

Implementation Model of Acceptance of Covid-19 Booster Vaccine in Elderly in Bogor City

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ABSTRACT

Objective: The major impact of COVID-19 occurs especially on the elderly, however the vaccination achievement rate among them tends to be low. The COVID-19 vaccination strategy for the elderly must still be implemented even though WHO has been revoked the Public Health Emergency of International Concern (PHEIC) status for COVID-19. One approach that can be taken is to empower the elderly in the vaccination process. This research aims to see the effectiveness of changes in knowledge, attitudes and behavior of the elderly regarding acceptance of the COVID-19 vaccine after receiving educational intervention using modules using the peer group method. **Method:** Quasi-experiment with a one-group pretest-posttest pattern. The research was conducted at the North Bogor Community Health Center in April-June 2023 on 66 elderly people taken using a purposive sampling technique. The questionnaire is used to look at characteristics, vaccine history, assess respondents' knowledge, attitudes and behavior regarding the COVID-19 situation. Data collection went through three stages, namely pre-test distribution, peer group method using module-19 and post-test distribution. Bivariate analysis with dependent t-test using SPSS 23.0 software. **Results:** The majority of elderly people were aged 60-74 years (90.9%) and there was a significant increase ($p < 0.05$) in the average score of knowledge, attitudes and behavior of elderly people before and after being given the intervention. The average knowledge score before intervention was 69.60 ± 9.51 and after intervention 80.30 ± 10.29 , attitude score before intervention 80.43 ± 9.61 and after intervention 85.25 ± 11.99 , and behavior score before intervention 86.29 ± 14.67 and after intervention 90.35 ± 10.34 . **Conclusion:** implementation of the model with intervention modules is effective in increasing knowledge, attitudes and behavior. It is hoped that with this increase, elderly people will be able to receive the COVID-19 vaccine.

Keywords: Peer group, Module, Knowledge, Attitudes, Behavior, Acceptance of the COVID-19 Vaccine.

INTRODUCTION

The impact of development and technological progress has increased, and in 2021, the proportion of elderly people will reach 10.82 percent or around 29.3 million people in Indonesia. This number shows that Indonesia has entered a phase of aging population structure, which is marked by the proportion of people aged 60 years and over in Indonesia which has exceeded 10 percent of the total population (1). This large number will not be a problem if they remain healthy. However, if they experience illness or health problems, this can be a heavy burden for the state and society. Therefore, efforts need to be made to ensure that the elderly remain healthy, independent, active and productive (2).

Even though the PHEIC (Public Health Emergency of International Concern) status regarding COVID-19 has been revoked, considering the major impact of COVID-19, especially on the elderly, additional prevention efforts need to be taken through vaccination. Even though the COVID-19 vaccine has been proven to be effective, there has been a decrease in vaccine efficacy and the emergence of virus mutations. Therefore, a booster dose of vaccine is needed (3).

The vaccination achievement rate for the elderly tends to be low so far, and it is necessary to look for new strategies to increase it (4). One approach

that can be taken is to empower the elderly in the vaccination process. The aim is to change the knowledge, attitudes and behavior of older people regarding vaccination, and support positive changes in society as a whole.

Challenges often faced in accepting vaccines by seniors involve fear of side effects, distrust of vaccines, and barriers to accessibility. To overcome this challenge, it is important to have effective education and clear communication regarding the benefits and safety of vaccines. Peer groups can play an important role in providing information and support to the elderly. This educational method can be used to promote various health education programs, for example to improve health and prevent disease, especially in the health sector of elderly communities (5).

Peer group material must include accurate information about vaccines, their benefits, and also explain the risks and benefits of vaccination. They should also have knowledge about possible side effects and how to deal with them. In many cases, training for peer group members or other target mobilizers is needed so that they can provide accurate information and understand how to communicate with older people well (4).

Short educational programs have proven successful in providing an easy to implement and effective way to educate and empower communities to understand emerging risks (6). In addition, educational

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interventions have previously been proven to be an effective method for improving knowledge, beliefs and behavior (7). The intervention carried out using a peer-based educational initiative on Polish high school students showed that pre- and post-intervention could increase students' knowledge and attitudes towards COVID-19 (8).

This research uses modules in the intervention which include harmonization of material based on field analysis, implementation of the intervention, as well as before and after measurements related to knowledge, attitudes and behavior. It is hoped that this intervention can help elderly people make independent decisions regarding receiving the COVID-19 vaccine.

METHODOLOGY

Participant characteristics and research design

This research uses a quasi-experimental design with a one-group pretest-posttest pattern. The design follows the O1 X O2 pattern which includes pretest, intervention and posttest stages. The research was conducted at the North Bogor Community Health Center in April-June 2023. The inclusion criteria for this research were elderly people who had or had not received the COVID-19 vaccine, elderly people who lived in Tanah Baru Village, Cibuluh Village and Cimahpar Village, could read, and were aged over 60 years old. The exclusion criteria are elderly people with comorbidities, mobility impairments, disabilities, and those who refuse to participate.

Sampling procedures

The sampling technique was purposive sampling and the sample size was calculated using the following Lemeshow formula:

$$\frac{z^2_{1-\alpha/2} P(1-P)N}{d^2(N-1) + z^2_{1-\alpha/2} P(1-P)} \quad (1)$$

Based on this formula, a sample size of 60 people was obtained. Researchers rounded and added 10% to 66 samples to reduce missing or missing data (lost follow-up).

Measures

This research uses an instrument to test the effectiveness of the model/module using a questionnaire compiled by the researcher himself, the questionnaire contains characteristics, vaccine history of the respondent, assessment of the respondent's knowledge, attitudes and behavior regarding COVID-19. The questionnaire has passed the validity testing stage. Before respondents receive intervention, a questionnaire is given first to assess knowledge, attitudes and behavior. Then an intervention was carried out by providing material using an interesting module, the content of the material was in accordance with what elderly people need to know regarding the COVID-19 vaccine, namely the meaning, symptoms, method of transmission, prevention of COVID-19, high risk groups, benefits, safety, halalsness of the COVID-19 vaccine. 19 and reasons for needing a booster dose. After providing the material, respondents were again given a questionnaire to assess the increase in respondents' knowledge, attitudes and behavior towards the material that had been provided. Measuring knowledge, attitudes and behavior uses scoring values.

Data analysis

Bivariate analysis used the dependent t-test with a confidence level of 95% and a p value <0.05 which was used to assess statistical significance. Data processing was carried out using SPSS statistical software version 23.0.

Table 1. Characteristics of the Elderly.

Characteristics	N	%
Age		
60-74 years old	60	90.9
75-90 years old	6	9.1
Gender		
Man	20	30.3
Woman	46	69.7
Education		
Elementary school	18	27.3
Junior High School	19	28.8
Senior High School	26	39.4
S1	3	4.5
Work		
ASN	7	10.6
Private sector employee	2	3.0
Housewife	27	40.9
Self-employed	13	19.7
Casual daily employee	15	22.7
Doesn't work	2	3.0
Vaccine History		
Not a vaccine	4	6.1
Dose 1	8	12.1
Dose 2	25	37.9
Booster 1	19	28.8
Booster 2	10	15.2

RESULTS AND DISCUSSION

Results

This research involved 66 elderly people, with the majority of them aged 60-74 years old (90.9%) and 69.7% female. Most of them have completed high school level education, which is 39.4%, while the majority work as housewives, which is around 40.9%. Apart from that, most elderly people have also received two doses of the Covid-19 vaccine, with the figure reaching 37.9%.

Table 2 shows questions regarding respondents' knowledge about COVID-19. There were 10 questions that experienced an increase and 5 questions that experienced a decrease in correct answers. During the pre-test, the question that respondents answered the least number of times correctly was the question about pregnant women and toddlers who were also at high risk of contracting COVID-19 at 16.7% and that COVID-19 was transmitted through the air at 22.7%. When the post-test was carried out, respondents who answered this question increased to 36.4% and 81.8%.

The results of the implementation of knowledge, attitudes and behavior from the module after three meetings, obtained the following results:

The average pre-test knowledge score for elderly people was 69.60 ± 9.51 . After being given the intervention, the average post-test score was 80.30 ± 10.29 . It can be seen that the mean difference between the pre-test and post-test is 10.71 ± 12.04 . The statistical test results obtained a p value <0.001, so it can be concluded that there is a significant difference between the knowledge scores of elderly people in the pre-test and post-test.

The average pre-test attitude score for elderly people was 80.43 ± 9.61 . After being given the intervention, the average post-test score was 85.25 ± 11.99 . It can be seen that the mean difference between the pre-test and post-test is 4.82 ± 11.83 . The statistical test results obtained a value of $p=0.002$, so it can be concluded that there is a significant difference between the pre-test and post-test elderly attitude scores.

Table 2. Results of Respondents' Answers Regarding Knowledge about COVID-19 during the Pre-Test and Post-Test.

No	Statement	Pre-test				Post-test			
		Wrong		Correct		Wrong		Correct	
		N	%	N	%	N	%	N	%
1	COVID-19 is caused by SARS-CoV-2	5	7.6	61	92.4	9	13.6	57	86.4
2	COVID-19 is transmitted through the air	51	77.3	15	22.7	12	18.2	54	81.8
3	Symptoms of COVID-19 in the elderly can have a serious impact, namely death	9	13.6	57	86.4	7	10.6	59	89.4
4	Transmission of COVID-19 through saliva splashes	8	12.1	58	87.9	0	0.0	66	100.0
5	The elderly are a group at high risk of contracting COVID-19	0	0.0	66	100.0	1	1.5	65	98.5
6	People with hypertension, diabetes, kidney, autoimmune disease and obesity are among the groups at high risk for COVID-19	5	7.6	61	92.4	1	1.5	65	98.5
7	Pregnant women and toddlers are also high-risk groups for contracting COVID-19	55	83.3	11	16.7	42	63.6	24	36.4
8	Health protocols do not need to be carried out if you have been vaccinated	18	27.3	48	72.7	10	15.2	56	84.8
9	Vaccination is a government directive to prevent COVID-19	1	1.5	65	98.5	2	3.0	64	97.0
10	The body's immunity is generated by the COVID-19 vaccine	11	16.7	55	83.3	4	6.1	62	93.9
11	The safety of the COVID-19 vaccine was issued by MUI30	30	45.5	36	54.5	16	24.2	50	75.8
12	The halal status of the COVID-19 vaccine is issued by BPOM	40	60.6	26	39.4	11	16.7	55	83.3
13	The efficacy of the vaccine lasts a long time so vaccine doses 1 and 2 are sufficient	47	71.2	19	28.8	62	93.9	4	6.1
14	The vaccine is able to fight all types of the COVID-19 virus, including the new one	15	22.7	51	77.3	18	27.3	48	72.7
15	Decreased immunity can be increased with a booster dose of the COVID-19 vaccine	6	9.1	60	90.9	0	0.0	66	100.0

Table 3. Average distribution of knowledge, attitudes and behavior scores for the elderly before and after the C-19 Module Intervention.

Variable	Mean	elementary school	p-value
Knowledge			<0.001
Pre-test Score	69.60	9.51	
Post-test Score	80.30	10.29	
Attitude			0.002
Pre-test Score	80.43	9.61	
Post-test Score	85.25	11.99	
Behavior			0.017
Pre-test Score	86.29	14.67	
Post-test Score	90.35	10.34	

The average pre-test behavior score for elderly people was 86.29 ± 14.67 . After being given the intervention, the average post-test score was 90.35 ± 10.34 . It can be seen that the mean difference between the pre-test and post-test is 4.06 ± 13.45 . The statistical test results obtained a value of $p=0.017$, so it can be concluded that there is a significant difference between the pre-test and post-test elderly behavior scores.

DISCUSSION

In this study, we involved 66 elderly people as participants. The majority of them are in the age range of 60-74 years and are female. Most of the elderly have completed high school level education. The majority of them work as housewives. Apart from that, most of the elderly have also received two doses of the COVID-19 vaccine. In research conducted by Gallè F, et al (9) regarding acceptance of COVID-19 vaccination among elderly adults in southern Italy, most of the elderly were female and had a high school level education. In line with previous research, the majority of elderly people are aged 60-70 years and have received primary dose COVID-19 vaccine (10).

The widespread use of COVID-19 vaccine throughout the world is a crucial action in efforts to overcome the crisis caused by the current COVID-19 pandemic (11). Because the effectiveness of immunization programs is highly dependent on high levels of vaccination acceptance in the community, it is necessary to design and identify educational programs that have the potential to have a positive impact on vaccination rates. This aims to increase our ability to overcome a pandemic like the one currently occurring (12). In our research, we included module as additional material to the elderly health series previously issued by the Ministry of Health of Republic of Indonesia.

Respondents' knowledge about COVID-19 and vaccination is quite good, seen from the average score obtained from the pre-test results. Likewise, respondents' attitudes and behavior towards COVID-19 and vaccination are quite good, seen from the average pre-test score. The findings from providing the module intervention look significant, as evidenced by the pre and post-test results. Providing module interventions can increase the knowledge of elderly people. Previous research shows that higher levels of knowledge correlate with higher levels of vaccine acceptance (13) (14). These results are in line with research conducted by Iswandi & Hadibrata (15), before being given information regarding vaccines, all elderly respondents were still doubtful about the benefits of vaccines, but after being given education there was an increase in knowledge, as evidenced by the evaluation results of pre-test and post-test scores showing a value of $p=0.034$. Research findings illustrate that educational interventions increase patient knowledge about COVID-19 and vaccines (14). In the research, the intervention was carried out by including an infographic education module. Apart from the COVID-19 vaccine, peer education/training is effective in increasing secondary school students' knowledge and awareness about HPV and cervical cancer (16). In the research, the intervention was carried out by including an infographic education module.

In the attitude of the elderly, there are differences between the pre-test and post-test results. Which shows a significant increase in the attitude of the elderly after being given the module intervention. According to Green L (17) knowledge can be a stimulus obtained from outside to encourage changes in attitudes and behavior, the stimulus provided

can be through information education, this is in line with the results of module interventions for the elderly. The same thing was also found in previous research where respondents' attitudes improved after being given educational intervention (18). In line with research conducted by Thaha et al (19), explained that there was a significant increase or increase in positive attitudes towards someone to prevent themselves from contracting HIV due to educational interventions provided using media such as videos, books or modules for someone amounting to 91.1% from the previous 62.5% for knowledge and for attitudes, there was a decrease in negative attitudes from 62.5% before the intervention to 58.9% after the intervention. A previous study by Kaim et al. determined that a videographic educational intervention improved attitudes toward vaccination acceptance (6).

Peer-education based teaching for secondary school students has been proven to be an effective method in increasing knowledge and awareness of SARS-CoV-2, the virus that causes COVID-19. However, it is important to remember that to achieve broader prevention goals, more efforts and comprehensive strategies are needed to improve public attitudes towards vaccination and overall increase the level of acceptance of vaccination against COVID-19 (8). As an effort to prevent the transmission of COVID-19, the government is carrying out a vaccination program. Implementing vaccines is not an easy thing, it requires positive participation and support from various sectors to help implement vaccines in the region. Like eradicating stunting, in research conducted by Aziz et al (20), in the implementation of the first 1000 days of birth program, eradicating stunting in the region proved difficult to do without cross-sector support. Prevention efforts and comprehensive strategies to improve the attitude of the elderly towards receiving vaccinations are not only by increasing knowledge of the target, but increasing knowledge needs to be provided across sectors, namely Village Heads, RW Siaga COVID-19, RT/RW, Cadres and Elderly Families because the implementation of vaccination is not can be done alone by the health sector but requires cross-sector and family roles (21).

Likewise, the behavior of the elderly showed a significant increase in elderly behavior after being given the intervention. Research by Ugarte et al. suggests that peer-led online community peer support groups can help disseminate health information, aid public health efforts, and combat COVID-19 vaccine hesitancy (22). Previous research using the Harnessing Online Peer Education (HOPE) intervention has succeeded in bringing about changes in attitudes/behavior in various geographic regions and medical conditions (23) (24).

A systematic review of peer-education-based interventions to increase vaccine uptake and confidence revealed several benefits of peer-based interventions. Thirteen studies illustrate some positive effects of peer-education based interventions on expected outcomes. This suggests that peer-education based interventions can be a useful tool for increasing vaccine uptake and confidence (25).

CONCLUSION

The implementation results of this research show that intervention using modules in peer groups has proven to be effective in increasing the knowledge, attitudes and behavior of elderly. This is indicated by the increase in pre and post test numbers. A model like this can be applied in other health centers, namely by providing module material to elderly empowerment classes, to urban village, hamlet, neighbourhood, cadres and elderly families and even to the Communication and Information Office, as material for creating more massive COVID-19 vaccine information content for the elderly. Integration between health systems, community organizations, and peer groups can help create effective vaccine acceptance models and can increase vaccination coverage among the elderly.

The obstacle found in this research was that the elderly group was often unable to attend due to illness. This is achieved by rescheduling meeting times. The weakness of this research is the unavailability of vaccine logistics so that the achievement of receiving the COVID-19 vaccine at the research location cannot be evaluated.

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