catholics. The ethnicity of the respondents are quite diverse, but the majority or 88.7% of the respondents

Table 2. Percentage distribution of the perceived susceptibility and severity of the respondents

Perceived Susceptibility	Strongly Agree	Agree	Disagree	Strongly Disagree	Total
My child is at risk for PD3I ((Infectious disease that can be prevented by immunization) or vaccine-preventable diseases (tuberculosis, polio, hepatitis B, pertussis, diphtheria, measles and tetanus)	7	47	59	37	150
I am worried that my child will have PD3I or vaccine-preventable diseases (tuberculosis, polio, hepatitis B, pertussis, diphtheria, measles, and tetanus)	29	65	43	13	150
PD3I or vaccine-preventable diseases (tuberculosis, polio, hepatitis B, pertussis, diphtheria, measles and tetanus) are contagious diseases	41	82	19	8	150
PD3I or vaccine-preventable diseases (tuberculosis, polio, hepatitis B, pertussis, diphtheria, measles and tetanus) are dangerous for my child	63	73	11	3	150
PD3I or vaccine-preventable diseases (tuberculosis, polio, hepatitis B, pertussis, diphtheria, measles and tetanus) can cause serious health problems for my child	58	75	15	2	150
The provision of immunizations is important for maintaining the health of my child	23	40	79	8	150
The immunization program implemented by the government is very effective	18	45	75	12	150
If I provide immunizations for my child, it means I also take care of the health of the people around me	21	39	82	7	150
The immunization program provided by the government is expected to be very useful	19	42	79	10	150
The latest vaccine products are more dangerous than the old vaccines products	22	61	61	6	150
Information about immunizations that I obtain from health workers can be trusted	14	66	61	8	150
Immunization is the best way to protect my child from illness	20	40	78	12	150
I did what the doctor suggested to immunize my child	17	46	79	8	150
I am worried about the serious side effects caused by immunization	43	70	32	5	150
My child does not need immunizations for PD3I or vaccine-preventable diseases (tuberculosis, polio, hepatitis B, pertussis, diphtheria, measles, and tetanus) because the diseases are now rare	18	76	47	9	150

are Javanese, 4% are Batakese, 2.7% are Madurese, 2% are Chinese, and the remaining 2.6% are Osing and Balinese. Only 1.3% graduated from elementary schools, 2% graduated from junior high schools, 35.4% graduated from senior high schools, and the remaining 61.3% graduated from universities. Having an income of above IDR 2,500,000 accounted for 53.3% of the respondents and the remaining 46.7% have an income of below IDR 2,500,000 (Table 1).

Table 3 shows the results of bivariate analysis between the dependent variables and the independent variables, where if a *p-value* is less than 0.05 . it is statistically significant. There was no significant relationship between religion and vaccine hesitancy ( $p=0.148$   $r=-0.119$ ), there was no significant relationship between ethnicity and vaccine hesitancy ( $p=0.127$   $r=0.125$ ), between level of education and vaccine hesitancy ( $p=0.560$   $r=-0.097$ ), or between level of income and vaccine hesitancy ( $p=0.560$   $r=-0.048$ ), but there was a significant relationship between perceived susceptibility and vaccine hesitancy ( $p=0.000$

$r=0.323$ ), and between perceived severity and vaccine hesitancy ( $p=0.000$   $r=0.292$ ).

## DISCUSSION

The results of this study indicate that demographic characteristics do not affect immunization hesitancy in parents. A study conducted by Calu in 15 countries showed lower immunization coverage among Muslims than Christians (Calu et al., 2020) This phenomenon of vaccine refusal has also been recently reported in developed countries, such as in the United States with religious concerns being a major reason (Review, 2016). However, a study carried out by Larson in 2016 explained that studies on vaccine confidence showed that Muslim faith itself is not always linked to low coverage, for example in Saudi Arabia (Larson et al., 2016). This study revealed that religion is not related to vaccine hesitancy in the anti-vaccine group on Facebook in Indonesia. This is consistent with a study conducted by Pelčić in 2016 which found that every religion has its own basic reasons for not giving immunizations to the children

Table 3. The results of univariate analysis

Independent Variables	Vaccine hesitancy			Sig.	Coefficient Correlation
	Refuser	Hesitance	Acceptor		
Religion					
Islam	26	88	32	0.148	-0.119
Christian	-	2	1		
Catholic	-	-	1		
Ethnicity					
Java	21	80	32	0.127	0.125
Madura	2	2	-		
Batak	2	3	1		
Chinese	-	2	1		
Osing	-	2	-		
Balinese	1	1	-		
Level of education					
SD	-	2	1	0.560	-0.097
SMP	-	-	1		
SMA	9	31	14		
PT	18	57	17		
Level of income					
<2.500.000	11	41	17	0.560	0.048
>2.500.000	15	48	17		
Perceived Susceptibility					
High	3	28	22	0.000	0.323
Middle	16	44	9		
Low	7	18	3		
Perceived Severity					
High	16	74	33	0.000	0.292
Middle	3	-	-		
Low	7	16	1		

(Pelčić et al., 2016). Basically, religion is not in contradiction with vaccination and public health. It is only individual parents or religious leaders and their questionable interpretations of religious practices that are opposed to vaccination since no religion has such intention.

There have not been many studies linking the relationship of racial disparities and vaccine hesitancy. This study shows that ethnicity is not related to vaccine hesitancy. This is not in line with the results of a previous study conducted by Crouse Quinn in 2018 which stated that there are significant racial differences in vaccine attitudes, risk perception, trust, hesitancy and confidence. They concluded that racial factors can be a useful new tool for understanding and addressing attitudes toward vaccine behavior (Crouse Quinn et al., 2018).

This study also explains that there is no relationship between education level and income on vaccine hesitancy. Previous studies have reported that parents with low levels of education obtain less information about vaccines compared to parents with high levels of education (Kumar et al., 2016). Meanwhile, another study conducted by Opel showed that parents with higher levels of education were nearly four times likely to be concerned about the safety of vaccines than those with lower levels of education. Highly educated people may have thought seriously about vaccination issues from the internet and social media, in which anti-vaccination groups are abundant (Dubé et al., 2013).

This study shows that the immunization hesitancy is not affected by parental income levels as well. Some studies revealed that parents of lower-income brackets have been shown in some studies to have greater levels of concern about the safety and necessity of vaccines compared to those with higher socioeconomic status. However, in another study, parents of higher-income brackets are more than two times likely to be concerned that injections might not be safe than parents of lower-income brackets. The apparent contradiction could be related to differing perceptions of what "vaccine safety" means among parents from different socioeconomic backgrounds (Gowda & Dempsey, 2013)

This study suggests that the feeling of vulnerability to PD3I or vaccine-preventable diseases in parents and the belief that PD3I can have a serious impact on the health of their children is related to immunization hesitancy in parents. Parents' perceptions on the prevalence of disease influence parents' decisions on whether or not to obtain a vaccine. The PD3I can affect anyone; therefore, according to them, infectious diseases that can be contagious should be prioritized for vaccination. It is the same for the severity of PD3I, in which the severity of a disease could be quantified by how long the child would be sick, or if the disease would result in disabilities or long-term effects. These results show that mothers who have a high awareness of the risk of PD3I require more compensation to accept vaccines than mothers who have less awareness of that issue.

## CONCLUSION

This study implies that what influences immunization hesitancy to parents is their perception of the possibility of PD3I and the seriousness of the disease. The results of the study assess decision-makers in the governmental organization and all health workers need to confirm to the community about the possibility of PD3I spread and the serious impacts that result from it because, in reality, demographic characteristics have no impact on immunization hesitancy. This study is just a first step into studying vaccine hesitancy in mothers who join the anti-vaccine group on Facebook social media in Indonesia. More studies are required to analyze other factors that can influence immunization hesitancy among mothers in other communities in the real world.

## CONFLICT OF INTEREST

No conflict of interest has been declared.

## ACKNOWLEDGEMENT

Authors of this study would like to thank the Faculty of Nursing and also Master's in Nursing Study Programme, for providing the opportunity to present this study.

## REFERENCES

- Calu, J., Weber, A. M., Darmstadt, G. L., Abdalla, S., & Victora, C. G. (2020). *Religious affiliation and immunization coverage in 15 countries in Sub-Saharan Africa*. *38*, 1160–1169. <https://doi.org/10.1016/j.vaccine.2019.11.024>
- Chiou, L., & Tucker, C. (2018). *Fake News and Advertising on Social Media: A Study of the Anti-Vaccination Movement*. 1–35.
- Crouse Quinn, S., Jamison, A., Freimuth, V., Hancock, G., & Musa, D. (2018). *Exploring Racial Influences on Flu Vaccine Attitudes and Behavior: Results of a National Survey of African American and White Adults*. *35*(8), 1167–1174. <https://doi.org/10.1016/j.vaccine.2016.12.046>
- Exploring
- Depkes RI. (2018). *Pelaksanaan Imunisasi MR Masih ada Tantangan*.

- Dubé, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. (2013). *Vaccine hesitancy An overview*. *August*, 1763–1773.
- Gowda, C., & Dempsey, A. F. (2013). *The rise ( and fall ?) of parental vaccine hesitancy*. *August*, 1755–1762.
- Hootsuite and We Are Social. (2018). *Digital in 2018: Essential Insights Into Internet, Social Media, Mobile, and E-Commerce Use Around The World*.
- Joubert, M. (2019). *Why anti-vaccine beliefs and ideas spread so fast on the internet*. Medical Press.
- Kumar, D., Chandra, R., Mathur, M., Samdariya, S., & Kapoor, N. (2016). *Vaccine hesitancy: understanding better to address better*. *Israel Journal of Health Policy Research*, 1–8. <https://doi.org/10.1186/s13584-016-0062-y>
- Larson, H. J., Figueiredo, A. De, Xiahong, Z., Schulz, W. S., Verger, P., Johnston, I. G., Cook, A. R., & Jones, N. S. (2016). *EBioMedicine The State of Vaccine Confidence 2016: Global Insights Through a 67-Country Survey*. *EBIOM*, *12*, 295–301. <https://doi.org/10.1016/j.ebiom.2016.08.042>
- Pelčić, G., Karačić, S., Galina, L., Kubar, O. I., Leavitt, F. J., Tai, M. C., & Morishita, N. (2016). *Religious exception for vaccination or religious excuses for avoiding vaccination*. *20*, 516–521.
- Review, C. (2016). *Association Between Vaccine Refusal and Vaccine-Preventable Diseases in the United States A Review of Measles and Pertussis*. *315*(11), 1149–1158. <https://doi.org/10.1001/jama.2016.1353>
- Schalkwyk, F. Van. (2019). *New potentials in the communication of open science with non-scientific publics: The case of the anti-vaccination movement*
- New potentials in the communication of open science with non - scientific publics: The case of the anti - vaccination movement* By François Barend van Schalkwyk. *March*. <https://doi.org/10.13140/RG.2.2.28501.06888>
- Sundoro, J., Sulaiman, A., Purwadianto, A., & Wasisto, B. (2018). *Kampanye Anti-Vaksin oleh Seorang Dokter, Apakah Melanggar Etik?* *2*(1), 1–5. <https://doi.org/10.26880/jeki.v2i1.8>
- WHO. (2018). *Immunization*.