



Booster dose of COVID-19 vaccination: Perception among elderly

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ABSTRACT

Background: COVID-19 is still a health problem that needs to be addressed. COVID-19 vaccination had been promoted but its coverage was still low, including coverage for the elderly.

Objective: This study aimed to investigate the elderly's perception of participation in COVID-19 vaccination of booster dose.

Methods: This research was a qualitative descriptive study. Collected informants using purposive sampling method. Semi-structured in-depth interviews with nine informants who were domiciled in Kendari, Indonesia. Data analysis using thematic analysis approach.

Results: There were three things related to the perception of the elderly in participating in booster dose COVID-19 vaccinations that have been identified. These three things were the elderly's perception of the COVID-19 vaccination, doubts about the COVID-19 vaccine, and family support.

Conclusions: The elderly's perception of COVID-19 vaccination can help determine the next intervention that can help increase vaccination coverage among elderly. The need to increase understanding of COVID-19 vaccination to the elderly through clear, comprehensive, easy-to-understand, and easily accessible information.

Keywords: vaccination; COVID-19; elderly's perception; Pender theory

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INTRODUCTION

COVID-19 is still one of the health problems that needs the attention of the whole community. The emergence of various types of COVID-19 variants (delta variant, omicron variant) had triggered the government and all relevant departments to promote the importance of carrying out various prevention and intervention measures to suppress the transmission of COVID-19. One of the steps taken was the provision of a COVID-19 vaccine. Vaccination is the most effective COVID-19 preventive measure available today, but its success depends on global accessibility to the vaccine and the willingness of people to be vaccinated (Subedi et al., 2021). Concerns about vaccine safety, vaccine efficacy, and lack of confidence were

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- *The COVID-19 vaccination program is a challenge for the elderly.*
- *It is necessary to provide proper understanding and knowledge about COVID-19.*
- *The right approach to understanding the characteristics of the elderly can be considered.*

possible underlying causes of vaccine doubt (Vellappally et al., 2022). Vaccine hesitancy became one of the top ten global health threats in 2019, referring to people's reluctance or refusal to be vaccinated, especially among the elderly population (Qin et al., 2022). With the availability of vaccines with proven safety and efficacy, vaccination and non-pharmacological measures had become important resources for managing pandemics and controlling the spread of the virus (Vellappally et al., 2022).

The elderly were individuals who receive priority to receive the COVID-19 vaccine. It was because the elderly experience a decrease in the immune system associated with the aging process. This decline in the immune system makes the elderly vulnerable to infections including severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus infection (Cao, 2020). COVID-19 vaccination was considered a public health intervention that could control the infectious disease (SARS-CoV-2) and reduced the mortality rate (Cao, 2020; Vellappally et al., 2022). Data from the United States, Germany, and South Korea show that COVID-19 vaccination could save most lives and remaining life expectancy (Qin et al., 2022; Vellappally et al., 2022).

Until now, governments around the world, including in Indonesia, have launched a 4-dose COVID-19 vaccination program, but the coverage had not been maximized. Based on data, the percentage of vaccination coverage in each stage had decreased. World data shows that up to June 20, 2022, 26.4% of the world's population had received booster doses of vaccine and 35.2% of the elderly in China had not received booster doses of vaccine (Qin et al., 2022). Likewise, data from the Ministry

of Health of the Republic of Indonesia as of October 30, 2022 stated that the first dose of vaccination was 87.42%, the second dose was 73.24%, the third dose was 27.70%, and the fourth dose was 0.28%. The decrease in coverage was also seen in the percentage of elderly vaccination coverage for the first dose of 85.56%, the second dose of 69.28%, and the third dose of 31.80%.

Low vaccination coverage could be attributed to perception. Perceptions or beliefs determine individuals in deciding to take certain preventive actions (Qin et al., 2022). Perception determines a person's behavior. The success of vaccination in achieving immunity through mass vaccination, was highly dependent on the attitudes and perceptions of the community towards the available vaccines (Subedi et al., 2021; Yesni & Rahmadhani, 2022). Promotion of global coverage of early vaccination and booster doses of COVID-19 vaccine had become an urgent issue worldwide, which was closely related to the establishment of herd immunity. The high level of reluctance to be vaccinated when a vaccine is available can be associated with negative attitudes and low perceptions of the COVID-19 vaccine (Adane et al., 2022). Negative attitudes and distrust towards the COVID-19 vaccine were a major obstacle to increase vaccine coverage worldwide (Adane et al., 2022).

As digitization advances – the expansion of social media and internet use – information can spread faster but it can also amplify dangerous messages. An infodemic is too much information, including false or misleading information, both digital and physical during a disease outbreak (Diseases, 2020). This can lead to distrust of health authorities and disrupt the public health response. The COVID-19 'infodemic' and the spread of misinformation through various media had increased negative perceptions about the COVID-19 vaccine and increased the risk of vaccine doubt (Subedi et al., 2021). A review of 35 studies revealed that vaccination doubt rates vary from 4.3% to 72% worldwide (Adane et al., 2022). Based on the results of the COVID-19 symptom survey in Indonesia, it was stated that public doubts about the COVID-19 vaccine decreased from 28.6% to 19.2% during the period January – March 2021 (Djanas et al., 2021; Olivia et al., 2020).

Therefore, it was important to understand people's perception of vaccines and willingness to accept them in order to formulate appropriate

promotional strategies towards successful vaccination. One of the strategies used refers to the Pender theory (Health Promotion Model). The Pender Health Promotion Model was one of the most widely used models to identify, change unhealthy behaviors, and improve health (Chen & Hsieh, 2021; Nurhayati & Dewi Setyawati, 2022; Pouresmali et al., 2022). However, until now there had been no research that examines the perception of the elderly about COVID-19 vaccination based on the Pender theory. For this reason, this study used the Pender theory as a frame of reference for investigating the perception of the elderly on the COVID-19 vaccination so that it could determine the right steps for the future in an effort to increase the coverage of the booster dose of COVID-19 vaccination. The purpose of this study was to investigate the elderly's perception of participation in COVID-19 vaccination of booster dose.

METHODS

Design

This research was a descriptive qualitative study. This study was done by collecting qualitative information data through interviews. Information collected on elderly perceptions of COVID-19 vaccination.

Participants and Setting

This research was conducted in Kendari City. Nine informants were recruited using purposive sampling. The informants were elderly aged 60 – 69 years, did not experience cognitive impairment, have had no history of being diagnosed with COVID-19, and domiciled in Kendari City, Southeast Sulawesi, Indonesia.

Ethical Consideration

This research has been approved by the ethical committee of the Faculty of Health Sciences Universitas Mandala Waluya Kendari, with certificate number No. 1568/UMW/VII/2021.

Data Collection

The semi-structured in-depth interview guide was developed based on the theory of the Health Promotion Model. The focus of the interview was on perceived benefits, perceived barriers, interpersonal influences, and situational influences (Alligood, 2014). The researcher explained the research objectives to all informants. The informed consent form was

given to the informant to be signed as proof of consent to become an informant. Informants were willing to share their perceptions and were willing to participate at any time. All informants were given the freedom to express their views and comments. The informant's identity is only known by the researcher by giving a code to each informant's identity. During data collection the researcher was assisted by a research assistant. Interviews were conducted for 45-60 minutes and were repeated up to 3 times. This is done to clarify the statements submitted by informants. The interview process is stopped when all question items have been answered in accordance with the research objectives that have been set and no new data is found. This is related to data saturation. Saturation was reached at the ninth interview. The interview process was carried out at the informant's house. All interviews were recorded using audio-recorded. Observational data during the interview process was recorded by the research assistant in the field notes. Data collection was carried out during the research period (January – March 2022).

Data Analysis

All data was transcribed into narrative form (verbatim), then read repeatedly and matched with the recording. Researchers coded the data and performed thematic analysis. Thematic analysis is used to conclude the meaning behind the words conveyed by the informants (Maguire & Delahunt, 2017). This is achieved using six steps: 1) become familiar with the data; 2) generate initial code; 3) search for themes; 4) review the theme; 5) determine the theme; 6) write/make a report. Becoming familiar with the data is accomplished by reading and rereading the transcript. Then code, in this phase the researcher organizes the data found by coding the data into small, meaningful pieces. Line-by-line coding of each relevant data with pen and highlighter. The next step was the search for themes by collecting some of the same code to be combined to form a theme. Review of the theme is done by collecting all available and relevant data for each theme. Define a theme, is done by defining and naming each theme found. The last step was reporting a thematic analysis.

Trustworthiness

In this study, trustworthiness was achieved using four approaches, namely credibility, transferability, dependability, and confirmability

(Polit & Beck, 2008; Polit & Beck, 2012; Polit & Beck, 2013; Stahl & King, 2020). The credibility of the qualitative data could be ensured through various perspectives during data collection to ensure the data was appropriate. It could be done by asking informants to reread the transcripts that the researcher had compiled. If the transcript was in accordance with what had been conveyed by the informant, the researcher asked the informant to sign the transcript sheet. Transferability of qualitative data ensures that research findings could be applied to similar settings or individuals. Data transferability in this study had been carried out by applying the methodology and purposive sampling. Dependability refers to the stability of the data. Dependability in this study was achieved by involving the review of data and documents by experts through a consultation process, including expert consultation in helping to review the themes found. Confirmability refers to the accuracy, relevance, or meaning of data. Researchers confirmed the findings of this study to the scientific community, including expert researchers.

RESULTS

The majority of informants were male (56%), most recently graduated from high school (67%), marital status was more married (78%), the others were widows and widowers. More informants have not received the second dose of the COVID-19 vaccine. The employment status was mostly retired civil servants (67%), the rest were housewives and entrepreneurs (Table 1). There were three themes identified in this study, namely perceptions about vaccines, doubts about vaccines, and family support. The distribution of themes can be seen in table 2.

Theme 1: Perceptions about The COVID-19 Vaccine

This theme was formed from three sub-themes: protected from COVID-19, prevented the spread of the virus, and followed government programs.

Subtheme 1.1. Protected from COVID-19

Several informants said that the COVID-19 vaccination was needed especially by the elderly, because the elderly was more susceptible to infectious diseases and vaccines could protect from COVID-19. The following

was the informant's statement:

"I thought this vaccine could protect our body from COVID-19. This disease is really scary, even though we are old but we want to stay healthy and live a long life." (I1)

"The COVID-19 vaccination could protect us from the COVID-19 disease. Our body were already weak because we were getting older, we were more susceptible to disease, especially COVID-19, we wanted to be healthy and live long, so I just took this vaccine, but only the first dose." (I3, I6)

"We have seen a lot of news on television, this vaccine could protect our bodies so that we could avoid this COVID-19 disease, God willing" (I4, I9)

Subtheme 1.2 Prevented the spread of the virus

"I thought that people who received the vaccine would not be susceptible to the COVID-19 virus so that it could prevent the spread of the virus." (I5)

"This vaccine was able to prevent the spread of the COVID-19 virus. I heard this news from the news on television, was it true or not... only Allah knows. We just hope so." (I1, I8)

"Hopefully this vaccine could really prevent the spread of the COVID-19 virus. We were also afraid with this disease, especially since we were old and easily get sick." (I3)

Subtheme 1.3 Followed government programs.

However, there were also informants who said that the lack of information about COVID-19 vaccination, informants did not know the benefits of booster doses of COVID-19 vaccines. Informants assume that the booster dose was only for participating in government programs without knowing the benefits. Informants did not get valid information about vaccination. Some informants only obtained information through television and other mass media (newspapers). Several informants also said that the COVID-19 vaccination was carried out only for administrative purposes such as the requirement to use air and sea transportation. The following was the informant's statement:

"I did the COVID-19 vaccine because

Table 1. Participants Characteristics

Code	Age (year)	Education	Job	Gender	Marital status	Vaccine COVID-19
I1	65	Senior High school	Housewife	Female	Married	The first vaccine
I2	63	Senior High school	Retired	Male	Married	Not yet vaccinated
I3	60	Diploma	Retired	Male	Married	Not yet vaccinated
I4	68	Senior High school	Retired	Male	Married	Not yet vaccinated
I5	60	Senior High school	Housewife	Female	Widow	Not yet vaccinated
I6	61	Bachelor	Housewife	Female	Widow	the first vaccine
I7	64	Senior High school	Entrepreneur	Male	Married	Not yet vaccinated
I8	67	Diploma	Retired	Male	Married	the first vaccine
I9	65	Senior high school	Retired	Female	Married	Not yet vaccinated

I: participants

I wanted to get on a plane, I wanted to visit my child out of town, I couldn't go on a plane if I wasn't vaccinated, so I just followed these rules." (I5)

"I thought this vaccine was just part of a government program, because almost all government administration requires us to be vaccinated, so whether we wanted to or not, we just gone with it." (I7, I8)

"I wanted to go on a ship, I wanted to do gardening in the village, so I get vaccinated so I could get on a ship." (I3, I9)

Theme 2: Doubts about Vaccines

This theme consists of three subthemes, namely fear of the COVID-19 vaccine reaction, possible risks/effects of the vaccine, and still being infected.

Subtheme 2.1 Fear of the COVID-19

vaccine reaction

Almost all of the informants had doubts about the effectiveness of the COVID-19 vaccine in overcoming the spread of COVID-19 infection. The following was the informant's statement:

"I was still afraid of being vaccinated, I was afraid... there was a reaction after being vaccinated, so I was still hesitant to get vaccinated again, I was just getting my first dose." (I6)

"I didn't want to be vaccinated yet. I was afraid... because I was old... I was afraid after being vaccinated my body would be sick." (I2)

"I was afraid that my body would become

weaker after being vaccinated, making it easy for me to catch COVID, I was not ready to be vaccinated at this time." (I7, I4)

Subtheme 2.2 Possible risks/effects of the vaccine

Several informants said many people who had been vaccinated experienced fever, bone and joint pain. The following was the informant's statement:

"I was old, my physical condition had decreased, so if I get vaccinated again, I might get sick, because after the vaccination, someone had fever, bone and joint pain, so I didn't want to be vaccinated yet." (I5)

"I heard the news that after being vaccinated, the body could get sick and even fever, it hurts the joints, when we get vaccinated then we get sick." (I3, I9)

"I just doubted that if I get vaccinated, maybe my body would get sick, even though I was old, I wanted to be healthy, not sick." (I4)

Subtheme 2.3 still being infected

"I saw the news on television that it said we could still be infected with COVID-19 even though we were vaccinated, so I was hesitant to get vaccinated." (I1, I4, I7)

"I heard that someone could still get COVID even though she/he have been vaccinated, so I was a bit doubtful to, the vaccine doesn't guarantee that we were

Table 2. Themes Distribution

Themes	Subtheme	Category
Perceptions about vaccines	Protected from COVID-19	• Vaccines could protect against COVID-19 • Vaccines could avoid COVID-19 • Vaccines could protect family and others
	Prevented the spread of the virus	• Vaccines could prevent the spread of the virus • Vaccines could prevent transmission of COVID-19 infection
	Followed government programs	• COVID-19 vaccine to meet long-distance travel requirements • Join government programs
Doubts about vaccines	Fear of the COVID-19 vaccine reaction	• Fear of a reaction after being vaccinated • Fear of getting sick after getting vaccinated • Fear of being easily infected after being vaccinated
	Possible risks/effects of the vaccine	• Possibility of getting sick after being vaccinated • Experiencing bone pain • Joint pain • Fever
	Still being infected	• Could still be infected with COVID-19 after being vaccinated • Could still get sick after getting vaccinated
Family support	Required information support from the family	• Required information from the family about the timing of the vaccine • Need information from family about the benefits of vaccines
	Required instrumental support from the family	• Required family support to deliver to the vaccine site • Need transportation assistance from family

protected from COVID.” (I2, I5)

Theme 3: Family Support

This theme was formed from two subthemes, namely required information support from the family and required instrumental support from the family.

Subtheme 3.1 Required information support from the family

Several informants said that because of their age and physical limitations, they needed to be accompanied by their families when vaccinating. Informants also needed support in the form of information from family members. But on the other hand, there were busy family members so that family members were limited in providing support to carry out COVID-19 vaccinations. The following is the informant's

statement:

“I didn’t know the vaccination schedule, so I needed information from my family because they were close to me”. (I3)

“Sometimes I was ready to be vaccinated, but I forgot the time, if my child didn’t remind me, so I kept forgetting, so I needed information from my child.” (I9)

“I was getting senile, so I needed help with information about vaccines from my child, but my children were busy at work so sometimes they forgot too.” (I6)

Subtheme 3.2 Required instrumental support from the family

“I was usually accompanied by my child, I couldn’t go to the vaccination center alone, so I needed my child’s help.” (I1)

“I was weak, I didn’t dare to walk alone, so my child always accompanied me everywhere, it was just that the children

were also busy, so I haven't been vaccinated." (I2, I3)

DISCUSSION

Perceptions about Vaccines

Perceptions or beliefs about outbreaks are important in deciding to take certain precautions (Qin et al., 2022). Overall, the perception of informants could understand the importance of COVID-19 vaccination. However, there were some informants who still did not understand that. Inadequate knowledge of informants could be associated with insufficient information received. In Pender's theory was stated that in the process of changing behavior a person must know the benefits of the action to be achieved (Alligood, 2017).

The benefits and barriers to action affect a person's perception of health behavior, the barriers they face when trying to change their health behavior, and their awareness of how doing health behavior will have a positive impact or consequence. A person who is committed to taking an action will predict the benefits of the action according to his personal value (Rezaeemanesh et al., 2020). Perceived barriers can prevent commitment to take certain actions (Rezaeemanesh et al., 2020).

It was related to one's knowledge. Inadequate knowledge about vaccines could be caused by low educational background, poor socioeconomic status, or getting knowledge from fellow laymen (Mohamed et al., 2021). The results of this study indicated that most of the informants had an educational background of high school graduates. Higher levels of education, higher income, and living with high-risk individuals were significantly associated with higher knowledge (Mohamed et al., 2021). Other studies suggest that perceptions of vaccine safety decrease with age, but increase with increasing education (Syan et al., 2021).

Doubts about Vaccines

The success of a vaccination program to achieve herd immunity depends on the acceptance of the vaccine and the uptake rate (Mohamed et al., 2021). Achieved adequate vaccine coverage also depends on addressing vaccine doubts and addressing vaccination barriers (Bolotin et al., 2021). The results of this study also showed that there was a perception of doubt in the elderly in carrying out COVID-19 vaccinations, most of the elderly did not want to

be vaccinated because they get bad information about the COVID-19 vaccine. Vaccine hesitancy was the reluctance of people to receive vaccines that are proven to be safe, effective, and available to them for protection against infectious diseases (Danabal et al., 2021). Vaccine doubt in the elderly was influenced by inappropriate vaccine information, vaccine benefits, and vaccine side effects (Rantingsih & Sutantri, 2022). The elderly expressed fear of the side effects of vaccines that cause fever, headache or pain at the injection site, doubting the benefits of vaccines that could protect them from the COVID-19 virus (Rantingsih & Sutantri, 2022).

Individuals who were unwilling to receive vaccinations indicated that concerns about the short- and long-term side effects of vaccines and a lack of confidence in the vaccines themselves were the main reasons they did not want to receive vaccinations (Syan et al., 2021). COVID-19 vaccine hesitancy in the United Kingdom was reported to be around 35% (Danabal et al., 2021).

This hesitation was driven by people's attitudes towards the health system and vaccines, including social factors, health systems and accessibility also play a role in vaccine doubt (Danabal et al., 2021). Another study also found that for older adults, the higher the knowledge score about COVID-19 and COVID-19 vaccines, the lower the vaccination hesitation against booster shots. A survey conducted in southern Italy showed that what people over 65 years of age know about COVID-19 can change their behavior during this pandemic (Qin et al., 2022).

Family support

In Pender's theory stated that health behavior was also influenced by interpersonal sources such as family, health workers, and peers. Pleasant environmental support will affect personal perception and cognition to facilitate or hinder further behavior. A situational influence that makes a person more able to be influenced to perform certain behaviors was a pleasant environment that can have a positive impact on efforts to change behavior (Alligood, 2017). In this study, it was found that the elderly need support from both their families and health workers to carry out the vaccine. This support can be in the form of information support on the importance of COVID-19 vaccination or support in the form of time from the family to take the elderly to health facilities that provide

vaccinations.

Family and peer support seems to be very helpful for patients to cope with their condition. Social support could serve as a protective buffer against one's perceptions and was an important factor in overcoming health-related problems (Helty et al., 2021). The involvement of patients, family members, and peers was one approach that could be taken to improve the patient's health status (Helty, 2022). In addition to information, informants also needed instrumental assistance from their families. Instrumental assistance in the form of transportation support to the vaccination site and assistance during the vaccination process. This is due to the physical weakness experienced by the elderly so that they need instrument assistance from the family.

This research had limitations but also had strengths. The limitation of this study was the results of this study cannot be generalized nationally because the sample was taken from one location. Although this research has applied the rules that have been set in qualitative research, but the results cannot be generalized. The strength of this study was that the results of this study can be used as a basis for determining further interventions so that a method can be developed that can increase the knowledge and behavior of the community, especially the elderly, about the booster dose of COVID-19 vaccination, thereby can be increasing vaccination coverage.

CONCLUSIONS

The elderly's perception of COVID-19 vaccination can help determine the next intervention that can help increase vaccination coverage. The provision of health information related to vaccination can be further improved by providing comprehensive, accessible, easy-to-understand information so as to prevent or reduce doubts about COVID-19 vaccination. The ease of the elderly in accessing appropriate and adequate information can reflect the elderly's desire to know more about vaccination. The involvement of the support system, including the family, in helping to increase the elderly's understanding of COVID-19 vaccination and the elderly's desire to be vaccinated needs to be done. Families can support the elderly through providing appropriate information and support the elderly by providing time, facilities, and infrastructure so that the elderly can receive doses of the COVID-19 vaccine. Perception

can help the elderly in determining the action to be achieved. This study is used as input in determining the appropriate intervention in an effort to increase the coverage of booster dose COVID-19 vaccination. Recommendation for further research is the need to take research samples from various regions with different ethnicities and customs, because a person's perception is also influenced by the norms he adheres to. The results of this study can also be continued into quantitative research methods by examining the relationship or influence of the themes found in this study on the booster dose COVID-19 vaccination coverage.

Declaration of Interest

None

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Data Availability

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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