

# Beliefs and barriers to COVID-19 vaccination among older people with a history of stroke in Indonesia: a descriptive qualitative study

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## Abstract

The COVID-19 vaccination program, aimed at vulnerable groups, such as elderly individuals with comorbidities such as stroke, has generated varied responses, including hesitancy due to internal health concerns and potential side effects. This study explored the experiences and perceptions of older adults with a history of stroke in Indonesia regarding the COVID-19 vaccination program. This qualitative study employed a descriptive qualitative approach using in-depth interviews. Participants were

selected through purposive sampling, focusing on elderly individuals with metabolic conditions such as stroke. Data saturation was achieved with 23 participants, and the data were analyzed using Haase's adaptation of the Colaizzi method. Several themes emerged, including rejection of the vaccination program, doubts and distrust of the COVID-19 vaccine, disbelief regarding vaccine content and benefits, concerns about stroke-related health risks, and feelings of compulsion or reluctance to participate in the program. The themes identified in this study provide insights into the barriers to COVID-19 vaccination in elderly individuals with a history of stroke. These findings could inform strategies for improving vaccination uptake in this vulnerable population.

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## Introduction

The spread of COVID-19 was rapid, prompting the World Health Organization (WHO) to declare it a global public health emergency. This has created an urgent need for rapid diagnosis, therapy, and vaccines for COVID-19.<sup>1</sup> The publication of the SARS-CoV-2 genetic sequence in January 2020 triggered numerous studies on vaccine development.<sup>2</sup> By December 2020, several vaccines with proven efficacy and safety had been authorized for use in various countries.<sup>2</sup> Global data have confirmed the effectiveness of these vaccines in reducing SARS-CoV-2 infections, severe cases, hospitalizations, and mortality among vaccinated individuals.<sup>3,4</sup> Therefore, universal and global vaccination against SARS-CoV-2 is essential to achieve herd immunity and control the pandemic.<sup>5-8</sup>

Although significant progress has been made in developing effective vaccines, achieving broad immunity requires high vaccination coverage, which is challenged by widespread vaccine hesitancy. Vaccine doubts have increased in various countries and are influenced by conspiracy theories and misinformation.<sup>3,6,9</sup> The success of immunization programs depends on public acceptance and coverage rates. Concerns about COVID-19 vaccines, especially among older populations in countries such as India, highlight the need to understand public perceptions.<sup>10-12</sup> Despite vaccination campaigns in Indonesia, coverage among older adults remains incomplete. The Johns Hopkins Center for Communication Programmes (JHCCP) reports that approximately 40% of older adults refuse vaccination because of religious concerns and safety fears.<sup>13</sup> The vaccination rates for the first and second doses among elderly Indonesians were 40.15% and 24.83%, respectively.<sup>14</sup> Since September 8, 2021, elderly individuals have accounted for 46.6% of COVID-19 deaths.<sup>15</sup> Indonesia's phase-2 vaccination targets individuals over 60 and those 45-59 with comorbidities.<sup>10</sup> Public willingness to vaccinate is crucial for achieving high coverage and overcoming the pandemic.<sup>16,17</sup> However, vaccine hesitancy is a significant barrier, with some refusing vaccination.<sup>18,19</sup>

Acceptance rates varied widely, from 27.7% to 97%, with the lowest rates in Africa, the Middle East, Russia, and parts of Europe.<sup>19,20</sup> Among healthcare workers, vaccine acceptance varies significantly, with rates ranging from 23.4% to 81.5% and an overall 55.9%.<sup>21</sup> A global study with 13,426 participants from 19 countries showed that 71.5% would accept the vaccine if proven safe and effective, while 48.1% would accept it based on employer recommendations.<sup>19</sup> Acceptance rates differ between countries, and public willingness may not predict actual behavior. Countries with rates above 80%, such as China, South Korea, and Singapore, have demonstrated public trust in the government.<sup>6,10</sup> In Indonesia, older adults make up 10% of COVID-19 cases but 50% of deaths.<sup>22</sup> Data from the Pekanbaru City Health Office show that many older adults and families refuse vaccination, leading to a low coverage rate of approximately 50%, which is below the national target.<sup>23</sup> In Palembang City, only 50% of the elderly and general population are vaccinated. Health centers use incentives and campaigns. However, only 50% of the elderly (66,443 of 128,519) received the first dose and among the general public, only 50% (433,450 of 857,384) were vaccinated.<sup>24</sup> The government has set a target of at least 70% coverage among older people.<sup>25</sup> However, vaccine acceptance presents an additional challenges.<sup>26</sup> The collegium of neurologists states that vaccination of patients with stroke should occur under physician supervision, considering their health conditions.<sup>27</sup>

Studies have shown that message framing significantly influences individuals' willingness to be vaccinated. Properly framed messages that explain vaccination benefits and risks can increase vaccination intentions.<sup>28</sup> Narrative messages are particularly persuasive in encouraging vaccination behaviors, as demonstrated in Chinese students.<sup>29</sup> Message framing, emotional appeal, and informative content can influence vaccine risk perceptions and the willingness to vaccinate.<sup>30</sup> Cultural aspects critically influence public response to health communication.<sup>31</sup> The incorporation of culturally sensitive approaches into communication strategies is essential for effective health promotion. This study aimed to explore the experiences of older adults with a history of stroke in perceiving the COVID-19 vaccination program, focusing on the factors influencing their attitudes and decisions.

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## Materials and Methods

### Study design

This study used a descriptive qualitative approach to explore the perceptions of older adults with stroke regarding their acceptance or rejection of the COVID-19 vaccination program.

### Setting

This study was conducted in August 2021, particularly for 10 public health centers in Palembang City, Indonesia.

### Sample/participant

Data were collected through direct interviews at the time of mutual agreement. Participants were recruited using purposive sampling with inclusion criteria for elderly individuals with a history of illness, particularly stroke. The sample size was determined based on data saturation, that is, the point where no new data or themes emerged. The characteristics of the informants, including age, gender, marital status, medical history, occupation, and place of residence, were explained. This study included 23 informants, which was sufficient to achieve data saturation. Saturation was

reached when all the participants provided consistent responses, indicating no further variation or new insights.

### Data collection

The study team explained the purpose of the study to the participants and obtained informed consent. They also sought approval and established a contract to conduct in-depth interviews at mutually agreeable times and dates. With the consent of all the informants, the interviews were recorded using voice and audio recorders. Data collection and analysis were simultaneously conducted. The audio recordings were transcribed verbatim within 24 hours of each interview, and the interview team reviewed the transcriptions to ensure their accuracy.

### Interview guides

During interviews, older adults were asked about changes in their self-beliefs, thoughts, feelings, and behaviors related to the vaccination program, as well as their views when it became mandatory. The team followed standardized reporting guidelines for qualitative research and conducted a quality assessment using various methods, including the Consolidated Criteria for Reporting Qualitative Research (COREQ), which consists of 32 criteria.<sup>32</sup> Domain 1: Research Team and reflection, comprising personal characteristics and relationships with participants. Domain 2: The study design includes a theoretical framework, participant selection, setting, and data collection. Domain 3: analysis and findings consisting of data analysis and reporting

### Data analysis

Data analysis was performed using Haase's adaptation to the Colaizzi method to analyze transcripts. The process began by reading transcripts multiple times to understand the meaning, identify essential phrases, and restate them. This was followed by formulating and validating meaning through team discussions to reach a consensus. The final stage involved identifying and grouping themes into clusters and categories, developing them into theme descriptions.<sup>33,34</sup> The strategies used to ensure data accuracy or trustworthiness were credibility and transferability. Two authors independently analyzed transcripts by bracketing data on preconceived ideas and systematically following an adaptation of the Colaizzi method. The team discussed the results until agreement on themes, theme groups (domains), and categories (coding) were reached.<sup>35</sup>

### Trustworthiness

To ensure credibility, a team dedicated time to data collection and analysis. Transferability: We provided a comprehensive description of the research context, methods, settings, participants, and sampling methods. Transferability was assessed by examining variations in participant characteristics and quotes from in-depth interviews. Dependability was enhanced by the qualitative analytical software Atlas, which organizes and manages data systematically, facilitating an audit trail. All decisions and methodological adjustments were recorded to ensure confirmability of the audit trail during data collection and analysis.

### Ethical clearance

This study received ethical approval from the review board or ethics commission of the Palembang Poltekkes Kemenkes (No: 013 KEP/ADM2/2020). Participants signed informed consent forms before participating, and data confidentiality was guaranteed during collection by using numbers instead of names with quotation codes (participant number) and removing identifying informa-

tion from transcripts. All audio recordings and transcripts were stored using computer password protection. During the study, the researcher adhered to the ethical principles of information consent, respect for human rights, beneficence, and non-maleficence.

## Results

### Demographics and characteristics of participants

Supplementary materials, Table 1 provides an overview of the participants' demographic and clinical characteristics. The study sample consisted of 23 older adults recruited from regions in South Sumatra Province. The participants' factors, including age, gender, marital status, region, disease history, work history, and place of residence, were documented. The team analyzed the results of the in-depth interviews and selected quotations combined into groups as a basis for coding and formulating categories, domains, and themes.

Supplementary materials, Table 2 shows the theme formation process, beginning with quotations from the in-depth interviews. The results were analyzed by selecting quotations combined into groups as a basis for coding to formulate categories, domains, and themes. Based on the themes formed, a sequence of events identifies the complexity of the dynamic situation when implementing a vaccination program.

## Discussion

This study provides insights into older people's perceptions of the COVID-19 vaccination program, particularly within the global pandemic context, which, by the end of 2020, caused over four million confirmed cases and three hundred thousand deaths worldwide.<sup>36</sup> Using a qualitative approach, researchers interviewed vulnerable groups, especially older adults with comorbidities such as stroke. The findings highlight various beliefs about and barriers to COVID-19 vaccination among elderly individuals with a history of stroke. The analysis revealed five major themes: initial resistance to the vaccination program, doubts about the benefits of the vaccine, fear of vaccination, compulsion to participate, and unwillingness to engage in vaccination programs.

### Theme 1: initial resistance to the vaccination program

The study found that initial resistance among elderly individuals, particularly those with chronic diseases, stemmed from resentment and a lack of trust in government-led vaccination programs. Rejection to vaccination may be caused by misperception and fear of this program among the elderly. Safe and effective vaccines aim to reduce virus transmission and enhance immunity.<sup>2</sup> Similar issues have been reported in developed countries, such as the United States, Australia, Italy, and the United Kingdom, where recipients are skeptical of government-led vaccination initiatives.<sup>20</sup> This aligns with previous research suggesting that vaccine hesitancy is often rooted in distrust of authorities and skepticism about public health initiatives.<sup>37,38</sup> Elderly participants expressed frustration about being targeted as a priority group for vaccination, which led to feelings of alienation and reluctance to participate.<sup>39</sup> Such sentiments highlight the need for more inclusive and transparent communication strategies to foster vaccine acceptance.<sup>39</sup> Addressing resistance requires trust building, inclusive communi-

cation, and transparent policy implementation. By fostering a collaborative and empathetic approach to vaccine campaigns, public health authorities can mitigate resistance and encourage informed decision making among the elderly.

### Theme 2: doubts and disbelief about the benefits of the COVID-19

Another major concern was the widespread doubt about the effectiveness of COVID-19 vaccines. Participants shared the belief that vaccines were unnecessary or similar to common cold treatments, reflecting misinformation and a general lack of understanding of vaccine mechanisms. This finding aligns with a previous study showing that some elderly individuals believe that their current health status does not necessitate vaccination and doubted vaccine effectiveness.<sup>40</sup> This is consistent with previous studies that have highlighted the impact of misinformation on vaccine acceptance, particularly among older populations with lower health literacy.<sup>41</sup> Systematic reviews and experimental studies have shown that appropriate message framing significantly increases vaccine acceptance by shaping perceptions of vaccine risks and benefits.<sup>42,43</sup> Normalizing preventive behaviors via public campaigns may strengthen trust by aligning it with accepted norms, and this study also suggests that the government and health providers should promote the vaccine and its side effects to improve people's understanding of COVID-19.

### Theme 3: fear surrounds vaccination

Fear, particularly regarding adverse reactions, was a dominant theme in participants' narratives. Many elderly individuals are at an increased risk of stroke, hypertension, or even death. This fear is often fueled by anecdotal stories from peers, media reports, and social networks, reinforcing the perception that vaccines are unsafe. This aligns with a previous study in which fear surrounding COVID-19 vaccination was a significant factor influencing vaccine hesitancy and acceptance. This fear is multifaceted, involving concerns about vaccine safety, side effects, the rapid development of vaccines,<sup>44-46</sup> and external misinformation.<sup>47-48</sup> Building trust within the community is essential to addressing these doubts.<sup>16</sup> These findings emphasize the importance of evidence-based communication and the role of healthcare providers in reassuring patients about vaccine safety, as previous research has shown that physician recommendations are among the most influential factors in vaccine decision-making.<sup>47</sup> Moreover, involving healthcare professionals who have established relationships with patients can enhance vaccine promotion efforts.<sup>16,48,49</sup>

### Theme 4: the compulsion to participate in the vaccination program

Despite hesitation, some participants felt compelled to receive the vaccine because of external pressures from family members, healthcare workers, or social circles. This coercion-based participation suggests that vaccine uptake among the elderly is not always voluntary but rather a result of social and familial influence. While peer pressure can be a powerful motivator, it is crucial to ensure that vaccine acceptance is driven by informed decision making rather than external coercion. Studies have shown that social and familial influences play a significant role in shaping health behaviors among older adults.<sup>50</sup>

### Theme 5: unwillingness to engage in vaccination programs

Finally, some participants remained steadfast in their refusal to

be vaccinated, citing concerns over personal health risks, distrust in vaccine information, and anecdotal reports of adverse effects. This underscores the challenge of overcoming deep-seated vaccine hesitancy in high-risk populations. Interventions should focus on personalized communication strategies, leveraging trusted community leaders and healthcare providers to dispel fear and provide factual information.<sup>51</sup> Previous studies have highlighted that the reasons for unwillingness to engage in COVID-19 vaccination programs are vaccination safety and concern about side effects.<sup>38,52</sup> Addressing deep-seated vaccine unwillingness in high-risk populations requires targeted trust-based interventions. Public health efforts should prioritize personalized communication, engage trusted community leaders, and provide transparent, evidence-based information to effectively counter misinformation and fears.

## Conclusions

The COVID-19 vaccination program for older adults aimed to reduce viral transmission. However, those with chronic conditions such as stroke face complex concerns, including fear of side effects and vaccine hesitancy. This study explored stroke survivors' experiences with vaccination, revealing themes such as rejection, distrust, skepticism about benefits, fear of health risks, and reluctance to participate. Future public health efforts should prioritize tailored communication strategies, address misinformation, and enhance trust in vaccination programmes through transparent messaging.

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*Online supplementary materials*

*Table 1. Characteristics of the participants.*

*Table 2. Results of theme analysis.*