


Identifying and understanding challenges to inform new approaches to improve vaccination rates: A qualitative study in Indonesia

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Abstract

Purpose: This study aimed to identify and understand challenges to inform new strategies to increase the COVID-19 vaccination rate according to involved vaccinators' perspectives in Belitung, Indonesia.

Design: A qualitative descriptive study design was used.

Methods: Online interviews and chatting were done among 11 vaccinators for data collection between August 2021 and January 2022. Data were analyzed using a content analysis model.

Findings: Four main themes emerged, including (1) communication strategies (evidence-based, electronic-based, and culturally based communication), (2) cross-sectoral strategies (collaboration with police, religious leaders, customary leaders, heads of village divisions, and non-governmental organizations), (3) "picking-up the ball" system (home visits for elderly and people with disability and school visits for children), and (4) setting-up priorities (between mandatory vaccines and boosters).

Conclusion: Despite making vaccination mandatory, the roles of communication, cross-sectoral innovations, "picking-up the ball" system, and priority setting may have useful potential to improve vaccination rates.

Clinical Relevance: The findings may serve as an input to overcome challenges and accelerate the vaccination coverage in Indonesia and beyond. However, further research is needed.

KEYWORDS

COVID-19, health policy, healthcare workers, humans, indonesia, sustainable development, vaccines

BACKGROUND

Our current life is still not free from COVID-19. Chances are we will be living with this virus for years to come. This has become the new normal that we must learn to live with (Gunawan, Aunguroch, & Marzilli, 2020). It is undeniable that most people globally, including the Indonesian people, are affected in terms of health, freedom,

and economy related to COVID-19 (Gunawan, Aunguroch, & Marzilli, 2020; Winarti et al., 2021).

A few months ago, Indonesia was considered the new epicenter of the pandemic as the delta variant spread (Dyer, 2021). The number of COVID-19 cases in Indonesia as of August 15, 2021, was around 3,854,354, with 117,588 deaths and 20,813 additional daily cases (Satuan Tugas Penanganan COVID-19, 2021). However, the number

of cases per day has gradually decreased. By September 30, 2021, only 1690 additional cases were identified (Satuan Tugas Penanganan COVID-19, 2021), and by January 18, 2022, only 772 new cases were confirmed (Satuan Tugas Penanganan COVID-19, 2021). Belitung, one of the 17,000 islands in Indonesia, had 7617 confirmed cases by October 1, 2021 (Dinas Kesehatan Kabupaten Belitung, 2021). The number of confirmed cases represents a significant number within a population of approximately one hundred and seventy thousand. Because of this high incidence, Belitung was again included in the COVID-19 red zone as of July 2021 (Astuti, 2021). Communities in the red zone require the cooperation of both the government and society to reduce the spread of this deadly virus.

In response to the COVID-19 cases, the Indonesian government started the COVID-19 vaccination program in Indonesia on Wednesday, January 13, 2021, at the State Palace (Ministry of Health of Indonesia, 2021). Leading by example, the first person injected with Sinovac's vaccine was President Joko Widodo. At the same time, a number of officials, religious leaders, professional organizations, and community representatives participated in the vaccination as motivation for the community and to lead by example that the vaccine was safe (Ministry of Health of Indonesia, 2021). Importantly, the day after the inoculation of President Joko Widodo, vaccination clinics were launched simultaneously to health workers and health support personnel in 34 provinces in Indonesia. The issuance of an Emergency Use Authorization (EUA) permit from the Food and Drug Supervisory Agency (BPOM) and a halal fatwa from the Indonesian Ulema Council (MUI), the agency that clarifies points of Islamic law (Ministry of Health of Indonesia, 2021), enabled widespread vaccinations. Further attempting to role model good citizenship and lead by example, the first wave of vaccines in Belitung were carried out to those in the *Forkopimda*, or the Local Leaders Coordination Forum, and the community leaders as a strategy for marketing the vaccination to the general population in the area. This idea of leading by example was thought to empower and motivate citizens to become vaccinated.

In order to achieve widespread vaccine coverage of the total population, the Chairman of the Committee for Handling COVID-19 and National Economic Recovery (KPC-PEN) emphasized that COVID-19 vaccination was mandatory for all Indonesians beginning in January 2021 (Farisa, 2021). The requirement for vaccination is stated in a number of laws and regulations, one of which is Law Number 4 of 1984, which stipulates that prevention and immunization are actions taken to provide protection to people who are not yet sick but have a risk of contracting the disease (Farisa, 2021). Basically, according to the Agency for Development of Human Resources in Law and Human Rights, the Indonesian Ministry of Law and Human Rights (BPSDM Hukum dan HAM, 2021), not one citizen has the right to refuse vaccination because the citizens are also obliged to respect the human rights of others. The ethical concerns must be weighed between autonomy and not engaging in non-maleficence because living in the community is not only about protecting ourselves or saving ourselves, but there is an obligation to protect and save others who need protection. Furthermore, vaccination is not just a matter of

personal health, but it also prevents transmission to others and develops the immune protection needed to combat the virus (BPSDM Hukum dan HAM, 2021). If individual citizens refuse vaccination, they can be subject to criminal sanctions in the form of imprisonment for a maximum of one year and/or a fine of as high as 1,000,000 IDR, or one million rupiah (BPSDM Hukum dan HAM, 2021). In addition, administrative sanctions are also implemented in the form of postponement or termination of the provision of social security or assistance, delay or termination of government administration services, and/or fines (BPSDM Hukum dan HAM, 2021). However, despite all the sanctions, many citizens refused vaccination.

As of September 29, 2021, 45.2% of the population worldwide received at least one dose of the COVID-19 vaccine (Our World in Data, 2021). However, in Indonesia, as of October 1, 2021, among 273.5 million of the total population, only 24.85% were fully vaccinated having received Vaccines 1 and 2, and 44.26% were partly vaccinated, having received Vaccine 1 only (Kawal COVID19, 2022). Although on January 4, 2022, Indonesia ranked fourth with the highest vaccination coverage globally, after China, India, and the United States (Cabinet Secretariat of Indonesia, 2022), 45.2% is not that high, with an increase to only 55.61% of the population classified as fully vaccinated and 80.83% classified as partially vaccinated on January 6, 2022. This vaccine coverage needs to be accelerated to reach 100% vaccination rate, and the addition of vaccine boosters creates an additional vaccination element for the country to manage. Vaccination continues to be an important issue considering the new variants identified in Indonesia including Delta and Omicron, and those to come (Media Indonesia, 2022). Interestingly, the vaccination achievement in Belitung, Indonesia, as of January 18, 2022, was only 70% of the community with Vaccine dose 1 and 50% with dose 2. These rates fall short of the national averages and needed a quick acceleration to meet the health needs of the community (Media Indonesia, 2022).

According to the literature review, issues related to vaccine hesitancy and acceptance among Indonesians were explored in previous studies. For example, Yanto et al. (2021) examined factors related to vaccination acceptance among 190 Indonesian adults, and their findings revealed 13.2% of those with vaccine hesitancy were significantly influenced by trust in scientists, trust in government, agreeableness trait, test frequency, and smoking status. Furthermore, Harapan et al. (2020) also found that the COVID-19 vaccine acceptance is highly influenced by the understanding of vaccine effectiveness among 1359 respondents. The 93.3% participants that indicated vaccine acceptance for indicated that a 95% effective vaccine was crucial for acceptance. However, only 67% of participants indicated vaccination acceptance for a vaccine with a reported 50% efficacy rate. The literature identified many challenges to COVID-19 vaccination including vaccine supply problems, inadequate cold chain system, and local anti-vaccination movement (Nugraha et al., 2021). Their findings were in line with the findings of Arifin and Anas (2021). These authors revealed that distribution to remote areas, population heterogeneities, mobilization, and financing were the challenges to accelerating vaccination (Arifin &

Anas, 2021). However, these studies provided evidence that the vaccine acceptance and the effectiveness of the vaccine mandate in Indonesia were influenced by many factors that affect the acceleration of the vaccination coverage.

The results of the existing literature explained above do not provide the whole context of the vaccination trajectory in Indonesia, as it lacks understanding of the issue from health professionals' point of view. In addition to the available knowledge, none of the qualitative studies have explored the vaccination issue in Indonesia from the vaccinators' perspectives. The existing qualitative research is mainly related to the anti-vaccine movement (Khadafi et al., 2022) and public communication (Dewi, 2021), which can be considered a research gap. Additionally, the majority of the local studies used quantitative methods, social media sentiment analysis, and literature review. Therefore, this study aimed to identify and understand challenges to inform new approaches to improve vaccination rates according to involved vaccinators' perspectives in Belitung, Indonesia. The results of this study may provide additional input for the effectiveness of vaccination coverage in Indonesia and beyond.

METHODS

Study design

This study employed a qualitative descriptive study design, outlined by Lambert and Lambert (2012). This study design is appropriate as it involves a *straightforward* descriptive summary of the informational contents of the data organized in a logical manner. The presentation of the data is arranged by themes/subthemes, categories/subcategories, time of occurrence, actual or reverse chronological order of events, and description of events of perspectives from more than one participant (Lambert & Lambert, 2012). Unlike other qualitative approaches, the qualitative descriptive design does not use a pre-existing set of rules that were generated from the philosophical or epistemological strands but is purely data-derived in that codes are generated from the data (Lambert & Lambert, 2012). Essentially, this design tends to draw from naturalistic inquiry, which supports a commitment to studying something in its natural state to the extent possible within the research arena.

It should be noted that this design has no manipulation of variables and no prior commitment to any theoretical view of a target phenomenon (Lambert & Lambert, 2012). The researchers could not report that the study used a grounded theory or phenomenological approach if the design was an actual qualitative descriptive. The qualitative descriptive design may have a grounded theory overtone because of the use of the constant comparative data analysis, but no theory was produced from the data. In addition, the qualitative descriptive design might have a phenomenology overtone, which uses "interpretive descriptive" but with less interpretation. In sum, the qualitative descriptive approach is the design of choice when a straightforward description of the phenomenon is desired, specifically about COVID-19 vaccine challenges and strategies in this

study. To report the findings of this study, consolidated criteria for reporting qualitative research (COREQ) (Tong et al., 2007) was used.

Participants

This study was conducted in Belitung island, Indonesia, and this island was chosen being a red zone for COVID-19 (Astuti, 2021). Eleven participants were included in this study using purposive sampling. Patton (2015) describes that the logic and power of purposive sampling lie in selecting information-rich cases from those who have a great deal of issues to reach an in-depth understanding. In this study, the inclusion criterion of the participants was healthcare workers who were directly active in the vaccination program acting as vaccinators or vaccine coordinators and believed to have rich information regarding COVID-19 vaccines in Indonesia. The vaccinators were selected as they would provide the actual phenomenon and detail in the field related to how the vaccination works, how the community responds, and what vaccine issues, barriers, and challenges must be resolved to improve vaccination rates. While the vaccine coordinators in the community healthcare centers and the health department provided the information regarding the vaccination management, policies, regulations, and internal or external strategies to improve vaccination coverage.

Of the 11 participants, six were vaccinators (54.5%), and the others were coordinators for COVID-19 vaccinations in the health care centers (27.3%) and the department of health (18.2%). It is noteworthy that there were seven community healthcare centers and one health department in Belitung regency, Indonesia. Each healthcare center had five vaccinators, which indicates a total of 25 vaccinators in seven healthcare centers. The researchers contacted all healthcare centers, and only four were available. Therefore, the participants in this study were from four healthcare centers and one health department, which sufficiently represent the whole context of the COVID-19 vaccination in the study setting. Additionally, the educational background of the participants consisted of two master's in nursing science (18.2%), three bachelor's in public health (27.3%), one bachelor's in nursing (9%), and five diplomas in nursing (45.5%). The participants consisted of six males (54.5%) and five females (45.5%).

Ethical consideration

This study was ethically approved by the Research Ethics Committee, Department of Health of Indonesia (Approved on August 20, 2021). The health department also gave permission to approach the participants. The participants signed the informed consent if they agreed to participate and understood the research procedures. Participants were assured that participation in this study was voluntary and there was no penalty if they withdrew. Also, there was no immediate risk to the participants, and the interviews were discontinued if they felt uncomfortable. Data were kept confidential and stored in a secured

computer. In reporting this study, the participants' names were anonymous and replaced by numbers (pp. 1–11).

Data collection

Data were collected from August 26, 2021, to January 10, 2022, in Belitung, Indonesia. The participants in this study were contacted by phone to explain the study aim and procedure. After they were fully informed and agreed to be interviewed, they were invited to sign an informed consent and were scheduled for an interview. Unfortunately, it was not possible to conduct a face-to-face interview during the COVID-19 restrictions so the researchers decided to use two data collection approaches, online interview and chat (SMS), based on the participants' convenience in sharing the information. The main reason was that the combination of data collection from different sources in a single study could provide trustworthy findings; although the number of codes differed between the sources, the substance and content did not (Saarijärvi & Bratt, 2021).

In conducting online interviews, not all participants preferred to use Zoom, Facetime, or video conference using a laptop as a formal interview. Instead, most of the participants chose their mobile phones for discussion; thus, it could be called phone interviews or online interviews, with the help of WhatsApp for chatting and video calling. The rationale of using chatting was to reduce boundaries to share perspectives and the formal manner of asking questions (Gunawan et al., 2021). Three participants even sent their voices using WhatsApp to answer every interviewer's question. The interviews were audio-recorded, transcribed verbatim, and validated by re-listening to the recording. In addition, the chats were recorded on the researchers' mobile phones and re-read by the researchers.

The interviews were conducted by three researchers of this study (JG, NN, and AS) using the Indonesian or Belitung language with the same initial probing questions: "What do you think about the vaccination program today?", "What are strategies to improve vaccination rates?" and "What are the challenges of the vaccination program based on your experience?" The questions continued until the researchers repeatedly listened to the same comments and responses, or when data reached saturation. One interview could last approximately 40 to 60 minutes.

There was no repeated interview in this study, and only chats were done several times for clarification. In other words, once the researchers found an unclear statement from one participant after the interview, the researchers sent him/her a message using WhatsApp. Next, the participant answered by either texting or sending voices to add or clarify some information. For instance, when two participants had two conflicting statements, one participant said that the vaccine was a must for obtaining a driver's license, while another stated that it was not required to show vaccination status or bring a vaccine certificate. Therefore, clarification was needed, which resulted in one conclusion: "only a *recommendation* from the police to get the vaccination before processing the license. However, those who have

been vaccinated would be *prioritized* before non-vaccinated persons, but it does not mean they will not be served, but delayed."

It was also noteworthy that the researchers conducted a content analysis of every participant's data right after the interview or before the next interview. Therefore, when the researchers heard the same answers, responses, or comments from another participant, the researcher knew that the information was repeated. It should also be noted that no prior relationship was identified between researchers and participants, which might influence the interview contents.

Data analysis

The content analysis process outlined by Vaismoradi et al. (2013) was used for data analysis. It consists of transcribing each interview, reading the transcripts repeatedly to get to the themes by highlighting the codes in the significant excerpts to grasp the meaning units, and organizing the meaning units under subthemes and themes (Vaismoradi et al., 2013). This content analysis is in line with the qualitative descriptive design and research question in this study because it aimed to describe the characteristics of the document's content by examining who said what, to whom, and with what effect (Vaismoradi et al., 2013). This analysis is considered fundamental and suitable for the study focusing on the explicit description rather than on the implicit meaning of the content, or focusing on a lower level of interpretation rather than a more abstract interpretation (Vaismoradi et al., 2013; Vaismoradi et al., 2016). In addition, this content analysis also fit with the area where not much is known (Vaismoradi et al., 2013), particularly about COVID-19 vaccination challenges and strategies in this study.

In this study, all authors conducted the data analysis manually. JG, NN, and AS performed initial transcription, coding, and categorization, and the results were reviewed and discussed with the others. After consensus was reached, the categorization was determined. All authors had experience in qualitative studies in the nursing area. All themes or findings were translated from the Indonesian language into English in the text. During the analysis, JG, NN, and AS used Indonesian and English to discuss and translate the findings with the other researchers.

The framework of Abfalter et al. (2020) was used to guide the translation decisions, which consisted of seven generic queries for transparency: (1) *Why* - the reasons for translation are to create scientific community value among researchers and for publication, (2) *When* - the translation in this study was done from the Indonesian language to English when presenting the initial draft and the final findings of the study (end of data analysis) to non-Indonesian researchers. With this decision, all researchers knew whether the initial findings needed more data collection or additional interviews. The interview transcripts and chats were not translated into English as there were too many sources of texts and codes, which required more time for translations. The researchers also believed that the three researchers would be sufficient to analyze the data in the Indonesian language and then discuss with the others regarding the findings, (3) *What* - initial and final results of the qualitative study,

(4) *Who* - JG, NN, and AS translated the drafts, (5) *How* - JG conducted a technical translation or forward translation from the original language to another language, and NN and AS compared the two versions-Indonesian and English versions for clarity, (6) *Where* - the translation was done within the socio-geographical environment of the target language, within an English speaking environment in the research team, (7) and *By what means* - JG, NN, and AS have a high level of language proficiency and were free to choose any auxiliary tools such as bilingual dictionaries (no IT applications were used).

Trustworthiness

The trustworthiness of this study was ensured using peer review by an experienced researcher (outside the research team) and two nursing experts (inside the research team) within 2 weeks to avoid bias of the study process and analysis. In addition, member checking was done by sending the study findings, in the form of themes, for validation to all participants. No changes in the results were made.

RESULTS

Thematic findings

Four main themes of the COVID-19 vaccination strategies emerged, including (1) communication strategies, (2) cross-sectoral strategies, (3) "picking-up the ball" system, and (4) setting-up priorities (Figure 1). It is noteworthy that all themes emerged from data analysis, and the researchers did not anticipate it before the analysis. Those themes are illustrated with exemplars from the participants' stories using pseudonyms.

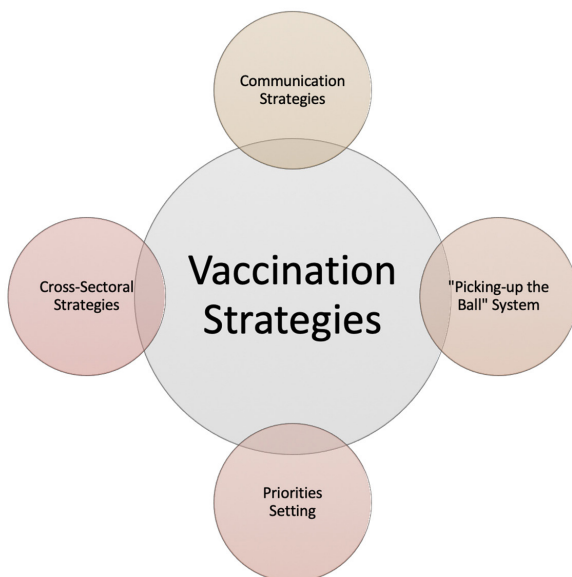


FIGURE 1 Main themes of the COVID-19 vaccination strategies.

Theme 1: Communication strategies

The communication strategy includes evidence-based communication, e-communication, and culturally based communication. This strategy requires communications skills among healthcare practitioners, and it is challenging to master. The communication strategy can be defined as verbal and non-verbal techniques that communicate presence, attention, interest, understanding, motivational interviewing, and approaches informed by health literacy, or evidence-based practice, mediated by technology (electronic-based), and based on local wisdom (culturally-based). However, communication is vital to pass information to others, build trust and help gain better knowledge (Table 1).

The use of evidence-based communication is vital because the participants faced hoaxes and misinformation as they communicated with vaccine recipients in the community (secondary perspectives) (Table 2).

Theme 2: Cross-sectoral strategies

To increase the vaccination rate, cross-sectoral strategies are needed. This term refers to a process where various organizations come together to focus on an issue in a community using their expertise and resources. In this study, the strategy should involve collaborations with policies, religious leaders, customary or traditional leaders, or *Pemangku Adat*, heads of village divisions, and non-governmental organizations (NGOs). This is expressed by the participants in Table 3.

Theme 3: "Picking-up the Ball" system

The "Picking-up the Ball system" refers to the use of the existing grouping strategy from previous health initiatives to gather or visit vulnerable individuals in the community. This system is not new; community nurses have implemented it in every health program in the public health centers, or *Puskesmas*. Considering its effectiveness, this system is also applied to the vaccination program in the form of home visits, especially for those who are unable to access the vaccinations, such as people with disabilities and the elderly. In addition, as the elderly programs in the Integrated Health Service Posts, or *Posyandu*, are still active, it is easy to gather the older people for vaccination administration. The program is also expanded to school visits to reach the vaccination target among school-age children. The participants expressed this in Table 4.

Theme 4: Setting-up priorities

Another strategy is setting priorities, especially between mandatory vaccines and vaccine boosters. In Indonesia, the first and second doses of the vaccines are required, while the third and fourth are optional. Therefore, the participants said that mandatory vaccines should be prioritized, in this case, for a specific brand of vaccine

TABLE 1 Communication strategies

Communication Strategies
Evidence-based communication <ul style="list-style-type: none"> • “Well, honestly, we are now demanded to provide evidence in any communication regarding COVID-19 and its vaccination. People are now smart and can search for anything on the Internet. But some are easy to believe in hoaxes and misinformation.” (p1) • “Where is your proof? Can you show me the evidence?” that's how they answer me. After that, I show them the research articles or information from the Department of Health and WHO. Luckily, I follow the updated news.” (p4)
Electronic-based communication <ul style="list-style-type: none"> • “To get attention from today's generation, we use TikTok for “Vaccine Service,” Instagram, and Facebook to provide info regarding vaccinations. So, we make videos about the vaccines and information about them.” (p8) • “Using social media now is a must. We also have roles in providing clear information and preventing hoax and misinformation.” (p10)
Culturally based communication <ul style="list-style-type: none"> • “Today, with COVID-19 pandemic, not many people believe in healthcare practitioners because some still think we are doing a business here. It is really challenging us to use our communication skills not to be angry easily, listening more, providing accurate information and straight and direct answers.” (p9) • “We need to understand the people's culture. I really know how to deal with people in Belitung. Easy to be reactive. So, in communication, I use a family and cultural approach, like talking with brothers and sisters or with mothers and fathers. And, speak slowly, of course.” (p11) • “I still need to manage my non-verbal communication, especially to control my face. My friend said that my verbal is okay, but my face is not.” (p2)

(Pfizer). Otherwise, those who want to get a vaccine booster could use any available vaccine to improve immunity against the new variant (Omicron) rather than waiting for the particular one. Additionally, the participants also expressed the vaccination implementation issues that should be solved (Table 5).

DISCUSSIONS

Although the COVID-19 vaccination is mandatory for all Indonesians, the program is not as smooth as it should, or could be. The findings of the study provided the four main COVID-19 vaccination strategies: communication strategies, cross-sectoral strategies, “picking-up the ball” system, and priority setting. These major themes may be similar to those already known to influence societal behavior, but they emerged from the data analysis. The following describe each theme and its recommendations.

Communication strategies

The use of communication strategies (evidence-based, electronic-based, and culturally based communication) to combat vaccination

TABLE 2 Existing hoaxes and misinformation

Existing Hoaxes and Misinformation
The vaccine is a marker because it is implanted with a chip <ul style="list-style-type: none"> • “Many people do not believe with the vaccine. They think that vaccine is a marker to track an individual. Therefore, they are afraid of the vaccine.” (p1) • “I was surprised when some people think that vaccine is implanted with a chip to get all information from us. They said they got the information from the Internet” (p3)
The vaccine is not “halal” <ul style="list-style-type: none"> • “I still find many people discuss whether Sinovac is halal or not. Not only Sinovac, other vaccine brands as well. MUI (Indonesian Ulema Association) has announced that other vaccines are haram. Some people in Belitung do not want to receive the vaccine because of this.” (p4) • “We can see the lack of understanding of people here; how they still ask vaccine is halal or not although it has been announced halal by MUI. They said the information is not clear.” (p5)
Poor healthcare behavior after vaccination (‘fully’ protected) <ul style="list-style-type: none"> • “Many also feel that they are immune to COVID-19 after receiving the vaccine. So, they are lazy to use masks, lazy to wash their hands, and unwilling to keep social distancing.” (p9) • “People mostly ignore the health behavior after vaccination. As a result, many people got infected in the end.” (p6)
“Ineffective” vaccine vs. positive COVID-19 <ul style="list-style-type: none"> • “They said that vaccine is a source of infection. You can see many people get infected after being vaccinated.” (p3) • “Many people, including nurses, do not believe that Sinovac is effective against delta variant, and now Omicron. Therefore, many are positive today.” (p2) • “Many stories describe that there are some people purposively make someone a false positive status, so they will need to pay for PCR and swab tests or other services.” (p11)

hesitancy and improve vaccination rates are discussed in previous studies (Boyd & Buchwald, 2021; Jin et al., 2021; Merkley & Loewen, 2021). which is similar to the findings of our research. However, what needs to be emphasized is that nurses and other healthcare workers have a professional and ethical obligation to communicate clearly. Failure to understand health literacy from a professional perspective will compromise their roles in developing health literacy in society (Fauzia & Hamdani, 2021; Sari et al., 2020). In addition, health professionals demanded to use technology, digital tools, and social media, such as TikTok, Instagram, and Facebook in this study, to deliver information quickly and accurately to young generations as well as to understand local wisdom and be sensitive to others' cultures in order to have appropriate two-way communications (Fauzia & Hamdani, 2021; Sari et al., 2020).

The issue related to the “halal” vaccine is described in previous studies (Ab Latiff & Zakaria, 2021; Mardian et al., 2021). Halal is an Arabic word meaning “permissible,” which generally refers to what is allowed under Islamic law (Setiawan, 2021; Simanjuntak, 2021). The term halal is contrasted with haram or “forbidden.” The halal and haram vaccines depend on the presence or use of enzymes derived from pigs, or if it contains pork gelatin to stabilize many inoculations

TABLE 3 Cross-sectoral strategies

Cross-Sectoral Strategies
<p>Collaboration with police</p> <ul style="list-style-type: none"> • “Those who want to make a driver license were asked by police whether they have been vaccinated or not. If not, they are recommended to go for vaccination first. If not, the licensing process will be delayed because the vaccinated people will be prioritized than those who have not got any vaccines, but they still be served” (p2) • “Police usually stops those who do not wear a facemask and asked about vaccination, and suggest them to do directly to get the vaccine in the vaccination program in front of their office.” (p8)
<p>Collaboration with religious leaders</p> <ul style="list-style-type: none"> • “It is common now to see vaccination programs in the mosques here. Most religious leaders work together with public health centers or the department of health to increase vaccination rates. The majority of the religious leaders, especially Islamic leaders, encourage their followers to get the vaccine.” (p7)
<p>Collaboration with customary leaders and head of divisions of the village</p> <ul style="list-style-type: none"> • “Most of the people still also believe in the Customary Leaders. So, they will follow what the leaders say. Public health centers work closely with them for vaccinations.” (p8) • “Some of the traditional law leaders also act as Heads of Divisions of the Villages. So, it is easy to convince the community.” (p11)
<p>Collaboration with non-governmental organizations (NGOs)</p> <ul style="list-style-type: none"> • “I can see so many promotions today from NGO, such as Yamaha and Honda groups, especially for those who are vaccinated. Interesting strategy, is not it?” (p5) • “I just need to pay 500,000 IDR for making down payment of the motorbike. Just got a coupon because I was vaccinated.” (p6)

TABLE 4 “Picking-up the Ball” system

“Picking-up the Ball” System
<p>Visiting homes (for those with disability [physically disabled, deaf, blind mute], and elderly through <i>Posyandu</i>)</p> <ul style="list-style-type: none"> • “This “picking-up strategy” actually focuses on the community whose family members have a disability. So, <i>Puskemas</i> works together with heads of division in the village and police to ask them to gather in one place to provide vaccinations and health educations.” (p1) • “We visit their homes if they do not have access for vaccination. We contact by phone first.” (p8) • “For elderly, we work closely with <i>Posyandu</i> for the vaccination. We have cadres to help in gathering all elderlies in the community.” (p6)
<p>Visiting schools (for school-age children)</p> <ul style="list-style-type: none"> • “To visit schools, we are with <i>Puskemas</i> working together with the Head of Village Division and Police to inform pupils' parents about vaccinations. They sign an informed consent if they agree their kids to get vaccines.” (p5)

(Setiawan, 2021; Simanjuntak, 2021). The Indonesian Ulema Council (MUI) certified that the Sinovac vaccine is halal, while AstraZeneca, Sinopharm, Pfizer, and Moderna vaccines are haram but allowed because of the COVID-19 pandemic emergency (Setiawan, 2021;

TABLE 5 Setting-up priorities

Setting-up Priorities
<p>Between mandatory and booster vaccinations</p> <ul style="list-style-type: none"> • “We actually need to focus on achieving the target of the mandatory vaccines (dose 1 and 2). Many people still do not get the second vaccine, while some are euphoria to get the vaccine boosters. It happens for people who get Pfizer as the 1st vaccine; they need to fight with those who want to get Pfizer as a vaccine booster. Actually, people who want to get boosters can use AstraZeneca, which is available. It's better than waiting and fighting for Pfizer.” (p8) • “My opinion is that setting-up priority is needed. Focus on those who do not receive vaccines yet! But, yeah, many people also ask for the third vaccine because of the Omicron. We need to work it out clearly.” (p5) • “People today prefers Pfizer above all. They think it is the most effective one. For kids, the government use Sinovac only.” (p8)
<p>Vaccination implementation issues</p>
<p>Inconsistent schedule and vaccine availability</p> <ul style="list-style-type: none"> • “When people want to be vaccinated, new obstacles arise regarding when and where they can get the vaccine. There are also many people who are late with information so that it is delayed. We (nurses) also have to call one by one.” (p2) • “Although mass vaccines have been carried out several times, many people still have not received the vaccine until they get lazy and do not want it anymore. This is because when they come, the availability of vaccines is lacking or has not yet arrived. And when the vaccine comes, they do not come. Back and forth like this.” (p5)
<p>Double registration</p> <ul style="list-style-type: none"> • “There are also those who register for the vaccine to two health centers at once. Whichever is called first, they will come. This is due to the vaccine schedule and lack of availability.” (p1) • “Yes, because the distribution of this vaccine is not clear, many people have registered to two places. Of course, it will affect the calculation of vaccination.” (p7)
<p>Conflict of interest</p> <ul style="list-style-type: none"> • “There are those who like to cut the road because they had to get into the airplane. Therefore, they were asked to get vaccinated right on that day even though other people were waiting in line for a long time from the morning. In the end, those who were waiting did not even get the vaccine and waited for the next schedule.” (p9) • “Please, this is my family, my cousin... To avoid trouble, the vaccine was finally given. Because that person is an important and influential person.” (p6)

Simanjuntak, 2021). However, the pros and cons about this continue to be debated in the community today. There are still many who do not want to receive the haram vaccine, as indicated in this study. Thus, the role of communication strategies is essential for solving this controversy.

Complicating this issue, many Indonesians are still contracting COVID-19 infection after being vaccinated. According to the participants 'views, there were three speculations generated in our study. First, the vaccine is a source of infection due to some people being positive COVID-19 after the first or second jabs. This cannot be true because Sinovac is an inactivated vaccine. With the inactivated vaccine, the virus is killed before injection, so COVID-19 cannot be transmitted to the recipient of the vaccine, rather the vaccine

triggers the production of antibodies to fight the virus (WHO, 2021). Second, the vaccine is no longer effective for the new variants. There are little data discussing the effectiveness of the vaccine against the Delta or Omicron variant, this speculation is probably true, which therefore some people compete to have vaccine boosters. Third, a false-positive result. Some individuals claimed to be positive so others may take their money with the increased costs of PCR or Swab tests. According to Indonesian media and news, there are persons who purposively make someone positive, although they are negative (Elvina, 2021; Muhtarom, 2021). This is a serious issue for healthcare professionals, government officials, and the police to deal with this.

In addition, according to the findings of this study, many people believe that they are fully protected after being vaccinated and can no longer infect others. Therefore, it should be noted that vaccines may not protect fully against catching the virus, but they can reduce the symptoms, prevent hospitalization, and/or death (OBrien, 2021). It does not mean the vaccine is not working or something is wrong with the vaccine. However, not everybody who received the vaccination has one-hundred percent protection. In fact, waiting for the most effective vaccine may be the worst thing to do to lower the risk of infections and dying of COVID-19 (Emanuel et al., 2021). Therefore, both vaccine and health behaviors are essential to slow the spread of COVID-19 and reduce the likelihood of hospitalization and death (Gunawan, Aunguroch, & Fisher, 2020). The Centers for Disease Control and Prevention (CDC) (2021a) stated that infection of a fully vaccinated person is referred to as a “vaccine breakthrough infection,” and they are less likely to develop serious illness than unvaccinated persons. This is also supported by the COVID-19 hospitalization rates among 35–64 year-old individuals and 65+ year-old individuals that are seven times higher in the unvaccinated population than in the fully vaccinated population (Disease Control and Health Statistics, 2022). It should be noted that the immunity may be decreased after so many months, which may require vaccine boosters.

Cross-sectoral strategies

It is noted that people are motivated for different reasons. Therefore, collaboration with other sectors, involving police officers, religious leaders, custom traditional law leaders, heads of divisions of the village, and non-governmental organizations, in the vaccination program can be considered add-on strategies to help improve the vaccination rate. However, involving the police in the vaccination program can have pros and cons. Negatively, it will create a conflict because there is no association between vaccination status and driver's license. Positively, it can significantly increase the vaccination rate, which is in line with the vaccination strategy in another Indonesian province. In the province in question, police officers inspected the riders by scanning the barcode and showing the vaccine card (Firmanto & Amin, 2021; Milenia, 2022). If it is discovered that they have not yet been vaccinated, they will be directed to receive the COVID-19 vaccination at the Police Vaccination Outlet.

This new pattern of accelerating vaccination rates is considered effective because people who have not yet received vaccinations can be vaccinated immediately (Firmanto & Amin, 2021; Milenia, 2022). At least 300 vehicles were caught in one vaccination inspection raid. Also, those who have been vaccinated will get free food or free packages to meet their daily needs (Firmanto & Amin, 2021; Milenia, 2022).

Additionally, involving religious leaders, customary leaders, and heads of village divisions is also a good initiative as this builds trust among communities. This also allows for dialogue to discuss the vaccination issues, and it provides an increased understanding about the vaccines. Furthermore, it aligns with a current strategy in another province/island in Indonesia, which asks the religious leaders and custom traditional law leaders to socialize with community members and spread the word that the COVID-19 vaccine is safe for the body and helps improve immunity against the virus (Antara, 2022; Simon et al., 2021). It is worth noting that many vaccination programs are now conducted in mosques, which are in line with previous studies (Lukihardianti et al., 2021; Razali, 2021). The role of NGOs in the vaccination program is also a good initiative. Despite getting the vaccine benefits, people will also acquire other advantages, such as promotions, discounts, etc.

“Picking-up the Ball” system

The concept of the “picking-up the ball” system is basically used for Indonesian nurses in the public health centers for health screening, and it is now beneficial in helping those who do not have access or lack access to vaccinations. In addition, they can also ask the health care professionals directly if they have some issues to clarify. According to the findings of this study, the system is created for those with a disability, which allows healthcare professionals from the vaccination program and public health centers to visit their homes or gather them in one place with easy access. In other words, this program is intended to overcome vaccine challenges, especially related to mobilization, as described by Arifin and Anas (2021).

This home visit program is similar to what is recommended by the Centers for Disease Control and Prevention (CDC, 2021b). However, in this study, this system is closely related to the cross-sectoral strategy, which involves the head of village divisions and police to prevent conflicts. In addition, the “picking-up the ball” system is also applied to the elderly by coordinating with *Posyandu*. It is noted that each *Posyandu* has elderly groups that can be easily reached (Harahap, 2021), so there is no need to visit them one by one. This strategy helps them to get vaccinated faster (AntaraNews, 2021; Dewi et al., 2021). It is worth noting that the “picking-up the ball” system also includes school visits, especially to vaccinate school-aged children. This strategy could cover all students and better help their parents understand the vaccination because the healthcare practitioners in this system also provide health education before the vaccination begins. It is noteworthy that there is no force for the parents to allow their kids to get vaccinated. They need to sign an

informed consent if they agree to receive the vaccine. According to the study findings, the Sinovac vaccine is mainly used for children.

Setting-up priorities

The theme “setting-up priorities” tells that there is an issue between mandatory vaccines and vaccine boosters. Many people have not received the second vaccine, while others are trying to get the vaccine booster. This issue is complicated due to the different vaccine manufacturers and concerns about compatibility among the vaccines. Interestingly, most people prefer the Pfizer vaccine above other versions of the COVID-19 vaccination. For example, those needing the mandatory second dose of Pfizer should have priority over those wanting to get the Pfizer booster although the other brand is available, such as the AstraZeneca COVID-19 vaccination. Therefore, determining the priority is necessary and should be set clearly. Nevertheless, this issue is closely related to the first theme, evidence-based communication strategy, and this must be emphasized. It is important to communicate that those who would like to get the vaccine booster should use any available vaccine rather than waiting for a specific vaccination brand. This is a priority with the increased prevalence of the Omicron strain and other potential variants. This strategy is in line with Williams et al. (2021). Williams et al. stated that priority setting may be helpful but should be based on evidence and transparent decision making, stakeholder participation, and a focus on decision implementations. The study findings revealed that the challenge is not only about identifying the priority, rather a challenge is also related to an unclear schedule, vaccine availability, conflict of interest, and double registration, which are also in line with Williams et al. (2021). The vaccination schedule and its availability are often a mismatch. Many people wait in line to be vaccinated only to find out the vaccine is not available. Sometimes, even if it is available, it may be given preference due to power or influence. Consequently, many have double registrations in two public health centers at the same time, which further exacerbates the gap between the people needing the vaccine and the vaccine ratio. Additionally, some people do not want to come to receive vaccines anymore. This finding aligns with Pereira et al. (2022) who revealed that the scarcity of vaccines can reduce the sense of priority and vaccination intentions. Therefore, the solutions for these problems should be prioritized to increase the vaccination rates.

Implications of the study

The study findings may serve as foundational for policy changes following the COVID-19 pandemic, mainly to improve vaccination rates. There are four potential approaches provided in this study:

First, the use of a combination of evidence-based, electronic-based, and culturally based communication may be a useful approach for the community, especially in dealing with vaccine hesitance and acceptance. Second, collaboration with other sectors, involving police

officers, religious leaders, custom traditional law leaders, heads of divisions of the village, and non-governmental organizations, in the vaccination program may be helpful to improve the vaccination coverage. Third, the use of the “picking-up the ball” system may be beneficial for people lacking access. As health care practitioners, we need to extend our hands to the field to serve the community. This system may also help the elderly and people with disabilities become vaccinated. This system may also help children receive their vaccines in a short time period. Last, establishing priorities may be useful to improve the vaccination rate, especially for those who have not received either the first or second dose of the vaccines. It is noteworthy that establishing priorities does not mean refusing anyone who wants to get the vaccine booster, but rather, it means focusing on those receiving the mandatory vaccines first before boosters. Ideally, the community would use any available vaccines to boost immunity rather than waiting for a specific vaccine due to a lack of information on how the new variant will infect humanity. In addition, priority setting should align with resource distribution and vaccine allocation. However, mismanaged priority setting may affect health, equity, and trust in public health and policymakers (Williams et al., 2021).

Limitations of the study

This study was only conducted in one of the islands in Indonesia; thus, it might not represent the whole context of Indonesia, particularly the vaccine challenges and its strategies to improve the vaccination rate.

CONCLUSION

Despite the mandatory vaccine for each individual in Indonesia, the roles of communication, cross-sectoral innovations, “picking-up the ball” system, and priority setting may be considered as potentially valuable approaches of the COVID-19 vaccine strategies to overcome challenges and accelerate the vaccination rate. However, further studies are needed to validate and confirm these strategies.

CLINICAL RESOURCES

Centers for Disease Control and Prevention <https://www.cdc.gov>

AUTHORSHIP CONTRIBUTION

All authors contributed equally in substantial contributions to conception and design, or acquisition of data, or analysis and interpretation of data; involved in drafting the manuscript or revising it critically for important intellectual content; given final approval of the version to be published. Each author should have participated sufficiently in the work to take public responsibility for appropriate portions of the content; agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. Data collectors were JG, NN, AS.

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CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.

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REFERENCES

- Ab Latiff, J., & Zakaria, Z. (2021). The challenges in implementation of halal vaccine certification in Malaysia. *Journal of Food and Pharmaceutical Sciences*, 9(1), 366–371. <https://doi.org/10.22146/jfps.1147>
- Abfalter, D., Mueller-Seeger, J., & Raich, M. (2020). Translation decisions in qualitative research: A systematic framework. *International Journal of Social Research Methodology*, 24(4), 1–18. <https://doi.org/10.1080/13645579.2020.1805549>
- Antara. (2022). Religious leaders in Sigi are asked to invite the community for a Covid-19 vaccine [in Bahasa]. *Medcom.id*. <https://www.medcom.id/nasional/daerah/0k8X8mak-tokoh-agama-di-sigi-diminta-ajak-masyarakat-untuk-vaksin-covid-19>
- AntaraNews. (2021). Babel implements the "pick up the ball" COVID-19 vaccination system [in Bahasa]. *Antara News*. <https://www.antaraneews.com/berita/2464437/babel-terapkan-vaksinasi-covid-19-sistem-jemput-bola>
- Arifin, B., & Anas, T. (2021). Lessons learned from COVID-19 vaccination in Indonesia: Experiences, challenges, and opportunities. *Human Vaccines & Immunotherapeutics*, 17(11), 3898–3906. <https://doi.org/10.1080/21645515.2021.1975450>
- Astuti, R. K. (2021). Red Zone in Babel: Pangkalpinang City, Bangka, Bangka Barat and Belitung [in Bahasa]. *Sonora.id Bangka*. <https://bangka.sonora.id/read/502789245/zona-merah-di-babel-kota-pangkalpinang-bangka-bangka-barat-dan-belitung?page=all>
- Boyd, A. D., & Buchwald, D. (2021). Factors that influence risk perceptions and successful COVID-19 vaccination communication campaigns with American Indians. *Science Communication*, 44(1), 130–139. <https://doi.org/10.1177/10755470211056990>
- BPSDM Hukum dan HAM. (2021). *Sanctions to refuse vaccinations between rights and obligations*. Ministry of Law and Human Rights of Indonesia. <http://bpsdm.kemkumham.go.id/index.php/publikasi/pojok-penyuluhan-hukum/122-sanksi-menolak-vaksinasi-antara-hak-dan-kewajiban>
- Cabinet Secretariat of Indonesia. (2022). *Indonesia among world's top 5 countries with highest vaccination coverage*. <https://setkab.go.id/en/indonesia-among-worlds-top-5-countries-with-highest-vaccination-coverage/>
- Centers for Disease Control and Prevention (CDC). (2021a). *The possibility of COVID-19 after vaccination: Breakthrough infections*. <https://www.cdc.gov/coronavirus/2019-ncov/vaccines/effectiveness/why-measure-effectiveness/breakthrough-cases.html>
- Centers for Disease Control and Prevention (CDC). (2021b). *Vaccinating homebound persons With COVID-19 Vaccine*. <https://www.cdc.gov/vaccines/covid-19/clinical-considerations/homebound-persons.html>
- Dewi, D. C., Utami, V. Y., & Yusuf, S. Y. M. (2021). Re-modeling of the public service system as a form of policy response to support the new normal (Study at the Mataram City population and civil registration service) [in Bahasa]. *Jurnal Ranah Publik Indonesia Kontemporer (Rapik)*, 1(1), 1–12. <https://doi.org/10.47134/rapik.v1i1.1>
- Dewi, S. A. E. (2021). Komunikasi publik terkait vaksinasi Covid 19 [Public communication regarding Covid 19 vaccination]. *Health Care: Jurnal Kesehatan*, 10(1), 162–167. <https://doi.org/10.36763/healthcare.v10i1.119>
- Dinas Kesehatan Kabupaten Belitung. (2021). Information related to Covid-19 in Belitung [in Bahasa]. *Belitung Department of Health*. <https://covid19.belitung.go.id>
- Disease Control and Health Statistics. (2022). COVID-19 cases, hospitalizations, and deaths by vaccination status. <https://www.doh.wa.gov/Portals/1/Documents/1600/coronavirus/data-tables/421-010-CasesInNotFullyVaccinated.pdf>
- Dyer, O. (2021). Covid-19: Indonesia becomes Asia's new pandemic epicentre as delta variant spreads. *BMJ*, 374, n1815. <https://doi.org/10.1136/bmj.n1815>
- Elvina, L. (2021). Circulating issues of many hospitals "Coviding" patients, This is the answer. *Kompas TV*. <https://www.kompas.tv/artic le/185369/beredar-isu-banyak-rumah-sakit-mengcovidkan-pasien-ini-jawaban-persi>
- Emanuel, E. J., Gounder, C., Osterholm, M., Borio, L., Gawande, A., & Bright, R. (2021). Take whatever COVID vaccine you can get. All of them stop death and hospitalization. *USA Today*. <https://www.usatoday.com/story/opinion/2021/02/12/all-covid-vaccines-stop-death-severe-illness-column/6709455002/>
- Farisa, F. C. (2021). Government confirms people must be vaccinated [in Bahasa]. *Kompas.com*. <https://nasional.kompas.com/read/2021/01/08/13411591/pemerintah-tegaskan-masyarakat-wajib-divaksinasi-covid-19?page=all>
- Fauzia, A., & Hamdani, F. (2021). Socio-cultural approach in the implementation of Covid-19 vaccination in Indonesia. *Seminar Nasional Hukum Universitas Negeri Semarang*, 7(1), 323–338. <https://doi.org/10.15294/snhunnes.v7i1.709>
- Firmanto, T., & Amin, M. (2021). The implementation of the duties of the police to support the implementation of health protocols during the Covid-19 pandemic [in Bahasa]. *Fundamental: Jurnal Ilmiah Hukum*, 10(2), 179–194. <https://doi.org/10.34304/jf.v10i2.56>
- Gunawan, J., Aunguroch, Y., & Fisher, M. L. (2020). One year of the COVID-19 pandemic: Nursing research priorities for the new normal era. *Belitung Nursing Journal*, 6(6), 187–189. <https://doi.org/10.33546/bnj.1255>
- Gunawan, J., Aunguroch, Y., & Marzilli, C. (2020). 'New normal' in COVID-19 Era: A nursing perspective from Thailand. *Journal of the American Medical Directors Association*, 21(10), 1514–1515. <https://doi.org/10.1016/j.jamda.2020.07.021>
- Gunawan, J., Aunguroch, Y., Marzilli, C., Fisher, M. L., & Sukarna, A. (2021). A phenomenological study of the lived experience of nurses in the battle of COVID-19. *Nursing Outlook*, 69(4), 652–659. <https://doi.org/10.1016/j.outlook.2021.01.020>
- Harahap, A. (2021). Posyandu elderly as an alternative health care program. *International Journal of Community Service*, 1(3), 365–369. <https://doi.org/10.51601/ijcs.v1i3.51>
- Harapan, H., Wagner, A. L., Yufika, A., Winardi, W., Anwar, S., Gan, A. K., Setiawan, A. M., Rajamoorthy, Y., Sofyan, H., & Mudatsir, M. (2020). Acceptance of a COVID-19 vaccine in Southeast Asia: A cross-sectional study in Indonesia. *Frontiers in Public Health*, 8, 1–8. <https://doi.org/10.3389/fpubh.2020.00381>

- Media Indonesia. (2022). COVID-19 vaccination in Bangka Belitung Province will achieve 100% [in Bahasa]. <https://www.medcom.id/nasional/daerah/GNGAI0dk-februari-vaksinasi-covid-19-di-babel-capai-100>
- Jin, Q., Raza, S. H., Yousaf, M., Zaman, U., & Siang, J. M. L. D. (2021). Can communication strategies combat COVID-19 vaccine hesitancy with trade-off between public service messages and public skepticism? Experimental evidence from Pakistan. *Vaccines*, 9(7), 757. <https://doi.org/10.3390/vaccines9070757>
- Kawal COVID19. (2022). Covid-19 vaccine situation today. <https://kawal.covid19.id>
- Khadafi, R., Nurmandi, A., Qodir, Z., & Misran. (2022). Hashtag as a new weapon to resist the COVID-19 vaccination policy: A qualitative study of the anti-vaccine movement in Brazil, USA, and Indonesia. *Human Vaccines & Immunotherapeutics*, 18(1), 1-9. <https://doi.org/10.1080/21645515.2022.2042135>
- Lambert, V. A., & Lambert, C. E. (2012). Qualitative descriptive research: An acceptable design. *Pacific Rim International Journal of Nursing Research*, 16(4), 255-256.
- Lukihardianti, A., Febryan, A., & Subarkah, M. (2021). Community enthusiastic mosque becomes vaccination place [in Bahasa]. *Republika*. <https://www.republika.co.id/berita/qx29cu385/masyarakat-antusias-masjid-menjadi-tempat-vaksinasi>
- Mardian, Y., Shaw-Shaliba, K., Karyana, M., & Lau, C.-Y. (2021). Sharia (Islamic Law) perspectives of COVID-19 vaccines [Perspective]. *Frontiers in Tropical Diseases*, 2, 1-8. <https://doi.org/10.3389/fitd.2021.788188>
- Merkley, E., & Loewen, P. J. (2021). Assessment of communication strategies for mitigating COVID-19 vaccine-specific hesitancy in Canada. *JAMA Network Open*, 4(9), e2126635. <https://doi.org/10.1001/jamanetworkopen.2021.26635>
- Milena, S. (2022). Motorcyclists vaccine raid, police appreciate by serving free culinary & food distribution [in Bahasa]. *Kompas TV*. <https://www.kompas.tv/article/247460/razia-vaksin-pengendara-motor-polisi-apresiasi-dengan-menyajikan-kuliner-gratis-pembagian-sembako>
- Ministry of Health of Indonesia. (2021). COVID-19 vaccination program begins, President is first person to receive COVID-10 vaccine injection [in Bahasa]. <http://p2p.kemkes.go.id/program-vaksinasi-covid-19-mulai-dilakukan-presiden-orang-pertama-penerima-suntikan-vaksin-covid-19/>
- Muhtarom, I. (2021). Hospital answers hoax related to patients claimed to be positive Covid-19 in WA groups. *Tempo.co*. <https://nasional.tempo.co/read/1479645/rumah-sakit-jawab-soal-hoaks-pasien-dicovidkan-yang-banyak-beredar-di-grup-wa>
- Nugraha, R. R., Miranda, A. V., Ahmadi, A., & Lucero-Priso, D. E. (2021). Accelerating Indonesian COVID-19 vaccination rollout: a critical task amid the second wave. *Tropical Medicine and Health*, 49(1), 76. <https://doi.org/10.1186/s41182-021-00367-3>
- O'Brien, K. (2021). Episode #49 - Can I get infected after vaccination? *Science conversation*. World Health Organization <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/media-resources/science-in-5/episode-49-can-i-get-infected-after-vaccination>
- Our World in Data. (2021). Coronavirus (COVID-19) vaccinations. <https://ourworldindata.org/covid-vaccinations>
- Patton, M. Q. (2015). *Qualitative research & evaluation methods: Integrating theory and practice* (4th ed.). Sage.
- Pereira, B., Fehl, A. G., Finkelstein, S. R., Jiga-Boy, G. M., & Caserotti, M. (2022). Scarcity in COVID-19 vaccine supplies reduces perceived vaccination priority and increases vaccine hesitancy. *Psychology & Marketing*, 39(5), 921-936. <https://doi.org/10.1002/mar.21629>
- Razali, H. (2021). Vaccination in mosques make it easier for residents [in Bahasa]. <https://www.bharian.com.my/berita/nasional/2021/06/827731/suntikan-vaksin-di-masjid-mudah-kan-penduduk>
- Saarijärvi, M., & Bratt, E.-L. (2021). When face-to-face interviews are not possible: tips and tricks for video, telephone, online chat, and email interviews in qualitative research. *European Journal of Cardiovascular Nursing*, 20(4), 392-396. <https://doi.org/10.1093/eurjcn/zvab038>
- Sari, A. S., Hapsari, E. D., & Widyawati, W. (2020). Effect of using an android-based module on knowledge and attitude of nursing students about the provision of transcultural nursing. *Belitung Nursing Journal*, 6(1), 8-13. <https://doi.org/10.33546/bnj.783>
- Satuan Tugas Penanganan COVID-19. (2021). COVID-19 map. <https://covid19.go.id>
- Setiawan, R. (2021). MUI allows use of Moderna vaccine even though it is Haram to contain pork [in Bahasa]. *Tirto.id*. <https://tirto.id/mui-perbolehkan-gunakan-vaksin-moderna-meski-haram-mengandung-babi-gjaR>
- Simanjuntak, R. A. (2021). No need to worry, MUI says these 3 vaccines can be used [in Bahasa]. *Sindonews.com*. <https://nasional.sindonews.com/read/526350/15/tak-perlu-khawatir-mui-sebut-3-vaksin-ini-boleh-digunakan-1630303721>
- Simon, S., Tampenawas, A. R., Santoso, J., Nainupu, A. M. Y., Angkouw, S. R., & Poluan, A. (2021). Participation of religious leaders in helping the success of the government's COVID-19 vaccination program. *Evangelikal: Jurnal Teologi Injili dan Pembinaan Warga Jemaat*, 5(2), 234-245. <https://doi.org/10.46445/ejti.v5i2.405>
- Tong, A., Sainsbury, P., & Craig, J. (2007). Consolidated criteria for reporting qualitative research (COREQ): A 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*, 19(6), 349-357. <https://doi.org/10.1093/intqhc/mzm042>
- Vaismoradi, M., Jones, J., Turunen, H., & Snelgrove, S. (2016). Theme development in qualitative content analysis and thematic analysis. <https://doi.org/10.5430/jnep.v6n5p100>
- Vaismoradi, M., Turunen, H., & Bondas, T. (2013). Content analysis and thematic analysis: Implications for conducting a qualitative descriptive study. *Nursing & Health Sciences*, 15(3), 398-405. <https://doi.org/10.1111/nhs.12048>
- WHO. (2021). WHO validates Sinovac COVID-19 vaccine for emergency use and issues interim policy recommendations. <https://www.who.int/news/item/01-06-2021-who-validates-sinovac-covid-19-vaccine-for-emergency-use-and-issues-interim-policy-recommendations>
- Williams, I., Essue, B., Nouvet, E., Sandman, L., Razavi, S. D., Noorhuda, M., Gool, S., Danis, M., Biemba, G., Abelson, J., & Kapiriri, L. (2021). Priority setting during the COVID-19 pandemic: Going beyond vaccines. *BMJ Global Health*, 6(1), e004686. <https://doi.org/10.1136/bmjgh-2020-004686>
- Winarti, E., Wahyuni, C. U., Rias, Y. A., Mirasa, Y. A., Sidabutar, S., & Wardhani, D. L. (2021). Citizens' health practices during the COVID-19 pandemic in Indonesia: Applying the health belief model. *Belitung Nursing Journal*, 7(4), 277-284. <https://doi.org/10.33546/bnj.1560>
- Yanto, T. A., Octavius, G. S., Heriyanto, R. S., Ienawi, C., Nisa, H., & Pasai, H. E. (2021). Psychological factors affecting COVID-19 vaccine acceptance in Indonesia. *The Egyptian Journal of Neurology, Psychiatry and Neurosurgery*, 57(1), 177. <https://doi.org/10.1186/s41983-021-00436-8>

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