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Review

The urgency of strengthening health information to support public perception and involvement in the COVID-19 vaccine

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COVID-19 vaccine
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A B S T R A C T

Objective: To identify the driving and inhibiting factors and to find a prototype of community involvement in the COVID-19 vaccine.
Method: Data sources from PubMed database, Google Scholar, Web of Science, and ProQuest. The data were obtained based on searches using the keyword COVID-19 (n = 11,.599), focusing on community acceptance (n = 813), community involvement (n = 86), and types of articles (n = 46). Articles that meet the inclusion criteria are seven, and the data were analyzed with ATLAS Ti.9 software.
Results: Engagement and driving factors have the highest correlation (0.38). The drivers, perceptions of vulnerability, and inhibiting factors determine community involvement. The perception of exposure can be a supporting or inhibiting factor influenced by information reinforcement.
Conclusions: Strengthening positive information can alter the sense of community vulnerability, making it a driving force for participation in the COVID-19 vaccine campaign. This finding is an appropriate strategy to expand the reach and resolve public doubts about accepting the vaccine.

La urgencia de fortalecer la información de salud respalda la participación comunitaria en la vacuna contra la COVID-19

Palabras clave:
Vacuna COVID-19
Participación comunitaria
Apoyo comunitario
Prototipo de participación comunitaria
Confianza
Fortalecimiento de la información en salud
Percepción de vulnerabilidad

R E S U M E N

Objetivo: Identificar los factores impulsores e inhibidores y encontrar un prototipo de participación comunitaria en la vacuna contra la COVID-19.
Método: Fuentes de datos de las bases de datos PubMed, Google Scholar, Web of Science y ProQuest. Los datos totales se basan en búsquedas con la palabra clave COVID-19 (n = 11.599), centrándose en la aceptación de la comunidad (n = 813), la participación de la comunidad (n = 86) y los tipos de artículos de investigación (n = 46). Los artículos que cumplieron con los criterios de inclusión fueron siete. Los datos se analizaron con el *software* ATLAS Ti.9.
Resultados: El compromiso y los factores impulsores tienen la correlación más alta (0,38). La participación de la comunidad está determinada por tres factores: impulsores, percepciones de vulnerabilidad e inhibidores. La percepción de vulnerabilidad puede ser un factor de apoyo o de inhibición que se ve influido por el refuerzo de la información.
Conclusiones: Fortalecer la información positiva puede cambiar la percepción de vulnerabilidad de la comunidad para que se convierta en un factor motivador para que esta se involucre en la vacuna contra la COVID-19. Este hallazgo es una estrategia adecuada para ampliar el alcance y resolver las dudas del público sobre la aceptación de la vacuna contra la COVID-19.

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Introduction

The COVID-19 pandemic has changed all aspects of human life. Every nation attempts to prevent the spread by boosting widespread immunity through vaccination programs. The target population for the distribution of vaccines in Indonesia is 208,266,720 individuals. Dose 1 and 2 that has been administered to 124,156,167 (19.61%) and 78,114,072 (37.51%) recipients on November 6, 2021 did not meet this target.[1,2] Meanwhile, vaccine acceptance rates in several countries were recorded, and China was the highest recipient country at 91.3%, followed by European countries and the United States at 74% and 67%.[3] Distrust and doubt in the government are the main obstacles to the failure of the vaccine.[4] This literature study has a distinct benefit over prior studies, specifically the development of grounded theory through qualitative analysis with ATLAS.ti9.

The reason for the reluctance to get involved in the vaccine is the concern about the effect[5] due to a history of past diseases such as heart and respiratory[6] and the reluctance to receive vaccines. People who lack adequate documentation fear being humiliated, rejected, and made a burden on the state if they visit vaccination centers.[7] The same opinion was conveyed by previous research on reluctance due to doubts and inequality of vaccines. Furthermore, political and religious conspiracy theories discourage Pakistanis from receiving vaccines.[8]

Based on this data, the formulation of the problem in writing a literature review is: what are the driving and inhibiting factors for community involvement in the COVID-19 vaccine? How is the community involved in the vaccine? Therefore, this literature review is useful as a strategy to succeed and support the implementation of the vaccine program.

Carson et al.,[7] described community involvement in the COVID-19 vaccine as determined by trust in medical personnel, perception of infection, and safety. Sethi et al.[9] explored the driving and inhibiting factors for the absorption and conducted a quantitative analysis. The main obstacle to the vaccine's success was dispelling public doubts about the side effect.[9] This literature review has an advantage that previous research has not conducted, namely developing grounded theory through qualitative analysis using ATLAS.Ti9 software after analyzing several selected articles. Therefore, this literature review is a development of previous theoretical concepts that are systematic and can be accounted for their objectivity and validity.

The theoretical basis for building this prototype uses the Health Belief Model theory, adding to the perception of vulnerability. A person will take action to prevent disease and be willing to be vaccinated when they have low confidence and are susceptible to disease. Vaccines are believed to reduce their susceptibility to COVID-19 and encourage them to take positive action.[10]

This literature review aims to identify the factors that encourage and discourage community participation in the vaccine program. Therefore, this literature review found the right strategy to expand the reach and resolve public doubts on receiving the vaccine.

Method

The literature review uses secondary data from previous studies, and data collection was carried out for 1 week. The data search was conducted through the PubMed database, Google Scholar, Scopus, Web of Science, and Proquest. The search used the "boolean searching" method using the keywords "community engagement" AND "COVID-19 vaccine" AND "vaccine program" AND "vaccine acceptance" AND "community participation". The tracing steps for determining samples using PRISMA developed by Page et al.[11] are described in Figure 1.

The total search for data based on the COVID-19 vaccine (n = 11,599) focused on public acceptance (n = 813) and community involvement (n = 86), then searched by type of article (n = 46). Furthermore, from 46 types, the selected articles were analyzed based on the PICOS inclusion criteria: 1) community population; 2) without intervention; 3) without comparison; 4) outcome: factors supporting, inhibiting, and accepting the vaccine; 5) research articles; 6) articles published in 2021; and 7) English.

Each article was studied and analyzed according to the inclusion criteria. Many articles were eliminated because they did not meet the criteria, including an intervention. The results section did not describe the specified variables, and the research year was not 2021. The articles were analyzed using the qualitative software ATLAS.Ti9 after carrying out the identification, screening, and criteria determination stages. Articles that meet the criteria are stored in one folder and inputted into the ATLAS.Ti9 software for further data analysis.

A total of seven international articles met the criteria and were sampled for synthesis and analysis. The inclusion criteria "outcome" was determined according to the purpose of writing a literature review. Variables were included in the PICOS method to reveal the factors that supported the community being involved and the vaccine. The issues that prevented the population from receiving immunizations were also identified, and the rationale for receiving the vaccine was examined in depth.

The seven articles that fit the criteria were examined, synthesized, and displayed in Table 1.

Results

The literature review results were obtained after carrying out the stages of identification, screening, and determining criteria until seven articles were analyzed. The articles were analyzed using the qualitative software ATLAS.Ti9. A literature review showed encouraging, inhibiting, and community involvement in the COVID-19 vaccine.

In accordance with writing to show community involvement, a variable construct was built based on the Health Belief Model theory, supported by Adebisi et al.[12] and Jones et al.[10], which describes that messages or information can optimally achieve behavior change when they target obstacles. Therefore, factors that hinder the administration of the COVID-19 vaccination should be investigated in depth based on several prior research. According to Jones et al.[10], self-efficacy can affect barriers, while self-confidence plays an important role in acting. This was described in the campaign (self-efficacy (perceived inhibition) scheme.

The three themes that became the purpose of writing a literature review were driving factors, inhibiting factors, and perceptions of vulnerability[12]. As illustrated in Figure 2, seven themes or constructs were obtained.

The results of data analysis showed that seven themes are related to driving factors, inhibiting factors, and perceptions of community vulnerability. Previous studies analyzed seven articles with similarities and differences. In several countries such as America, Carson's research[7] found that people's reluctance to participate in vaccination programs results from one day of lost productivity. Green et al.[13] states that the inhibiting factor for people to receive the vaccine is their beliefs and doubt. Seale et al.[14] explained that Australians are involved in the vaccine because they are susceptible to the disease. Therefore, people with chronic diseases are 1.4 times more likely to strongly agree to be vaccinated, in addition to family support. The results are the basis for the perception of vulnerability which is a variable between the driving and inhibiting factors. Based on research by Jones et al.[10], Green et al.[13] and Seale

Table 1
Synthesis of previous research.

Author, year	Title	Aim	Design, samples and measurements	Technical analysis	Results
Carson et al.[7], 2021	COVID-19_ vaccine_ decision-making_ factors_ in_ racial_ and_ ethnic_ minority_ Communities_ in_ Los_ Angeles_ California	Finding factors that influence the decision-making process in receiving the COVID-19 vaccine Finding public trust and acceptance of the COVID-19 vaccine	Kualitatif desain deskriptif Jumlah informan 70 orang. Data dikumpulkan dengan Focus group discussion Qualitative descriptive design The number of informants is 70 people Data collected by Focus group discussion	Data obtained from interviews Data analysis was compiled in the transcript of the interview results ATLAS.Ti9 Analysis	There are 37 informants received vaccines if available People need correct information and reliable sources, direct information from health workers provides peace of mind Fear of black people being treated differently from whites, fear of being the subject of experimentation and ill-treatment Barriers to access, it takes one day off work if they are willing to be vaccinated
Sethi et al.[9], 2021	The_ UPTAKE_ study:_ a_ cross-sectional_ survey_ examining_ the_ insights_ and_ beliefs_ of_ the_ UK_ population_ on_ COVID-19_ vaccine_ uptake_ and_ hesitancy	Discover the challenges of successful implementation of the COVID-19 vaccine, examine the drivers and barriers to acceptance of the Covid-19 vaccine	Cross sectional design, carried out with an online survey via Facebook, Twitter, LinkedIn and Instagram	The analysis was performed using a nultinominal logistic regression test	Respondents who are interested and agree to receive the vaccine (79.3%) Educated respondents agree with vaccines compared to uneducated There are reasons respondents did not receive the vaccine including; disinterested, unsure, distrustful, vaccine safety, as a trial, and fear The reason for increasing vaccine acceptance is due to the imbalance in the number of deaths and patients being treated
Green et al.[13], 2021	A_ study_ of_ ethnic_ gender_ and_ educational_ differences_ in_ attitudes_ toward_ COVID-19_ vaccines_ in_ Israel_ implications_ for_ vaccination_ implementation_ policies	Assessing ethnicity and sociodemographic factors of attitudes towards the COVID-19 vaccine	Cross sectional survey research design Data was collected using an online questionnaire in October 2020 The sample was 957 adults over the age of 30, consisting of 606 Jews and 351 Arabs	Descriptive analysis measures the percentage, the comparison of prevalence between groups using the chi-square test Multiple logistic regression test examines the relationship between variables	There are 23.1% Arab respondents and want to get vaccinated immediately compared to 13.6% Jews Higher education has few doubts about vaccines Confidence in vaccines is driven by government policies in imposing less stringent restrictions
Abdelhafiz et al.[18], 2021	Factors_ Influencing_ Participation_ in_ COVID-19_ Clinical_ Trials_ A_ Multi-National_ Study	Analyzing public perceptions and attitudes towards the COVID-19 vaccine clinical trial	The study used a cross sectional design, data was collected using Google forms via social media Facebook, WhatsApp, LinkedIn and distributed to Egypt, and Jordan	The psychometric questionnaire was analyzed by assessing the intra-class correlation coefficient Cronbach alpha assessed the consistency of the questionnaire Pearson correlation analysis calculates the total correlation	The majority of respondents' attitudes towards vaccine trials stated their willingness to participate (57.6%) Female respondents have a negative attitude compared to males in receiving vaccine trials living in urban areas Attitude in receiving the COVID-19 vaccine is positively correlated with the country of residence
Thompson et al.[17], 2021	Factors_ Associated_ With_ Racial/Ethnic_ Group–Based_ Medical_ Mistrust_ and_ Perspectives_ on_ COVID-19_ Vaccine_ Trial_ Participation_ and_ Vaccine_ Uptake_ in_ the_ US	Testing the acceptability of the COVID-19 vaccine trial	The study was conducted by means of a survey of 1835 people in Michigan. The sample selection using purposive sampling technique was distributed to nine community organizations	Socio-demographic data is calculated in percentage, continuous data based on mean and standard deviation Relationships were analyzed by path analysis	There is a relationship between medical distrust based on the race of certain groups Blacks are more likely to refuse vaccines than whites A total of 45% of black respondents reported negative experiences from medical personnel

Table 1 (*Continued*)

Author, year	Title	Aim	Design, samples and measurements	Technical analysis	Results
Seale et al.[14], 2021	Examining_ Australian_ public_ perceptions_ and_ behaviors_ towards_ a_ future_ COVID-19_ vaccine	Ensuring community readiness to administer the COVID-19 vaccine Understand the Australian public's perception of the COVID-19 vaccine	A cross sectional survey was conducted on 1420 samples of Australian adults aged 18 years and over	Data analysis using logistic model regression	The majority of respondents (80%) have a positive view of the COVID-19 vaccine Women are more likely to agree than men Respondents with chronic disease 1.4 times agreed to receive the vaccine. The decision to receive the vaccine is supported by family and friends
Adebisi et al.[12], 2021	When_ it_ is_ available_ will_ we_ take_ it? Social_ media_ users'_ perception_ of_ hypothetical_ COVID-19_ vaccine_ in_ Nigeria	Understanding the perception of social media users regarding the COVID-19 vaccine in Negeria	A cross sectional survey, using an online questionnaire, including demographic characteristics and perceptions of vaccines. The sample is 517 respondents	Data analysis using STATA 14	The majority of respondents were male (56.9%) and a number (74.5%) intended to receive the vaccine, the remaining 25.5% had received the vaccine The reason for refusal was because clinical trials were not valid, they had the perception that they would not contract COVID-19 because they believed their immune system was good Based on the results of the mapping analysis (STATA) it was obtained that geographic location was related to acceptance of the COVID-19 vaccine

Source: primary data (2021).

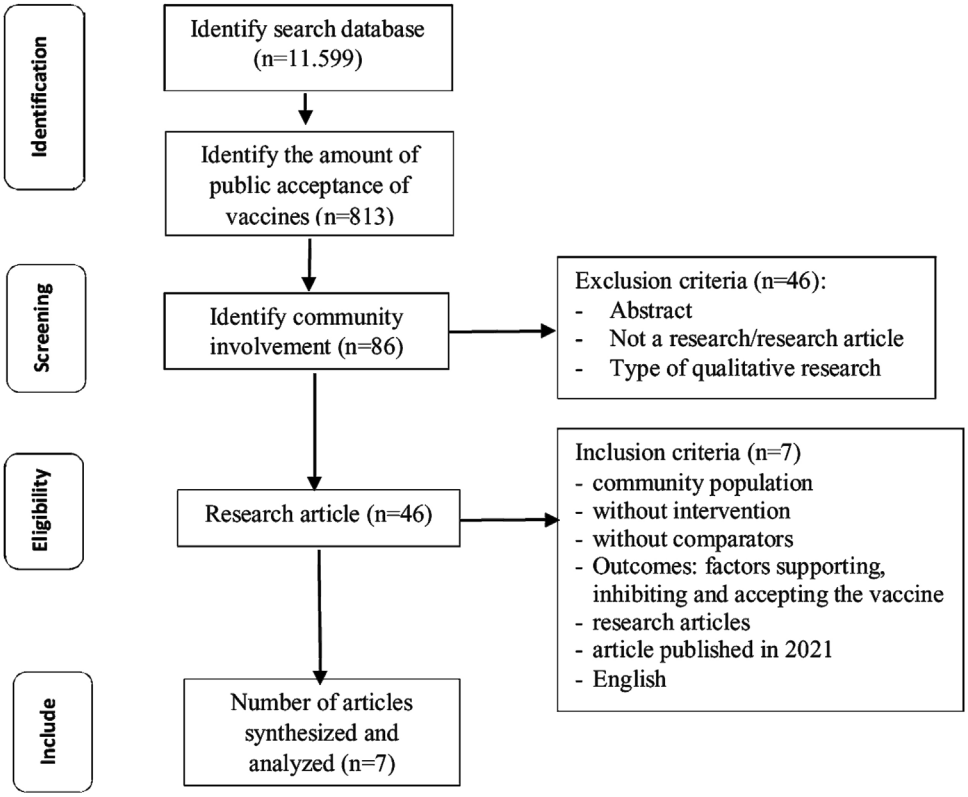

Figure 1. Diagram of the process of searching for community involvement data in the COVID-19 vaccine.

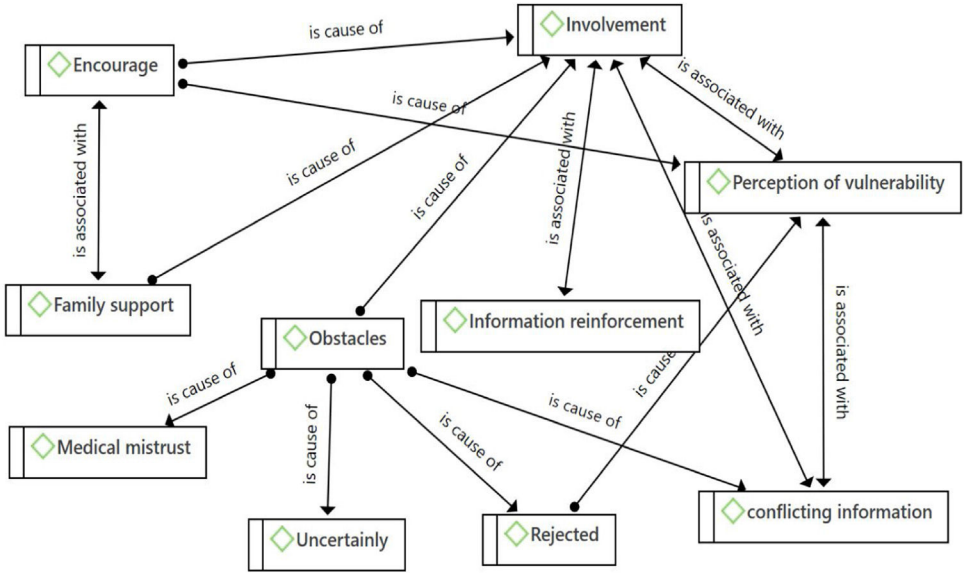

Figure 2. The results of the analysis of the research theme.

et al.[14], it is important to add the perception of vulnerability as a constructed variable in the prototype.

Some of the themes were found using the ATLAS.Ti9 software is the basis for developing the theory. The next phase in producing this theory is to examine the tight relationship between the literature study's themes and create a prototype model based on grounded theory. Meanwhile, the co-occurrence values are shown in Table 2.

The theme that has a very strong relationship is community involvement with driving factors ($p = 0.38$), family support ($p = 0.13$) and information reinforcement ($p = 0.10$). The inhibiting factor has a strong relationship with the theme of rejection ($p = 0.32$), conflicting information ($p = 0.25$), drug distrust ($p = 0.25$), perception of vulnerability ($p = 0.14$), and conflicting information ($p = 0.10$). Furthermore, vaccine refusal was caused by distrust of the drug (score = 0.14), and conflicting information is related to reinforcement ($p = 0.18$).

The novelty of this research is the development of a grounded theory in the form of community involvement in the COVID-19 vaccine (Fig. 3).

Figure 3 explains that community involvement is caused by driving factors, inhibiting factors, and perceptions of vulnerability. It is related to strengthening information, conflicting information, and perceptions of vulnerability. Family support and perceptions of vulnerability encourage people to administer the COVID-19 vaccine. There were four causes of inhibiting factors, namely distrust of drugs, uncertainty, rejection, and conflicting information.

Discussion

Community involvement in the COVID-19 vaccine is determined by drivers, perceptions of vulnerability, and inhibiting factors. The perception of vulnerability can be a supporting or inhibiting factor influenced by information reinforcement. Strengthening positive information can alter the impression of community vulnerability, making it a compelling element for the community to participate in the COVID-19 vaccine. Family support and information reinforcement encourage community involvement. The incentive to encourage people to be vaccinated must be bolstered because they have been dissatisfied with previous medical care, resulting from informational uncertainty.[7] Intention to receive vaccines is influenced by motivation and psychological factors.[15]

The perception of vulnerability to being exposed to COVID-19 is an influential factor in community involvement in vaccine programs. As supported by earlier research, people with a low perception of becoming infected are reluctant to obtain the vaccine. The study explains the great confidence associated with involvement in the vaccine program. The people with confidence not to be exposed are reluctant to join the vaccine program.[16,17]

The inhibiting factors for community involvement in vaccines are conflicting information, mistrust of drugs due to uncertainty, and vaccine resistance. Relevant to previous research, the attitude of choosing not to play a role is significant to a lack of trust in doctors and nurses.[18] The combination of health workers, professionals, and the role of the media is important to stop the pandemic.[19]

The prototype model of community involvement is the government's strategy to increase the reach of the vaccine program by strengthening information. In line with these findings, Schoch-Spana et al.[20] stated that the government and policymakers in the health sector are expected to find solutions to overcome this crisis. The acceptance strategy dispelled doubts about the vaccine's effect,[9] and the public has considerations to deciding on vaccines, efficacy, safety, and public distrust of medical personnel. Perceptions of the risk of contracting COVID-19, emotional state, socio-political, mistrust, economic stability, and mental disorders.[7]

Strengthening information is a driving factor for community involvement in the COVID-19 vaccine, and the wide acceptance through large-scale campaigns is important to consider.[20] It is difficult to build public trust in vaccines, hence health workers need to open information posts and provide brochures containing correct information about vaccines.[7] A survey by the Ministry of Health noted that respondents with low education had little knowledge about vaccines. The knowledge increases with increasing education and socioeconomic status.[21]

Safe and quality vaccines are a challenge for all countries worldwide, and public communication is a key factor to be considered. The people of Indonesia and the rest of the world distrust vaccines and choose not to obtain their respective vaccinations. Meanwhile, people with good awareness of vaccines will voluntarily be vaccinated.[22] The reasons for rejection based on a survey conducted in Indonesia were dominated by vaccine safety (30%), doubting the effectiveness (22%), not believing in the effect (13%), fear of side effects (12%), and religious factors (8%).[21] Relevant to the results,[23] the reasons for not being willing to receive the vaccine were due

Table 2
Co-occurrence value of research themes.

	Conflicting information (5)	Encourage (14)	Family support (2)	Information reinforcement (8)	Involvement (15)	Medical mistrust (5)	Obstacles (15)	Perception of vulnerability (9)	Rejected (10)	Uncertainly (2)
Conflicting information (5)				2 (0.18)			4 (01.25)	(0.08)	1 (0.07)	1 (0.07)
Encourage (14)			2 (0.14)		8 (0.38)		1 (0.04)	2 (0.10)		
Family support (2)		2 (0.14)			2 (0.13)					
Information reinforcement (8)	2 (0.18)				2 (0.10)		2 (0.10)	2 (0.13)		1 (0.11)
Involvement (15)		8 (0.38)	2 (0.13)	2 (0.10)			1 (0.03)	1 (0.04)		
Medical mistrust (5)							4 (0.25)		3 (0.25)	
Obstacles (15)	4 (0.25)	1 (0.04)		2 (0.10)	1 (0.03)	4 (0.25)		3 (0,25)	6 (0.32)	1 (0.06)
Perception of vulnerability (9)	1 (0.08)	2 (0.10)		2 (0.13)	1 (0.04)		3 (0.14)			
Rejected (10)	1 (0.07)					3 (0.25)	6 (0.32)			1 (0.09)
Uncertainly (2)	1 (0.17)			1 (0.11)			1 (0.06)		1 (0.09)	

Source: primary data (2021)

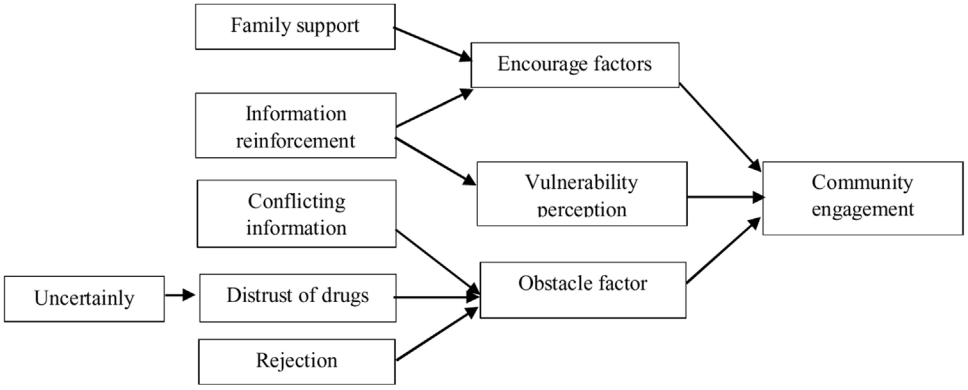

Figure 3. Community engagement prototype.

to side effects (65.5%) and lack of trust (55.2%). A previous study on 537 samples (91.2%) of COVID-19 vaccine recipients reported side effects.[24]

Community participation in stopping the spread of COVID-19 is in the form of support for the environment, complying with large-scale social restrictions, and implementing health protocols. Bangladesh is carrying out a massive campaign to mobilize public participation in the program of up to seven million doses. However, most people are hesitant to receive the vaccine out of fear.[25,26]

Vaccine doubt is a big problem in the world,[27–31] and in Indonesia, community participation in the programs is still low.[32–34] Doubts on vaccines have prevented people from participating in clinical trials of COVID-19 vaccines.[13,35] Contrary to previous studies, vaccine coverage is still low (37.5%) in the United Kingdom. The government's policy to prioritize vaccines for elderly groups vulnerable to the pandemic spread was accepted by 86% of respondents.[3] Older age and the male gender were more likely to participate in vaccine trials. Likewise, health care personnel at risk and likely to engage in vaccination clinical trials are eligible. The willingness to receive vaccines in the elderly group is higher.[28,36]

Various factors determine vaccine acceptance at different rates. The COVID-19 pandemic emergency response strategy built solidarity to foster public awareness, trust, and participation. Furthermore, drug mistrust due to uncertainty is an obstacle to vaccine programs. Community leaders are involved in preventing the spread of COVID-19 infection by planning, building trust, and supervising the implementation of health protocols and vaccine programs.[37–39] Positive public perception in Osun State - Nigeria is significantly related to the willingness to receive vaccines.[40] Accurate information about vaccines is the main factor in increasing public acceptance of Saudi Arabia. Samples with reliable information are more willing to be vaccinated than those unaware of the advantages of vaccines.[41] Meanwhile, vaccine awareness is high due to getting the right information.[42,43]

Community involvement in receiving the COVID-19 vaccine differs in each country, depending on the socio-cultural background. The rejection of vaccines in the United States is influenced by religious, cultural, and political aspects. Conflict exists between liberal groups who reject vaccines and conservative groups who support the movement.[44] Socioeconomic disparities and fear of different treatment between black and white races hinder the wide coverage of the vaccine in America.[7] A survey in the United Kingdom in September 2020 involving 4,884 respondents found that vaccine coverage was influenced by government policies prioritizing the elderly, groups at risk for COVID-19 complications, educational background, and high awareness of the importance of eliminating doubts about receiving vaccines because of the information received, and the imbalance between the number of deaths.[9]

Indonesian society adheres to the religious value of 96%, but the rejection of science is minimal. The reasons for the refusal are religion, health, ideology, and culture.[44] In a study of 900 participants in Israel, the low acceptance rate in the Arab population is significant to the development of vaccines and misinformation from the media.[13] Since building public trust in vaccines is difficult, it is necessary to convey information through public communication and

counseling.[45,46] The correct information is essential to adopting vaccines, as highlighted by several prior research.

Concerning the limitations of the literature review, it is necessary to demonstrate or prove the underlying reality of this theory by original research on the subject since the outputs are grounded theory rather than generic judgments on the subject group. Testing the theoretical concept requires confirmatory factor analysis and structural testing models. Another limitation is that the selected articles determine research results. Therefore, the accuracy of setting the PICOS criteria determines the quality of research results.

Conclusions

Community involvement in the COVID-19 vaccine is influenced by driving factors, perceptions of vulnerability, and inhibiting factors. Information reinforcement becomes a driving factor that will increase awareness, and trust, eliminate doubts and strengthen perceptions of vulnerability to suppress inhibiting factors. Therefore, the media, religious leaders, and other social organizations should be used more effectively to disseminate information to increase vaccination rates.

Availability of databases and material for replication

Research data available to the author.

Editor in charge

Gonzalo Casino.

Authorship contributions

T.N. Utami: research draft, collect data, analysis, and discussion. F.P. Gurning: colect data, discussion, conclusions. E. Eliska: collecting literature, selecting literature. D. Ayu A: collect data, and discussion. Z. Aidha: data analysis, and conclusions. R.A. Harahap: editing and conclusion.

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Conflicts of interest

None.

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