

UNDERSTANDING RISK PERCEPTION AND RISK TOLERANCE AMONG VACCINE REFUSERS IN BANDUNG: A CASE STUDY OF RISK COMMUNICATION DURING THE COVID-19 PANDEMIC

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Abstract

Public rejection and hesitation towards vaccination continue to increase. Based on data from the West Java Provincial Health Office, various obstacles hinder vaccination coverage in the region. This study aims to identify and analyze the factors that influence people's risk perception and risk tolerance in making decisions related to vaccination during the COVID-19 pandemic, especially in Bandung City, the largest city in West Java. This research uses a qualitative method with a constructivist paradigm and a case study approach. The research subjects consisted of 12 Bandung residents who refused or hesitated to vaccinate and were selected through a purposive sampling technique. Primary data was obtained through in-depth interviews, while secondary data was collected from documentation studies, literature, and other supporting sources. The results showed that risk perception towards vaccination is influenced by several aspects, such as underestimating the danger of the virus and distrusting the government, lack of understanding about the virus and vaccines, belief in the haram status of vaccines and conspiracy theories, personal experiences related to negative impacts on loved ones or livelihoods, and concerns about side effects and vaccine effectiveness. Meanwhile, risk tolerance is influenced by subjective and socioeconomic aspects. These factors play a major role in the lack of changes in health behavior in the future, especially in decisions related to vaccination.

Keywords: Risk Perception, Risk Tolerance, Risk Communication, Vaccine Hesitancy, Covid-19 Pandemic

Abstrak

Penolakan dan keraguan masyarakat terhadap vaksinasi terus meningkat. Berdasarkan data dari Dinas Kesehatan Provinsi Jawa Barat, terdapat berbagai kendala yang menghambat cakupan vaksinasi di wilayah tersebut. Penelitian ini bertujuan untuk mengidentifikasi dan menganalisis faktor-faktor yang memengaruhi persepsi risiko dan toleransi risiko masyarakat dalam mengambil keputusan terkait vaksinasi selama pandemi Covid-19, khususnya di Kota Bandung sebagai kota terbesar di Jawa Barat. Penelitian ini menggunakan metode kualitatif dengan paradigma konstruktivis dan pendekatan studi kasus. Subjek penelitian terdiri dari 12 warga Bandung yang menolak

atau ragu terhadap vaksinasi, yang dipilih melalui teknik purposive sampling. Data utama diperoleh melalui wawancara mendalam, sedangkan data sekunder dikumpulkan dari studi dokumentasi, literatur, dan sumber pendukung lainnya. Hasil penelitian menunjukkan bahwa persepsi risiko terhadap vaksinasi dipengaruhi oleh beberapa aspek, seperti sikap meremehkan bahaya virus dan ketidakpercayaan terhadap pemerintah, kurangnya pemahaman tentang virus dan vaksin, keyakinan terhadap status haram vaksin serta teori konspirasi, pengalaman pribadi terkait dampak negatif bagi orang terdekat atau mata pencaharian, serta kekhawatiran terhadap efek samping dan efektivitas vaksin. Sementara itu, toleransi risiko dipengaruhi oleh aspek subjektif dan sosial ekonomi. Faktor-faktor tersebut berperan besar dalam minimnya perubahan perilaku kesehatan di masa depan, terutama dalam keputusan terkait vaksinasi.

Kata Kunci: Persepsi Risiko, Toleransi Risiko, Komunikasi Risiko, Keraguan Vaksin, Pandemi Covid-19

INTRODUCTION

Vaccines are one of the most effective prevention tools in building immunity against a disease. However, the success of the vaccination program is highly dependent on the high level of public acceptance. In reality, there are still individuals who are skeptical or even reject the use of vaccines for various reasons. Especially in the context of vaccination during the pandemic, some groups of people believe that vaccines contain elements that are considered haram, so they are not suitable for injection into the human body. Some also believe that vaccines are part of a conspiracy between the state and pharmaceutical companies to take advantage of the situation. Many also reject vaccines because they already have a low level of trust in the government and its pandemic management strategy. In general, the reasons behind vaccine refusal in Indonesia include religion, health, ideology, and culture.

People in West Java Province, especially in Bandung City, have also shown rejection and hesitation towards vaccines. When COVID-19 vaccination was implemented during the pandemic, one of the challenges faced by local governments as policymakers was the increasing public rejection of COVID-19 vaccines, especially in the West Java region. Based on a survey conducted to map the level of public knowledge and acceptance of the COVID-19 vaccine, the Head of the West Java COVID-19 Handling and Economic Recovery Policy Committee, Ridwan Kamil, revealed that 93% of West Java residents have an awareness of the COVID-19 vaccination process (Fahmi, 2020). However, this figure does not necessarily indicate that all West Java residents believe and are willing to use the COVID-19 vaccine. A survey involving 1,086 respondents spread across West Java showed that 47.1% of residents believe in and are willing to receive the COVID-19 vaccine. Meanwhile, 43.8% expressed doubt because they wanted to obtain more information before making a decision, and 9% explicitly rejected the COVID-19 vaccine (CNN Indonesia, 2020).

Furthermore, in a study conducted by a collaboration between the University of Maryland and Facebook in January-March 2021, a survey regarding doubts about the COVID-19 vaccine in Indonesia involving 178 thousand respondents showed that the percentage of public doubts about the COVID-19 vaccine had decreased from 28.6% to 19.2%.

However, West Java is in the middle position with 19% (Facebook & University of Maryland, 2021). Based on various surveys measuring the level of public acceptance of vaccines, it can be concluded that Aceh Province has the highest level of doubt, while East Nusa Tenggara and West Papua have the lowest level of doubt. West Java is in the middle category. Another similarity seen in various surveys is that the majority of respondents are from West Java, with a significant difference compared to other provinces. In addition, the survey showed that the 25-35 years (21.4%) and 18-24 years (20.9%) age groups had higher levels of vaccine hesitancy or refusal than other age groups.

The demographics of Bandung City, the capital of West Java, show relevance to the survey results. Based on area coverage, Bandung City has an area of 167.3 square kilometers, which makes it one of the largest cities in West Java Province. In the last 20 years, from 2001 to 2021, the population of Bandung City has increased to 306,540 people (Alhamidi, 2022). The population density of Bandung City reached 15.17 thousand people per square kilometer, which is the highest rate compared to 26 other districts/cities in West Java (Kusnandar, 2019). Data from the Directorate General of Population and Civil Registration (Dukcapil) of the Ministry of Home Affairs noted that the population of Bandung City in 2021 reached 2.53 million people (Kusnandar, 2022). Based on age group, data from the Bandung City Statistics Agency shows that the productive age group dominates the population, with the highest number in the 20-24 age group at 252,914 people, followed by the 25-29 age group at 225,369 people (Statistics Agency, 2022).

While there is no official data on the number of vaccine-refusing individuals in Bandung City, data obtained during the pandemic shows that COVID-19 vaccination coverage for the elderly, general public, and adolescents as of November 12, 2022, has reached more than 83%. However, there is a significant drop in coverage of the second and third doses, and there is no specific information on the percentage and reasons for people hesitating or refusing the vaccine. Thus, the involvement of the West Javanese community as the largest respondent group in various surveys and the high rate of vaccine hesitancy and refusal from the productive age group show relevance to the demographic profile of Bandung City. This provides a strong basis for research that focuses on Bandung residents as research subjects.

One of the main factors contributing to vaccine refusal and hesitancy is rampant misinformation. During the pandemic, the World Health Organization (WHO) identified the COVID-19 information landscape as “information overload” and even stated that there was a “mass infodemic,” where most of the information spread was hoaxes. With individuals having easier access to information, the credibility of information sources is being questioned, which in turn increases risk and uncertainty (Dubé et al., 2014). Misinformation about vaccines spread in the media, both conventional and digital, requires special attention because it can increase doubts and trigger rejection of vaccines. The success of risk communication can be measured by its effectiveness in minimizing misinformation (Jacobsen & Vraga, 2020).

To overcome this resistance, a risk communication approach is needed, where stakeholders can manage potential health crises through communication strategies aimed at providing knowledge, understanding, and changing public attitudes and behaviors towards vaccination. The main principle of risk communication is the interactive process of exchanging information and opinions between individuals, groups, and institutions (Sellnow et al., 2009). Effective risk communication includes not only understanding information but also building quality social relationships. In addition, understanding public risk perceptions is a key aspect of infodemic management during emergency planning and preparedness, as people's behavior largely depends on how they perceive the associated risks (Lohiniva et al., 2022).

In principle, attitudes toward risk, such as risk perception, can influence behavior change, especially in promoting preventive measures (Shou et al., 2022). Therefore, in understanding public perceptions of vaccination risks and designing risk communication strategies, it is also important to take into account individuals' risk tolerance for vaccines. Risk tolerance reflects the extent to which an individual is willing to accept risk in decision-making, including in assessing risky situations (Quinlan et al., 2021). In health crisis situations, individuals with low-risk tolerance tend to show higher negative emotions and avoid risky situations (Maner et al., 2007). This study aims to fill the research gap by examining the relationship between risk perception and risk tolerance to health behavior change, particularly in the decision to use vaccines.

METHOD

This research explores the factors influencing the risk perception and tolerance of Bandung city residents regarding vaccine use, particularly in relation to potential changes in health behavior during the pandemic. Given the complexity of how society perceives and tolerates risk in vaccination decisions, the study employs a constructivist paradigm, which sees social reality as constructed rather than naturally occurring. This approach helps uncover how perceptions and tolerances are shaped. A qualitative method is used to provide an in-depth understanding of individual and group behaviors through verbal speech, writing, and observed actions within a specific social context. Additionally, a case study approach is applied to examine contemporary phenomena by addressing key questions on how and why certain attitudes emerge. The research focuses on identifying and analyzing the perceptions and tolerances of vaccine refusal in Bandung. The study subjects are residents who reject or have never received a vaccine. Data collection is conducted through purposive sampling, selecting individuals who are knowledgeable about the issue and relevant to the research objectives. The criteria for informants include (1) being a Bandung city resident, (2) possessing a Bandung city ID card, and (3) refusing to use vaccines. To ensure adequate representation, researchers identified vaccine refusers across several districts in Bandung.

A total of 12 informants were selected from different districts, including Andir, Sukasari, Antapani, Arcamanik, Lengkong, and Kiara Condong, with diverse educational backgrounds ranging from junior high school to doctoral degree holders, aged between 17 and 69 years. Data collection methods included semi-structured interviews conducted

both offline and online, as well as documentation and internet studies to gather supporting written data. Official documents from the regional government on vaccination coverage were also analyzed to provide a broader context for the research findings.

RESULTS AND DISCUSSION

The perception of risk in emergency situations significantly influences community participation in preventive actions, including adherence to health protocols and proactive behavior in seeking information and using vaccines to prevent disease transmission. This aligns with the Protection Motivation Theory, which suggests that individuals' intentions to take self-protective measures are strongly influenced by their perceived level of risk (Okuhara et al., 2020). According to this theory, people's perceptions of the severity and susceptibility of a health threat shape their overall risk perception. The stronger their perception of risk, the more likely they are to take protective actions against infection.

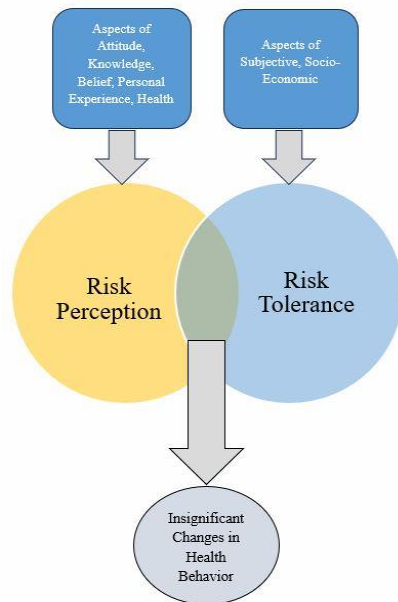
Understanding public risk perception is crucial for risk communicators in both crisis prevention and response. Risk perception refers to the subjective evaluation of actual or potential threats to one's life or psychological well-being, which influences an individual's willingness to comply with public health guidelines and accept health messages (Lohiniva et al., 2022). If perceived risk is too high, it can lead to panic or denial, while low perceived risk can reduce motivation to follow health measures. A recent study on COVID-19 risk perception highlighted that multiple factors, including demographics, individual characteristics, geography, time, and culture, influence how people assess risk. This underscores the need to understand individual and cultural factors in each specific context (Lohiniva et al., 2022).

To analyze the factors shaping the risk perception and tolerance of Bandung city residents regarding the COVID-19 pandemic particularly those hesitant or refusing vaccines researchers utilized social listening. This ongoing and systematic process gathers public perceptions and identifies information gaps through both online and offline data collection using standardized tools. Social listening provides valuable insights into public opinion and helps understand the evolving dynamics of the pandemic through interactions with the community (Lohiniva et al., 2022).

In practice, researchers conducted interviews with 12 informants from six different sub-districts in Bandung. To gain comprehensive insights, in-depth, face-to-face, and individual interviews were carried out. These interviews explored risk perception and tolerance related to the pandemic from various perspectives, including cognitive aspects and sources of information about viruses and vaccines. The discussions covered risk perception concerning the severity of the pandemic, such as restrictions on activities, high exposure, and mortality rates, and the potential for viral mutations. Additionally, researchers examined informants' views on vaccine effectiveness, virus transmission to significant others, misinformation from mass media and government agencies, and the negative impact of vaccine refusal on livelihoods. Other concerns included restricted access to public facilities due to vaccine mandates, potential vaccine side effects, the method of injection, religious considerations regarding vaccine ingredients, and various conspiracy theories about vaccines.

To gain a thorough understanding of vaccine hesitancy in Bandung, researchers used the Covid-19 pandemic as a case study. The interview findings were compiled into a risk perception and risk tolerance model, revealing five key factors influencing risk perception and two factors shaping risk tolerance toward vaccines among Bandung residents. Furthermore, the study highlights the crucial role that risk perception and tolerance play in shaping health behavior, particularly in influencing vaccination decisions.

Model 1. Risk Perception and Risk Tolerance Model



Source: Research Results, 2023

The study highlights various attitudes and perceptions among the residents of Bandung City regarding the COVID-19 vaccine, shaped by factors such as risk perception, knowledge, beliefs, personal experiences, and health concerns. These attitudes reflect how individuals assess the risks associated with the pandemic and the vaccine, influencing their decision-making processes.

Attitudes and Risk Perception

Attitude, defined as a relatively stable feeling or way of thinking that influences behavior, plays a significant role in shaping risk perception. Many interviewees exhibited a stable attitude, expressing little to no anxiety or fear about the COVID-19 pandemic. Despite the high number of infections and deaths, some individuals did not perceive the situation as an emergency. This perception stems from the belief that the Covid-19 virus is not particularly dangerous. For instance, one informant, KH, stated that while they were saddened by the loss of friends and neighbors to COVID-19, they viewed the virus as a passing disease, not a fatal one, given that more people recover than die. This attitude reflects an underestimation of the virus's dangers, influenced by the perception that the number of victims is insignificant. This aligns with risk perception theory, which suggests that risks from activities causing a small number of random deaths are often perceived as less severe than those causing large-scale, catastrophic events (Covello, 2009).

Some individuals also displayed a fatalistic attitude, viewing the pandemic as part of the natural order of the universe. They believed that human actions have little effect on the course of the pandemic and that death from Covid-19 is predetermined by fate. This fatalistic perspective is tied to value rationality, where actions are based on deeply held personal values rather than practical outcomes (Turner, 2012). For example, another informant, YH, expressed that they did not worry excessively about Covid-19, believing that death comes to everyone regardless of the cause, and thus saw no urgent need for vaccination.

Trust in Information and Government

Trust in information and government policies also significantly influenced risk perceptions. Distrust in vaccine information from mass media led to hesitancy and refusal. Some individuals doubted the accuracy of information, especially when it conflicted with their personal beliefs or when they perceived it as influenced by political agendas. For instance, one informant, MH, expressed skepticism about the government's motives, suggesting that vaccine policies were driven by political interests rather than public health concerns. This distrust is consistent with studies showing that higher trust in government correlates with greater willingness to vaccinate (Chung et al., 2022). Building trust requires not only competence and knowledge but also empathy, honesty, and dedication from authorities (Covello, 2009).

Knowledge and Understanding

Knowledge about the Covid-19 virus and vaccines also shaped risk perceptions. Many interviewees had limited understanding of the virus's origins, transmission, and prevention methods. While some were aware of basic information, such as transmission through droplets and symptoms like fever and shortness of breath, few mentioned vaccines as a preventive measure. This lack of knowledge increased risk perceptions, as individuals were less informed about the benefits and safety of vaccination. For example, one informant, KH, admitted to not knowing the requirements for getting vaccinated, reflecting a broader lack of awareness. This highlights the need for accurate and accessible health information to improve public understanding and reduce vaccine hesitancy (Chesser et al., 2020).

Beliefs and Religious Convictions

Religious beliefs played a significant role in shaping attitudes toward the vaccine. Some individuals rejected the vaccine based on concerns about its halal status, despite official assurances from religious authorities. For instance, one informant, MH, expressed doubts about the vaccine's ingredients and believed that relying on vaccines contradicted their faith in divine healing. This belief is rooted in traditional and value-rational actions, where decisions are based on deeply held values rather than practical considerations (Turner, 2012). Such beliefs are difficult to change, as they are tied to core religious convictions, making individuals more likely to reject vaccines outright rather than hesitate (Alsuwaidi et al., 2023).

Personal Experiences

Personal experiences with Covid-19 also influenced risk perceptions. Many interviewees reported mild symptoms among their family members, leading them to perceive the virus as less dangerous. For example, one informant, AS, described their father's mild Covid-19 symptoms, which they compared to a common cold. This positive experience reduced their perception of risk and their urgency to get vaccinated. Conversely, negative experiences, such as severe illness or death, could increase risk perceptions. However, in Bandung, many individuals reported that their livelihoods were unaffected by the pandemic, further reducing their sense of urgency to vaccinate. For instance, one informant, AS, noted that their business even thrived during the pandemic, leading them to view the situation as a blessing rather than a crisis.

Health Concerns

Health concerns, particularly about vaccine side effects, also shaped risk perceptions. Some individuals feared that the vaccine could cause adverse reactions, especially for those with pre-existing conditions. This fear is linked to the controllability factor in risk perception theory, where risks perceived as beyond an individual's control are seen as more significant (Covello, 2009). Additionally, some interviewees expressed doubts about the vaccine's effectiveness, citing cases of vaccinated individuals still contracting the virus. This skepticism, combined with a fear of injection needles, further contributed to vaccine hesitancy.

Risk Tolerance

Risk tolerance, or an individual's ability to control risk, also played a role in shaping behavior. Many interviewees exhibited high risk tolerance, believing that the pandemic had transitioned to an endemic phase and that strict health protocols were no longer necessary. This attitude reflects instrumental rationality, where individuals make calculated decisions to achieve their goals (Turner, 2012). On the other hand, some individuals showed low risk tolerance, adhering to health protocols and considering vaccination if the situation worsened. This behavior reflects affective actions, driven by emotional responses to risk (Turner, 2012).

CONCLUSION

The Covid-19 pandemic is an unprecedented health crisis, presenting enormous challenges to individuals and communities, and impacting millions of people around the world. The high death toll can be attributed to risk communication failures, especially in preventing the spread of the virus and reducing the number of deaths during the crisis. One form of such failure is the rise of vaccine refusal globally, including in Indonesia. Therefore, case studies on vaccine rejection during the pandemic can be used as a benchmark to understand the perspectives of people who reject vaccines, especially in terms of risk perception and risk tolerance towards the use of vaccines, both in Covid-19 prevention and immunization in general. In the context of Bandung residents' risk perception of the Covid-19 vaccine, there are several factors that play a role in its formation. The first factor is the attitude aspect, including the perception of the dangers

of Covid-19 and distrust of the credibility of information from the mass media and the government. Second, aspects of knowledge and understanding of viruses and vaccines. Third, aspects of beliefs, which include assumptions about the halal status of vaccines and conspiracy theories. Fourth, aspects of personal experience, such as transmission to close people, economic impact, access to public facilities, and previous experience with vaccination. Fifth, health aspects, including concerns about side effects, vaccine effectiveness, and pain from injections. Meanwhile, the risk tolerance of the Bandung community is influenced by two main factors. First, subjective aspects, such as the impact on comorbidities, personal experience with Covid-19, the influence of close people, the assumption that the pandemic has turned into an endemic, and discipline in implementing health protocols. Second, socio-economic aspects, including work demands and social sanctions. The results show that these factors play an important role in determining future health behaviors, with most informants showing insignificant changes in decisions regarding vaccine use. Therefore, the government needs to pay attention to people's risk perception and risk tolerance in formulating policies and improving risk communication to prevent future health crises, by ensuring trust and vaccination coverage at various levels of society.

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