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Applying Health Belief Model on Covid-19 Preventive Behavior among the Elderly in Aceh Barat District in 2020

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Abstract

This study aims to analyze the behavior of preventing COVID-19 in the elderly group. This research is descriptive analytic in nature employing quantitative approach. The total sampling was carried out for 47 elderly people. The data collection technique in this research was done through interview using an interview guide as the instrument. Data collection was carried out by the researchers themselves, by providing informed consent and asking for approval in the form of the respondent's signature. Data analysis in this study used 3 analyzes, namely univariate, bivariate, and multivariate analysis. The results showed that there was a relationship between Perceived Susceptibility, Perceived Severity, Perceived Benefit, Perceived Barriers and Cues to Action with Preventive COVID-19 (obtained P-Value < 0.05). Multivariate analysis obtained R2 = 35.4% that Perceived Susceptibility, Perceived Severity, Perceived Barriers and Cues to action stated that 35.4% Health Belief Model (X) contributed to the prevention of COVID-19. The F test results show that P-Value = 0.000, α=5%. Hence, it is hereby stated that this model is suitable for COVID-19 prevention. The logistic regression test is jointly related between Perceived Susceptibility, Perceived Severity, Perceived Barriers and Cues to action with COVID-19 prevention, so that the regression model is obtained Y = -1.628 + 1.046 (Perceived Susceptibility) + 0.993 (Perceived Severity) + (- 0.981) Perceived Severity + 2,198 (Cue to action). Prevention of COVID-19 in the elderly can be done with the health belief model.

Keywords: Covid-19, Health, Belief, Model

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Introduction

The The World Health Organization (WHO) designated the Corona virus as a pandemic on March 11, 2020. The status of a global pandemic or epidemic indicates that the spread of COVID-19 is taking place so quickly that almost no country in the world can ensure that they can avoid the corona virus. So that, various health policies and protocols are set by all countries to overcome the widespread spread of this virus [1].

In Indonesia, the first positive case of COVID-19 was announced on March 2, 2020. Henceforth, the transmission of this virus became more widespread in various regions. The current state of COVID-19 in Indonesia as of August 29, 2020 is 169,195 people and 122,802 people have recovered, and 7,261 of the infected patients died. The increase in cases on this date is the highest increase in a one-day record with a total of 3,308 cases from August 28, namely 165,887 cases [2].

The increase in the number of Corona cases occurred in a short time and required immediate treatment. Corona virus can easily spread and infect anyone regardless of age, but some groups of people have a higher risk level for exposure to Corona Virus that can lead to death [3]. Research conducted by Tiodora in analyzing groups at high risk of being infected with COVID-19 showed the results that the elderly with comorbidities were one of the groups most at risk of being infected with COVID-10 [4]. In this pandemic era, the elderly group is the group most at risk of experiencing severely. This is because the function of the immune system has decreased and is accompanied by various high comorbidities, such as cardiovascular disease, diabetes, chronic respiratory disease and hypertension [5]. In addition, the negative behavior of the elderly towards healthy living is quite worrying that a quarter of the elderly are active smokers, and this situation will worsen their health condition [6].

West Aceh Regency is one of the areas confirmed positive for COVID-19, where the total cases as of August 29, 2020 amounted to 15 cases, spread over two sub-districts, namely Johan Pahlawan sub-district and Meurebo sub-district with 4 deaths, with an average group of infected positive with an age range of > 50 years, as reported by West Aceh Health Office in 2020. This condition should be able to be handled properly because of the various programs that have been set by the government, but the effectiveness of the program must also be in line with the awareness of people's own behavior towards preventing the transmission of COVID-19. Human behavior is the most significant determinant factor affecting the degree of human health, so that the supporting factors for positive behavior towards the program are very important indicators and must be realized by the community as a whole [7].

A preliminary study of several elderly people in the West Aceh Regency area showed negative behavior towards preventing the transmission of COVID-19, where the elderly still spent time in the coffee shop together, smoked, and were also exposed to secondhand smoke from other shop visitors. Even worse, this elderly group also did not use masks as stipulated in the health protocol for the elderly during this pandemic [8].

The phenomenon described above indicates that there is an individual gap in preventing the transmission of COVID-19, so it is very important to scientifically study the behavior of the elderly through the application approach of the *Health Belief Model* in West Aceh district. This study aims to analyze the COVID-19 prevention behavior in the elderly group which includes an assessment of susceptibility to COVID-19, an assessment of the seriousness of COVID-19 prevention, an assessment or belief in the perceived advantages and disadvantages of carrying out COVID-19 preventive measures, an assessment of self-confidence in the ability to take actions and beliefs that they have or encourage COVID-19 prevention measures, so that the factors underpinning the COVID-19 prevention behavior in the elderly will be obtained.

Methodology

This type of research is quantitative approach, specifically employed descriptive analytic. The population in this study is 47 elderly. The sampling technique in this study is a total sampling so that the whole of the 47 people were considered as the research sample. On the basis of considering the number of populations that are less than 100, the entire population can be used as research samples. Data collection techniques in

this study were interviews using a questionnaire instrument. Data collection was carried out by the researcher himself, by providing informed consent and asking for approval in the form of the respondent's signature. Data analysis in this study used 3 analyzes, namely univariate, bivariate, and multivariate. Univariate analysis was presented in tabular form so that the frequency distribution or the different proportions of each variable studied could be seen and then analyzed. Bivariate analysis is presented in the form of cross tabulation using the chi-square statistical test, while for multivariate analysis using multiple logistic regression statistical tests which aim to see how much influence the *Health Belief Model* has on the prevention of COVID-19 in the elderly [9].

Results

Johan Pahlawan district and Meureubo district are 2 districts located in the center of Meulaboh. Johan Pahlawan has one village only and Meurebo has 26 villages. Of the two districts, there are 4 villages with high COVID-19 confirmed cases, namely Lapang Village, Ujong Baroh Village, Rundeng Village, and Gunoeng Kleng Village. The following is the distribution of respondents based on their domicile villages with COVID-19 confirmed cases.

Table 1. Distribution of Respondents based on Village of Domicile

Area	Age range	Total
A. *Johan Pahlawan* District		
1. *Lapang* Village	60- 65 years	9 people
2. *Ujoeng Baroh* Village	60- 66 years	13 people
3. *Rundeng* Village	61- 68 years	14 people
B. *Meurebo* District		
1. *Gunoeng Kleng* Village	60 – 69 years	11 people
Total		47 people

The description of the results concerning variable relationship is explained in the bivariate analysis of this study by looking for the relationship between 2 variables. The dependent variable in this study is *COVID-19 efforts* while the independent variable is *perception factors in the Health Belief Model theory* which includes perceptions of vulnerability, severity, cues to take action, benefits and obstacles to taking COVID-19 preventive measures. The following are the results of the relationship analysis between the Health Belief Model and Preventive COVID-19.

Table 2. Relationship between Health Belief Model and Preventive COVID-19

Health Belief Model	**Covid-19 Preventive Behavior**				**Total**		**P-*Value***	**OR**
	Less		**Better**					
	f	**%**	**f**	**%**	**f**	**%**		
Perceived Susceptibility								
Less	14	30.2	33	69.8	47	100	0.000	2.7
Better	25	53.9	22	46.1	47	100		
Perceived Severity								
Less	19	39.8	28	60.2	47	100	0.01	2.77
Better	30	64.7	17	35.5	47	100		
Perceived Benefits								
Less	18	37.4	29	62.6	47	100	0.026	1.77
Better	22	47.4	30	63.6	47	100		
Perceived Barriers								
Less	15	30.9	32	69.1	47	100	0.000	2.76
Better	26	55.3	38	80.8	47	100		
Cues to action							0.017	0.5

Less	22	47.2	25	52.8	47	100		
Better	15	30.9	32	69.1	47	100		

The table above reveals that from the 47 elderly, there is a relationship between Perceived Susceptibility, Perceived Severity, Perceived Benefits, Perceived Barriers, and Cues to Action with Preventive COVID-19 (obtained P-Value <0.05). The five variables that can be continued into multivariate analysis are Perceived Susceptibility, Perceived Severity, Perceived Barriers, and Cues to Action (P-value < 0.025). The following are the results of the multiple logistic regression test.

Table 3. Multivariate Analysis

Health Belief Model (X)	B Coeficient	P-Value	Exp(B)	R^2
Perceived Susceptibility	1.046	0.000	2.846	0,354
Perceived Severity	0.993	0.000	2.700	
Perceived Barriers	-0.981	0.003	0.375	
Cues to action	2.198	0.000	9.005	
Constant	-1.628			

The table above explains that the results of the analysis test carried out obtained R2 = 35.4%. This means that Perceived Susceptibility, Perceived Severity, Perceived Barriers and Cues to action stated that 35.4% of *Health Belief Model* (X) contributed to the prevention of COVID-19. The results of the F test show that the P-Value = 0.000, α=5%. It revelas that this model is suitable in preventing COVID-19. The logistic regression test is related jointly between Perceived Susceptibility, Perceived Severity, Perceived Barriers and Cues to action with COVID-19 prevention, so that the regression model is obtained Y = -1.628 + 1.046 (Perceived Susceptibility) + 0.993 (Perceived Severity) +(-0.981) Perceived Severity + 2.198 (Cues to action).

Health Belief Model is a model that is used to describe individual beliefs about healthy living behavior. During this pandemic era, this health living behavior can be in the form of preventive behavior or the use of health facilities. This health belief model is often used to predict preventive health behaviors as well as behavioral responses to treatment of patients with acute and chronic diseases. However, recently the Health belief model theory is used to predict various health-related behaviors [10].

Discussion

From the various recommendations and regulations that have been implemented to suppress the spread of the virus, it is necessary for every individual to have awareness in concern to cases that are threatening to health. This is as prescribed in the construct of *Health Belief Model* [11]. *Health Belief Model* is a set of a person's perceptions about the threat of a disease so that it causes changes in behavior to be healthy [12]. This construct has several elements contained in the self-efficacy group (or self-confidence) [13]. To measure the level of confidence in healthy behavior changes to avoid a certain disease, several questions can be used including: 1. perceived susceptibility (which means a person's belief about his susceptibility to a disease, in this study COVID-19), 2. perceived severity (which means one's belief about the severity of his/her condition if he/she has been exposed to a disease, in this study COVID-19), 3. perceived benefit (which means a person's perception of the benefits obtained from sports activities to ward off a certain disease, in this study COVID-19), and 4. perceived barriers (which means a person's perception regarding the obstacles obtained when doing sports) [14]. Old age is a phase of declining intellectual and physical abilities, which begins with some changes in life. As is known, when humans reach adulthood, they normally have the ability to reproduce and give birth to children. When living conditions change, a person will lose this capacity and function as they enter the next level, old age, and then die. For normal humans, whoever that person is, of course they are ready to

accept new circumstances in every phase of their life and try to adapt to the conditions of their environment [15].

The immune system of the elderly decreases due to the aging process. As people get older, their defenses against foreign organisms weaken, making them more susceptible to suffering from various diseases such as cancer and other infectious diseases. This postulation emphasizes that the elderly experience a reduced ability to guard themselves from foreign or intruder cells, so that the body cannot distinguish normal and abnormal cells. This results in antibodies attack leading to the degenerative diseases [16].

Perceived susceptibility constructs personal risk or susceptibility. This refers to a person's subjective perception of the risk of his/her health condition. In the case of medical illness, these dimensions include acceptance of the diagnosis, personal estimation of the presence of resusceptibility (sensitivity), and susceptibility to disease in general [17]. The results of previous studies stated that perceived susceptibility was closely related to behavioral changes in certain groups. This study obtained that the perceived susceptibility of the elderly can change the behavior of the elderly in health prevention. This is because the perceived susceptibility carried out provides diagnostic results as well as the opportunity for the elderly to be able to 'feel' the risk if potentially COVID-19 disease arises. The susceptibility of the COVID-19 disease is an urgent signal to be immediately addressed by the government so that the chain of transmission can be completely dismantled [18].

From the perceived severity or perceived seriousness, the discussion below can be addressed. This construct is about the feelings about the seriousness of an illness, including evaluating clinical and medical consequences such as death, disability, and illness and other possible social consequences such as effects on work, family life, and social relationships [19]. Many experts combine the two components above as a perceived threat [20]. Other studies have found perceived severity in COVID-19 patients, so that evaluation of clinical and medical consequences will lead to perceived seriousness and need to be prevented [21]. This study provides several evaluation activities that can be carried out by the elderly in preventing COVID-19. Other studies also provide some education regarding perceived severity in COVID-19 potential diseases [22].

Later, it is perceived benefits. This is the state of acceptance of a person's susceptibility to a condition which can lead a person to believe the seriousness of a disease. Then, it can encourage to produce a force that supports behavior change[23]. Moreover, this depends on a person's belief in the effectiveness of the various available efforts in reducing the threat of disease, or the perceived benefits of taking these health efforts [24]. When a person shows a belief in susceptibility and seriousness, it is often not expected to accept any recommended health measures unless they are found to be effective and appropriate [25]. This study encourages the elderly to produce a strength in preventing COVID-19 so that by feeling the benefits received, the elderly can be serious in preventing COVID-19 and supporting government programs to break the chain of COVID-19 transmission.

Next, it is perceived barriers. This happens when individuals face barriers found in taking actions toward the behavioral changes [26]. In addition to the four beliefs or perceptions, potentially negative aspects of a health effort (e.g, uncertainty and side effects), or perceived barriers (e.g, worry about being unsuitable, unhappy, and nervous), that may serve as barriers to recommending a behavioral change [27]. This study found that the barriers experienced by the elderly affect the prevention of COVID-19. The elderly belief that COVID-19 is very dangerous for humans and this has led to actions in health efforts and implementing health protocols in their daily life.

Last, it is cues to action. This is a behavior which is influenced by a variable that becomes a reason for someone to take an action or behavior. Signals in the form of external and internal factors, such as messages in the mass media, advice, or suggestions from friends or other family members, sociodemographic aspects such as education level, living environment, parental care and supervision, association with friends, religion , ethnicity, economic, social, and cultural conditions [28].

Conclusion

Older age is a phase of where a person has declining intellectual and physical abilities, which

begins with some changes in life and tries to adapt to environmental conditions. The immune system of the elderly gradually decreases due to the aging process. The *Health Belief Model* (HBM) is a model that can explain the healthy behavior of the elderly. And from this study it is found that the model can lead to behavioral changes in preventing COVID-19 potential among the elderly.

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Competing Interest

The authors declare that there is no conflict of interest.

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