COVID-19 Preventive Behavior of Young Adults Living With Elderly Through the Lens of Health Belief Model

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Abstract
To suppress the Covid-19 pandemic, a series of preventive measures, both promotive and interventive were taken. From small children to the elderly, socialization continues to be carried out. However, there are quite a lot of risk factors for the elderly group, including comorbidity and elderly age. Then how about individuals living with the elderly? This research looks at the Covid-19 preventive behavior in individuals living with the elderly through the lens of the Health Belief Model (HBM) and individual perceptions of the susceptibility of the elderly to Covid-19 infection. Of the 305 research participants, the research results show that the Health Belief Model and individual perceptions of the elderly's vulnerability to Covid-19 infection can explain almost 25% ($R^2 = 0.247$) the variance of Covid-19 prevention behavior. Two variables were found to be significant in predicting Covid-19 prevention behavior, namely perceived benefits and cues to action. Therefore, if the individual knows that carrying out Covid-19 preventive behavior has many advantages and is awakened with information related to Covid-19 prevention, he will be more inclined to carry out Covid-19 preventive behavior.

Keywords**:** Young Adults, Health Belief Model, Elderly, Covid-19 Preventive Behavior

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INTRODUCTION

The health emergency shown by the increase in Covid-19 cases despite various policies that have been implemented continues to highlight how human behavior as an individual is very important in controlling the spread of the epidemic (Flaxman et al., 2020; Islam et al., 2020; Michie & West, 2020). The spread of Covid-19 can only be accommodated if the community adopts preventive behavior (Ahmad et al., 2020). From various promotions and implementation of health policies, encouraging the adoption of Covid-19 prevention behavior is a big challenge, especially among young adults (Nivette et al., 2021). 53.7% of positive cases of Covid-19 experienced by the productive age group (19-45 years; Lokadata, 2021). One risk among young people is the mobility and interaction of moving from one location to another via outbound flights, public transportation, and joining the crowd which is one of the causes of the prevalence of the spread of Covid-19 (McCloskey et al., 2020; Pluchino et al. ., 2021). In fact, maintaining a safe distance can reduce the risk of transmission by up to 85% (Covid-19 Handling Committee and National Economic Recovery, 2020). If we look at data in several parts of the world, in Georgia, for example, the study results reveal that Covid-19 is transmitted by young adults 2.78x more than others (Widyaningrum, 2020). The same phenomenon was found in India where the majority of the first patients in the chain of transmission were young adults aged 20-45 years (Laxminarayan et al., 2020). This becomes a concern when young adults live with the elderly.

This threat was also found by Fenoll and Grossbard, more individuals died from Covid-19 in areas with higher intergenerational residency rates where the two were positively related (Aparicio Fenoll & Grossbard, 2020). Not only that, elderly have symptoms that are more difficult to detect and require special attention which adds to the urgency for children and grandchildren who live with the elderly to pay more attention to health protocols (COVID-19 Handling Task Force, 2021). In the pandemic period, this creates an additional burden on individuals living with the elderly where research finds individuals living with the elderly have worse perceptions of physical and mental health than before the pandemic than other individuals (Fageera et al., 2021). There are emotional reasons that underlie the considerations taken by individuals living with the elderly (VOA Indonesia, 2020). Several studies have found that individuals who live with the elderly have a higher tendency to engage in behaviors that can prevent Covid-19 infection (Ozdemir et al., 2020; Sun et al., 2021).

From various theoretical models in understanding the adoption of preventive behavior in the health context, the Health Belief Model (HBM) theory synergistically seeks to create a greater understanding of the phenomenon that occurs, to reduce or avoid a disease condition, and to explain or predict public health behavior (Tarkang & Zotor, 2015). The results of a meta-analysis of 18 studies (2,702 participants) showed that individual perceptions of severity, inhibition, and benefit correlated with predictable directions for performing the target behavior. Through a literature review, Yastica and colleagues (2020) found that HBM has been found to have a significant effect on preventive behavior (Yastica et al., 2020). Considering the strength of the theory, HBM is a suitable model in researching Covid-19 prevention behavior in young adults living with the elderly.

Covid-19 Prevention Behavior

Preventive behavior is a series of actions related to general hygiene, social distancing, a healthy lifestyle, and anything that includes activities carried out by a person who believes himself to be healthy for the purpose of preventing or detecting disease (Kasl & Cobb, 1965). Agencies

such as WHO and CDC has suggested prevention strategies related to personal hygiene such as, for example, washing hands with soap and water, wearing masks when in public (Centers for Disease Control and Prevention, 2021; World Health Organization, 2021).

Health Belief Model

The Health Belief Model (HBM) is one of the extensively researcheds of health behavior that attempts to predict health-related behaviors from certain belief patterns (Mckellar & Sillence, 2020). HBM shows that individual beliefs about health problems are perceived severity, perceived susceptibility, perceived benefits, and perceived barriers (Tarkang & Zotor, 2007, 2015). In order to adopt health care behaviors and/or avoid disease risk, individuals must: (1) believe they are susceptible to disease; (2) believe that illness will have a negative impact on their lives; (3) believe that adopting certain behaviors is beneficial in reducing their vulnerability or, if they already have it, its severity; (4) can overcome perceived barriers (Kim et al., 2012; Rosenstock, 1974; Sayegh & Knight, 2013).

An additional variable proposed by Rosenstock and colleagues in 1988 (Rosenstock et al., 1988) is self-efficacy which is defined as the belief that an individual has in his or her ability to do something (Davis et al., 2013). In subsequent developments, Tang and Wong proposed other variables in the HBM used to date, cues to action which can be internal, such as perceptions of body conditions, or external, such as the influence of mass media and social pressure (Tang & Wong, 2004).

Prevention of Covid-19 By Young Adults Living With the Elderly

Although research conducted on the relationship between living with the elderly and behavioral changes in the pandemic is limited, based on the increased risk of Covid-19 faced by the elderly, it can be suspected that there is a change in behavior (Ozdemir et al., 2020). Gozzi and colleagues (2020) found that individuals living with older adults were significantly associated with moderate changes in behavior. Individuals who are aware of the risk of infection in the elderly will change their behavior as a preventive measure (Gozzi et al., 2020). One study, for example, found that individuals who lived with the elderly were more likely to reduce the time spent shopping compared to those who did not live with the elderly (Ozdemir et al., 2020). Research conducted by Sun and colleagues showed that individuals' willingness to receive the Covid-19 vaccine was 1,928 times higher in individuals who lived with the elderly so as not to transmit it to their families (Sun et al., 2021). However, further investigation is needed to determine the variables that influence the Covid-19 prevention behavior in individuals living with the elderly.

Dynamics of Covid-19 Prevention Behavior and HBM in Indonesia in Young Adults Living with the Elderly

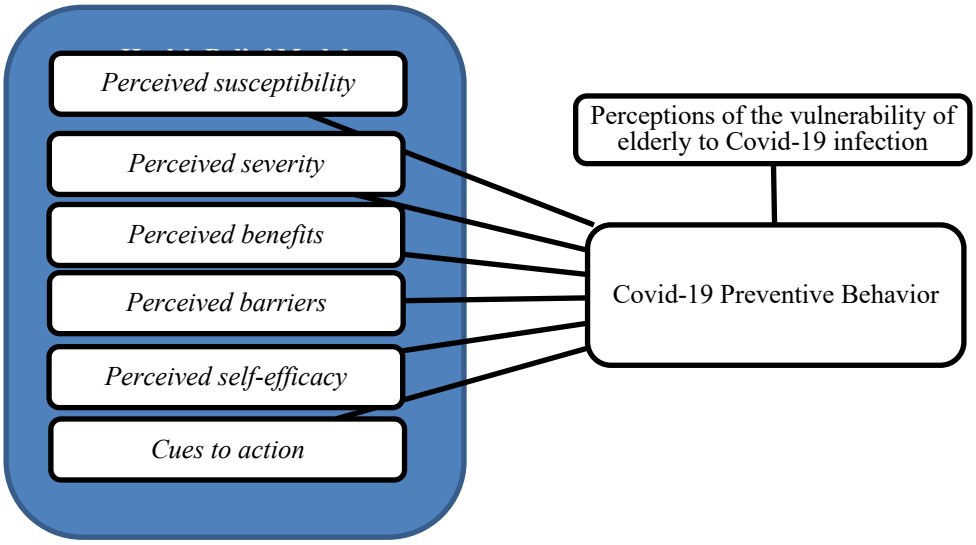

Figure 1. The dynamics between the Health Belief Model and Covid-19 prevention behavior in young adults living with the elderly

Study Design

The design of this research is non-experimental where the researcher does not manipulate the variables contained in this study (Gravetter & Forzano, 2012). This study will use a quantitative method with the Multiple Linear Regression design, where researchers look for variables that are the strongest predictors of Covid-19 prevention behavior.

Participants

The criteria for the limited sample of participants in this study are young adults aged 18-25 years in Greater Jakarta who live with the elderly (over 65 years) who have the status of Indonesian citizens (WNI). The sample size in this study was determined using G Power Analytics to predict the required sample size with statistical computational power analysis. With the Multiple Linear Regression technique, the effect size is 0.15 (medium), the coefficient significance is 0.05 and the power value is 80%, an a priori analysis.

Research Instruments

In measuring the variables in the Health Belief Model, this study uses a measuring instrument compiled based on the HBM by Shahnazi and colleagues (2020). The adaptation results show that all the reliability values of the HBM variable have a value above 0.7, except for perceived severity with a value of 0.405 and perceived susceptibility with a value of 0.089 which may be caused by imperfections in data collection techniques (Caesaron et al., 2021). The item score is obtained from the total score of all points with a Likert scale of 1-5 which measures individual agreement with the statement.

To measure the behavior of preventing Covid-19, the researchers adapted a measuring instrument in the same study as the measuring tool compiled by Shahnazi and his colleagues (2020) and adapted by Caesaron and his colleagues into Indonesian language. The results of the adaptation show that the reliability value of the measuring instrument r has a value above

0.7. The item score is obtained from the total score of all points with a Likert scale of 1-5 which measures individual behavior frequency.

To find out individual perceptions of the elderly's vulnerability to Covid-19, the researcher added one statement item that had passed the readability test. The item score is obtained from the total score of all points with a Likert scale of 1-5 which measures individual agreement with the statement.

Data collection will use the convenience sampling method on the young adult population in Jabodetabek who live with the elderly using a Google Form which is open from November 17, 2021 to December 3, 2021. The questionnaire consists of informed consent, participant personal data, and measuring tools for preventing COVID-19 behavior. 19. The questionnaires were distributed through LINE, LinkedIn, WhatsApp, and Instagram social media.

After getting the data, for analysis, the researcher uses SPSS program to process the research data. First, the researcher conducted a descriptive analysis on the demographic data of the participants. Demographic data analyzed included age, domicile, last education, and occupation. The researcher tested the hypothesis by using correlation analysis technique using Multiple Linear Regression.

Results

In this study, as many as 305 people were willing to take part in the following research:

Table 1. Research Demographic Statistics (Age, Occupation, and Gender)

Occupation	Gender	Age						
		19	20	21	22	23	24	25
Others	Male	3	3	2	7	12	10	16
	Not comfortable to disclose	0	0	1	0	0	0	0
	Female	1	1	0	16	37	21	16
Student	Male	13	17	21	12	3	0	0
	Female	18	26	26	18	3	1	1

Table 2. Demographic Statistics of Research (Education and Domicile)

Characteristic	n	%
Education		
Diploma	23	7,5
Bachelor	99	32,5
High School	180	59,0
Middle School	3	1,0
Domicile		
Bekasi	32	10,5
Bogor	52	17,0
Depok	34	11,1
Jakarta	134	43,9
Tangerang	53	17,4

Table 3. Overview of Research Variables (N=305)

Variables	N	Min	Max	M	SD
Covid-19 prevention behavior	305	1,8	40	4,2	4,5
Perceived susceptibility	305	1,7	14	3,4	10,3
Perceived severity	305	2	15	4	2
Perceived barriers	305	1	38	2.9	9,8
Perceived self-efficacy	305	1	5	4,2	0,6
Perceived benefits	305	3	10	4,3	1
Cues to action	305	1,5	5	4,3	0,6
Individual perceptions of the vulnerability of the elderly to Covid-19 infection	305	1	5	4,4	0,6

*all data is divided per total item except SD

Table 4. Multiple Linear Regression HBM and individual perception of elderly vulnerability to Covid-19 infection in predicting Covid-19 prevention behavior

Predictors	R^2	***p***
Perceived susceptibility	0,012	0,932
Perceived severity	0,075	0,089
Perceived barriers	0,049	0,245
Perceived self-efficacy	0,051	0,084
Perceived benefits	0,163	0,000
Cues to action	0,105	0,001
Individual perceptions of the vulnerability of elderly to Covid-19 infection	0,002	0,445

*F(7, 297) = 13,932, R^2 = 0,247, DV = Covid-19 prevention behavior

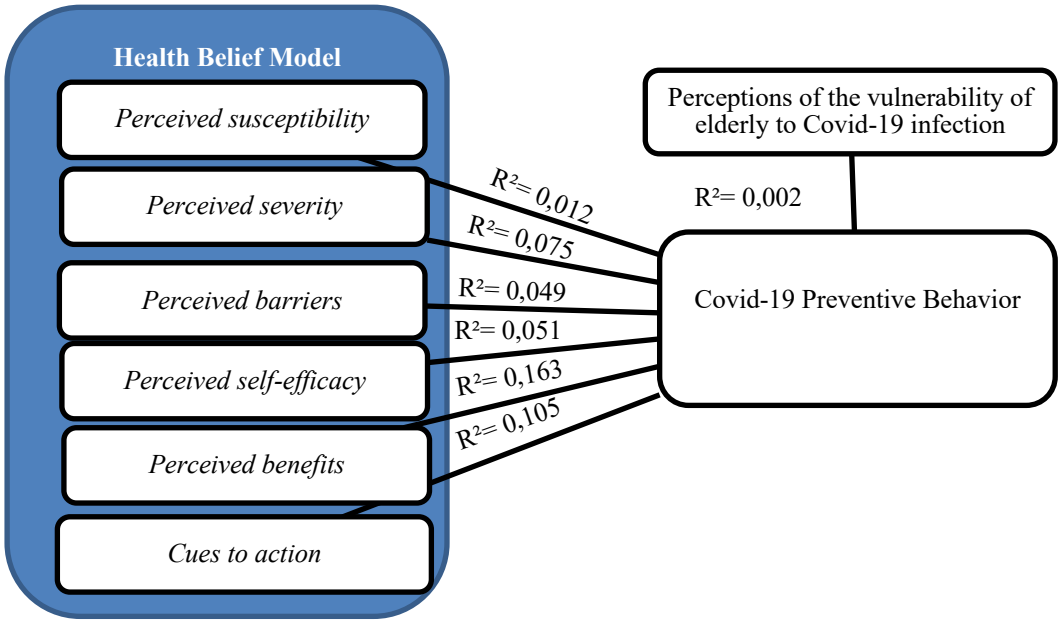

Figure 2. Regression calculations of the HBM and individual perceptions of the elderly's vulnerability to Covid-19 infection on Covid-19 prevention behavior

CONCLUSION

The results show that the Health Belief Model (HBM) and individual perceptions of the elderly's vulnerability to Covid-19 infection can explain almost 25% (R^2 = 0.247) the variance of Covid-19 prevention behavior. These results are similar to Karimy and colleagues (2021) who found that HBM can explain 27% of the variance of Covid-19 prevention behavior while Mirzaei and his colleagues found a higher number, 29% of the variance of Covid-19 prevention behavior can be explained through HBM (Mirzaei et al., 2021).

On the perceived susceptibility variable, the results are similar to several other previous studies (Mehanna et al., 2021; Mirzaei et al., 2021; Prastyawati et al., 2021; Shah et al., 2021) which did not find any significant relationship between perceived susceptibility and behavior. Covid-19 prevention. This can be explained because in the early stages of the pandemic there was a

cautionary urge to take preventive measures (Karimy et al., 2021a) while this research was conducted more than a year after the outbreak of Covid-19.

The relationship between perceived severity variables found in this study was also obtained by several other studies (Mirzaei et al., 2021; Prastyawati et al., 2021; Saputra et al., 2021; Shah et al., 2021; Wahyusantoso & Chusairi, 2021) and is in line with that proposed by Janz and Becker (1984) where perceived severity has relatively low relevance for preventive health behavior but can play a major role when the individual has been diagnosed with a particular disease. It is possible that the participants in this study had never been diagnosed with Covid-19 infection, similar to the results obtained by Chen and colleagues (Chen et al., 2020).

On the self-efficacy variable, several previous studies also found similar results to this study (Prastyawati et al., 2021; Shah et al., 2021). The low influence of perceptions of vulnerability and severity in predicting Covid-19 prevention behavior can be caused by individual feelings that think that Covid-19 is something that is out of control which can explain the low ability of self-efficacy in predicting Covid-19 prevention behavior (Shah et al., 2021). The decline in public confidence in the government in dealing with Covid-19 reported by the Indonesian Survey Institute from September 2020 to July 2021 can also be a trigger for this feeling (Jayani, 2021) similar to the results obtained in Pakistan where the majority of individuals (68.8%) doubt the government's ability to cope with the Covid-19 pandemic (Shah et al., 2021).

In addition to the perceived barrier, similar results were also found in previous studies (Prastyawati et al., 2021; Shah et al., 2021; Wahyusantoso & Chusairi, 2021). This may occur because the preventive behavior proposed in this study is relatively easy to do even though it causes discomfort (Tang & Wong, 2004). Face coverings, for example, become cheap and easy to obtain except at the beginning of the pandemic, so that preventive behavior is relatively easy to do (Tang & Wong, 2004).

For the individual perception variable on the vulnerability of the elderly to Covid-19 infection, currently, research regarding individuals living with the elderly is still very limited. In individuals living with the elderly, researchers suspect that the death of the elderly may have become inevitable, as found by Jacobi and his colleagues (da Silva Jacobi et al., 2017). Studies conducted by Duggleby also show that families living with sick elderly people generally expect comfortable and peaceful treatment, not healing from the disease (Duggleby et al., 2012). This assumption is one of the possible causes for the variable. Perceived susceptibility is not a significant variable in predicting Covid-19 prevention behavior.

In the perceived benefits variable, similar to the results obtained by Shah and colleagues (2021), individuals living with the elderly in Greater Jakarta are moved by the perceived benefits of preventing Covid-19 to comply with preventive behaviors that have been enforced by the WHO and the Indonesian government. In the HBM construct, indeed, the perception of benefits has been proposed to be a more prominent variable than other variables in predicting behavior (Carpenter, 2010). This is also evidenced from research in Indonesia, although there are differences in results, perceived benefit is indeed a variable that is easy to find significantly stronger in predicting Covid-19 prevention behavior compared to other variables (Djuningsih & Samputra, 2021b; Harahap et al., 2021; Saputra et al., 2021; Wahyusantoso & Chusairi, 2021). When individuals perceive certain preventive health behaviors as effective in preventing disease, they will be motivated to engage in those behaviors (Lau et al., 2003, 2004, 2007; Rubin et al., 2009). Communication that enhances individuals' perceptions of the benefits of

certain health-related behaviors has been shown to be successful in reducing health threats (Klohn & Rogers, 1991; Ronis, 1992).

Communication is related to the next variable, cues to action. In the context of Covid-19, communication that is continuously upheld in the community and easy to find can be a form of cues to action which is a significant predictor in this study (Tang & Wong, 2004). In Indonesia itself, the 3M Covid-19 prevention behavior campaign continues to be promoted by the government until the end of the year (Widiyanto, 2021). These results are consistent with those proposed by Tang and Wong (2004) and the alleged HBM. Several previous studies showed similar results where cues to action became a variable that was significantly positively related to Covid-19 prevention behavior (Caesaron et al., 2021; Karimy et al., 2021b; Tesema et al., 2021).

In interpreting the findings of this study, it is worth considering the limitations of the research conducted. First, this study is quantitative so it cannot answer why only perceived benefits and instructions/information obtained for taking action but not other HBM constructs significantly predict preventive behavior in this study participants. However, this study enriches the existing scientific literature and reviews a unique group of young adults living with the elderly. In addition, this study explains the dynamics of the Covid-19 prevention behavior variable after a lapse of more than a year people live life in a pandemic which may be different from the previous behavior pattern when the pandemic started.

Study Suggestion

In this study, the perceived benefits and the instructions/information obtained to act became the strongest predictors needed to trigger preventive behavior. In addition, further research can consider individual perceptions of the elderly's vulnerability to Covid-19 as a dependent variable that may be influenced by variables in the HBM. As a practical suggestion, the researcher proposes to continue to promote the adoption of preventive behavior through mass media, as well as send notifications via cellphones and social media, especially those that increase public awareness of the benefits of implementing Covid-19 preventive behavior to encourage Covid-19 prevention behavior.

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