AN ANALYSIS OF PEOPLE'S BEHAVIORAL CHANGES TO PREVENT COVID-19 TRANSMISSION BASED ON INTEGRATED BEHAVIOR MODEL

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ABSTRACT

The Covid-19 pandemic has forced people to limit their daily activities in order to prevent the spread of the virus. This study aimed to analyze people's behavioral changes in order to prevent the Covid-19 transmission based on integrated behavior model. This research used a survey method. 103 respondents from Banyumas were collected using a convenience sampling technique from April to May 2020. A statistical analysis with frequency distribution was used in this research. The collected data were dominated by those with ages ranging from 21 to 59 years old. The excellent behavior of washing hands using soap and running water reached 84.5%. The behavior of people wearing face-masks when leaving their homes reached 92.2%. The behavior of social distancing implementation only reached 47.6%. People's knowledge of Covid-19 was classified into the good category reaching 81.5%. 80 people or about 77% of respondents had positive attitudes. The implementation of norms/rules reached 100%. The availability of supporting facilities reached 92%. The media accessibility reached 75%. Only 10% of respondents had not yet established the habit of washing hands and wearing face-masks. These factors unite and influence each other and then eventually create new expected behaviors. Social distancing is the most difficult behavior to change, because Banyumas people have a high social life intimacy.

Keywords: integrated behavior model; Covid-19; health behavior; health promotion, pandemic

ABSTRAK

Pandemic Covid-19 memaksa orang untuk membatasi aktivitasnya untuk mencegah penyebaran virus. Tujuan penelitian ini untuk menganalisis perubahan perilaku pencegahan penularan Covid-19 ditinjau dari integrated behavior model. Metode penelitian yang digunakan dengan survei. Sebanyak 103 responden di Banyumas diperoleh secara *convenience sampling* pada bulan April hingga Mei 2020. Analisis statistik yang digunakan dengan distrubisi frekuensi. Data yang diperoleh adalah usia didominasi pada rentang 21-59 tahun. Perilaku cuci tangan menggunakan sabun dan air mengalir sangat baik mencapai 84.5%. Penggunaan masker saat keluar rumah sebesar 92.2%. Penerapan social distancing hanya 47.6%. Pengetahuan masyarakat tentang Covid-19 kategori baik mencapai 81.5%. Sikap positif sebanyak 80 orang atau sekitar 77%. Penerapan norma/aturan mencapai 100%. Ketersediaan fasilitas yang mendukung sebanyak 92%. Aksesibilitas media sebanyak 75%. Hanya 10% saja masyarakat yang sebelumnya memiliki kebiasaan cuci tangan dan memakai masker. Perilaku seseorang dipengaruhi faktor demografi, pengetahuan, sikap, norma, kebiasaan, lingkungan, media. Faktor-faktor tersebut menjadi satu kesatuan yang saling memengaruhi sampai terciptanya perilaku baru yang diharapkan.

Kata-kata kunci: *integrated behavior model*; Covid-19; perilaku kesehatan; promosi kesehatan, pandemi

BACKGROUND

A new coronavirus (SARS-CoV-2/Covid-19) was discovered in December 2019. This virus can cause an acute respiratory syndrome epidemic in humans. This virus first began spreading in Wuhan, China (Zhou et al., 2020). After only a short time, the virus spread to 216 countries. WHO has announced Covid-19 as a global pandemic since it has spread to most parts of the world. The number of cases of infection globally has reached 7,761,609 people (WHO, 2020). In Indonesia, based on data from the Ministry of Health as of June 15, 2020, there were 39,294 cases with the death rate reaching 2,198 people (Acob, 2020). It is reported that there is still an increasing number of Covid-19 infection cases. Thus, it can be concluded that the pandemic is not over yet.

The Covid-19 pandemic has caused various adverse effects on the Indonesian people. These adverse effects have occurred in most sectors of people's lives. Business actors have had to close their businesses due to the decreasing levels of people's purchasing power. The existence of Large Scale Social Restrictions (known as PSBB *or Pembatasan Sosial Berskala Besar*) implemented by the Indonesian government has eventually resulted in the weakening of the lower classes' economy (Thorik, 2020). The social activity restriction forms include: the restriction of transportation operations, closing of tourism sites and activities, closing of shopping centers, and working from home. Thus, many social problems have arisen and resulted in an increasing number of crimes and negative community stigma against health workers (Abdillah, 2020) as seen from the community's rejection of the health workers. These community actions are possibly influenced by the people's limited knowledge regarding the Covid-19 transmission.

On March 17, 2020 the President of the Republic of Indonesia declared the status of this disease as being in the Emergency Response phase by issuing the Presidential Decree No. 7 Year 2020 on the Task Force for Accelerating the Corona virus Handling led by the Head of National Disaster Management Agency (known as *BNPB or Badan Nasional Penanggulangan Bencana*). This Task Force is intended to improve the national resilience of the health sector; accelerate the Covid-19 handling through the synergy between ministries/institutions and local governments; increase the escalation development anticipation to prevent the spread of Covid-19; improve the synergy of operational policy making; and increase the readiness and ability to prevent, detect, and respond to the Covid-19 cases (Lerik & Damayanti, 2020). The Community Movement (known as *Germas* or *Gerakan Masyarakat*) Campaign has been performed on a large scale to slow down the spread of the virus by introducing people to frequently washing their hands and wearing face-masks as well as both social and physical distancing (Ngronggah et al., 2020).

Based on the news published by the Tempo National Media on March 18, 2020, *Tabligh Akbar* (an Islamic Religious Praying Together event) was held in Gowa Regency of South Sulawesi, which was a gathering of thousands of people. The government's recommendation to do social distancing and to avoid any form of mass gathering was not obeyed by the community (Irawan, 2020). Most people still consider the Covid-19 as a normal and harmless virus. A survey conducted by Triyanto and Kusumawardani (2020) found that the physical or social distancing behavior was only obeyed by 47.6% of the society. Thus, it can be concluded that physical or social distancing is a behavior which is difficult to achieve.

People's behavioral changes have significantly increased in terms of wearing face-masks and washing hands. Based on the research findings, the people's behaviors of wearing face-masks and washing hands increased very high reaching up to 84% (Jacob, 2020). Similarly, the results of research conducted by Bavel et al., (2020), showed that the people's behavioral changes of washing hands using soap with running water were mostly performed by the urban communities. The findings of research conducted by Bavel et al., (2020) indicated that people's behavior of wearing face-

masks was dominated by those living in urban areas. Bavel et al., (2020) also explained that communities living in rural areas still found it difficult to implement the behavior of wearing face-masks and washing hands.

There are many scientifically proven factors, which influence people's behavioral changes. The Integrated Behavior Model (IBM) comprehensively explains the various factors contributing to a person's behavioral changes (Lunn, Belton, Timmons, & Robertson, 2020). Washing hands and wearing face-masks are less frequently practiced by the majority of Indonesian people and most never do the physical or social distancing. A person's behavioral changes can be divided into either easy or difficult and are influenced by many factors. Therefore, the researchers conducted a descriptive study on the behaviors of washing hands, social distancing, and wearing face-masks based on the perspective of the Integrated Behavior Model. The purpose of this research is to analyze people's behavioral changes in order to prevent the Covid-19 transmission based on the perspective of the integrated behavior model.

METHOD

This research used a non-experimental quantitative study with a survey design. The research data was collected by researchers using online questionnaires in Google form, which were distributed to 103 respondents between April and May 2020. The inclusion criteria included people living in Banyumas. The samples were collected using a convenience sampling technique. The Integrated Behavior Model (IBM) presents the determinants influencing the behavioral performances including demography, knowledge, attitudes, norms, habits, environments, and media. The questionnaire was prepared based on the IBM consisting of 14 items related to the behaviors of washing hands, wearing face-masks and other factors influencing the behaviors including: knowledge, attitudes, habits, environment/facilities, and media. The questionnaires were distributed through WhatsApp (WA) group networks. The survey data was collected using the

Google form and was then descriptively analyzed using a frequency distribution. The ethical consideration of this study was distributed using the online informed consent of respondents form via Google form.

RESULT
Table 1. Research Respondents' Characteristics (n=103)

Respondents' characteristics	Frequency (N)	Percentage (%)
Age		
Adolescent (11-20 years)	34	33
Adult (21-59 years old)	68	66
Elderly (over 60 years)	1	1
Gender		
Male	43	42
Female	60	58
Working location		
Inside buildings	70	68
Outside buildings	33	32
Educational level		
Elementary school	4	3
Junior High School	8	6
Senior High school	76	74
Bachelor Degree	15	17
Residential area		
Urban	65	63
Rural	38	37

103 respondents completed the online survey prepared in Google form. The respondents' characteristics were presented in Table 1 based on age, sex, working location, educational level, and residential area. Based on age, 68 or approximately 66% of respondents were of an age ranging from 21 to 59 years old. Meanwhile, 34 or approximately 33% of respondents were in the adolescent age range. Based on sex, the research respondents consisted of 42% males and 58% females. Based on the working location, 68% of respondents worked inside buildings while the other 32 % of respondents worked outside buildings. Based on educational level, 76 or 74% of respondents had graduated from Senior High School. Meanwhile, based on the residential area, 63% of respondents resided in urban areas, while the other 37% of respondents resided in rural areas.

Table 2. Preventive Behaviors for the Covid-19 transmission (n=103)

Preventive Behaviors	Frequency (N)	Percentage (%)
Washing hands using soap and running water		
Always	87	84.5
Sometimes	16	15.5
Never	0	0
Wearing face-masks		
Always	95	92.2
Sometimes	8	7.8
Never	0	0
Doing social distancing		
Always	49	47.6
Sometimes	50	48.5
Never	4	3.9

The researchers measured the respondents' behaviors in order to prevent Covid-19 transmission including washing hands using soap and running water; wearing face-masks when leaving their homes; and performing social distancing. The measurement results were presented in Table 2. The behavior of washing hands using soap and running water was very good at 84.5%. The behavior of wearing face-masks when leaving their homes was also very good at 92.2%. Both behaviors significantly increased when compared to those before the Covid-19 pandemic, which was approximately only 10%. This proves that Banyumas people are aware of the danger of the spreading of Covid-19. However, the data on the behavior of performing social distancing was still poor. Table 2 showed that only 49 (47.6%) of 103 respondents always did social distancing.

Table 3. Factors contributing to the respondents' behavioral changes (n=103)

Factors contributing to behavioral changes	Frequency (N)	Percentage (%)
Knowledge		
Good	84	81.5
Poor	19	18.5
Attitude		
Positive	80	77
Negative	23	23
Habit		
Have the habit	10	10
Do not have the habit	93	90
Norm		
There is a norm	103	100
There is no norm	0	0
Environment/facilities		
Supporting	95	92
Not supporting	8	8
Media		
Accessible	78	75
Inaccessible	25	25

Based on the Integrated Behavior Model, the factors contributing to the people's behavioral changes were proven to be very complex. The research data in Table 3 presents factors contributing to the people's behavioral changes including knowledge, attitudes, past habits, norms, environments/facilities, and media accessibility. There were six factors, which mostly influence a person's behavior (Fishbein & Ajzen, 2007). In terms of knowledge, nowadays, almost everyone has a smartphone. This product of technology is widely used by people to share and obtain information. The data on public knowledge related to the Covid-19 has rapidly increased and reached 81.5%.

The attitude variable was considered in terms of influencing a person's behaviors. The results of this study showed that 80 or 77% of respondents had positive attitudes, while the other 23 or 33% of respondents had negative attitudes. The other factor contributing to people's behavioral changes, which was proven from the results of this study, was related to the implementation of norms/rules, which reached 100%, meaning that the government seemed to be disciplined in implementing the recently issued rules. People found outside their homes who did not obey the rules would be sanctioned.

The availability of facilities included in the category of supporting factors reached 92%. The government easily distributed face-masks to the people in various public places, such as markets and offices as well as providing facilities for people to wash their hands with antiseptic soap.

Another factor, which has an

important role in improving people's knowledge during the Large Scale Social Restrictions is media accessibility. The data presented in Table 3 shows that the accessibility of health education media was very accessible for the urban communities reaching 75%. The media were mostly distributed by the people through smartphones and the government even provided support in the form of free internet data packages. However, there was still the data related to the people's habits of wearing face-masks or washing their hands using soap and running water to consider. Only 10% of people previously had the habit of washing their hands and wearing face-masks. These factors were then analyzed based on the perspective of Integrated Behavior Model.

DISCUSSION

Based on the Integrated Behavior Model, several factors influence a person's behavior including demography, knowledge, attitudes, norms, habits, environments, and media (Lunn et al., 2020.). As well as these there are other factors, which can also influence a person's behavior, such as self-efficacy, skills, and salience. These factors were not examined by this study due to the necessity of secure data collection and the requirement to have face to face meetings. The results of this study related to the people's behavioral changes in order to prevent the Covid-19 transmission showed that the respondents highly increased their behaviors of washing hands using soap and running water, which reached 84.5% and wearing face-masks when leaving their homes, which reached 92.2%.

The respondents' behavioral changes, which rapidly and sharply increased were significantly influenced by the behavioral factors. In this case, the respondents prevented the Covid-19 transmission, which was driven by their fear of the applicable sanctions and of being infected with Covid-19. According to the results of research conducted by Lerik & Damayanti (2020), the people's behavioral changes, which were driven by their fear of the applicable sanctions, were usually only temporary. During the Covid-19 pandemic, the government has been

very serious about preventing the spread of the virus. Due to the applicable norms, the government continuously monitored whether the people crossed the road wearing face-masks or not. Those who did not wear their face-masks were subject to strict sanctions. This was based on the obtained data that the norm was 100% applied to all levels of society.

Behavioral changes coming from a person's own self-awareness are greatly important in maintaining health and will last longer (Bavel et al., 2020). Someone who understands well the benefits of the expected behavioral changes, according to research conducted by (Faasse & Newby, 2020), will tend to maintain his/her new behaviors. A person's background will also alter his/her behaviors. A nurse should be the one to educate and motivate people to have the correct self-awareness to prevent the Covid-19 transmission. Sometimes, the new awareness will arise only when someone is initially forced (Hanoatubun et al., 2020)

Social distancing behavior still needs to be improved since it reached only 47.6%. The people still consider that the people they talk to are in a healthy condition without any virus symptoms. Although, even if the people's conditions were without symptoms, there is still a possibility that they could be infected by Covid-19 (Pujilestari, 2020). However, many people feel no need to keep their distance from each other. This condition is actually very risky for the Covid-19 transmission. As proven by the results of the study conducted by Wise, Zbozinek, Michelini, Hagan, & Mobbs (2020), which stated that Covid-19 can be transmitted through droplets, and then if people still do not implement social distancing, it will potentially increase the number of newly infected patients. Based on the findings of this study, people felt that they had adequately strong immunity to protect themselves from the disease. These false beliefs could lead to failure in changing the people's behaviors to prevent the Covid-19 transmission. False beliefs may be influenced by the knowledge factor.

The adequate knowledge related to Covid-19 is greatly influenced by determining a person's behavioral

changes. Knowledge is one of the principles for a person in decision making and determining subsequent behaviors. New behaviors start from the cognitive domain and will then form attitudes and actions. Knowledge of how to prevent the Covid-19 transmission will make someone more aware of the importance of preventing the transmission of the disease. This researchers' statement is in line with the research conducted by Bavel et al., (2020), which explains that knowledge has a close relationship with decision making and the achieved positive attitudes and the realization of new behaviors. The results of this study found that 77% of respondents had positive attitudes and that these positive attitudes then supported their behavioral changes, which is proven by the results of this study because the achieved behavior of washing hands and wearing face-masks was almost at 100%.

During the Covid-19 pandemic, the government along with the health workers created the information media related to the Covid-19. This media could be easily found through the internet and social media. Many information sharing activities are made by people through WhatsApp group messages. The role of the media is quite effective in increasing the knowledge related to the risks of the Covid-19 transmission. The results of this study indicated that media accessibility reached 75%. Media accessibility increased the people's awareness of the importance of preventing the Covid-19 transmission. This statement is in line with the research conducted by Lunn et al., (2020), which discovered that clear public information campaigns could facilitate the involvement of behavioral changes to prevent the Covid-19 transmission. The information can be disseminated to the people living in urban areas, yet those living in rural areas tend to have very limited access to the information. The amount of respondents in this study who lived in rural areas was 37%. Therefore, the health workers certainly need to do the campaigns in different ways, such as through posters and leaflets. Both media were also proven to be effective in increasing the people's knowledge related to Covid-19 (Acob,

2020; Saputro, 2018).

After obtaining adequate knowledge and combined with a high education level, a person is expected to have a positive attitude. The results of this study indicated that most respondents had graduated from senior high school with good knowledge levels and positive attitudes. People's behavioral changes are also influenced by the availability of facilities. A person will be expected to behave well when supported by the facilities available in the society (Smolkowski et al., 2017). The availability of facilities found in this study was included in the supporting category at 92%. The availability of facilities might be seen from the free distribution of face-masks to the public, the existence of facilities for people to wash their hands using soap and running water in several public places, such as in markets and offices. Adequate facilities possibly used by the people might support the expected behaviors (Wise et al., 2020).

One other factor important to note in this research are habits. A person's behavioral changes are strongly influenced by past habits. The past habits which completely or at least do certain behaviors based on the research conducted by Lee, Kwok, Hons, & Diptroppubhlth (2015) are found to possibly inhibit the achievement of new expected behaviors. The findings in this study indicated that only 10% of respondents previously had the habit of washing hands and wearing face-masks. Thus it can be assumed that the respondents' behaviors to prevent the Covid-19 transmission were only temporary without the reinforcement of the health workers through the family empowerment. Families as the supporters and supervisors of behavioral changes have an important role in making those behaviors become permanent (Friedman & Pfiffner, 2020). Health workers, in promoting health related to the Covid-19 transmission, will be successful if they involve families as the support system. This research only describes people's behavioral changes based on the perspective of integrated behavior model. Thus, further research is definitely

required to reveal the other significantly influencing factors.

CONCLUSION AND RECOMMENDATION

Based on the integrated behavior model, it can be concluded that a person's behavioral changes are influenced by many factors, including demography, knowledge, attitudes, norms, habits, environments, and media. These factors unite and then influence each other until the new expected behaviors are created. By ignoring one of the factors, it may prevent a person from changing his or her behaviors. Good behaviors are created and may become a culture in people's daily lives through family empowerment. The background that is needed to change a person's behavior is still unknown. Recommendations based on the results of this study are to figure out the background behind people's behavioral changes. Further studies are greatly needed to conduct in-depth interviews as a basis for optimizing the expected behavioral changes. Health workers should work together with the families to provide the support system required to improve the people's behavioral changes to prevent the Covid-19 transmission.

CONFLICT OF INTEREST

The authors declare that they have no conflict of interest

REFERENCES

Abdillah, LA (2020). *Stigma on Positive People COVID-19.* Medan: Our Writing Foundation.

Acob, JRU (2020). Nursing the nursed: addressing co-19 pandemic crisis in the cuen theory perspective, 6 (2), 59–61.

Bavel, JJ Van, Baicker, K., Boggio, PS, Capraro, V., Cichocka, A., Cikara, M., ... Weeden, KA (2020). COVID-19 pandemic response. Nature Human Behavior, 4 (May). https://doi.org/10.1038/s41562-020-0884-z

Faasse, K., & Newby, J. (2020). The effects of perceived social norms on hand washing behavior in students. *Psychology Health Medicine.* 2 (3):154–159

Friedman, LM, & Pfiffner, LJ (2020). Behavioral interventions. The Clinical Guide to Assessment and Treatment of Childhood Learning and Attention Problems. Elsevier Inc. https://doi.org/10.1016/B978-0-12-815755-8.00007-1

Hanoatubun, S., (2020). Analysis of the Behavior of Indonesian Communities in Dealing with the Covid-19 Virus Pandemic and Tips for Maintaining Mental Welfare. Journal of Social and Culture 7 (3): 217-226

Irawan, AJH (2020). Covid-19 Phenomenon: The Impact of Globalization and Revitalization of Multilateralism.

Jacob, ON, Info, A., & Institutions, H. (2020). Impact of COVID-19 Pandemic School Close Down on the Research Program of Higher Institutions, 1 (1), 40–49. https://doi.org/10.25008/ijadis.v1i1.189

Jay JV,, et al. (2020). Using social and behavioral science to support Covid-19 pandemic responses. *Nature Human Behavior 4 (1): 460–471*

Lee, Y., Kwok, A., Hons, JG, & Diptroppubhlth, MM (2015). American Journal of Infection Control Face touching: A frequent habit that has implications for hand hygiene. American Journal of Infection Control, 43 (2), 112–114. https://doi.org/10.1016/j.ajic.2014.10.015

Lerik, MDC, & Damayanti, Y. (2020). Covid-19 Myth in the City of Kupang:

Online Cross-Sectional Survey, 2 (2), 130–137.

Lunn, PD, Belton, CA, Timmons, S., & Robertson, D. (nd). Using behavioral science to help fight the Coronavirus: A rapid, narrative review, 3 (1), 1–15. https://doi.org/ 10.30636/jbpa.31.147

Ngronggah, DI, Medical, R., Health, F., Nation, UD, Sari, DP, & Atiqoh, NS (2020). with adherence to the use of face-masks as an effort to prevent covid-19, 10 (1).

Pujilestari, Y. (2020). The Positive Impact of Online Learning in Indonesia's Educational System Post-Covid-19 pandemic, 4, 49-56.

Saputro, DS, & Semarang, UN (2018). Sustainability of the legal profession a mid-Covid-19 pandemic situation. https://doi.org/10.15294/ijicle.v2i2.38 333

Smolkowski, K., Seeley, JR, Gau, JM, Dishion, TJ, Stormshak, EA, Moore, KJ, ... Garbacz, SA (2017). Effectiveness evaluation of the Positive Family Support intervention: A three-tiered public health delivery model for middle schools ☆. Journal of School Psychology, 62, 103–125. https://doi.org/10.1016/j.jsp.2017.03. 004

Thorik, SH (2020). The effectiveness of large-scale social restrictions in Indonesia in the handling of the Covid-19 Pandemic, the total number of patients under surveillance as much as the Government's Strategic Measures for the Corona Vi-Covid-19 Epidemic Outbreak, its growth is quite alarming. So it places the world's highest order. In response to this, the government, 4, 115-120.

WHO. (2020a). Coronavirus Dashboard. Available at: https://who.sprinklr.com /# (Accessed: June 15, 2020).

WHO. (2020b) Naming the coronavirus disease and the virus that causes it. Available at:https://www.who.int/em ergencies/diseases/novel-coronaviru s-2019/technical-guidance/naming-th e-coronavirus-disease-(covid-2019)- and-the-virus-that-causes-it (Access ed: June 14, 2020).

Wise, T., Zbozinek, T., Michelini, G., Hagan, CC, & Mobbs, D. (nd). Changes in risk perception and protective behavior during the first week of the COVID-19 pandemic in the United States, (4).

Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y., Liu, Z.,... Wei, Y. (2020). Articles Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study. The Lancet, 6736 (20), 1–9. https://doi.org/10.1016/S0140- 6736(20)30566-3