Determinants of Adolescents' Healthy Lifestyle Behavior in Kediri, East Java

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ABSTRACT

***Background**: Amidst the disruptive era that is full of changes and challenges during the COVID-19 pandemic, psychological strength is needed by adolescents to be able to focus on positivity and maintain optimal health functions. Adolescents are one of the high-risk groups in this world's recent situation. Therefore, adolescents need to stay safe and healthy to survive their future, one of which is by doing healthy lifestyle behavior. In this context, resilience, self-compassion, and hope need to be considered by adolescents in order to successfully perform healthy lifestyle behavior. **Objective**: The research objective was to analyze the relationship between resilience, self-compassion, and hope with healthy lifestyle behavior in adolescents. **Methods**: This research was a descriptive-analytic study with a cross-sectional design. The population was adolescents in Kediri; East Java aged 15-19 years old. The sample was collected by cluster random sampling. The total sample of this research was 342 respondents. The independent variable was resilience, self-compassion, and hope. The dependent variable was healthy lifestyle behavior. Data were collected by offline questionnaires filled by the respondent and analyzed using regression. **Results**: Based on regression analysis, variables that simultaneously and significantly related to healthy lifestyle behavior were resilience, self-compassion, and hope ($p<0.001$). There was a significant relationship between each variable of resilience ($p=0.001$), self-compassion ($p=0.002$), and hope ($p<0.001$) with healthy lifestyle behavior. **Conclusion**: Resilience, self-compassion, and hope, both simultaneously and individually were predictors of healthy lifestyle behavior. According to the research result, adolescents need to raise awareness and practice their psychological strengths to maintain their healthy lifestyle behavior in daily life.*

***Keyword**: Adolescents; Healthy lifestyle behavior; Hope; Resilience; Self-compassion*

INTRODUCTION

Challenges and disruptions in various sectors of life continue to be experienced by world citizens at this recent time. This condition can cause discomfort both physically and psychologically (1–3). Related to this situation, it is necessary to shift the focus of thinking and behaving on a positive side. Focusing on the positive side can be done in various sectors of life, one of which is in the health sector (4). It is needed to set the primary attention to the concept of health, not illness. Trying to be healthy or maintaining and improving health in the first place before trying to treat the diseases, is a form of positive approach emphasis in the health sector (5).

In line with the above issues, in Psychology, there is a Positive Psychology approach. It is an approach in psychology that focuses on the important role of individual psychological strengths in achieving and improving optimal wellbeing (6,7). The positive Psychology approach can be used to understand the concept of health in terms of health promotion because both fields emphasize on achieving positive things, namely how individuals can stay healthy optimally and positively amidst the challenging times of their lives (5,7).

Most people at various phases of their age, including adolescence age, want to be healthy and function optimally (8). In Maslow's hierarchy of needs, health is one of the basic needs that every human wants to fulfil (9). In addition, the human needs to be healthy is due to the increasing cost of treatment for diseases (10). This situation is exacerbated by the COVID-19 pandemic which has caused limited and expensive care as well as treatment in health facilities (1,11). Health is an important issue in adolescent life (12) because if adolescents are able to do the effective efforts related to

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health, they can improve their general health in adulthood and reduce the risk of experiencing non-communicable diseases (NCDs) (13,14). Currently, adolescents are known as digital natives who use various technologies, facilities, and digital devices to support their daily life functions. Adolescents engaged in many passive activities such as excessive use of social media, gadgets, computers, television, and various digital applications (15,16). This condition brings a negative impact on adolescents' health and underlies the development of unhealthy lifestyle behavior (17). Adolescents also have a risk of exposure to adverse environmental influences related to their health (e.g. peer pressure) which causes adolescents to imitate unhealthy lifestyle behavior performed by people in their environment (13,18,19).

During the pandemic, which is still ongoing today, there have been some fundamental changes in various aspects of adolescents' life that have had impacts on economic, educational, social, and cultural aspects. Several countries in the world, including Indonesia, also carry out various restrictions on community activities (20,21). Several studies have shown that there is an increase in unhealthy lifestyle behavior in adolescents when this condition occurs (22–24).

Globally, research in some countries reveals that currently there is an increase in unhealthy lifestyle behavior in adolescents, namely 36% of adolescents choose unhealthy foods, 60% of adolescents have uncontrolled eating patterns, 48% of adolescents gain weight, and 43 % of adolescents not exercising regularly (25). In Indonesia, there are 95.5% of adolescents consume vegetables and fruit less frequently, 33.5% of adolescents do less physical activity, 29.3% of adolescents smoke, and 31% of adolescents experience dietary problems (26). In East Java Province there is an increase in the number of NCDs patients by 75.1 percent. This is influenced by the lack of healthy lifestyle behavior performed by the community, which is only 20 percent (27,28). Kediri City, which is one of the cities in East Java Province, has a number of NCDs patients (due to the lack of healthy lifestyle behavior) of 34 percent, 81,814 people with hypertension, 7,663 people with diabetes, and 5,048 people with obesity (29). These high numbers of NCDs patients in Kediri City are caused by the lack of healthy lifestyle behavior, which in this case can be performed since adolescents.

In order to avoid illness and gain optimal health, adolescents need to perform healthy lifestyle behavior (30). Adolescents tend to perform healthy lifestyle behavior when they have certain conditions. Several things that facilitate adolescents in performing healthy lifestyle behavior in this research are assumed to be resilience (31,32), self-compassion (33,34), dan hope (35,36). Resilience, self-compassion, and hope elicit certain psychological states and bring positive psychological effects on adolescents to help them perform healthy lifestyle behavior (7,37).

Resilience, self-compassion, and hope have important roles for adolescents to perform healthy lifestyle behavior. Based on previous studies regarding healthy lifestyle behavior, it is known that there have not been many studies that examined and combined constructs such as resilience, self-compassion, and hope with healthy lifestyle behavior. So, it is necessary to do further research to find out the relationship between these variables. Thus, in this research, we will examine the relationship between resilience, self-compassion, and hope with healthy lifestyle behavior and the contribution of these variables both simultaneously and individually to healthy lifestyle behavior.

METHODS

This research has been ethically approved by the ethics committee of the Public Health Faculty of Institut Ilmu Kesehatan Strada Indonesia with the number 2485/KEPK/VIII/2021. The research was conducted from September to December 2021. This descriptive-analytic research was conducted with a cross-sectional design. The population in this research was all adolescents in Kediri City aged 15-19 years old as many as 20,000 adolescents. During this adolescent phase, individuals have several conditions that are in accordance with the research context. Adolescents belong to a group of individuals who are vulnerable to various risk exposures in their lives due to changes in global dynamics and trends, limitations

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and conditions of the Covid-19 pandemic (Park et al., 2020), adverse environmental influences in the health context (e.g. peer pressure) (Sunarti et al., 2017), and the existence of various problems related to adolescents' social life (Taylor, 2018). Some of these conditions underlie the emergence of adolescents' issues related to healthy lifestyle behavior (Hosseini et al., 2017). This adolescent phase is also the right phase for adolescents to understand, prevent, or overcome the possibility of future disease development by doing efforts related to their health condition (McGovern et al., 2018). Healthy lifestyle behavior performed at a young age is effective to do because it helps reduce the risk of adolescents experiencing non-communicable diseases that can cause death at later ages (World Health Organization, 2020). The sampling technique used in this research was cluster sampling. The research sample was 342 respondents who were determined using the guideline for determining sample size by Isaac and Michael (Mulyatiningsih, 2011). The sampling of 342 respondents was carried out by the process of double-stage cluster random sampling (Silalahi, 2015), which was conducted by dividing the research area, namely Kediri City into 3 districts and randomly selecting several districts. Those selected districts were divided based on their sub-district and several sub-districts were randomly selected from the selected districts. Respondents were selected from each selected sub-district according to the research sample size, which amounted to 342 respondents.

The independent variables in this research were resilience, self-compassion, and hope. The dependent variable was healthy lifestyle behavior. Data were collected using printed questionnaires filled out by respondents and analyzed using regression at a significance level of α=0.05. In this research, resilience was measured using a questionnaire adapted from the questionnaire in Hedo and Simarmata's research (Hedo & Simarmata, 2021). Self-compassion was measured using a questionnaire adapted from the questionnaire in Sugianto, Suwartono, and Sutanto's research. (Sugianto et al., 2020). Hope was measured using a questionnaire adapted from the questionnaire in Reza's research (Reza, 2017). Healthy lifestyle behavior was measured using a questionnaire adapted from the questionnaire in Damayanti, Dino, and Donnelly's research (Damayanti et al., 2020).

RESULTS AND DISCUSSION

Healthy lifestyle behavior can maintain and improve the general health of adolescents and adults, as well as prevent the possibility of individuals suffering from non-communicable diseases (Mollborn & Lawrence, 2018). Healthy lifestyle behavior is related to several conditions in adolescents. Individuals' personal psychological state is one of the conditions related to healthy lifestyle behavior (Ciupinska & Cyprysiak, 2020; Krause & Halkitis, 2020; Pender et al., 2015; Rahayu et al., 2019; Taylor, 2018). Adolescents who are resilient, have self-compassion and have high hope tend to be able to perform healthy lifestyle behavior in their daily life (Bottolfs et al., 2020; Taylor, 2018).

Table 1. Subjects Characteristics

Characteristics	Frequency	%
Age		
15	197	57.6
16	34	9.9
17	39	11.4
18	37	10.8
19	35	10.2
Gender		
Male	167	48.8
Female	175	51.2
Education		
Junior High S	197	57.6
Senior High S	109	31.9
Graduate	36	10.5
Resilience		
Low	32	9.4
Moderate	242	70.8
High	68	19.9
Self-compassion		
Low	54	15.8
Moderate	210	61.4
High	78	22.8
Hope		
Low	32	9.4
Moderate	242	70.8
High	68	19.9
Healthy Lifestyle Behavior		
Low	50	14.6
Moderate	245	71.6
High	47	13.7
Total	342	100

Table 1 presents the demographic and psychological conditions of

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respondents. The data showed that most respondents were junior high school students (57.6%), 15 years old (57.6%), and females (51.2%). Table 1 also showed that most subjects had resilience, self-compassion, and hope in moderate level. While the subjects who performed healthy lifestyle behaviors at a high level were 13.7%.

Table 2. Crosstab, Bivariate Analysis Result

Variables	Healthy Lifestyle Behavior						Statistic Test
	Low		Moderate		High		
	n	%	n	%	n	%	
Resilience							P-Value:
Low	16	51	15	46	1	3	<0.001
							R:0.4
Moderate	30	12	181	74	31	13	R^2:0.15
High	4	5	49	72	15	23	
Self-c							P-Value:
Low	22	40	32	60	0	0	<0.001
							R:0.43
Moderate	22	10	160	76	28	14	R^2:0.19
High	6	8	53	68	19	24	
Hope							P-Value:
Low	13	41	19	59	0	0	<0.001
							R:0.5
Moderate	32	13	192	79	18	8	R^2:0.23
High	5	7	34	50	29	43	

According to Table 2, it was known that most subjects had moderate resilience and performed healthy lifestyle behavior which was also at the moderate level (74%). Most subjects who had a low level of resilience performed healthy lifestyle behavior which was also at a low level (51%). Meanwhile, most subjects who had a high level of resilience performed healthy lifestyle behavior at a moderate level (72%). Based on the results of the analysis, it was also known that resilience had a significant relationship with healthy lifestyle behavior (p<0.001). There was a strong relationship between resilience and healthy lifestyle behavior, which was 40%. Meanwhile, the contribution of resilience to healthy lifestyle behavior was 15% and the remaining 85% was influenced by other variables not examined in this research.

There was previous research that revealed similar results to this research. Research with a cross-sectional approach conducted on adolescents in Bogor stated that adolescents who had low resilience tended to perform unhealthy lifestyle behavior (Wardhani et al., 2017).

Table 2 also states that most subjects had a moderate level of self-compassion and performed healthy lifestyle behavior which was also at a moderate level (76%). It was also known that there were no subjects with a low level of self-compassion who had high levels of healthy lifestyle behavior (0%). Meanwhile, most subjects who had a high level of self-compassion performed healthy lifestyle behavior at a moderate level (68%). From the analysis, it was stated that self-compassion had a significant relationship with healthy lifestyle behavior (p<0.001).

There was a strong relationship between self-compassion and healthy lifestyle behavior, which was 43%. While the contribution of self-compassion to healthy lifestyle behavior was 19% and the remaining 81% was influenced by other variables not examined in this research.

There was previous research that revealed similar results to this research. Systematic review research about the effect of self-compassion on healthy lifestyle behavior conducted by Biber and Elis stated that individuals who had a low level of self-compassion tended to apply unhealthy lifestyle behaviors, and vice versa (Biber & Ellis, 2017).

From Table 2 it was known that most subjects had a moderate level of hope and performed healthy lifestyle behavior which was also at a moderate level (79%). There were no subjects with a low level of hope who performed a high level of healthy lifestyle behavior (0%). Meanwhile, most subjects who had a high level of hope tended to perform healthy lifestyle behavior at a moderate level (50%). Based on the analysis result, it was also known that hope had a significant relationship with healthy lifestyle behavior (p<0.001). There was a strong relationship between hope and healthy lifestyle behavior, which was 50%. Meanwhile, the contribution of hope to healthy lifestyle behavior was 23% and the remaining 77% was influenced by other variables not examined in this research.

There was previous research that revealed similar results to this research. A cross-sectional study conducted by Griggs and Crawford on adolescents at University stated that adolescents who had a low level of hope tended to adopt unhealthy

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lifestyle behavior. Meanwhile, adolescents who had a high level of hope tended to have the initiative to perform healthy lifestyle behavior (Griggs & Crawford, 2019).

Table 3. Multivariate Analysis Result

IV	P Value	B	Sig	R	R^2
Resili-ence	0.001	0.345			
Self-compa ssion	0.002	0.184	<0.001	0.56	0.31
Hope	<0.001	1.149			
		B constant: 60.526			

The data analysis results in Table 3 states that simultaneously there was a significant relationship between resilience, self-compassion, and hope with healthy lifestyle behavior (p<0.001). There was a strong relationship between resilience, self-compassion, and hope simultaneously with healthy lifestyle behaviors by 56%. Meanwhile, the contribution of resilience, self-compassion, and hope simultaneously to healthy lifestyle behavior was 31% and the remaining 69% was influenced by variables that were not examined in this research. According to the results of data analysis, predictions of healthy lifestyle behavior in adolescents could be made based on resilience, self-compassion, and hope that existed in adolescents. Prediction through regression equation was Y = 60.526 + 0.345 (X1 resilience) + 0.184 (X2 self-compassion) + 1.149 (X3 hope). This meant that if variables of resilience, self-compassion, and hope were considered constant, the amount of healthy lifestyle behavior in adolescents would be 60,526.

Table 3 also shows that each variable of resilience, self-compassion, and hope had a significant relationship with healthy lifestyle behavior (p<0.05). By the regression equation, the prediction of healthy lifestyle behavior that could be made based on resilience was every increase in the resilience variable by 1 unit would increase healthy lifestyle behavior in adolescents by 0.345. Meanwhile, the prediction of healthy lifestyle behavior that could be made based on self-compassion was every increase in self-compassion variable by 1 unit would increase healthy lifestyle behavior in adolescents by 0.184. The prediction that can be made on healthy lifestyle behavior based on hope was every increase in the hope variable by 1 unit would increase healthy lifestyle behavior in adolescents by 1,149.

The Relationship between Resilience, Self-compassion, and Hope with Healthy Lifestyle Behavior

Results of this research showed that resilience, self-compassion, and hope simultaneously had a significant relationship with healthy lifestyle behavior (p<0.001), which was in accordance with previous research that stated similar results. Resilience, self-compassion, and hope bring impact to adolescents when they face difficult situations, experience problems, and failures, as well as when adolescents face a normal or neutral situation in their daily life (Holden et al., 2020). Resilience, self-compassion, and hope together have a relationship with healthy lifestyle behavior in adolescents by serving roles as protective and buffer functions for adolescents related to healthy lifestyle behavior (Ellis et al., 2017; Hu et al., 2018; Y. K. Kim et al., 2019). When adolescents with a high level of resilience, self-compassion, and hope face problems or challenges, they will experience a certain process of accepting the situation in a calm, balanced, and meaningful way. Adolescents also experience positive emotions, a sense of security and comfort, and a soothing effect, as well as improvement in negative feelings related to problems in performing healthy lifestyle behavior (Butz & Stahlberg, 2020; Li et al., 2019; Nery-Hurwit et al., 2018).

Resilience, self-compassion, and hope bring benefits to adolescents in neutralizing the negative impacts caused by biopsychosocial problems experienced by adolescents when they perform healthy lifestyle behavior (Y. K. Kim et al., 2019; Konaszewski et al., 2021). With these three internal psychological strengths in adolescents, they tend to proactively perform healthy lifestyle behavior even when they have not experienced illness (Griggs & Crawford, 2019). Adolescents will try to gain the optimal health condition by maintaining, enhancing, and improving health by implementing healthy lifestyle behavior as a form of loving, caring, and responding well to themselves (Dunne et al., 2018).

Adolescents who have resilience, self-compassion, and hope tend to experience mental energy that facilitates them to continuously strive and move to

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find ways in performing healthy lifestyle behavior, both in normal and difficult conditions (Horan & Taylor, 2018; Mcgarity-palmer, 2019). Adolescents also tend to respond effectively and positively toward a painful or difficult situation, so that it can produce a positive result as well, which in this case is positive healthy lifestyle behavior (Holden et al., 2020; Li et al., 2019).

Previous research stated that when adolescents perform healthy lifestyle behavior and experience negative feelings, problems, difficult situations, or failures, they tended to remain able to perform healthy lifestyle behavior if they had resilience, self-compassion, and hope at a moderate or high level. Despite experiencing problems or difficult situations in performing healthy lifestyle behavior, adolescents would be able to bounce back to a balanced condition. This was related to resilience, self-compassion, and hope that carried out the process of protecting and buffering adolescents from difficult situations (Horan & Taylor, 2018; Hu et al., 2018; Konaszewski et al., 2021).

Theories about resilience, self-compassion, and hope state that the existence of resilience, self-compassion, and hope will produce certain repairing effects on negative situations experienced by adolescents. In addition to neutralizing and repairing negative conditions in adolescents, resilience, self-compassion, and hope also carry out a therapeutic process in adolescents (Fukuhara et al., 2019; Hu et al., 2018; Schiavon et al., 2017). In such circumstances, adolescents do not continuously focus on negative situations and do not give in to difficulties or problems that arise when they perform healthy lifestyle behavior (Dunne et al., 2018; Gedik, 2019).

The Relationship between Resilience and Healthy Lifestyle Behavior

Results of this research indicated that there was a significant relationship between resilience and healthy lifestyle behavior of adolescents in Kediri, East Java.

The theory of resilience states that resilience is an individual's ability to survive and struggle by mobilizing the assets and resources as well as maintaining a balanced life during and after experiencing stress and difficult times. These pressures and difficulties are considered as means and opportunities for self-development so that individuals can rise or recover to normal development functions or even better than the previous state and function (Garmezy, 1991; Höltge et al., 2021; Sagone et al., 2020; Wagnild & Young, 1993; Zimmerman, 2013).

Adolescents who have resilience tend to experience an inner peace that helps them minimize excessive negative responses to a certain problem, tend to continue to bounce back when facing problems or difficult conditions, tend to have confidence and ability to depend on themselves, tend to be able to realize meaning and purpose in their life, and tend to realize about existential solitude (Wagnild & Young, 1993). Resilience facilitates adolescents to be able to survive when they face difficult conditions and are exposed to negative impacts or influences that may occur in the performance of healthy lifestyle behavior as the result of changes in adolescents' life related to their transition from childhood to adulthood, and as result of global change (Hendriani, 2019; Wardhani et al., 2017). The theory of development in adolescents states that adolescents are vulnerable to exposure to bad influences from their environment where peer pressure becomes an important issue in adolescents' life (Taylor, 2018). The environment can bring a bad influence on adolescents related to unhealthy lifestyle behavior and increase adolescents' risk to experience problems in performing healthy lifestyle behavior (Havigerová et al., 2019; Pender et al., 2015).

The Covid-19 pandemic exacerbated the difficult situation of adolescents because they are exposed to biopsychosocial stressful situations due to disturbances and changes to the daily routine of adolescents' lives caused by isolation and restrictions in most areas of life in order to break the chain of spread on Covid-19. There are also changes in adolescents' socioeconomic conditions as an effect of the pandemic situation (Huber et al., 2020). All these conditions trigger adolescents to experience decreased physical activity, increased passive activity (sedentary behavior), experience changes and disturbances in sleep and eating patterns, increased consumption of alcoholic beverages and cigarettes, increased anxiety, stress, boredom, and loneliness (Ashadi et al., 2020; Huber et al., 2020; Larson, 2021; Pecanha et al., 2020; Phillipou et al., 2020; Reyes-

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Olavarría et al., 2020; Romero-Blanco et al., 2020; Zenic et al., 2020; Zheng et al., 2020).

According to the theory of the resilience process, resilient adolescents will carry out a process that involves dynamic interactions between assets and resources when they face problems and obstacles in performing healthy lifestyle behavior. Assets are positive internal factors that exist in adolescents, such as competence, coping abilities, and self-confidence. Meanwhile, resources are positive factors outside the adolescents and rooted in adolescents' family support, environment, and social communities (Garmezy, 1991; Utami & Helmi, 2017).

Assets and resources that interact with each other within adolescents will neutralize the negative impact caused by biopsychosocial problems experienced by adolescents due to negative influences and risk factors, such as exposure to peer pressure, economic difficulties, and restrictions due to the Covid-19 pandemic, which make them prone to perform unhealthy lifestyle behavior. The resilience process also involves assets and resources as protectors that will fight or work in directly opposite ways from the risk factors experienced by adolescents related to their performance of healthy lifestyle behavior (Zimmerman, 2013).

The results of this research were in accordance with the results of longitudinal research on adolescents under 18 years old which stated that there was a relationship between resilience and healthy lifestyle behavior. The research revealed that resilience in adolescents can interfere with or counter the negative impact of negative experiences or problems experienced by adolescents related to healthy lifestyle behavior (Nishimi et al., 2021).

The Relationship between Self-compassion and Healthy Lifestyle Behavior

Results of this research indicated that there was a significant relationship between self-compassion and healthy lifestyle behavior of adolescents in Kediri City, East Java.

Self-compassion is an individual's ability to love oneself or respond to oneself with compassion or kindness when faced with difficulties or failures, which is manifested in form of treating oneself with kindness, realizing one's own shortcomings which are natural for every human being, and dealing with emotions and life experiences in meaningful ways (Biber & Ellis, 2017; Bluth et al., 2018; K. Neff et al., 2021).

In relation to healthy lifestyle behavior, self-compassion helps adolescents to be able to perform healthy lifestyle behavior in daily life (Gedik, 2019; Homan & Sirois, 2017; Rahimi-Ardabili et al., 2018; Sirois, 2020). Self-compassion produces a positive influence on adolescents to perform healthy lifestyle behavior (Biber & Ellis, 2017; Cleare et al., 2018; Dunne et al., 2018; Homan & Sirois, 2017; Rahimi-Ardabili et al., 2018). Adolescents who love themselves will treat themselves well, including caring for, maintaining, and improving their health by performing healthy lifestyle behavior.

Self-compassion will enable adolescents to do a proactive effort to achieve an optimal health state by performing healthy lifestyle behavior. Adolescents are said to be proactive about their health when they are willing to perform healthy lifestyle behavior in order to maintain, enhance, and improve their health even before they experience illness. Adolescents who treat themselves with compassion tend to apply good things to themselves, in this case, by performing healthy life behavior so that they can obtain optimal health status (Dunne et al., 2018). During the process of performing healthy lifestyle behavior, adolescents can experience difficult conditions, problems, and failures triggered by the influence of environment and lifespan developmental change, as well as restrictions due to the Covid-19 pandemic (Taylor, 2018). Adolescents also become negligent in performing healthy lifestyle behavior when they feel unstable, have a negative evaluation of themselves, and experience confusion in finding their identity as part of their developmental tasks and puberty phase (Bluth & Eisenlohr-Moul, 2017).

Despite facing various problems and difficulties, adolescents who have self-compassion will treat themselves well and in a compassionate manner so that they will continue to perform healthy lifestyle behavior in daily life. In addition, adolescents who experience failure in implementing healthy lifestyle behavior will not judge themselves harshly, will not feel alone and isolated, and will not be protracted in sadness and guilt due to failure in performing healthy lifestyle

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behavior. They tend to maintain the balance by accepting and understanding that every human being has flaws and experiences failure as a life lesson (Elices et al., 2017; Khumas et al., 2019).

Self-compassion in adolescents acts as a buffer and gives them a repairing effect from the negative condition that may arise when adolescents perform healthy lifestyle behavior or when adolescents experience difficult situations or when adolescents fail to perform healthy lifestyle behavior. In addition, self-compassion also raises healthy and positive emotions in adolescents when performing healthy lifestyle behavior (Gill et al., 2018; Marsh et al., 2018; K. Neff et al., 2021).

The results of this research were in accordance with previous research on adolescents at University which stated that there was a relationship between self-compassion and healthy lifestyle behavior. The research revealed that self-compassion had a positive relationship with healthy lifestyle behavior in adolescents. Adolescents who had self-kindness and acted in a mindful manner tended to perform healthy lifestyle behavior (Gedik, 2019).

The Relationship between Hope and Healthy Lifestyle Behavior

Results of this research indicated that there was a significant relationship between hope and healthy lifestyle behavior of adolescents in Kediri City, East Java. Hope is an individual's attribute of personal strength which manifested in form of expectations, strong mental determination, and future-oriented belief about the ability to create roads, directions, and routes (pathways) to achieve a certain goal in the future. Hope is driven by the component of motivation (agency) to use the pathways in order to achieve determined goals, even though there are problems and difficulties that must be faced in achieving these goals (Espinoza et al., 2017; Snyder, 2002). High hope adolescents tend to have mental energy that can move and encourage them to survive and live the way to achieve their goals (Snyder, 2002). Both in neutral conditions and difficult conditions, hope is a personal strength possessed by adolescents that have an important role in achieving their goals (Ghielen et al., 2018).

In relation to healthy lifestyle behavior, hope enables adolescents to find and execute all the possible ways with the encouragement of mental energy to perform healthy lifestyle behavior in daily life. Hope helps adolescents experience positive expectations about positive results in the future, which in this case are their expectations to successfully perform healthy lifestyle behavior (Forbes, 2017; Ghielen et al., 2018). Hope also inspires adolescents to take care of themselves and be proactive and focus on finding ways to implement their goals related to healthy lifestyle behavior (Mcgarity-palmer, 2019).

Within the health context, hope acts as a protector for adolescents when they implement healthy lifestyle behavior (Rustoen, 2021). Hope will elicit a therapeutic process in protecting and improving adolescents' health (Fukuhara et al., 2019; Schiavon et al., 2017). High hope adolescents will consider the problem and difficult condition when implementing healthy lifestyle behavior as a challenge that will be successfully overcome by finding alternative ways and using various resources in their life (Hauck, 2020).

The results of this research were in accordance with quantitative research about adolescents which stated that there was a relationship between hope and healthy lifestyle behavior. The study stated that hope was a predictor of adolescents' healthy lifestyle behavior (Popoola, 2017).

CONCLUSION

Most of the adolescents in Kediri City, East Java had psychological strengths such as resilience, self-compassion, and hope at a moderate level. Meanwhile, most of the adolescents who had resilience, self-compassion, and hope at a low level tended not to perform healthy lifestyle behavior in their daily lives.

There was a significant relationship between resilience, self-compassion, and hope simultaneously with the healthy lifestyle behavior of adolescents in Kediri City, East Java. In addition, it was also known that the three attributes of psychological strengths in the form of resilience, self-compassion, and hope, partially had a significant relationship with healthy lifestyle behavior in adolescents.

Based on the results of this research, it can be suggested that further study on healthy lifestyle behavior, resilience, self-compassion, and hope in various contexts and approaches is necessary to be carried out.

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According to the results of this research, it is necessary to design intervention and health promotion programs to improve healthy lifestyle behavior among adolescents in sustainable and practical ways, especially by integrating Positive Psychology constructs (resilience, self-compassion, and hope) into intervention and health promotion programs for adolescents in Kediri City, East Java.

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Planned Behavior Theory Approach to Waste Management Behavior in South Denpasar District

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ABSTRACT

***Background**: In Bali, waste generation is estimated at 10,266.4 m³ per day. Although promotion and public education about waste management have been carried out for a long time, community behavior related to waste management is still lacking. **Objective**: This study aims to better understand the factors influencing waste management behavior. Thus, the promotion strategy given to the community can be ideal. **Methods**: A cross-sectional study was conducted in 5 sub-districts in South Denpasar District. The accessible population was all households in South Denpasar District, with a total of 36,722 households. After calculation according to the formula, the sample size was 100 and was added 10% to make 110 samples to minimize invalid data or unwilling households. As for the exclusion criteria for respondents, they were those who have lived <6 months in the sub-district of South Denpasar. The sampling technique used was Probability Proportional to Size, then analyzed using the logistic regression. The questionnaire was used to help the data collection processes. **Results**: People with good behavior in managing waste amounted to 55.45%. The multivariate analysis results showed a significant relationship between knowledge (AOR=2.52; 95%CI= 1.08-5.85), attitude (AOR=3.06; 95%CI= 1.13-8.28), and perceived behavior control (AOR=3.00; 95%CI= 1.22-7.38) with waste management behavior in the community. **Conclusion**: Efforts are needed to increase knowledge through training and education programs managed by the government and local non-governmental organizations. In addition to more frequent programs to increase community participation, accompanied by more adequate facilities and infrastructure such as carrier services and waste banks.*

***Keywords**: Behavior; Denpasar; Planned Behavior; Promotion Strategy Waste Management*

INTRODUCTION

According to a book titled "What a Waste: A Global Review of Solid Waste Management" by Hoornweg and Bhada-Tata (2012), it is estimated that by 2025 the amount of waste produced globally will reach 2.2 billion tons yearly. This number will certainly increase along with the increase in population number each year. In Indonesia, as stated by the Ministry of Environment and Forestry, the waste produced by the Indonesian population is around 65 million tons per year. Research by Jambeck, et al (2015) in the Indonesian Environmental Statistics book (Badan Pusat Statistik, 2017) estimated that every resident in Indonesia can produce 0.52 kg of waste per day.

In Bali, based on the Environmental Status Report of Bali Province (Pemerintah Provinsi Bali, 2015), the waste generated reached 10,266.40 m³ daily. Most of the waste was produced by Denpasar City, at 2,865.96 m³. Data from Sarbagita Landfill showed that 5,000 m³ of waste went to the landfill every day in 2019. The waste mainly consisted of plant and wood (62%), plastics (16%), paper (10%), cloth, food, rubber, leather, and other waste (Dinas Lingkungan Hidup Pemerintah Provinsi Bali, 2020).

Waste that is not managed properly can disturb environmental aesthetics, cause unpleasant odors, and increase the risk of vector-borne diseases. To ensure that the waste produced is managed properly, the Government of Indonesia regulates it using the Statute Number 18 of 2008 about Waste Management. Waste management processes include waste reduction activities and waste handling. If the community follows, these activities will reduce waste production and utilize it to have economic value or be reused for

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other activities. Thus, the waste at the landfill can be minimized, and waste processing can run optimally (Kementerian Hukum dan HAM, 2008).

However, based on Susenas results quoted in Environmental Statistics of Indonesia 2018 (Badan Pusat Statistik, 2018b), 66.8% of the community managed their waste by burning it, and only 1.2% of the community sorted the waste they produced or better known as 3R. According to the 2018 Indonesia Environmental Indifference Behavior Index, which also cited the Susenas data, 53% of households in Indonesia used non-environmentally friendly methods when managing waste and only 1.1% of households managed their waste further by recycling, composting, or depositing into the waste bank (Badan Pusat Statistik, 2018a).

The theory of planned behavior is widely used to explain the psychological factors that influence various consumer behaviors and health behaviors, such as the determinants of buying behavior for organic food (Wijaya, 2017), environmentally friendly attitudes and behavior of consumers (Kusumo *et al.*, 2017), and consumer behavior of organic rice (Dewi and Yusalina, 2011).

Abroad, the theory is widely used to describe behaviors related to waste management which includes sorting, recycling, reusing, and further processing of household waste, including hazardous waste (Mahmud and Osman, 2010; Cabaniss, 2014; Strydom, 2018; Santoso and Farizal, 2019; Islam, 2021). However, this behavioral theory is rarely used to analyze waste management behavior, especially in Denpasar City.

The author had discovered a previous study titled "Community Behavior in Waste Management and Influencing Factors in East Denpasar District, Denpasar City, Bali Province" (Sukerti, 2017). In this study, the factors included internal factors such as knowledge, education, and household income, as well as external factors such as socialization, law enforcement, and facilities available to manage waste. For this reason, research using a different approach is necessary, namely the theory of planned behavior, to better understand the factors that influence behavior. Thus, the approach to promoting healthy behavior in the community can be ideal.

METHODS

A quantitative descriptive study with a cross-sectional design was conducted. The accessible population was all households in South Denpasar District, Denpasar City, with 36,722 households. After calculation according to the formula, the sample size was 100 and was added 10% to make 110 samples to minimize invalid data or unwilling households.

The sampling technique used in this study was Probability Proportional to Size (PPS). PPS is a technique for selecting samples from small unit groups called clusters. This technique can be used if complete data on the population are not available, costs of research are limited, and the population is geographical. The technique was begun by determining clusters in the form of villages/sub-districts in the South Denpasar District. The selected clusters were Sesetan Sub-District, Panjer Sub-District, Sanur Sub-District, Serangan Sub-District, and Sidakarya Village. The total samples were divided equally into each cluster, making it 22 samples per cluster. Then, each sample was selected using the Simple Cluster Sampling technique.

The study occurred from April to June of 2021. The data collection process was carried out by interviewing each head of the household with questionnaires as a tool. The inclusion criteria for the samples were people aged 18-65 years and domiciled in South Denpasar District. The exclusion criteria were those who lived less than six months in South Denpasar District.

The data collected were then analyzed bivariate using a simple logistic regression method and analyzed multivariate using binary logistic regression method in a data processing application.

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RESULTS AND DISCUSSION

Table and Image

Table 1. Respondent's Demographic

Demographic Characteristics	Frequency	Percentage (%)
Sex		
Male	55	50.0
Female	55	50.0
Umur		
18-24 Years Old	21	19.1
25-54 Years Old	73	66.4
55+ Years Old	16	14.5
Occupation		
Private Sector Employee	20	18.2
Government Employee	6	5.5
Entrepreneur	34	30.9
Student/College Student	18	16.4
Retiree	4	3.6
Household Wife	22	20.0
Others	6	5.5
Education Level		
No School	0	0.0
Elementary	11	10.0
Junior High	7	6.4
Senior High/of the same level	68	61.8
College	24	21.8
Monthly Income		
<Rp 1,500,000.00	41	37.3
Rp 1,500,000.00-Rp 2,500,000.00	37	33.6
Rp 2,500,000.00-Rp 3,500,000.00	13	11.8
>Rp 3,500,000.00	19	17.3
n Total	**110**	**100**

Table 2. Behavior, Knowledge, Attitude, Subjective Norm, and Perceived Behavior Control of Waste Management

Variable	Frequency	Percentage (%)
Behavior		
Good	61	55.45
Poor	49	44.55
Knowledge		
Good	45	40.9
Poor	65	59.1
Attitude		
Positive	29	26.4
Less Positive	81	73.6
Subjective Norm		
Supportive	40	36.4
Less Supportive	70	63.6
Perceived Behavior Control		
Supportive	37	33.6
Less Supportive	73	66.4
n Total	**110**	**100**

Table 3. Relationships between Demographic Factors and Knowledge with Behavior

Variable	Behavior				OR	95 CI	P-value
	Good		Poor				
Education Level	n	%	n	%			
High	55	90.2	37	75.5	2.97	1.02-8.62	0.045
Low	6	9.8	12	24.5	Ref		
Monthly Income							
<Rp 1,500,000.00	20	48.8	21	51.2			
Rp 1,500,000.00-Rp 2,500,000.00	20	54.1	17	45.9	1.23 Ref	0.50-3.00	0.642
Rp 2,500,000.00-Rp 3,500,000.00	8	61.5	5	38.5	1.68 Ref	0.46-6.00	0,425
>Rp 3,500,000.00	13	68.4	6	31.6	2.27 Ref	0.72-7.1	0.159

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						4	
Knowledge							
Good	31	50.8	14	28.6	2.58	1.16-5.73	0.020
Poor	30	49,2	35	71,4	Ref		

Table 4. Relationships between the Theory of Planned Behavior and Waste Management Behavior

Variable Category	Behavior				**OR**	**95 CI**	**P-value**
	Good		**Poor**				
Attitude	**n**	**%**	**n**	**%**			
Positive	22	36.1	7	14.3	3.38	1.30-8.80	0.012
Less Positive	39	63.9	42	85.7	Ref		
Subjective Norms							
Supportive	27	44.3	13	26.5	2.19	0.97-4.94	0.057
Less Supportive	34	55.7	36	73.5	Ref		
Perceived Behavior Control							
Supportive	27	44.3	10	20.4	3.09	1.31-7.31	0.010
Less Supportive	34	55.7	39	79.6	Ref		

Table 5. Multivariate Analysis Results

Variable	**First Model**			**Last Model**		
	AOR	**95 % CI**	**p-value**	**AOR**	**95 % CI**	**p-value**
Education Level	2.64	0.81-8.59	0.107			
Knowledge	2.50	1.02-6.12	0.045	2.52	1.08-5.85	0.032
Attitude	2.91	1.03-8.20	0.043	3.06	1.13-8.28	0.028
Subjective Norms	2.08	0.82-5.23	0.120			
Perceived Behavior Control	2.93	1.14-7.55	0.025	3.00	1.22-7.38	0.016

Table 1 shows that the proportion of male and female respondents was the same (50%), and the majority was in the age group of 25-54 years (66.4%). Most respondents worked as entrepreneurs (30.9%) and 3.6% as retirees. The majority of respondents had completed high school education/equivalent (61.8%) and had an income of <Rp1,500,000.00 (37.3%) per month.

In general, waste management behavior in the South Denpasar District community was good (55.45%). 17.3% of respondents always sorted the waste they produced at home, 23.6% sometimes, and 59.1% never. Waste sorted by the community was then distributed to scavengers or waste banks with a percentage of always 17.3%, sometimes 22.7%, and never 60%. This finding was similar to Manado city, where 25% of people separated wet and dry waste, and 45% of the people never sorted their waste (Pianaung, 2007). 13.6% of respondents had also provided special containers for B3 waste such as used batteries, bulbs, or expired drugs, 45.5% of respondents occasionally, and 40.9% mixed hazardous waste with other waste. In line with the research of Muhyiddin et al., (2016) in the community of Mangasa Village, Tamalate District, Makassar City, which disposed of hazardous waste separately from other waste (13.3%), and the rest of the community (86.6%) still mixed hazardous waste with other waste. The trash cans used by respondents were always closed (30%), sometimes closed (20%), and 50% of those used open trash cans. The use of open trash cans can make it easier for vectors such as flies, mice, and cockroaches to breed and cause unpleasant odors (Kumala and Patangan, 2017). As many as 13.6% of respondents always did compost for food waste and leaves, 27.3% sometimes, and 59.1% never. In addition, respondents also reused the waste they produced, such as cans/iron (32.3%), bottles/glass (50.1%), and plastic/cracks (48.2%). The rest, 36.4%, never reused the waste they produce. Littering behavior was still found. As many as 10% of respondents always disposed of their waste in a place

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that was not transported to landfills, and 36.4% sometimes did so. 1.8% of respondents also still burned the waste they produced, and 9.1% sometimes. The rest claimed to have never burned the waste they produced. The waste usually burned was in the form of leaves that fall on the lawn, paper, and plastic. Susenas data stated that 66.8% of Indonesians still managed their waste by burning (Badan Pusat Statistik, 2018b), meaning that the percentage of people who burned waste in the South Denpasar District was much lower.

Based on the analysis results, knowledge had a significant relationship with waste management behavior (p=0.032). However, there was no significant relationship between the demographic factors of the respondents, namely the level of education and monthly income with waste management behavior in the community in South Denpasar District.

People with good knowledge had a significant relationship with waste management behavior (p=0.032). However, there was no significant relationship between the demographic factors of the respondents, namely the level of education and monthly income with waste management behavior in the community of South Denpasar District.

People with good knowledge had a 2.52 times greater chance of behaving well than people with poor knowledge (AOR=2.52; 95%CI= 1.08-5.85). Knowledge is the output of people who are sensing a particular object. Most of the human knowledge is obtained through the senses of sight and hearing. Health-related knowledge is essential for forming one's healthy behavior because behavior based on knowledge will be more durable in practice than one not based on knowledge (Notoatmodjo, 2014).

The research results showed that the proportion was not so different between respondents who had good knowledge and poor knowledge, who behaved well in managing waste. This was likely because respondents were accustomed to good behavior in managing waste regardless of the respondent's knowledge of the behavior. According to the WHO expert team (1984) cited by MRL et al., (2019), behavior knowledge can be obtained from one's own experience and the experience of others, such as the closest family and neighbors. The analysis results also showed that 59.1% of the community's knowledge regarding waste management was still poor. For this reason, more efforts are needed to increase knowledge through training by local non-governmental organizations and the government (Salawati, Astuti and Hayati, 2008). For example, the government of Surabaya City did educational programs in schools named Eco-School program(Salawati, Astuti and Hayati, 2008). For example, the government of Surabaya City did educational programs in schools named Eco-School program (Puspasari and Mussadun, 2016)).

In general, the level of education will affect a person's behavior. The higher a person's level of education, the better the resulting behavior (Mubarak, 2012). However, this research found no significant relationship between education level and waste management behavior (p=0.107).

The level of education is a stage of education that has a continuous nature. Determination of the level takes into account the development of students, the level of complexity of the material, and the technique of delivering the material (Ihsan, 2010). High education does not guarantee good behavior in managing waste, as seen from the number of respondents who had poor behavior but had high education, namely 75.5%.

Education will indirectly affect a person's knowledge. With higher education, it is hoped that knowledge about waste management will be better, resulting in good behavior as well (Sari and Mulasari, 2017). However, in this research, there was no relationship between education level and waste management behavior, perhaps because knowledge related to waste management was not provided through formal education but through informal education such as socialization or counseling or training about waste management (Devi, 2016).

Income was the amount of rupiah obtained monthly by the respondent, which came from both basic salary and side income. The income grouping referred to the level by Badan Pusat Statistik, namely >Rp3,500,000.00 in the very high category, Rp2,500,000.00-Rp3,500,000.00 in the high category,

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Rp1,500,000.00-Rp2,500,000,00 for the medium category, and <Rp1,500,000.00 for the low category.

This research showed no significant relationship between income level and waste management behavior, as evidenced by the p-value of 0.137. According to Putra et al., (2013), the amount of a person's income could have a major influence on waste management. People with high incomes had a better ability to provide good facilities to manage waste. For example, to provide closed and easy-to-clean trash cans, pay for a garbage collection service, or to pay someone else to handle the waste they produce. In this research, there was no significant difference between respondents with high income and well-behaved and respondents with low income and well-behaved.

Based on the analysis results, there was a significant relationship between attitudes (p = 0.028) and perceived behavior control (p = 0.016) with waste management behavior in the people of South Denpasar District. However, there was no relationship between subjective norms and behavior (p=0.120).

People with a positive attitude had a 3.06 times greater chance of behaving well than people with a less positive attitude (AOR = 3.06; 95% CI = 1.13-8.28). This finding was in line with research conducted by Pianaung (2007, Kama, (2009), Srisantyorini and Ningtyas (2018), and Rizkiyati (2019).

According to Newcomb in (Notoatmodjo, 2014), attitude is a tendency to accept or reject an activity, such as waste management behavior, based on a person's experience, knowledge, and norms. So, attitude is not the executor of a particular motive. Notoatmodjo and Azwar's quote in Syam (2016) also stated that a person's attitude towards an object is a feeling of support or partiality or a feeling of not supporting the object. According to Thurstone, attitude is the degree of positive or negative effects associated with a psychological object.

The analysis results also showed that there were still respondents who already had a positive attitude but behaved poorly, which was 14.3%. Sudiharti (2012) stated that attitudes would have an impact on the behavior of each individual. Even though the attitude was positive toward waste management, respondents might still behave poorly because they did not want to be bothered with waste problems, so the waste they produced was simply thrown away without treatment.

People with supportive perceived behavior control hada 3.00 times greater chance to behave well than those with less perceived behavior control (AOR=3.00; 95%CI= 1.22-7.38). This finding was in line with research by Gusti et al. (2015), which stated that perceived behavior control was significantly related to the intention to carry out sustainable waste management behavior. Research by Astuti and Linarti (2020) also found a relationship between perceived behavior control and residents' intentions to become customers of a waste bank

Ajzen (2006) explained that certain behaviors would be automatically carried out when there were external signs, in the case of waste management, external signs in the form of waste transport services, the availability of scavengers or waste banks, as well as adequate socialization or education. In line with the research of Widiyanto *et al*. (2020), which stated that the availability of facilities and infrastructure was a supporting factor that influenced a person's behavior. The better the existing waste management facilities and infrastructure, the better the community's management behavior. Other research stated that the limited facilities and infrastructure that could support good management activities such as temporary landfills and transport services resulted in poor solid waste management (Hutabarat, 2015).

In addition to increasing public access to good facilities and infrastructure to manage waste, the number of waste banks also needs to be increased. In principle, the waste bank is an activity from the community, by the community, and for the community to be more active in sorting waste. Implementing a waste bank can provide benefits in the form of money in exchange for deposited waste. As the name implies, the waste bank has a concept where the community as customers saves waste and gets money according to the amount of waste they collect based on the type. With the existence of a waste bank that is routinely implemented, the community becomes more trained in maintaining

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environmental cleanliness, independence, efficiency, environmental protection, and integration ((Riswan, Sunoko and Hadiyarto, 2011; Selomo *et al.*, 2016).

Research by Suwerda et al. (2019) also stated that there was a relationship between the role of the government and non-governmental organizations and community participation in waste banks. The government and local non-governmental organizations (NGOs) have a role in providing education so public awareness of the importance of managing waste can increase. Research conducted by Puspasari and Mussadun (2016) in Trenggalek District stated that NGOs played a very important role in waste management. Although no NGO participated in waste management, the community believed that with the role of NGOs, the implementation of waste management will improve. In addition, the government can be more active in carrying out programs that can increase community participation in managing the waste they produce, such as holding a waste recycling competition, providing facilities and infrastructure (trash cans, garbage carts, composters, etc.), establishing a waste bank, giving awards for households who are the best in managing waste, and so on (Mulasari, Husodo and Muhadjir, 2014).

The analysis results also showed no significant relationship between subjective norms and waste management behavior (p = 0.120). Subjective norms are social pressures individuals feel to perform or not to perform certain behaviors (Fishben and Ajzen, 1992). Subjective norm is an individual's perception of whether other people will support or not the realization of the action. Other people include families, friends, colleagues, or others who are seen as role models (Caecilia, 2012).

The results showed that 63.6% of respondents had subjective norms that were less supportive. This finding was similar to Ittiravivongs (2011) and Botetzagias et al. (2015)), which stated that there was no significant relationship between subjective norms and waste recycling behavior. Also, Humaira and Falatehan (2021) stated that there was no significant relationship between subjective norms and intentions to sort waste in the COVID-19 pandemic situation. Previous research stated that the subjective norm component had a weak role in the theory of planned behavior because this component depended on the economic and socio-cultural conditions prevailing in the area (Conner and Armitage, 2006; Guomin *et al.*, 2019).

In table 5, it can be concluded that the variables of knowledge, attitude, and control on behavior had a significant relationship with waste management behavior. People with good knowledge had a 2.52 times higher chance of behaving well in managing waste than people with poor knowledge (AOR=2.52; 95%CI= 1.08-5.85). People with a positive attitude also had a 3.06 times higher chance of behaving well in managing waste than people with a negative attitude (AOR=3.06; 95%CI=1.13-8.28). Communities with control over supportive behavior also had a 3.00 times higher chance to behave well in managing waste compared to people with control over unsupportive behavior (AOR=3.00; 95%CI= 1.22-7.38).

CONCLUSION

In general, the waste management behavior of the community of South Denpasar District was good (55,45%). People with good knowledge had a 2.52 times higher chance of behaving well in managing their waste than those with poor knowledge. People with a positive attitude had a 3.06 times higher chance of behaving well in managing waste than those with less positive attitudes. People with a supportive perceived behavioral control had a 3.00 times higher chance to behave well in managing waste than people with a less supportive perceived behavioral control.

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Environmental-Related Trigger for Asthma in East Java: An Advance Analysis of the Risk Factor

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ABSTRACT

Background: According to the Indonesian Ministry of Data and Information Center (2019), the main cause of asthma is not yet known. The national prevalence of asthma is 4.0%. Meanwhile, according to Basic Health Research in 2019, the incidence of asthma in Indonesia was 2.4%, and in East Java, it was 2.5%. Several risk factors for the prevalence of asthma due to unhealthy behaviours, namely smoking consumption habits, physical activities, triggers for depression, and processed chicken/meat/fish foods that are given preservatives. ***Methods:*** The design of this study is the advanced analytical method. An approach of utilizing secondary data from the 2019 National Riskesdas (Basic Health Research) report. This study looked at the relationship between asthma prevalence and smoking habits, physical activity, triggers for depression, and consumption of processed chicken/meat/fish food with preservatives. ***Results:*** Based on the results, cigarette consumption habits and triggers of depression had a relationship with risk factors for asthma prevalence. Meanwhile, physical activity and consumption of processed meat/chicken/fish foods with preservatives did not have a relationship with the incidence of asthma. ***Conclusion:*** The increasing prevalence of asthma was closely related to smoking habits and a trigger for depressive disorders. However, based on the cross-tabulation results, there was no relationship between physical activity and consumption of processed meat/chicken/fish foods with preservatives and the prevalence of asthma. It is hoped that with this research, and seeing that there were still exposure factors from smoking habits and depression triggers, prevention efforts can be made, starting with education about asthma recurrence by avoiding smoking or air pollution, allergens, stress, and emotions. In addition, reducing asthma can be done by asking for support from the closest people to minimize these behaviors and changing smoking behavior with other positive habits such as getting used to replacing nicotine with candy.

Keywords: *Trigger for asthma, Risk factor, environmental, Riskesdas*

INTRODUCTION

Asthma is a disorder in the form of chronic inflammation of the airways that causes airway constriction (bronchial hyperactivity), leading to repeated episodic symptoms in the form of wheezing, shortness of breath, chest tightness, and coughing, especially at night or early morning (Kementerian kesehatan, 2018). Asthma is a health problem commonly found in the community and with a high morbidity and mortality rate. Asthma attacks not only children but all age groups. It is currently estimated that as many as 235 million people have asthma in the world (World Health Organization, 2017).

The World Health Organization report in December 2016 recorded that as many as 383,000 people died of asthma in 2015. Based on the National Basic Health Research report in 2018, the number of asthma patients in Indonesia was 2.4% (Badan Penelitian dan Pengembangan Kesehatan, 2018).

Based on the Household Health Survey results, asthma is the fourth leading cause of death (mortality) in Indonesia or 5.6%. It is reported that the prevalence of asthma throughout Indonesia is 13 per 1,000 population (Kementerian Kesehatan, 2017). According to the Ministry of Health, the incidence of asthma in children and infants is around 10-85%. In East Java

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Province, 4.45% suffer from bronchial asthma with breathing pattern ineffectiveness (Indonesian Health Profile, 2018); and ineffective breathing patterns 2.7% (MOH 2018).

The national prevalence of asthma is 4.0%. Meanwhile, according to Riskesdas, in 2019, the incidence of asthma in Indonesia was 2.4%, and in East Java, it was 2.5% (Basic Health Research, 2019). East Java province had the largest number of cases (1,942 cases), and Papua had the lowest hospitalization (15 cases). Asthma data sourced from the *Sistem Informasi Rumah Sakit* (SIRS) or Hospital Information System includes categories of asthma and asthmaticus (Hr. et al., 2019). Meanwhile, the Pasuruan region is ranked 2nd in East Java, estimated at 172 per 1000 population who suffer from asthma (East Java Health Profile, 2019).

According to the Indonesians, the main cause of asthma is not yet known. The main risk factor for triggering asthma is a combination of genetic predisposition and environmental exposure to inhaled substances and particles that can trigger allergic reactions or irritate the airways, such as indoor allergens (e.g., mites, house dust, pollution, and pet dander) (Ministry of Data and Information Center (2019). Outdoor allergens (e.g., pollen and mold) of cigarette smoke are chemical irritants in the workplace pollution (RI, 2019). A number of these risk factors are considered to increase the chance of developing asthma, developing other allergies, such as atopic dermatitis or allergic rhinitis (hay fever), second-hand smoke, and exposure to chemicals used in agriculture, hairdressing, and manufacturing (M. Faisal, 2019).

The Global Initiative for Asthma (GINA) defines asthma control as controlling the clinical manifestations of asthma. Many factors affect asthma control, including excessive emotions, namely anxiety. The anxiety that asthma patients tend to have influences their asthma control and quality of life. Trigger factors for asthma also vary, such as smoking consumption, allergies to certain substances, strenuous exercise or activity, weather factors such as cold air, air pollution, and environmental and even mental or psychological stress (The Global Initiative for Asthma, 2018).

Based on this description, the background explains that the prevalence of asthma in East Java is still around 2.5%. Therefore, this study aims to examine the relationship between risk factors and the prevalence of asthma in districts/cities in East Java Province.

METHODS

This research design used advanced analytical methods. The research was conducted by utilizing secondary data from the 2019 National Riskesdas (Basic Health Research) report. Riskesdas is community-based health research whose indicators can describe the national level to the district/city level (Health Research and Development Agency, 2018). Riskesdas was officially issued by the Ministry of Health of the Republic of Indonesia. The unit of analysis in this study was the Regency/City in East Java Province. Overall, 38 districts/cities were analyzed.

Table 1. Sources of advanced data analysis from the prevalence of asthma diagnosed by doctors (2019).

Source	Variable
Riskesdas (2019)	Prevalence of asthma diagnosed by a doctor
	Consumption of smoking habits
	Sufficient physical activity
	Triggers of depression
	Consumption of processed chicken/meat/fish food with preservatives

DATA ANALYSIS

The dependent variable selected in this study was the prevalence of asthma diagnosed by doctors. In addition, there were 4 independent variables analyzed in this study, namely consumption of smoking habits, adequate physical activity, triggers for depression, and consumption of processed chicken/meat/fish foods with preservatives.

Data were analyzed univariate and bivariate. Univariate analysis was

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performed using a descriptive table on each variable. Meanwhile, bivariate analysis was carried out with cross-tabulation by connecting each independent variable with the dependent variable. The whole analysis process used SPSS 21 software. So, it didn't use a correlation regression test or any other test.

The research was conducted by utilizing secondary data from published reports. For this reason, there was no need for ethical clearance in carrying out this research.

RESULTS AND DISCUSSION

Table 2 shows the descriptive analysis results of the dependent variable of asthma prevalence with 4 other related variables based on Riskesdas (2019). The highest gap was the variable physical activity, which was sufficient at 27.70%. The lowest prevalence of Asthma diagnosed by doctors was in Kediri City at 1.40%, and the highest was in Situbondo City District at 4.80%. While the area with a fairly high variation in the percentage of physical activity with the lowest proportion was Pasuruan City at 56.13%, and the highest was Tuban City Regency at 83.83%.

Table 2. Statistical description of asthma prevalence variable with related variables

	N	Min	max	Mean
Prevalence of asthma diagnosed by a doctor	38	1,40	4,80	2,56
Consumption of smoking habits	38	18,74	29,92	23,48
Sufficient physical activity	38	56,13	83,83	73,83
Triggers of depression	38	0,57	10,21	4,25
Consumption of processed chicken/meat/fish food with preservatives	38	62,54	88,30	74,53

Source: Riskesdas 2019

Table 3 shows the cross-tabulation results of the percentage of smoking consumption habits and the prevalence of asthma diagnosed by doctors in East Java. Based on table 3, it can be seen that there was still a moderate prevalence of asthma (1.64 - 3.48) in the moderate category of cigarette consumption habits (20.62 - 26.35). The cross-tabulation results were in line with Putra et al (2020) and Thomson et al (2020) that as many as 25% of adult individuals with asthma were active smokers, indicating they had the habit of smoking in their daily lives.

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Table 3. Table of cross-tabulation of smoking habits variable with the prevalence of asthma diagnosed by a doctor variable.

Consumption of smoking habits	Prevalence of asthma diagnosed by a doctor					
	Low (<1.63)		Medium (1.63 – 3.48)		High (>3.49)	
	N	%	N	%	N	%
Low (<20.61)	0	0.0	7	25.0	0	0
Medium (20.62-26.35)	4	100	17	60.7	3	50
High (>26.36)	0	0.0	4	14.3	3	50
Total	4	100	28	100	6	100

Source: Riskesdas 2019

Table 4 shows the cross-tabulation results of the percentage of sufficient physical activity with the prevalence of asthma diagnosed by a doctor. Based on table 4, it can be seen that there is still a moderate prevalence of asthma (1.64 – 3.48) in sufficient physical activity (66.26 – 81.41).

This shows that there is no relationship between sufficient physical activity and the prevalence of asthma diagnosed by a doctor. According to research by Clark, Bronchospasm or bronchial asthma due to physical activity or Exercise-induced Bronchospasm (EIB) is a term that describes the outcome of an acute airway that occurs temporarily due to physical activity (Clark, 2013). The high prevalence of asthma is dominated by a lack or excess of physical activity.

Table 4. Table of cross-tabulation of sufficient physical activity variable with the prevalence of asthma diagnosed by a doctor variable

Sufficient physical activity	Prevalence of asthma diagnosed by a doctor					
	Low (<1,63)		Medium (1,63 - 3,48)		High (>3,49)	
	N	%	N	%	N	%
Low (<66.25)	0	0.0	4	14.3	1	16.7
Medium (66.26-81.41)	4	100	18	64.3	5	83.3
High (>81.42)	0	0.0	6	21.4	0	0.0
Total	4	100	28	100	6	100

Source: Riskesdas 2019

Table 5 shows the cross-tabulation results of depressive disorders with the prevalence of asthma diagnosed by doctors. Based on table 5, it can be seen that there was still a moderate prevalence of asthma (1.64 - 3.48) in the moderate category of triggers of depression (1.73-6.76). This shows a link between depression triggers and asthma prevalence with a doctor's diagnosis, supported by research from the Indonesian Lung Doctors Association, which proved there was a relationship between triggers of depression and asthma prevalence (Perhimpunan Dokter Paru Indonesia, 2018).

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Table 5. Table of cross-tabulation of triggers of depressive disorders variable with theprevalence of asthma diagnosed by a doctor variable

Triggers of Depression	Prevalence of asthma diagnosed by a doctor					
	Low (<1,63)		Medium (1,63 - 3,48)		High (>3,48)	
	N	%	N	%	N	%
Low (<1.72)						
Medium (1.73-6.76)	1	25	4	14.3	0	0.0
High (6.77)	3	75	20	71.4	3	50
	0	0.0	4	14.3	3	50
Total	4	100	28	100	6	100

Source: Riskesdas 2019

Table 6 shows the cross-tabulation results of the consumption of processed chicken/meat/fish food with preservatives and the prevalence of asthma diagnosed by a doctor. Based on table 6, it can be seen that there was still a moderate prevalence of asthma (1.64-3.48) in the consumption of processed chicken/meat/fish food with preservatives in the medium category (68-82.06). This shows that there was no relationship between the consumption of processed chicken/meat/fish food with preservatives and the prevalence of asthma diagnosed by a doctor.

Table 6. Table of cross-tabulation of consumption of processed meat/fish/chicken food with preservatives variable with the prevalence of asthma diagnosed by a doctor variable

Consumption of processed chicken/meat/fish food with preservatives	Prevalence of asthma diagnosed by a doctor					
	Low (<1,63)		Medium (1,63 - 3,48)		High (>3,48)	
	N	%	N	%	N	%
Low (<67)	1	25	5	17,9	0	0,0
Medium (68 - 82,06)	2	50	17	60,7	6	100
High (>82,07)	1	25	6	21,4	0	0,0
Total	4	100	28	100	6	100

Source: Riskesdas 2019

The habit of smoking is known to be one of the factors in the occurrence of asthma. Based on the cross-tabulation results, there was 1 district with the highest percentage showing habitual smoking behavior and the occurrence of asthma, namely Probolinggo in East Java. The results of this study were supported by research conducted by Putra et al and Thomson et al in 2020 that as many as 25% of adult individuals with asthma were active smokers. Research stated that health effects also affected passive smoking (Putra et al, and Thomson et al, 2020).

WHO, IARC, EPA, and various scientific and medical studies in the world have documented the adverse effects of exposure to cigarette smoke, namely respiratory, vascular, and carcinogenic disorders in adults. Children exposed to secondhand smoke were at a higher risk for sudden infant death syndrome (SIDS). Higher concentrations of nicotine were found in children who died of SIDS compared to those who died of other causes. Secondhand smoking was also associated with respiratory tract infections in children (Kosen et al, 2017).

Physical activity, according to the World Health Organization (WHO), is any body movement produced by skeletal muscles that require energy expenditure. Based on the cross-tabulation results, 3 cities/districts show the highest percentage of the relationship between moderate physical

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activity and the prevalence of asthma, namely Magetan, Ngawi, and Batu City. The high prevalence of asthma was dominated by a lack or excess of physical activity. However, in carrying out physical activities, asthmatics should also be careful because physical activity could trigger asthma attacks. A survey conducted by the Asthma and Allergy Foundation of America (AAFA) in 2017 showed that someone with asthma would experience a decrease in physical condition due to asthma symptoms that often came and became worse during activity.

Triggers of depressive disorders come from psychological factors that affect asthma, where anxiety and depression are interconnected with each other in adolescents and young adults with asthma. According to the World Health Organization (WHO), 15 million people per year experience Disability-Adjusted Life Years (DALYs) per year due to asthma, 100-150 million people worldwide have asthma. This number continues to grow by 180,000 people every year. Asthma is a chronic disease because it can arise when the patient interacts with factors that cause asthma. So, it is feared that it can cause patients to experience anxiety and depression. Based on the cross-tabulation results, there was 1 city with a percentage of triggers for depression in asthma prevalence, namely Malang City. This was supported by research from the Indonesian Lung Doctors Association, which proved that there was a relationship between triggers for depression and asthma prevalence (Ikatan Dokter Paru Indonesia, 2018).

The same result was also found in other studies. A study published in the journal International Journal of Child Health and Human Development detailed the link between asthma and emotional disorders, including major depression and anxiety disorders. In asthmatic patients, when an asthma attack occurred, they experienced a narrowing of the airway with symptoms ofshortness of breath and coughing; the patient would also experience an increase in body metabolism in the form of sweating and heart palpitations.

Consumption of processed meat/fish/chicken with preservatives is not one of the factors that can trigger asthma. There are still other factors that influence the increase in the prevalence of asthma. The results of this study were in line with what Winta in 2020 did when analyzing the factors that influence bronchial asthma, that the consumption of preserved foods proved to have no effect. These factors had an effect but the risk caused was smaller. All foods that were given preservatives had a 0.495 lower risk of being consumed by people with bronchial asthma (Winta et al, 2020).

CONCLUSION

Based on the results of the study, it can be concluded that the increased prevalence of asthma was closely related to smoking habits and a trigger for depressive disorders. However, based on the cross-tabulation results, there was no relationship between physical activity and consumption of meat/chicken/fish food processed with preservatives with the prevalence of asthma. It is hoped that with this research, and seeing that there were still exposure factors through smoking habits and depression triggers, prevention efforts can be made starting with education about asthma recurrence by avoiding smoking or air pollution, allergens, stress, and emotions. In addition, reducing asthma can be done by asking for support from the closest people to minimize these behaviors and changing smoking behavior with other positive habits such as getting used to replacing nicotine with candy.

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COVID-19 Prevention: Healthy and Clean-Living Behavior Program on Toilet Access in Tiban New Village, Batam City, Indonesia

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ABSTRACT

***Background**: The current low level of prevention of COVID-19 is one of the severe problems in Indonesia. Healthy and Clean-Living Behavior or PHBS (Perilaku Hidup Bersih dan Sehat) program and sanitation access are some things that can be done in terms of prevention during a pandemic. New Tiban Village ranks 3rd with the highest number of COVID-19 cases in Batam City. **Objective**: This study aims to determine whether there was a relationship between implementing the Healthy and Clean-Living Behavior program and toilet access on the incidence of COVID-19 in New Tiban Village, Batam City, Indonesia. **Methods**: A quantitative analytic observational study with a total sample of 115 families. The instrument used in this study was a questionnaire. The acquired data were analyzed with chi-square analysis using SPSS as the tool. **Results**: The results showed a significant relationship between the application of the Healthy and Clean-Living Behavior program towards COVID-19 cases p = 0.006. There was an effective relationship between toilet access towards COVID-19 cases p = 0.000. **Conclusion**: In this study, there was a significant relationship between applying the Healthy and Clean-Living Behavior program and toilet access toward COVID-19 with a value of a < 0.05. Recommendations for the community include always carrying out health protocols by maintaining distances and always washing hands using running water and soap after activities outside the home.*
***Keywords**: COVID-19, Healthy and Clean-Living Behavior Program, Toilet Access*

INTRODUCTION

Coronavirus disease is abbreviated as COVID-19 and occurred in 2019. WHO defines coronaviruses as a group that can cause infections in humans and animals. Despite coronavirus being discovered in 2019, the condition has been around for a long time. There are several types of coronaviruses. They can cause respiratory infections in humans, ranging from coughing, runny nose, and shortness of breath to respiratory failure (Yayi Suryo Prabandari, 2020).

In response to the Amendment to Regulation Number: 2269/MENKES/PER/XI/2011 of Regulation Number 2269, the Ministry of Health of the Republic of Indonesia formulates guidelines for guidance on Healthy and Clean Living Behavior in Indonesia through a healthy and clean living behavior management pattern (Widodo, Sri Wijiastuti and Kurniawati Darmaningrum, 2021). All groups are expected to follow the behaviors listed. In addition to lifestyle habits at home and the environment, factors like the community and environment also contribute to Healthy and Clean Living Behavior (Karuniawati, 2020) (Sulaiman Endang Sutisna, 2021)(Marlinae *et al.*, 2019).

This program makes sure that family members and individuals, understand how to make healthier decisions and play a more active role in community health activities (Penyehatan Lingkungan Dinas Propinsi Kepulauan Riau, 2012)(Martina, 2021)(Burhan *et al.*, 2021). Developing the Healthy and Clean Living Behavior is based on the principle that prevention is better than cure. As outlined in (Keputusan Menteri Kesehatan Republik Indonesia, 2020)(Maliga, Rafi'ah

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and Hasifah, 2021), the main objective of this initiative is to improve healthcare quality through the cultivation of knowledge, which is the foundation for contributing to a clean and healthy daily life. Furthermore, it creates health-conscious individuals who make positive life choices by maintaining a level of cleanliness according to standards (NSPK, 2020)(Karuniawati, 2020).

The concept of healthy and clean living also includes all the activities that a person carries out when playing an active role in their health and the health of others. Unfortunately, not everyone understands what it means to live a healthy life. This is proved by the fact that many people still carry out various activities regardless of their health levels; one example is when a child finishes doing a job outside the house, parents do not get used to the child washing their hands and feet when they enter the house; the child is left to do new activities. Another example is when the cleanliness of the bathroom is not paid attention to and is left alone, especially in terms of the cleanliness of the bath (Levani, Y., Prastya, 2021)(Maliga, Rafi'ah and Hasifah, 2021). These behaviors may seem trivial but have a significant impact when they become habits. For this reason, notification or information related to knowledge about the Healthy and Clean Living Behavior program is needed in the community so that awareness grows of the importance of implementing the behaviors in the community for the health and welfare of family members (Tentama, 2018)(Dit. PL, 2013)(Chandra, 2007).

The prevention of COVID-19 is closely linked to healthy and clean living behaviors. Hand sanitizers (at least 70% alcohol) and soaps are some of the means to prevent being infected with COVID-19. Washing hands is also an indicator of the Healthy and Clean-Living Behavior program. A mask must be worn when traveling, a distance of at least 1 meter must be maintained from other people, the elbows must be folded when coughing or sneezing, and using tissues must be the only method of touching one's mouth, nose, or eyes and traveling with them must be avoided. Clean objects, surfaces, and tools that are often used, especially those that are used in general, consume a balanced nutritious diet, do not smoke, do take regular breaks, exercise, and think positively (Peraturan Menteri Kesehatan Reublik Indonesia No. 65 Tahun 2013, no date)(Pusat Promosi Kesehatan Kementerian Kesehatan Republik Indonesia, 2013). Constantly monitor the progress of the COVID-19 disease from official and accurate sources. Follow directions and information from health workers and the local Health Office (Kementerian Kesehatan RI, 2020)(Departemen Kesehatan RI, 2010).

Some health behaviors that can reduce the possibility of being infected or spreading COVID-19 by implementing Clean and Healthy Behavior include constantly washing hands, maintaining a distance of 1-3 meters, avoiding outdoor activities with crowds, avoiding touching eyes, nose and mouth, staying at home and self-isolate even with mild symptoms. In addition, by increasing knowledge about implementing the Clean and Healthy Behavior program, which relates to preventing the spread of COVID-19, attitudes in responding to it, and actions that must be carried out according to applicable regulations (Karuniawati, 2020)(UNICEF East Asia and Pacific Regional, 2013).

In addition, the level of sanitation is also very influential in the transmission of COVID-19 disease, one of which is access to healthy latrines. Several factors need to be considered to properly handle human feces as part of a solid waste management system, starting with ensuring that toilets/latrines are functioning and safe, septic tanks are in good condition, and waste is transported and processed (WHO and UNICEF, 2020)(Peraturan Menteri Kesehatan RI No: 416/Per/IX/1990, no date)(Azwar A, 1995).

WHO reported that from the beginning of the COVID-19 outbreak to the last update on March 17, 2021, there were 120,383,191 confirmed cases, with 2,664,386 deaths resulting from the disease (Word Health Organization, 2021). As of March 2021, data from Indonesia, with the last updated data in March 2021, showed that 1,437,283 people were confirmed positive for COVID, 1,266,673 recovered, and 38,915 people died (Komite Penanganan Covid-19 dan Pemulihan Ekonomi Nasional, 2021)(Badan Penelitian dan Pengembangan Kesehatan Kemenkes RI, 2013). In addition, data on COVID-19 cases in Batam City, the area

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with the highest COVID-19 issues was Tiban Baru Village, with 81 patients (Dinas Kesehatan Kota Batam, 2021)(Saputra, Utami and Nuraini, 2021).

This study aims to determine whether there was a relationship between implementing of the Clean and Healthy Lifestyle program and toilet access on the incidence of COVID-19 in New Tiban Village, Batam City, Indonesia.

METHODS

This study used a quantitative analytic observational study with a cross-sectional research design (Notoatmodjo, 2010)(Nugrahaeni & Mauliku, 2011). The population in this study was the community of Tiban Baru Village, Batam City, totaling 170 families. The sample size was measured using the Slovin formula (31). The number of samples was 115; the model was taken by a simple random sampling method with statistical analysis using the chi-square test.

The variables in this study consisted of the independent variable being the Healthy and Clean-Living Behavior program and toilet access, and the dependent variable was the incidence of COVID 19.

The measurement method for each variable in this study was the application of the Healthy and Clean-Living Behavior program variable using a questionnaire measuring instrument and an ordinal measuring scale. Meanwhile, the toilet access variable used an observation sheet and an ordinal measuring scale, and the COVID-19 Cases variable was taken from secondary data from the Batam City Health Office.

Ethical Clearance

This study received an approval from the Research Ethics Committee, Faculty of Public Health, Sriwijaya University No. 234/UN9.1.10/KKE/2021.

RESULTS AND DISCUSSION

The research results obtained were univariate and bivariate. The univariate results were that the application of the Healthy and Clean-Living Behavior program in the "Not good" category had 71 respondents (61.7%) and the "Good" category had 44 respondents (38.3%); and that the toilet access in the "Yes" category had 40 respondents (24.8%) and the "No" category had 75 respondents (65.2%). The results of the COVID-19 cases in the "Yes" category had 81 respondents (70.4%), and in the "No" category had 34 respondents (29.6%), which can be seen in table 1.

Table 1. Demographic Characteristics (N=115)

INDICATORS	n	%
Application of Healthy and Clean Living Behavior program		
Not Good	71	61.7
Good	44	38.3
Toilet Access		
Yes	75	65.2
No	40	34.8
COVID-19 Cases		
Yes	81	70.4
No	34	29.6

Application of Healthy and Clean Living Behavior Program Toward COVID-19 Cases

Based on the analysis results, it can be seen that the application of the Healthy and Clean-Living Behavior program variable obtained p = 0.006, meaning there was a significant relationship between the application of the Healthy and Clean-Living Behavior program towards COVID-19 cases in Tiban Baru Village, Batam City, which can be seen in table 2.

Table 2. Distribution of Application of Healthy and Clean-Living Behavior Program Towards COVID-19 Cases

V*	COVID-19 Cases				Total		P-Value
	Yes		No				
	(n)	(%)	(n)	(%)	(N)	(%)	
G**	57	49.5	14	12.2	71	61.7	
NG***	24	20.9	20	17.4	44	38.3	0.006
Has	81	70.4	34	29.6	100	100	

*Application of Healthy and Clean-Living Behavior Program
**Good
***Not Good

The application responds to active and observable stimuli, contrary to the passive attitude that cannot be observed. Supporting the philosophy into action required facilities, but the parties keep a vital role. The level itself has 1) perception, which is expected to recognize various objects connected to the action taken. 2) response, namely the

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movement of someone by carrying out something following the provisions. 3) the stage where someone has acted correctly. 4) is a practice or action that has developed well, meaning that the action has been modified without reducing the truth of the action (Maryunani, 2013)(Ditjen Cipta Karya, no date).

On this occasion, the researcher assumed that the people of Tiban Baru Village, the research respondents had wrong actions at the home environment level (activities while at home and around). The community was still not disciplined to carry out the regulations and apply them to family members regarding the health protocols that the government has set. However, this can still be improved by increasing the knowledge of the community itself and the participation of health parties such as the *puskesmas* (public health centre), *posyandu* (integrated service post for pre- and postnatal health care), and others(Ahmadi and Saputra, 2021).

In line with the results of research conducted by Patmawati et al (2021) that there was a significant relationship between clean and healthy living behavior with the use of personal protective equipment in the Wonomulyo district traditional market Polewali Mandar in preventing COVID-19 with a p-value of 0.049 (p > α). (Patmawati, Ningsi and Lisnawati, 2021)

Availability of Toilet Access Towards COVID-19 Cases

Based on the analysis results, it can be seen that the toilet access variable obtained p = 0.000, meaning there was a significant relationship between toilet access towards COVID-19 cases in Tiban Baru Village, Batam City, which can be seen in table 3.

Table 3. Distribution of Toilet Access Towards COVID-19 Cases

Toilet Access	COVID-19 Cases				Total		*P-Value*
	Yes		No				
	(n)	(%)	(n)	(n)	(%)	(%)	
No	67	58.3	0.000	6.9	75	65.2	0,000
Yes	14	12.1	26	22.7	40	34.8	
Has	81	70.4	34	29.6	100	100	

Patients who are confirmed or suspected of being infected with COVID-19 must be given access to a separate toilet or latrine separate from the patient's room. Toilets with flushing (flush toilets) must be able to function correctly. Where possible, bathrooms must be flushed when the toilet lid is lowered to prevent splashing droplets or aerosol vapors. If it is not possible to provide a separate toilet from the patient's room, the bathroom must be cleaned and disinfected at least twice a day by trained staff, and the staff must wear PPE (cloaks, gloves, boots, masks, face coverings, or goggles). Furthermore, by applicable guidelines, employees and medical personnel must access separate toilet facilities from the patient's toilet (WHO and UNICEF, 2020)(Departemen Kesehatan RI, 2006).

WHO recommends using a standard and well-maintained plumbing system, for example, closed bathroom drains, valves on spray hoses, and faucets to prevent feces in the form of aerosols from entering the water supply and ventilation systems (World Health Organization, 2006) and implementing standardized wastewater treatment (World Health Organization, 2018). Errors in plumbing systems and poor ventilation system design were factors that contributed to the spread of SARS coronavirus particles in high-rise apartment buildings in Hong Kong in 2003 (Yu *et al.*, 2004). Similar concerns were raised regarding the spread of the COVID-19 virus in high-rise apartment buildings through room design errors bathing (Regan H., 2020). Suppose the health care facility is connected to a sewer; in that case, a risk assessment must be carried out to determine whether the wastewater flows safely in the sewer system (to ensure that the sewer is not leaking) before the wastewater arrives at the final disposal and further treatment is carried out. Risks also include the adequacy of the waste collection system to cure. The disposal mechanism must also be analyzed to ensure safety (42) and determine critical control points to prioritize mitigation plans.

This is in line with the results of research conducted by Ramadhan Tosepu (2021) that the availability of toilets meeting the requirements was very closely related to the risk of transmitting COVID-19(Tosepu *et al.*, 2021).

The weakness of this research is that it was conducted in the early days of COVID-19, so the number of samples measured was still small. Meanwhile, the strength of this research is that the topic

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being researched was relatively new, so it can provide an initial perception for people who are looking for information about COVID-19.

CONCLUSION

Based on the analysis results and discussion of the research, it can be concluded that 71 respondents (61.7%) who had the application were in the "Not Good" category and 44 respondents (38.3%) were in the "Good" category. 75 respondents (65.2%) who had toilet access were in the "No" category, and 40 respondents (34.8%) were in the "Yes" category. Meanwhile, in COVID-19 cases, 81 respondents (70.4%) were in the "Yes" category, and 34 respondents (29.6%) were in the "No" category. There was a significant relationship between the application of the Healthy and Clean Living Behavior program towards the COVID-19 cases with a p = 0.006. There was a substantial relationship between toilet access towards COVID-19 cases with a p = 0.000.

Recommendations for the community include always carrying out health protocols by maintaining a distance and always washing hands using running water and soap after activities outside the home.

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College Students' Perception of Cardiovascular Disease in Yogyakarta

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ABSTRACT

***Background**: Cardiovascular disease has been found in young people because of the unhealthy lifestyle that is lived by many younger people. Packed activities, social life, and students' assiduity affect their lifestyle. Each student lives a different lifestyle depending on their motivation, therefore it's necessary to do research in order to investigate students' lifestyles, consist of smoking behavior, eating behavior, and physical activity, using the Protection Motivation Theory, which consists of perceived vulnerability and severity of cardiovascular disease, response efficacy, and self-efficacy of healthy behavior. This research aimed to ascertain students' healthy lifestyle as protection against cardiovascular disease. **Methods**: The research was done using the qualitative method with a phenomenology approach. The data were gathered by doing comprehensive interviews with 14 informants in a purposive way with maximum variation sampling, at four universities in Yogyakarta Province. The research was conducted from May to July 2015. **Results**: The results indicated that students have yet lived healthily due to some common habits such as smoking, unhealthy diet, lack of exercise, and other discoveries such as coffee and alcohol consumption. The attempt of protection against cardiovascular disease wasn't habitually done yet by students because of their young age and their customary thought that cardiovascular disease mostly happens to elderly people. Students haven't been aware yet that they are not resistant to cardiovascular disease. One of the reasons was how insufficient the student's awareness was when it comes to cardiovascular disease. Their perception of the disease severity was adequate due to the fact that they have seen directly the consequences that were caused by cardiovascular disease. The students' response efficacy and self-efficacy in doing a healthy lifestyle were also considered low because the access to make a healthy lifestyle was still less. **Conclusion**: The student's awareness of the cardiovascular disease was still low. Among the four parts of Protection Motivation Theory, the part on severity perception was quite decent due to the fact that they had seen directly the consequences that were caused by cardiovascular disease. Each university needs to provide health care services in order to promote a healthy lifestyle, particularly among students.*

***Keywords**: lifestyle, university student, prevention of Cardiovascular-Disease*

INTRODUCTION

Globally, cardiovascular disease (CVD) sits at the top list of death causes. This disease is often found in the elderly, though nowadays, there's a tendency that the disease is also infecting people under 40 years of age. This is caused by an unhealthy lifestyle that is lived by many younger people (Shayo, 2019 Four risk factors of main behavior include smoking, unhealthy diet, lack of physical activity, and alcohol consumption (Ng et al., 2020). During the period someone goes through the transition from school age to higher education, the environment, responsibility, and behavior would change. Negative health behavior could contribute to the development of physiological risk factors for cardiac problems (Luo & He, 2021).

College students' healthy lifestyle in habit of physical activity was still low, figuring that in 23 countries, college students' spare time to do physical

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activities was still below the recommended standard. Younger people also rely on delicious food and snack with low nutrition which is another contribution to their low nutrient consumption (Hess et al., 2016). The data from Basic Health Research (Riskesdas) 2018 showed that one in eight people in Indonesia consumed instant noodles more than one time a day (Kemenkes RI, 2018). Another data also showed that 23.7% of Indonesian people between 15-24 years of age did not consume vegetables and fruits. Another problem was that smoking has been a habit for college students, both male and female. According to Basic Health Research, from 2013 to 2018, the number of smokers 15-24 years of age tended to increase from year to year (Kemenkes RI, 2018).

Rogers stated that behavior regarding health is engendered by an individual's intention. The intention of a certain behavior is a consequence of an individual's threat appraisal and coping appraisal (Priyoto, 2014). These two ways of appraisal develop protection motivation. Threats against health become stimuli to consider protection motivation, followed by the decision to take action or intention to act. The Protection Motivation Theory (PMT) is one of the theories that have been utilized to explore the factors that influence individual behavior motivation (Sadeghi et al., 2019). According to the theoretical framework, in terms of developing a protective motivation against cardiovascular disease, an individual must first go through a threat and coping appraisal process, which would be a mediating appraisal process that results in a decision or intention to initiate, continue or inhibit the adaptive response (Floyd et al., 2000). Different responses will arise from changes in threat and coping evaluations. Moreover, contextual effects (exposure to information about protective measures taken by family, friends, other people, or even the mass media) and personality factors impact each individual's response (education level, age, gender).

Yogyakarta is known as a student city in Indonesia because it has 137 universities and a total number of students that account for more than 20% of the productive population. Yogyakarta is characterized by the dynamism of students and students who arrive from various Indonesian cities. Students in Yogyakarta are a major human resource who, in order to build a good society, has to be able to maintain their health, especially in the prevention of cardiovascular disease. Therefore, more research is needed to explore the phenomena that occur in students in Yogyakarta Province regarding a healthy lifestyle as self-protection against cardiovascular disease using the Protection Motivation Theory.

METHODS

This research used a qualitative design with a phenomenology approach to investigate phenomena that occurred regarding the lifestyle that is lived by college students who live independently and to explore the perception of cardiovascular disease and a healthy lifestyle. 14 in-depth interviews were completed with the college students in different regions. From May to July 2015, this study was carried out. Informants in this research were gathered in a purposive way, which means the students are the ones who live by themselves, not with any of their families. Informants in this research consisted of:

Table 1. The Distribution of Informants in This Study

Initials	Age (y.o)	Gender	Faculty of
TR	19	M	Sport Science
DN	23	M	
CR	22	F	
JT	21	M	Medicine
PH	22	M	
YM	22	F	
HV	19	F	Engineering
SE	19	M	
AN	20	M	
TN	22	F	
DS	21	M	Social and
BS	21	M	

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MR	22	F	Political
ME	20	F	Sciences

The purposive recruitment strategy was intended to maximize the variation of participant characteristics.

Interviews explored each subject's healthy behaviors including smoking behavior, eating behavior, and physical activity during the period of becoming a student who lives far from home. The interview also explored cardiovascular disease knowledge, cardiovascular disease risk perception, cardiovascular disease severity perception, and associated response efficacy and self-efficacy. The main questions in the interview guide were:

"Could you talk about your smoke behaviour, eating behaviour, and physical activity during being a student here and why?"

"What do you know about cardiovascular disease?"

"How much confidence you will be exposed to cardiovascular disease?"

"What do you think about the severity of cardiovascular disease?"

"How confidence do you have that doing a healthy lifestyle will prevent cardiovascular disease?" "What do you think are the benefits to consistently doing healthy behaviour?"

"What makes you do a healthy lifestyle?"

"What hinders you from consistently doing healthy behaviour?"

"How much confidence do you have to consistently do healthy behaviour?"

All interviews were conducted in a private place and tape-recorded after informed consent was received. Interview time ranged from 45 to 120 minutes. Each informant received health education about cardiovascular disease and the cardiovascular disease risk matrix as compensation.

Descriptive statistics were used to describe the basic features of the data. All interviews were transcribed into Word files and then imported into the software for coding qualitative data. The analytical process included six steps: familiarization with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes, and producing the report. This study has received ethical clearance from the Medical and Health Research Ethics Committee (MHREC) Faculty of Medicine, Public Health and Nursing, Gadjah Mada University number KE/FK/515/EC/2015.

RESULTS AND DISCUSSION

The following were the characteristics of respondents who fulfilled the requirements.

Table 2. Characteristics of Informants (N=14)

Characteristics	Nn	%
Age (in years)		
19	2	14.3
20	3	21.4
21	3	21.4
22	4	28.6
23	2	14.3
Gender		
Male	8	57.1
Female	6	42.9
Smoking status		
Current	6	42.9
Never	7	50.0
Former	1	7.1
Family history of cardiovascular disease		
Yes	7	50.0
No	7	50.0
Total	14	100

Based on the table above, it can be seen that the youngest informant of this study was 19 years old and the oldest was 23 years old. It means they come from different semester levels, ranging from the first semester to the final semester. Almost half were smokers, only one being a former smoker. Most of those who smoke were men. It also found that half of the informants have a family history of cardiovascular disease.

Lifestyles

The result of this study found that seven students smoke because of various reasons including curiosity, the capability of purchasing cigarettes, social

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environment, to get to be accepted as a friend, lifestyle, habit, stress, and distraction from problems. Inclined with other research that also stated that college students smoke because of curiosity factor, relatively large stipend, also as a way to distract from stress situations was one common reason to smoke (Zobena & Skrastina, 2020). The smoking environment influenced college students to try smoking as well. Social conditions and family could also highly impact somebody's decision to smoke (Johnson et al., 2019).

The majority of smoking students preferred cigarettes with menthol filters because, in addition to its sweet taste, this kind of cigarette is also believed to be lighter compared to the other kinds. On average, students smoke about 1-30 pieces of cigarettes per day. Other research also stated that students who smoke last than 1 pack of cigarettes per day were accounted as light smokers, smoking more than 1 pack of cigarettes falls into the heavy smokers' category (Ng et al., 2020). In this case, the students were considered smoking addicts even though they did not feel the addiction.

> *"... sebenarnya nggak ketergantungan juga sih jadi kalau pas pengen ngerokok ya ngerokok kalau misalnya gak pengen bisa 1 minggu, 2 minggu gak ngerokok* (TN, F, 22 y.o.).
>
> *(Actually, I don't think that I'm addicted as I smoke only when I feel like I want to smoke. But when I don't feel like I want to smoke, I can go through 1 to 2 weeks without smoking at all).*

For those who didn't smoke, the absence of smoking's benefits according to them was the ultimate reason why they chose not to smoke, other than the fact that it could negatively affect their health as well as be financially burdensome. In addition to that, the smell and smoke from the cigarettes were considered disturbing to them. Research among Danish adolescents reported that other than health and financial reasons, non-smoking students also mentioned the main reason why they didn't smoke was that it smelled bad and disgusting (Kjeld et al., 2021).

> *"Bau gitu kan, kamar gitu atau apa tas gitu. . . Gak enak gitu. Dan bau rokok itu lengket* mba*, sifatnya sangat lengket. Susah itu kalau dihilangin. He-eh. Mau ditutupin pake parfum itu juga gak ketutup biasanya".* (JT, M, 21 y.o.).
>
> *(It's smelly, all over the room, bags, and so on. It's not good. And the smell is persistent, it won't go. Not easy to get rid of. Yeah. Even if it's covered by fragrance, the smell's usually still there).*

The eating habit of college students naturally changes. From initially eating regularly 3 times a day, now most of them eat only 2 times a day. This was because many students skip breakfast due to their assiduity on campus made them didn't have time to have any meal in the morning and it also has become a habit not to have breakfast.

> *"He-eh dari dulu gak ada kebiasaan sarapan, gak ada keinginan sarapan, jadi gak terbiasa gitu - malah kalau aku sarapan akunya sakit. . . mual, mual jadinya gak nyaman. Badan tu gak nyaman".* (CR, F, 22 y.o.).
>
> *(From early on I've never had breakfast regularly, I never wanted it, so it became a habit – on the contrary, if I had breakfast, I wouldn't feel well. I'd feel like want to puke, it's uncomfortable)*

Another factor was the fact that nobody provided food for them anymore. The provision of food plays a major role when a student lives independently without any more help from their family. Almost all of the students buy their food, not cook them by themselves. One of the most significant life changes for college students was the shift from living at home to living alone/with roommates throughout their postsecondary education, and many eating decisions

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were heavily intertwined with this transition (Sogari et al., 2018).

The study found out how college students' eating behavior was, including skipping an important meal (especially breakfast), low consumption of fruits and vegetables, and a tendency to consume junk food. Inclined with preceding research about the appraisal of body weight status, eating habits and faith, physical activities, and knowledge about nutrition among college students, they all found the same behaviors which were develop inconsistent and unhealthy habits such as skipping breakfast, eating quickly, and sleeping within one hour of dinner (Alrashed et al., 2019). The kinds of food that were preferred by the students were the ones that can be easily found including fast food, other than that, instant noodles were also consumed more often than fruits and vegetables. Fried foods can be easily found at regular tenants in Yogyakarta, especially warung Burjo or Angkringan (in Central Java, Yogyakarta, and East Java, Angkringan is a wheelbarrow used to sell various foods and beverages on the side of the road and also warung Burjo is an acronym for green bean porridge stall, but there sells a variety of food like instant noodles, etc), that were located mostly around students' residences.

> *"Ya pertama karena banyak yang menyediakan, banyak yang jual jeroan, terus juga kan masih mahasiswa bisanya beli itu mba. Biaya pas-pasan".* (TR, M, 19 y.o.).
>
> *(Well, first of all, it's everywhere, many of them sell 'jeroan' (a type of food made out of animal entrails), those are the foods that are affordable to us college students. We have a limited stipend).*

The students admitted that the foods in those tenants were priced low and affordable. As students who lived away from parents with no paying jobs, they should be able to manage their finance prudently. Another significant barrier to following a healthy diet was the reported lack of healthy foods at the university canteen. Higher food quality and variety, as well as lower costs, were found to result in healthier eating habits at university canteens, according to intervention studies (Hilger et al., 2017).

Although some of the reported eating habits were unhealthy, the majority of students, especially medical students, had a good understanding of the food pyramid and balanced nutrition. University students made bad eating choices due to stress, a hard assignment, and a lack of time (Tok et al., 2018).

In physical activities, half of the informants admitted that they didn't exercise regularly. Lack of time and access restrained them from doing exercise. Other research stated that the reasons why college students did not exercise due to they were not motivated, there was no support, they were too busy, and has difficult access (Permana et al., 2020). According to one study, students who lived in boarding houses/rented/dormitories were 1.447 times less likely than those who lived with their families to participate in physical activities (Farradika et al., 2019).

> *"Jarang olahraga iya, kecuali yang mau diet banget ya iya pasti olahraga banget, tapi palingan, kebanyakan kita gitu kok. Iya kan biasa cewek gitu mba, aduuuh udah gendut nih, baru olahraga."* (YM, F, 22 y.o.)
>
> *(I rarely exercise unless I'm on a diet, then I will absolutely exercise a lot, but at the very least, that's how so many women are... Women who already feel they have gained weight and are overweight will be exercised).*

Students agreed that they will only participate in sports for special reasons. According to the previous section informant, the informant said that the informant would participate in sports and during a weight-loss diet. Furthermore, if the informant felt their weight has increased, the informant would exercise regularly. Another research with the college student in UEA indicated that

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dissatisfaction with body image was related to fewer attempts to diet or exercise. Intervention programs should aim to increase physical activity while also improving body satisfaction, particularly among female college students (Radwan et al., 2019). However, another finding in this study for those who regularly exercise considered it a must-do activity as well as a hobby.

> *"Kalau olahraga mungkin karena aku lebih hobi ke badminton, sebenernya aku bukan tipikal yang suka olahraga, tapi karena aku suka badminton ya jadi itu yang aku lakuin." (BS, M, 21 y.o.) (When it comes to sports, it's probably because I prefer badminton; I'm not the type who likes sports but I enjoy playing badminton, so that's what I do).*

Those who regularly exercise considered it a must-do activity as well as a hobby. According to 2018 data from Basic Health Research, lack-of-moving behaviour in demographic groups 15-19 years old and 20-24 years old were high compared to other demographic groups, meaning this behavior was commonly found in college students because the older someone is, the less their lack-of-moving behavior becomes (Kemenkes RI, 2018). CVD in young adults was mostly caused by sedentary behavior and obesity (O'Toole et al., 2019).

This study also discovered the "hang out" habit that's usually done by college students. During their hang out it was possible that they interact with each other while smoking, drinking coffee, and/or alcohol. For one of the students, coffee is a must and cannot be skipped. This student admitted that this student was more addicted to coffee rather than smoking. Epidemiologically, drinking boiled coffee could increase the risk of CVD (Lire Wachamo, 2017).

Besides drinking coffee, students also drink alcohol. College students mostly drink alcohol for the sake of solidarity with friends or relatives on certain occasions. Other than the environment, the ease of getting alcohol was also another reason; they said that Yogyakarta is a relatively free city.

> "Mendapatkan barang itu sangat mudah. . . Itu saya belinya bisa beli online. . . Ataupun kita pengen spend money lebih kita ke bar, karena di bar-bar menyediakan. Meskipun kadang orang tidak tau. Tapi kalau kita pesan itu ada". (JT, M, 21 y.o.).
>
> (They're easy to get. I buy them online. Or if I wanted to spend more money, I'd go to bars, because bars have them (alcohol drink). Even though sometimes, people are not aware of it. But if we'd order them, they'd provide them).

Students have certain lines where they restrain themselves from doing negative behaviour such as smoking and drinking alcohol. In this case, students thought that negative behaviour was not something that needs to be avoided because by living healthy, negative effects from such behaviour would be automatically dodged. Other research found that individuals who engaged in physical activity believed that physical activity and the adaptive stress response had such a direct correlation, improving strength and fitness, for example, was not only a result of physical activity (exercise) but also had a beneficial impact on future physical activity participation. The fact that this positive stress adaption led to beneficial health outcomes, such as lower blood pressure, a lower risk of dying from any cancer, and better blood sugar control (Cairney et al., 2019).

According to the discussion of student lifestyles above, most students continued to be involved in negative behavior. This was also confirmed by a variety of previous studies, which identified a large number of students who did not live a healthy lifestyle. This will have an impact on future life, especially for adolescents and students, who will be at risk of developing degenerative diseases. The presence of Cardiovascular Risk Factors (CVRF) among students is

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concerning, considering the risk of future health issues (Zarrazquin Arizaga et al., 2018). Other findings highlighted the significance of early screening to identify students at risk for cardiovascular disease, especially because the majority of college students were unaware of their risk and believe they were healthy (Yahia et al., 2017). Their findings also mentioned that metabolic risk factors in students may go unnotified if they were not identified early, worsening over time and eventually contributing to disease progression.

Generally, college students' behaviors tended to shift when they lived independently and away from their parents. Each component was elaborated in Figure 1.

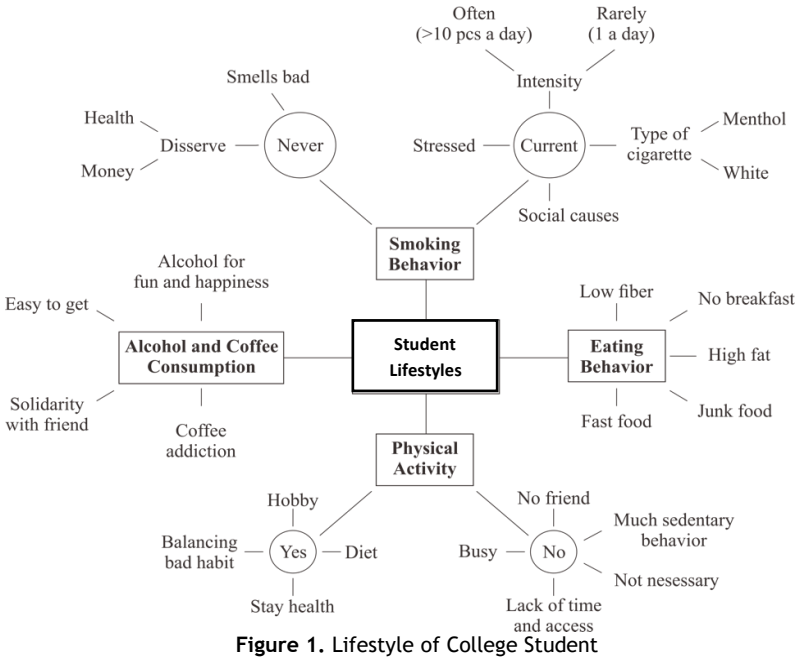

Figure 1. Lifestyle of College Student

Cardiovascular Disease Knowledge and Perceive Vulnerability

Regarding protection attempts against cardiovascular disease, students' grasp of the disease was also studied. For students studying the health-related discipline, cardiovascular disease was very familiar to them, while it was not the case for students from other disciplines. Almost all of the students agreed that unhealthy behaviour was the reason for cardiovascular disease, but age was also another factor in the disease. Cardiovascular disease happened to a lot of elderly people which led them into believing that the disease won't affect young people.

"Ya kan aku masih muda (informan merentangkan kedua tangannya). (informan tertawa) yaaa iya mba kan aku masih sehat nih, olahraga iya, makan juga gak". (PH, M, 22 y.o.).

(Because I'm still young (the informant gestured by spreading his hands) (informant laughed) yeah look, I'm still healthy, I do exercise, and don't eat that much).

As we know, nowadays there had been a shift of disease to younger people because of unhealthy changes in lifestyle to them. Individuals in the group of younger age had such low awareness compared to those in the group of older age. Young adults with multiple cardiovascular risk factors were unaware if they had it (Bucholz et al., 2018). Other discoveries also concluded that young people didn't have enough understanding

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about risk and consider themselves didn't have the risk of cardiovascular disease (O'Toole et al., 2019). Students tended to feel more susceptible to diseases that the effect can be directly felt such as gastritis.

Perceived Severity

Compared to susceptibility perception, the students' severity perception of cardiovascular disease was far more appropriate. This was because they have family/relatives who suffer from cardiovascular disease which caused them to see directly the danger of the disease. Even further, they have seen sudden death that happened to people with cardiovascular disease.

> "Apa sejahat itukah jantung itu? Sampai gak ada tanda-tandanya, dan respon. . . Gak, maksudnya tanda-tandanya, yaitu gak ada tanda-tandanya apa, buktinya aku ngeliat belum lama ini, om ku gitu kan (DN, M, 23 y.o.).
>
> (Is the heart that evil? It doesn't show any sign as well as response. No, I mean the indication, there's nothing, like what I saw a while ago to my uncle).

The number of death from cardiovascular disease among college students was relatively high, thus severity perception of cardiovascular disease in college students tended to be higher compared to susceptibility perception. Having a family history of CVD was a strong predictor of the next disease if it was not controlled at the right time, and a healthy lifestyle should be built among young people regardless of the risk of parental inheritance. However, studies on students have revealed that students generally adopt the behaviours and habits of their parents who contribute to CVD (Güneş et al., 2019).

College students who didn't have any relatives with cardiovascular disease tended to not worry about the disease because of their young age. Threat from the disease that has never been felt and seeing that cardiovascular disease happened mostly to elderly people, thus made college students not feel threatened. Young people believed that they were not at risk to get cardiovascular disease, which happens to the older population. According to previous research, it stated that university students' awareness of cardiovascular disease was still very low (Güneş et al., 2019).

> *"Loh kan aku takutnya nanti mba, kalau udah tua hehehe. Itu jujur sih gak takut soalnya gak tau ya kenapa ya?"* (YM, F, 22 y.o.).
>
> (I will be worried later when I am old hahaha (She's laughing). Honestly, I'm not worried now, not sure why?).

Due to the students can see directly the impact of cardiovascular disease, students' severity perception of cardiovascular disease was quite good for students who have family/relatives impacted by cardiovascular disease. Understanding cardiovascular disease has an impact on students' severity perceptions because students who didn't come from a family with a history of a cardiovascular disease believed that the disease will only affect the elderly. In Protection Motivation Theory, susceptibility and severity perceptions are the factors measured on the threat. High perception would increase the adoption of adaptive behavior which is a healthy lifestyle. If someone sees a relevant and serious threat that they consider scary enough, it would motivate them to avoid the threat. Consequently, people are often involved in protection action to lessen the threat. If someone didn't see the threat, they wouldn't respond to the risk message (Lewis et al., 2007).

Response efficacy

Another appraisal of the attempt to protect against cardiovascular disease is coping appraisal including response efficacy and self-efficacy. It was found that the response efficacy of the students did not give a quite positive response on the benefit of a healthy lifestyle because of experience in seeing other people and gave a negative experience to the students.

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"...tapi menurutku gak efektif, juga gitu loh. Adikku hidupnya gak ngerokok juga baru mau masuk kuliah dianya, ngerokok juga enggak, makan di rumah terus orang kuliah di Semarang kan, makan di rumah terus tidur juga gak begadang, infeksi liver (TN, F, 23 y.o.).

(But I think it won't be effective. My brother, who doesn't smoke, eats regularly at home in Semarang (The city in Indonesia), has enough sleep, and still gets a liver infection).

In addition, that-other-students were not sure because cardiovascular disease is caused by genetic factors. Cardiovascular disease was not inherited directly from the parents, but the parents' unhealthy behaviour tended to be followed by the children. In previous studies was found that children with a history of CVD in their families were susceptible to developing CVD in the future (Vohra et al., 2017). Research In Turkey on university students found that they had healthier eating habits due to cultural issues and local issues (Güneş et al., 2019).

However, not all of the students believed in the same thing because one of the causes of cardiovascular disease was behaviour. The students also believed the benefit of a healthy lifestyle which lessens the risk factor of cardiovascular disease such as obesity will improve the metabolism of the body, decrease the fat, and another benefit is not easily getting sick.

Self-efficacy

Healthy lifestyle self-efficacy was also considered low. Some of the students were not sure if they were capable of living healthy. This was proved by the student's statement that the student would change their lifestyle if already affected by a disease.

"...soalnya sering pusing, pusing gitu kan. Tapi, kalau misalnya aku tu kalau ini tu gak sehat kan, nah kalau misalkan udah ada indikator kayak gitu misalnya, efeknya baru sehat gitu mba, setelah itu ya balik lagi." (Male, 20 y.o.).

(I get headaches a lot. But, if I feel unhealthy, when there's an indicator of such, then I would change to be healthy, but after that, I would usually go back to the way I used to).

Most of the students will live healthy for a certain purpose and goal like wanting to lose weight. Students did a healthy lifestyle for the psychological benefit and body image. The impacts were also significant for older adolescents, according to one study. This was in accordance with findings from a study of 9 to 18-year-olds, which found that body dissatisfaction increased with age. Furthermore, a previous study revealed that the period between youth and adulthood was associated with the greatest risk of weight increase, suggesting that weight judgments may become increasingly significant as people get older (Meyer et al., 2021). Students' awareness of the degenerative disease was still low which caused students to do a healthy lifestyle only for a short period of time.

College students also had low confidence in changing their behaviour to be better when they were still college students. This was because there's an obstacle or in Protection Motivation Theory it was called response including activity, environment/friends, access, economy, and the presence of advertisers. Response cost will increase maladaptive behavior from an individual. Even so, some students already had a willingness to change once they graduated. One thing that affects self-efficacy the most was the students' low awareness regarding healthy lifestyle behavior because of the presence of the wrong assumption about healthy lifestyle. The lack of education could decrease self-efficacy because the individual would not be able to receive information well enough (Lewis et al., 2007).

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Based on the discussion that has been described above, it showed that students' knowledge affected to threat appraisal of cardiovascular disease, as well as coping appraisal of healthy life against cardiovascular disease. In the Protection Motivation Theory, threat appraisal and coping appraisal will increase an adaptive response. In this study, the knowledge of students who were low regarding cardiovascular disease and a healthy lifestyle affected both those appraisals. There was an overview of the innovation of cognitive mediating processes in the Protection Motivation Theory obtained from this study as follows.

Thus, to raise awareness of the cardiovascular disease and improve the health behaviour of students needed health education through health promotion efforts for adolescents, especially college students.

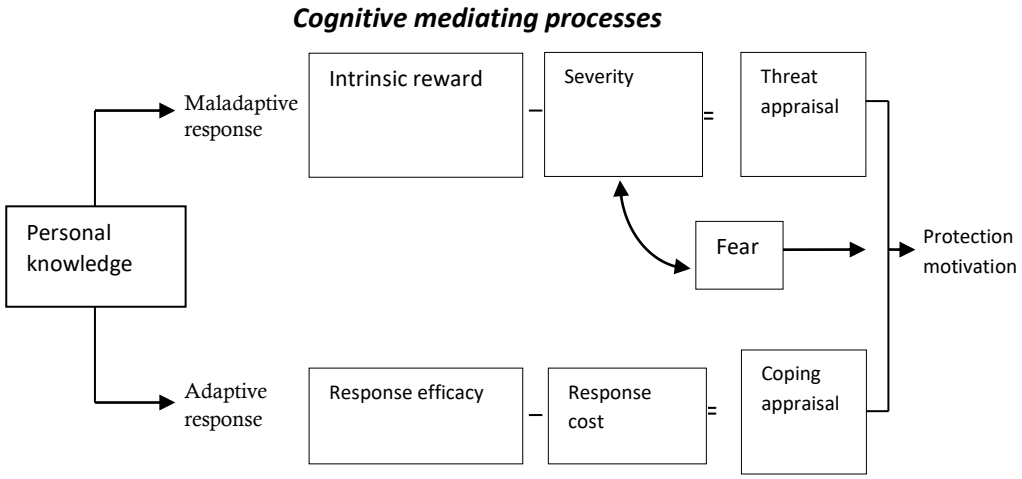

Figure 2. The Innovation of Cognitive Mediating Processes in the Protection Motivation Theory

CONCLUSION

According to Protection Motivation Theory, perceive severity part was quite good compared to susceptibility perception on cardiovascular disease. This was because the students had their own experiences in seeing their family/relatives or other people affected by cardiovascular disease and most of the students were not worried about the disease because of their young age and felt like they were still young and not at risk of getting cardiovascular disease. The students' belief in a healthy lifestyle was still low. Response efficacy was low because they still haven't felt the long-term impact of the healthy lifestyle benefit, while self-efficacy was still low also because there were still obstacles.

Universities are supposed to provide students with access to health information using electronic media through the university's official website, such as recommendations to engage in physical activity. The university is also expected to improve its supply of healthy canteen facilities by providing students with healthy and affordable meals that include a variety of local vegetables and fruits as food ingredients, as well as by creating canteens that promote health. Limiting smoking access on campus such as making all universities a smoke-free area for all students, both in health majors and non-health majors could also be carried out. Another recommendation is that further research into the effects of healthy and unhealthy living behaviours during an individual's youth is needed.

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Knowledge and Breastfeeding Experience are Associated with High Levels of Exclusive Breastfeeding Self-Efficacy in Pregnant Women from Dobo, Maluku

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ABSTRACT

***Background**: The rate of exclusive breastfeeding in Indonesia, including Maluku Province, was still low. One of the factors associated with exclusive breastfeeding is maternal self-efficacy. This study aimed to determine factors associated with high levels of exclusive breastfeeding self-efficacy amongst pregnant women living in the catchment area of Dobo and Siwalima Health Centers in Dobo, Aru Islands District, Maluku Province. **Methods**: This study was conducted in October 2021 using a cross-sectional research design. Using total population sampling, 146 pregnant women living in Dobo and Siwalima Health Center's catchment area were selected and interviewed. We examined the role of different factors: mothers' sociodemographic characteristics, number of children, breastfeeding knowledge, social support, antenatal care use, and mothers' history of breastfeeding. Logistic regression analysis was performed to determine factors associated with high levels of exclusive breastfeeding self-efficacy in pregnant women. **Results**: We found that 61.6% of pregnant women had high levels of exclusive breastfeeding self-efficacy. The odds of high levels of exclusive breastfeeding self-efficacy significantly increased in pregnant women with high levels of breastfeeding knowledge (aOR=4.73; 95%CI: 1.44-15.52, p=0.010). The odds also increased in mothers who had ever exclusively breastfed their previous child (aOR = 5.10; 95% CI: 2.02-12.86, p=0.001) or had any experience with breastfeeding (aOR=0.48; 95%CI: 1.88-12, p=0.001). **Conclusions**: The level of knowledge about exclusive breastfeeding and previous breastfeeding experience was associated with the level of exclusive breastfeeding self-efficacy amongst pregnant women. Health promotion efforts, including health education and provision of support from health workers and family members for pregnant women who did not have any breastfeeding experience, were beneficial to improving exclusive breastfeeding self-efficacy.*

***Keywords**: Exclusive-breastfeeding, Public Health Center, Self-efficacy*

INTRODUCTION

According to the World Health Organization (WHO), exclusive breastfeeding is the condition in which an infant receives only breast milk for the first six months without other solids or liquids, except for drops or syrups consisting of vitamins, minerals, and supplements, or medicines (WHO, 2018). Breast milk is easy to digest, supports infants' growth and development, including their cognitive function, and contains various immune cells beneficial to protect infants from various infectious diseases (Widiarto T, 2018). Breastfeeding benefits mothers as it plays an important role, including in the process of restoring reproductive organs, extending inter-pregnancy interval, reducing the risk of breast cancer, and increasing the bond between mothers and their infants (Muflidah, 2017; Pusat Data dan Informasi Kementrian Kesehatan RI, 2018).

Although the benefits of exclusive breastfeeding were widely reported, its prevalence was still low worldwide, including in Indonesia (WHO, 2018). According to data from the WHO, only 44% of infants globally were exclusively breastfed from 2015-2020. Based on the 2018 Basic Health Research (RISKESDAS) report, the prevalence of exclusive breastfeeding in Indonesia was 37.3% (Kementerian Kesehatan Republik

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Indonesia, 2019). In Maluku Province, the prevalence of exclusive breastfeeding for infants aged 0-6 months in 2019 was 43.3% and reduced to only 37.2% in 2020 (Dinas Kesehatan Provinsi Maluku, 2020). The prevalence was also low in the Aru Islands District of Maluku Province (Dinas Kesehatan Provinsi Maluku, 2020). In 2020, the prevalence of exclusive, breastfeeding in the Aru Islands District ranged from 100% at the Dobo Health Center to only 32% at the Siwalima Health Center (Dinas Kesehatan Kabupaten Kepulauan Aru, 2020).

Multiple factors were reported that influenced exclusive breastfeeding practice in the first six months of infants' life. They included maternal knowledge, occupation, education level, social support, and self-efficacy (Li *et al.*, 2021; Tsegaw, Dawed and Amsalu, 2021). Self-efficacy is a person's belief in his ability to perform a specific action to achieve the desired or expected results (Bandura, 1977). Thereby, when a mother had a high level of exclusive breastfeeding self-efficacy, she would have a greater belief in her ability to exclusively breastfeed her infant in the future. Self-efficacy is related to different factors, including maternal age and social support (Ngo T H, 2019; Safitri *et al.*, 2019). Previous research conducted by Titaley CR et al. reported that maternal education level, occupation, and level of knowledge about breastfeeding were significantly related to mothers' breastfeeding self-efficacy (Titaley *et al.*, 2021).

In 2021, a study was conducted in Dobo, Aru Islands District, Maluku to examine breastfeeding self-efficacy amongst pregnant women. Using data from this study, this analysis examined factors associated with high levels of exclusive breastfeeding self-efficacy amongst pregnant women living in the catchment areas of Siwalima and Dobo Health Centers. This result of the study could be used by program managers to improve maternal exclusive breastfeeding self-efficacy as part of the efforts to promote the prevalence of exclusive breastfeeding in the Aru Islands District, Maluku.

METHODS

Design and sampling method

This was an analytic study with a cross-sectional design. We interviewed pregnant women of all gestational ages living in the catchment area of Siwalima and Dobo Health Centers in Dobo, Aru Islands District, Maluku Province.

A total sampling method was used in this research. All pregnant women registered in Siwalima and Dobo Health Center were asked to participate in this study. A total of 151 pregnant women were listed. The total number of respondents interviewed was 146 pregnant women. Five respondents were not included in the survey due to their time constraints.

Respondents were required to fill out the questionnaires, accompanied by the researcher. The questionnaires were filled out either at the integrated health posts or at the respondent's house. Before filling out the questionnaire, the researcher explained the purpose of the study and requested the respondents to fill out the informed consent form. After filling out the questionnaire, the researcher ensured its completeness of the questionnaire.

Research instrument

We used a structured questionnaire covering several aspects, including sociodemographic characteristics, the number of children pregnant women previously had, maternal knowledge of breastfeeding, social support, and breastfeeding self-efficacy. Questions related to sociodemographic characteristics, number of previous children, and maternal breastfeeding experience were adapted from a questionnaire used in studies in Semarang and Jakarta in 2020 and 2016 (Maelissa, 2017; Pusparoni, 2021). Questions about maternal social support were adapted from a questionnaire used in the Sreseh Health Center area, Surabaya, in 2018 (Agustin, 2018). The translated Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF) developed by Denis in 2003 was also used in this survey (Dennis, 2003; Agustin, 2018; Sari *et al.*, 2019).

Dependent and independent variables

The dependent variable was maternal exclusive breastfeeding self-efficacy. The self-efficacy questionnaire has 14 questions with a total score ranging from 14 to 70. Each question has the answer of five options.: 'strongly disagree', 'disagree', 'neutral', 'agree', and 'strongly agree' (Agustin, 2018). All 'strongly disagree' answers were given a

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score of one, 'disagree' answers were given a score of two, 'neutral' answers were given a score of three, 'agree' answers were given a score of four, and 'strongly agree' answers were given a score of five. All these scores were then summed for each respondent. The median distribution from the total self-efficacy score from all respondents was used as a cut-off point to determine respondents with high and low self-efficacy scores. If the total score was equal to or more than the median distribution, the respondent was classified into the high self-efficacy group. If the total score was less than the median, it was classified into the low self-efficacy group (Titaley *et al.*, 2021).

The independent variables in this study were grouped into sociodemographic, internal, and external factors. Socio-demographic factors consisted of five variables: (1) Age (<20 years/20-35 years/>35 years); (2) Education level (not schooling-primary school/junior high school /senior high school/university); (3) Occupation (housewife/working outside the home); (4) Gestational age (trimester I/II/III); and (5) Household income (<IDR 2,604,961 which is the Regional Minimum Wage (*Upah Minimum Regional*, UMR)/=UMR/>UMR). Internal factors consisted of three variables: (1) Number of children (not having any child/1 child/>=2 children), (2) Maternal level of knowledge about exclusive breastfeeding (low/high), and (3) Breastfeeding experience (never/ever had any experience) (Maelissa, 2017; Pusparoni, 2021).

External factors consisted of two variables: (1) use of antenatal care services (never/ever), and (2) social support (low/high). The social support variable consisted of 10 questions with the option: 'always', 'often', 'sometimes', and 'never' for each answer. If respondents answered 'always' score four was given, answered 'often' score three was given, answered 'sometimes' score two was given and answered 'never' score one was given. All these scores were then summed for each respondent and categorized into: (1) 'high' if a total score was >30, (2) 'low' if a total score was ≤30 (Agustin, 2018).

Data analysis

Initially, the frequency distribution of each variable used in this study was presented descriptively. In the next stage, logistic regression methods (univariable and multivariable) were used to identify factors associated with high levels of exclusive breastfeeding self-efficacy in pregnant women. Univariable analysis was carried out to examine the relationship between a variable and exclusive breastfeeding self-efficacy without controlling for other variables. Multivariable analysis was then performed using the backward elimination method to determine factors that were significantly associated with high levels of exclusive breastfeeding self-efficacy in pregnant women (using a significance value of 0.05), after controlling for other covariates. The living area, age, and level of education were selected a priori to be retained in the model despite their significance level. All data analyses were carried out using the SPSS 24 software.

The ethics committee of the Faculty of Medicine, University of Pattimura, Ambon, approved the implementation of the research (number 053/FK-KOM.ETIK/VIII/2021). After obtaining an explanation from the researcher, respondents who were willing to be interviewed were asked to sign an informed consent form to state their willingness to participate

RESULTS AND DISCUSSION

This analysis used information from 146 respondents, i.e., 73 from the catchment area of Siwalima and 73 from the catchment area of Dobo Health Centers. In general, 61.6% of pregnant women had high levels of exclusive breastfeeding self-efficacy related. The distribution of respondents' answers for each component of the self-efficacy question is presented in Figure 1.

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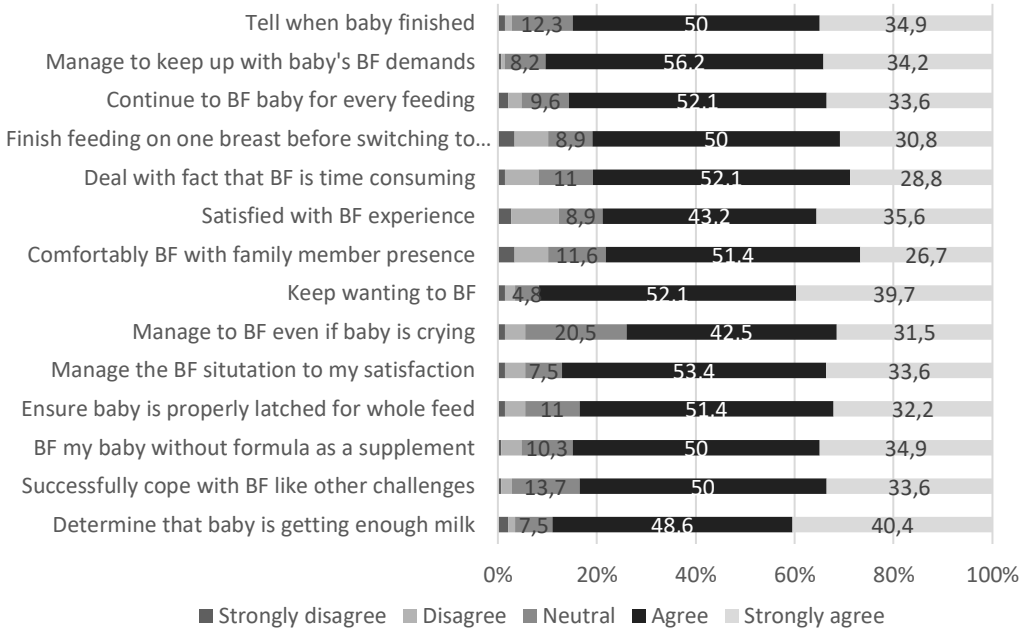

Figure 1: Distribution of respondents' answers for each question of the Breastfeeding self-efficacy scale short form (BSES-SF) in pregnant women living in the catchment area of Dobo and Siwalima Health Centers in Dobo, Aru Islands District, Maluku Province, 2021

Table 1 shows the frequency distribution of all respondents included in this analysis (n=146). Most of the respondents were aged 20-35 years (80.8%) and completed a minimum of high school level of education (47.3%). A total of 68.5% of respondents worked as housewives. The percentage of respondents with high levels of knowledge about exclusive breastfeeding was higher (86.3%) than those with a low level of knowledge. More than 60% of respondents had ever breastfed (68.5%), or exclusively breastfed their children (63.7%). Most respondents used antenatal care (ANC) services (92.5%). The distribution of each variable based on the level of self-efficacy is presented in Table 1. The percentage of pregnant women with high levels of exclusive breastfeeding level of self-efficacy was found in women who had high levels of knowledge and ever breastfed their children.

Table 2 presents the logistic regression analysis results performed in this analysis to determine factors associated with high levels of exclusive breastfeeding self-efficacy in pregnant women. A significant association was found between mothers' level of knowledge about breastfeeding and exclusive breastfeeding self-efficacy, even after adjusting for respondents' location of residence, age, and education. The odds of high levels of exclusive breastfeeding self-efficacy were higher in mothers with high levels of knowledge about breastfeeding than those with low-level knowledge (aOR=4.73; 95%CI: 1.44-15.52, *p=0.010*). Increased odds were also found in the group of pregnant women who had ever exclusively breastfed their children before (aOR=5.10; 95% CI: 2.02-12.86, *p=0.001*). When mothers' experience of exclusive breastfeeding was replaced with any type of breastfeeding, significantly higher odds were still found in mothers who had previously breastfed compared to those who had never breastfed before (aOR=4.79; 95%CI: 1.88-12.18, *p=0.001*).

This study demonstrates the vital role of knowledge about exclusive breastfeeding during pregnancy on mothers' breastfeeding self-efficacy. This finding was supported by a previous study by Titaley, et al., which showed that mothers with a low level of knowledge had low self-efficacy, while mothers with high

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levels of knowledge had high self-efficacy (Titaley *et al.*, 2021). According to Bandura's 1997 theory, one of the factors that formed a person's self-efficacy was the cognitive or knowledge component. The mindset possessed would influence someone's performance (Bandura, 1977). Mothers who had high self-efficacy could have high expectations of the results obtained. In pregnant women, self-efficacy becomes one of the essential drivers for mothers to exclusively breastfeed their children.

Our finding indicated the importance of improving mothers' knowledge and awareness about the importance of breastfeeding. Various health promotion strategies could be applied, including individual and group counseling. Individual counseling refers to individual meetings between the counselor and counselee, through which the counselor could provide assistance related to the counselee's personal development and the counselee could anticipate the problems that lie ahead (Florida Boa and Agustine, 2022). The importance of breastfeeding counseling was also emphasized by other studies reporting that lactation counseling had an effect on mothers' ability to breastfeed their children after cesarean section (Vidayanti and Wahyuningsih, 2017). Mothers who received lactation counseling had a 3.85 times better chance of breastfeeding their babies compared to mothers who did not receive any lactation counseling. Furthermore, a study on a self-efficacy-based training program amongst postpartum women in the first six months after delivery reported that mothers in the intervention group who received education intervention had higher levels of self-efficacy and longer duration of breastfeeding compared to mothers in the control group (Man *et al.*, 2016). This research also showed that 31.4% of mothers in the intervention group successfully breastfed their babies for six months after delivery compared to mothers in the control group 16.7%

Health promotion about the importance of breastfeeding could use different media to reach that will help the audience improve their understanding of the messages. A study reported an increased knowledge amongst respondents after education interventions were delivered using leaflets and video (Afriyanti and Salafas, 2019). The results further showed that video was more effective in increasing respondents' knowledge. The use of video as a media of education could be applied in our study sites considering the high percentage of pregnant women in this age group, i.e., 20-35 years, who could access videos easily to retrieve any health-related information (Afriyanti and Salafas, 2019).

Furthermore, this study showed that mothers' self-efficacy was also related to their previous breastfeeding experience. A similar finding was reported by Ariyanti L, in 2021 (Ariyanti L, 2021). Mothers with experience of breastfeeding had a higher self-efficacy level than those who did not have any breastfeeding experience. Mothers who did not have any breastfeeding experience or ever failed to exclusively breastfeed their child due to difficulties encountered might be less motivated to exclusively breastfeed again (Man *et al.*, 2016). On the other hand, the success of the previous breastfeeding experience might become a strong desire to give their child exclusive breastfeeding again (Ariyanti L, 2021). This finding also reaffirmed the importance of family support and health professional assistance for pregnant women, especially those in their first pregnancy, who never had or failed to exclusively breastfeed their children before. Meeting opportunities during antenatal visits should be used optimally by health workers to provide education and assistance to pregnant mothers as early as possible. Several studies showed that educational efforts were more effective when conducted early to improve mothers' motivation to give exclusive breastfeeding to their babies (Vidayanti and Wahyuningsih, 2017). With assistance and education from lactation counselors, health workers, or trained cadres, solutions and challenges could be addressed early (Man *et al.*, 2016; Afriyanti and Salafas, 2019; Florida Boa and Agustine, 2022). Family support also plays a crucial role (Mufdlilah, Dwi Ernawati, 2022). Research conducted by Septiani Hanulan et al. in 2017 reported the significance of family support and the mother's decision to give exclusive breastfeeding. Therefore, the involvement of other family members in health promotion efforts since the pregnancy period will be essential to ensure women

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receive adequate support and increase their exclusive breastfeeding self-efficacy.

Strengths and limitations

Research has not been thoroughly studied on breastfeeding self-efficacy amongst pregnant women in Dobo, Aru Islands Districts, Maluku Province. This research was also conducted in two health centers with a large catchment area and could represent the condition of Dobo. Therefore, the results of this study could be used by program managers to design evidence-based interventions to promote exclusive breastfeeding rates in Dobo and its surrounding areas. The main limitation of this study was the use of a cross-sectional design that could not establish any causal relationships between the variables examined.

CONCLUSION

In summary, our study confirms a significant association between knowledge of breastfeeding and previous breastfeeding experience with a high level of exclusive breastfeeding self-efficacy amongst pregnant women residing in the catchment area of Siwalima and Dobo Health Center in Dobo, Aru Islands District. Health promotion activities to improve pregnant women's knowledge and awareness about exclusive breastfeeding are essential. Additionally, support and assistance from breastfeeding counselors, health workers, and other family members will benefit pregnant women to improve their breastfeeding self-efficacy, particularly those who did not have any breastfeeding experience.

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Empowering Community Leaders to Prevent and Control Lung Tuberculosis in Manado City: A Quasi-experimental Study

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ABSTRACT

***Background**: Lung tuberculosis (TB) is a global public health problem as it continues to be a major cause of morbidity and mortality worldwide. According to WHO, as many as 44% of lung TB cases were in the Southeast Asian region. A previous study showed the importance of the support of community leaders and health cadres in increasing knowledge and improving public attitudes towards the prevention and control of lung TB.* ***Objective**: This study aims to determine the effectiveness of health education in empowering community leaders to prevent and control lung TB in four Public Health Centres in Manado City.* ***Methods**: A quasi-experiment with pre and post-design was used to answer the research hypothesis. With cluster sampling, four Public Health Centres in Manado City were selected based on their geographical location. Community leaders were selected according to the inclusion criteria using a convenience sampling technique. One hundred community leaders from the four Public Health Centres agreed to participate. Health education used the newly developed printed and e-posters accessed through YouTube. The health education was conducted once for each group according to the respondents' convenient time. Questionnaires collected knowledge and attitudes data before and after the educational program from July to August 2021.* ***Results**: Sixty percent of respondents were women, and most of their education level was Senior High School. Wilcoxon signed-rank test results for the knowledge variable and paired t-test for the attitude variable showed a significant difference (P-value < 0.05). Results indicated an increase in knowledge and a positive change in attitudes of the community leaders after the health education.* ***Conclusion**: Findings from this study showed that the educational program was highly effective in empowering community leaders to prevent and control lung TB in four Public Health Centers in Manado.*
***Keywords**: community leaders, education, empowerment, lung TB.*

INTRODUCTION

Lung Tuberculosis (TB) is a global public health problem as it continues to be a significant cause of morbidity and mortality worldwide. According to predictions, 1.2 million people with lung TB would die in the population without Human Immunodeficiency Virus (HIV) in 2018 and 1.5 million in 2020, including 214,000 people with HIV (World Health Organization, 2020). World Health Organization (WHO) stated that lung TB would be the 13th leading cause of death and the 2nd leading infectious killer after COVID-19 (above HIV/AIDS). Approximately 57% were men of all lung TB cases in 2018, women about 32% and children (aged 15 years) as much as 11%. Similarly, 10 million people fell ill with lung TB worldwide; they were 5.6 million men, 3.3 million women and 1.1 million children. Thus, lung TB affects both sexes in all age groups but was higher in men (>15 years of age). Geographically, most lung TB cases in 2018 were in the WHO regions of South-East Asia (44%), Africa (24%) and the Western Pacific (18%), while the lowest percentage of cases was in the Eastern Mediterranean (8%), America (3%). Eight countries were included in the group of two-thirds of global total lung TB cases, namely; India (27%), China (9%), Indonesia (8%), Philippines (6%), Pakistan (6%), Nigeria (4%), Bangladesh (4%) and South Africa (3%) (World Health Organization, 2020).

Lung TB cases fell by 200 thousand cases. Hence, the lung TB incidence rate in 2019 became 842,000 cases in Indonesia, making Indonesia the country with the third-largest lung TB burden in

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the world after India and China. According to patient cost survey data, nearly 50% of lung TB-affected households globally needed to spend an extra 20% of their household income (Pedrazzoli et al., 2018). Similarly, the target was approximately US$13 billion annually needed for lung TB prevention, diagnosis and treatment to achieve the agreed global target. Although lung TB is a curable and preventable disease, children and adolescents are frequently neglected by health providers and consequently become challenging to diagnose and cure (Mbuti et al., 2020).

In addition, Multidrug-resistant lung TB (MDR-TB) was still a public health problem. However, in 2020 only about one in three people with drug-resistant lung TB accessed treatment (Mbuti et al., 2020). A study showed that families perceived the signs and symptoms as normal, so specific treatment was not needed (Febrina, 2018). Others believed lung TB was hereditary and non-communicable (Deswinda et al., 2019). This perception made them not seek help from health workers. Similarly, other studies found that knowledge, attitudes and actions of the community, families, groups, and individuals about ways to prevent lung TB transmission, treatment and control of lung TB were the critical factors in dealing with lung TB in the community (Adane et al., 2017; Nyasulu et al., 2018; Datiko et al., 2019).

Another study showed that in 2018 the North Sulawesi Province was the four highest Case Notification Rates (CNR=273) for TB disease in Indonesia after DKI Jakarta, South Sulawesi and Papua Province (Hansun, 2020). More importantly, the Indonesian Health Profile 2020 reported that the North Sulawesi Province was the third-highest of Case Notification Rate (CNR=189) after Papua (CNR=244) and DKI Jakarta (CNR=228). CNR is the number of new and relapse notified TB cases in a given year per 100,000 population. Consistent with the treatment success rate of the North Sulawesi Province in 2020, which was only 82.6% (below the national standard of 90%) (Kemenkes Republik Indonesia, 2020). In Manado City, the number of new TB cases in 2017 was 990 while new cases of BTA+ were 888 cases (Dinas Kesehatan Kota Manado., 2018). Improving lung TB care cadre groups' knowledge, attitudes, and skills can strengthen lung TB control programs in the community (Yanti, 2016). In line with this, The Indonesian Health Department has declared a "Wanted: Leader for a TB Free World" commitment so everyone can be a leader in ending TB both at work and in their respective places of residence (Indah, 2018; Indah, 2018 p.2). Several intervention studies have been done to promote family knowledge and attitudes toward lung TB prevention and control (Brownlie, 2007; Hasanica et al., 2020; Saputra & Fajriani, 2021). These evidences showed that empowerment of the community, including community leaders, in promoting knowledge about lung TB prevention and control among people and families with lung TB was a crucial intervention. However, preliminary observation in several Public Health Centres in Manado City indicated that not all TB cadres made regular monthly reports on medication supervisors' (PMO) activities and findings of new suspected cases in their area. In addition, health education only occurred occasionally. The religious and village leaders were the key persons for all health promotions and preventions in the villages. The health education on TB lung prevention and control typically occurred within religious and community activities attended by the village leaders. However, not all the community leaders had done these regularly in their activities. Therefore, these activities did not occur optimally. It was predicted that their knowledge and attitudes towards TB prevention and control played a critical role in this situation. However, there were limited studies regarding empowering community leaders to end lung TB in North Sulawesi Province.

Community empowerment is an effort to make people have opportunities and the ability and skills to increase their capacity to determine their future by mobilizing and utilizing all available resources. Community empowerment is the element that enables a society to survive and, in a dynamic sense, develop itself and achieve goals (Popay, 2021; Yanti, 2016). Additionally, empowering the community is also an effort to increase the dignity of the people who cannot escape the trap of poverty and underdevelopment. In other words, empowering the community is enabling

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and empowering people. Therefore, this study aims to determine the impact of printed and electronic posters in empowering community leaders.

METHODS

A quasi-experimental study with a pre and post-test one-group design approach was used to determine community leaders' differences in knowledge and attitudes before and after the education program to prevent and control the spread of Lung TB. The study was conducted in four working areas of public health centres with the highest lung TB incidence in Manado City, namely Ranotana Weru Public Health Centre, Tuminting Public Health Centre, Tikala Public Health Centre, and Wawonasa Public Health Centre. The total sampling strategy was used to increase the external validity of the study. Twenty-five community leaders from each Public Health Center area were identified based on the inclusion criteria, including serving as religious leaders, heads of villages and TB cadres. So, a total of 100 community leaders participated in this study. Respondents' agreement to participate in the study was shown by signing the informed consent.

The authors developed printed posters and e-posters. The language used in the posters was the local language so that respondents would quickly apprehend the message in the posters. All respondents were given the printed poster and access to the e-poster simultaneously for 30-40 minutes during the educational program. The health education was carried out once in each group according to the respondents' convenient time in each public health centre.

Data collection on the knowledge and attitudes of community leaders towards the prevention and control of lung TB occurred before and after the intervention from July to August 2021. Both of these questionnaires were developed by the research team and were tested for validity and reliability. Five questions underwent revision because the r-count did not reach the r-table. The reliability test obtained Cronbach=0.70. Thus, the two instruments were considered valid and reliable for this study.

The knowledge questionnaire consisted of 30 questions with two answer choices, namely 'Yes' and 'No'. Each correct answer had a score of 2 and the wrong answer of 1. Thus the highest score for the knowledge questionnaire was 2x30=60. The final score of each respondent was in the form of an interval scale.

Furthermore, attitudes data of community leaders were collected using 25 attitude statements on a Likert scale with a range of 1-5 and with choices of strongly agree, agree, unsure, disagree, and strongly disagree. Answers with positive attitudes to the statements in the questionnaire received a score of 5; on the contrary, negative attitudes received a score of 1. Thus, the highest score for the knowledge questionnaire was 5x25=125. The final scores of each respondent were in the form of an interval scale.

However, respondents' knowledge and attitudes scores were included in the three categories to facilitate the interpretation of descriptive data. The classification of the categories is depicted in Table 1.

Table 1. Categorization of the knowledge and attitudes scores

Classification	**Attitudes** (Normally Distributed)	**Knowledge** (Not Normally Distributed)
Good	Data > Mean + SD	Data > Q3
Moderate	Mean-SD ≤ Data ≤ Mean +SD	Q1 ≤ Data ≤ Q3
Low	Data < Mean-SD	Data < Q1

(Hasanah, 2020)

Ethical approval number 01/07/188/2021 was granted by the Health Research Ethics Committee of Manado Health Polytechnic Ministry of Health.

RESULTS AND DISCUSSION

Out of the 100 respondents, 60% were women. According to the largest age group distribution, 36% were 41-50 years old, and 27% were 51-70 years old. Most respondents had a high school education (57%), followed by Bachelor's or Diploma IV (25%). The distribution of the

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demographic characteristics of the respondents is shown in Table 1.

Table 2. Demographic Characteristics Subjects Based on Age, Sex, Education

Characteristics	n	(%)
Gender		
Women	60	60
Men	40	40
Age (years old)		
20-30	5	5
31-40	19	19
41-50	36	36
51-60	27	27
61-70	13	13
Education		
Elementary	2	2
Junior High School	0	0
Senior High School	5	5
Diploma	56	56
Bachelor	25	25
Master	2	2
Total	**100**	**100**

The demographic picture shows that 60% of the respondents were women. And the proportion of the most age was 41-50 years (36%). Other studies also found that more women participated in social activities than men (Kim et al., 2017). From the distribution of education levels, 57% of respondents were high school graduates, and 25% had an educational background equivalent to a bachelor's. There were still 2% of respondents with elementary school education levels. The highest proportion (34%) of respondents with the type of work as household workers was in line with the proportion of respondents' gender. COVID-19 pandemic situation had significantly changed women's type of work, length of work and salaries (Pratiwi et al., 2020). The author explained that one of the reasons was that women were responsible for caring for their children. The distribution of gender, age, education level and occupation had provided an overview of the demographic characteristics of respondents in this study.

Knowledge Aspect

Scores from the knowledge aspect were not normally distributed, so scores were classified into three groups according to their quartile (see Table 1). In the pre-test, 26% of respondents had low knowledge about the prevention and control of tuberculosis, and the majority of respondents (56%) were in the moderate category. Those respondents with good knowledge were only 18%. Increased knowledge about the prevention and control of TB lung among community leaders can be seen in Table 2. It depicts the proportion of knowledge of community leaders in the good knowledge category increased from 18% to 98% of respondents or 80%. In comparison, the knowledge of community leaders in the category of moderate knowledge was reduced by 55%.

Table 3. Knowledge Scores Distribution Before and After Intervention

Knowledge categories	Pre-test		Post-test	
	f	%	f	%
Good	18	18	98	98
Moderate	56	56	1	1
Low	26	26	1	1
Total	**100**	**100**	**100**	**100**

The results of the bivariate test to see differences in the level of knowledge of the respondents were carried out using the alternative test, Wilcoxon Signed Rank Test because the data were not normally distributed. The test results were presented using the median value of the score and the range of the lowest and highest scores from the scores obtained at the stage before and after the intervention was carried out.

Table 4. Differences Between Pre and Post Knowledge Test Scores of the Community Leaders

Knowledge Score	*Median*	Min-max	*z*	*P-value*
Pre-test	46	38-56	8.65	0.000
Post-test	56	43-59		

The Wilcoxon Signed Rank Test results showed a significant difference in the level of knowledge before and before the health education intervention regarding the prevention and control of lung TB z= 8.65, P-value < 0.001. The increase can be seen from the respondents' scores at Median= 46 (38-56) to Median= 56 (43-59). The impact size is r= 0.8, meaning that the intervention in the form of health education using posters and e-posters had had a major impact on increasing public knowledge about the prevention and control of lung TB in the Public health care in Manado City.

Studies showed that in the 21st century, written and electronic

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communication was needed in providing health education (Hasanica et al., 2020). In addition, several studies had also shown the effectiveness of printed posters and posters. It was also reported the effectiveness of printed posters in increasing knowledge about students' healthy lifestyles in Zenica-Doboj Canton (Hasanica et al., 2020). A study conducted in Kendari City found that posters could effectively be used as a medium for health promotion (Saputra & Fajriani, 2021). Printed posters would be stored for a long time in their place to enable the storage of knowledge, and positive attitudes in the long term after the education program was implemented (Hasanica et al., 2020). Furthermore, users' electronic posters could actively engage the message recipient and allow the sender to present it in various media and languages (Brownlie, 2007). As in previous studies, the results of this study had shown the effectiveness of printed and electronic posters in increasing community leaders' knowledge of lung TB.

Increasing the knowledge of community leaders about the prevention and control of lung TB can encourage the behavior of prevention and control of lung TB in the community. Knowledge is an important internal factor for the occurrence of a behavior. According to the Precede and Proceed Model, knowledge of predisposing factors could direct behavior (Hasanica et al., 2020). A study found that knowledge about lung TB was a predictor of self-management of lung TB patients, which means that improving patient knowledge about lung TB would improve self-management (Li et al., 2021). In addition, community leaders were key people in the community. Reinforcing factors can be in the form of support from family or people considered important for a behavior occurrence (Vera et al., 2018). Thus, community leaders play an important role in forming lung TB prevention and management behavior in the community.

Attitudes Aspect

Similar to the knowledge aspect, results from the attitudes aspect were classified into 3 groups. The mean and SD of the data were used to classify the attitudes' scores (see Table 1). In the pre-test, respondents who had attitudes about prevention and control of tuberculosis in the less category were 15%, and the most in the moderate attitudes category were 77%. In comparison, those who had good attitudes were only 18%. After the pre-test, the researchers conducted an intervention by providing health education materials using printed posters and e-posters.

These results from the post-test showed that 66% of the participants had good attitudes. So there was a 48% increase after health education in the good category. There were no more respondents who had low attitudes.

Table 5. Attitudes Score Distribution Before and After Intervention

Attitudes categories	Pre-test		Post-test	
	f	%	f	%
Good	18	18	66	66
Moderate	77	77	34	34
Low	15	15	0	0
Total	**100**	**100**	**100**	**100**

The results of the bivariate test to see differences in the level of respondents' attitudes were carried out using the paired t-test. The test results were presented using the mean value of the respondents' attitudes score. The distance or range of scores between respondents was indicated by the standard deviation (SD). The magnitude of the increase in scores from before and before the intervention is shown in the results of the Mean Difference.

Table 6. Differences between Pre and Post Attitudes Test Scores of the Community Leaders

Attitude Score	*Mean*	*SD*	*Mean diff*	P-value
Pre-test	93.13	9.66	-	0.000
Post-test	106	7.86	13.52	

The results of the paired t-test showed a significant difference, as indicated by an increase in attitude scores before (M = 93.13, SD = 9.66) and after the intervention (M= 106, SD= 7.86), t(99) = -13.520, P-value < 0.001. The increase in the mean before and after the intervention was 13.52, with a large impact showing eta-squared (η2)= 0.65, which means that the intervention in the form of health education using posters and e-posters had had a major impact on improving the attitudes of community leaders towards the prevention and

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control of lung TB at the Public Health Centre in Manado City.

Similar to the knowledge aspect, the results of the attitude aspect analysis showed the positive impact of health education using printed posters and e-posters in improving the attitudes of community leaders towards efforts to prevent and treat lung TB. This was indicated by a significant increase in attitude scores (P-value <0.001) before and after the education program.

Several studies also showed positive attitudes and changes after the provision of health education (Adane et al., 2017; Datiko et al., 2019; Fan et al., 2018). Making health education available for school children might increase their healthy living behaviour (Hasanica et al., 2020). A study conducted in Surabaya found a significant increase in the attitude aspect toward the behavior of preventing lung TB transmission from participants after receiving health education using brainstorming strategies and leaflets. This study used printed and electronic poster media, and the analysis results showed a significant impact on increasing the knowledge and attitudes of community.

leaders towards the prevention and control of lung TB. Improving participant attitudes had a reciprocal relationship with increasing knowledge. The study said that knowledge might improve attitudes. If there was an improvement in individual attitudes, there would be an increase in curiosity and understanding of the things conveyed in the educational program (Sukartini & Makhfudli, 2020).

Community leaders were one of the reinforcing factors in the Precede and Proceeding Model. Several studies reported the important role of community leaders in developing community healthy lifestyle behaviors (World Health Organization., 2020a, 2020b). A study conducted in Jayaraga Village, Garut Regency, revealed a central role of community leaders in preventing and overcoming the COVID-19 pandemic (Rosidin et al., 2020). Empowering cadres and community leaders also might reduce maternal mortality (Beydokhti et al., 2021; Chasanah, 2017). Similarly, a study also showed the role of community and religious leaders in controlling dengue fever(Rosdiana, 2021).

In the lung TB context, several studies showed that inadequate case management, such as non-standard diagnosis and drug guidance and failure to cure diagnosed cases could also undermine the prevention and control of lung TB in the community (Meundi et al., 2021; Tola et al., 2016). These findings indicated that successful prevention and control of lung TB in the community required collaboration and cooperation among stakeholders, including community leaders. Therefore, empowering community leaders may enhance the prevention and control of lung TB programs in the North Sulawesi Province.

CONCLUSION

The results of this study had provided evidence-based information that the provision of health education using printed and electronic poster media would effectively increase knowledge and improves the attitudes of community leaders towards the prevention and control of lung TB disease. Thus, this health education could also be implemented in the work areas of other health centers. In addition, the results of this study had validated the ecological approach to health promotion. The linkage of the concepts in the Precede and Procede Model in this study can be shown in aspects of knowledge and attitudes of community leaders as predisposing factors, health education programs as enabling factors and community leaders as reinforcing factors have functioned synergistically in achieving the objectives of this study.

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Improving Knowledge, Attitudes and Skills of Wani Ngandani Cadres on Effective Communication Dissemination of Health Protocols and Continuous Monitoring (Surveillance) for Covid 19 Management in Surabaya

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ABSTRACT

***Background**: COVID-19 preventive behavior plays a role in reducing infection rates and controlling the spread of the disease. In order to optimize the behavior of preventing COVID-19 in the Pacar Keling Sub-district, Tambaksari District, a health promotion program is needed by involving the active participation of the community, so that the community is able to overcome health problems with their existing potential. **Objectives**: This study aimed to determine the increase before and after being given knowledge and skills on how to communicate effectively when socializing the 5M health protocol, planning and evaluating in conducting socialization activities and how to carry out continuous surveillance on Wani Ngandani cadres as well as increasing knowledge related to health protocols during the COVID-19 pandemic for webinars. **Methods**: In each activity, 1-3 and RTL Webinar, Pre-test, and Post-test data are collected to measure the level of knowledge of participants. A paired t-test is used as the data analysis to determine the difference before and after being given training. The methods applied in measuring cadre skills are presentation and role play. Meanwhile, RTL activities are held online in the form of Community Service Webinars. The materials provided in training activities 1-3 are in the form of PPT materials and manuals. **Results**: Based on the results of the paired t-test, it is known that there were significant differences (sig <0.05) in the results of the pre-test and post-test on the four training activities. **Conclusion**: This program was effective and its implementation has succeeded in achieving the expected target and there has been a strengthening of knowledge in the community.*

***Keywords**: Continuous Monitoring; COVID-19; Planning; Prevention; Socialization.*

INTRODUCTION

COVID-19 has caused panic in the world community and has been declared by WHO as an extraordinary event. Further explanation regarding COVID-19 that can be understood easily by the patients, families, and the community is needed to reduce panic and provide knowledge on how to prevent the disease (Thamrin, n.d.). COVID-19 is caused by a type of influenza virus that suppresses the immune system which allows the virus to grow in respiratory tissues and organ (Republik & Indonesia, 2020). Common signs and symptoms of COVID-19 infection include symptoms of acute respiratory distress namely fever, cough, and shortness of breath. The average incubation period is 5-6 days with the longest incubation period to 14 days.

Standard recommendations to prevent the spread of infection are regular hand washing, practicing coughing and sneezing etiquette, avoiding direct contact with livestock and wild animal as well as avoiding close contact with anyone showing symptoms of respiratory

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disease including coughing and sneezing (Republik & Indonesia, 2020). World Health Organization (WHO) established the COVID-19 Protocol as a Public Health Emergency of International Concern (PHEIC) on January 30, 2020. The increase in the number of COVID-19 cases has taken place quite rapidly and the spread has happened cross-countries, as of March 2020, were reported globally 90,870 confirmed cases among 72 countries with 3,112 deaths (CFR 3,4%) (Republik & Indonesia, 2020).

According to the latest data obtained from COVID-19 Response Acceleration Task Force, on December 16, 2020, the number of recovered patients increased by 521,984 people. However, on the other hand, there has also been an increase in confirmed cases as many as 643,508 people and a total of 19,248 people died. The data is spread among 34 provinces. The data COVID-19 Response Acceleration Task Force showed East Java as the province with the second largest number of cumulative cases in Indonesia. As of December 16, 2020, COVID-19 Response Acceleration Task Force's data reported as many as 72,979 confirmed cases in East Java.

The city of Surabaya is one of the cities in East Java province which is included in the moderate risk zone category in the spread of COVID-19 cases. One of the districts which densely populated in the city of Surabaya is Tambaksari District. Tambaksari District is included in the 10 districts with the largest number of confirmed COVID-19 cases districts in Surabaya, as of December 16, 2020, the confirmed cases are reported as many as 1,329 people. According to this data, Pacarkeling Sub-district is reported as the sub-district with the sixth-largest number of confirmed COVID-19 cases in the Tambaksari District with a total of 140 people.

The result of primary data collected through interviews with stakeholders in the Pacarkeling Sub-district, Tambaksari District, found various problems related to the high number of COVID-19 cases, namely the lack of public knowledge that assumed COVID-19 as a conspiracy theory, the lack of public awareness in keeping the distance during the new normal period, and the absence of surveillance system for online motorcycle-taxi which entering a certain area as well as the protection at the entrance of the village to implement health protocol.

According to the result of the Forum Group Discussion (FGD) at the Balai RW 10 Pacarkeling Sub-district with stakeholders and referring to the result of the Rapid Health Assessment (RHA) conducted in the Pacarkeling Sub-District, it was found that the community had implemented the health protocol, however, the discipline in implementing COVID-19 prevention behavior in the community had not been implemented optimally due to the lack of knowledge regarding the benefit of COVID-19 prevention behavior and the perception among the community which assumed COVID-19 as a conspiracy theory. This condition is supported by the information obtained from the informants of Healthy City which stated that the community in Pacarkeling Sub-District only implements the 3M health protocol if the local COVID-19 Task Force is around. In addition, the lack of public awareness in maintaining distance during the new normal period is also influenced by the condition of the settlement in the Pacarkeling Sub-district which is located so close to the market area and culinary center, causing the entire area in Pacarkeling Sub-district to be at risk for crowds due to limitations in maintaining distance.

Several causative factors in the lack of public awareness regarding COVID-19 prevention behavior including the public's assumption that the public will not be at risk as long as have never been in direct contact with the contaminated people, the perception of the seriousness of the disease that only vulnerable groups are most at risk of death from COVID-19, and the disability to carry out the prevention behavior (Freeman et al., n.d.). Certain beliefs that develop regarding COVID-19 have also affected public behavior. The right and accurate beliefs will encourage healthy behavior, meanwhile, the false beliefs will encourage individuals to behave unhealthy (Al-Hanawi et al., 2020). The false beliefs will grow stronger within the community, especially if the Protocol is faced with external conditions that can trigger preventive behavior such as the COVID-19 Protocol (Georgiou et al., 2020).

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COVID-19 preventive behavior plays a role in reducing infection rates and controlling the spread of the disease (Chen et al., 2020). Preventive behaviors such as the use of masks, keeping a distance, and washing hands using running water and soap are important things to slow the spread of the Coronavirus in the community (Van den Broucke, 2020). In order to optimize the behavior of preventing COVID-19 in Pacarkeling Sub-district, Tambaksari District, a health promotion program is needed by involving the active participation of the community, thus the community is able to overcome health problems with the existing potential. To assist in the faster response to COVID-19, the government of Surabaya City formed a team of Wani Jogo Surabaya Cadres which is further divided at the Hamlet level into 4 namely Wani Sehat Cadres, Wani Sejahtera Cadres, Wani Jodo Cadres, and Wani Ngandani Cadres (Asyary & Veruswati, 2020).

The influence of knowledge, attitude, and behavior on communication effectiveness are positive which means that if the knowledge, attitude, and behavior are improved, it will increase communication effectiveness and vice versa, if there is a decrease in knowledge, attitude, and behavior factors, there will be a decrease in communication effectiveness (Asyary & Veruswati, 2020). This study aimed to determine the differences in the increase of knowledge as well as communication skills, knowledge and skills in planning along with evaluating activities of disseminating Health Protocol and knowledge also skills regarding continuous surveillance on Wani Ngandani cadres before and after given a training, thus expected that Wani Ngandani cadres have a good knowledge and skills to help prevent and control COVID-19.

METHODS

This study used a quasi-experimental design. Observations were carried out twice, before and after training as well as community service activities. The variables in the study were the knowledge and skills of Wani Ngandani cadres in carrying out effective communication and COVID-19 surveillance. The study was conducted in the Pacarkeling Sub-district, Tambakasi District, Surabaya, in September 2021. The sample of the study was obtained from the total population of Wani Ngandani cadres in the Pacarkeling Sub-district as many as 32 respondents of Wabu Ngandani cadres in the community of Pacarkeling Sub-district.

The data collection technique in this study used a questionnaire known as the data collection technique which carries out by giving a series of questions or written statements to respondents to be answered. Data collection was conducted before and after the intervention, then processed and analyzed using the paired t-test and data processing tools from SPSS version 25 software.

The knowledge of respondents was assessed using a questionnaire and the results in scores are compared before and after socialization are given. Communication skills were assessed using the role-play method, in which respondents were given the task of providing socialization. Planning and evaluation preparation skills were assessed by giving each respondent a task sheet to prepare planning and evaluation of socialization activities in accordance with the planning and evaluation procedures that have been provided. Surveillance was assessed using a questionnaire by comparing the score before and after socialization is given. Surveillance skills were assessed using the role-play method, in which respondents were given a case study and asked to conduct surveillance based on the cases that have been given.

This study has passed the ethical review with no. 2383-KEPK from the Health Research Ethics Commission, Faculty of Nursing, Universitas Airlangga.

RESULTS AND DISCUSSION

1) Respondents Characteristics

Table 1. Characteristics of Participants based on Aged, Gender, Education.

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Characteristics	n	%
Gender		
Male	18	56.25
Female	14	43.75
Number of Participants		
Wani Ngandani Cadres	23	71.87%
PKK (Empowerment Family Welfare)	9	28.13%
Participants Age		
Average	48 years old	
Min	32 years old	
Max	71 years old	

According to table 1 above, it is known that the characteristics of the majority of the participants were men as much as 56.25%, with a total of 71.87% of the participants being a cadre with an average age of 48 years old. The older an individual, the more mature the level of maturity to think and work. This also affects an individual's cognition. In terms of public trust, the more mature an individual, the more trusted by the public than those who are not mature enough (Hertzog et al., 2008).

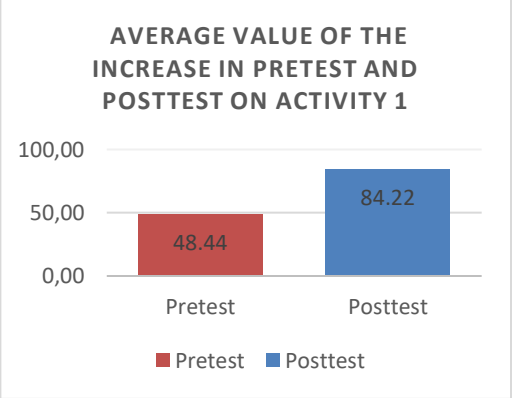

Figure 1. The average score of the comparison before and after program activity 1 takes place.

According to the result of the pre-test and post-test given which showed in Figure 1 above, there was an average increase in knowledge regarding the way to carry out an effective communication on preventing COVID-19 with 5M in each participant before and after socialization given. The average score of knowledge before the socialization was around 48.44 and has increased to 84.22 after the socialization. The average score of pre-test and post-test showed an increase in the participant's average knowledge by more than 70%, namely 79.03%. The increase in knowledge occurred because the material presented by the source was easy for the participants to understand. The ease of understanding of the participants was due to the use of socialization media including power point and audio-visual (video). By using a video as the media, the learning process was more interesting and exciting. A crucial aspect of using video as a medium was to help clarify the material, thus the media took the role as the tool to clarify the message conveyed in the teaching and learning process (Smeda et al., 2014).

Video is anything that allows audio signals to be combined with a motion picture. A previous study stated video as media gave effectiveness in the skill of writing a simple German essay in grade 11th Science, SMA Negeri 11 Makassar (Fauziah, n.d.).

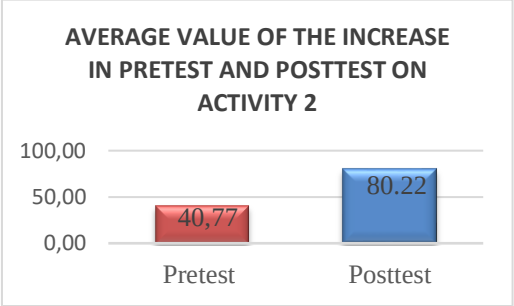

Figure 2. The average score of the comparison before and after program activity 2 takes place.

Figure 2 above shows that there was an increase in the result of pre-test and post-test of knowledge before and after socialization was given regarding planning and evaluation of socialization activity about 5M Health Protocol in each participant. Before the socialization, the average score of the participant's knowledge was 40.77, and after socialization has increased by 80.22. According to the average score of pre-test and post-test, it showed that the expectation or the main goal of the socialization in activity 2 has been achieved including achieving an increase in the average score of knowledge by more than 70%, namely 96.73%. It means that the material given by the source in Activity 2 can be easily understood by the participants.

In Activity 2, the participants were given a task sheet that contain the steps for planning and evaluating, thus the participants will get a better understanding and will be skillful in arranging planning and evaluation. Planning is a systematic process

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in the form of decision-making regarding target selection, objectives, strategies, policies, program forms, and assessment for success by considering the change that will occur to achieve effective and efficient goals (Kørnøv & Thissen, 2000).

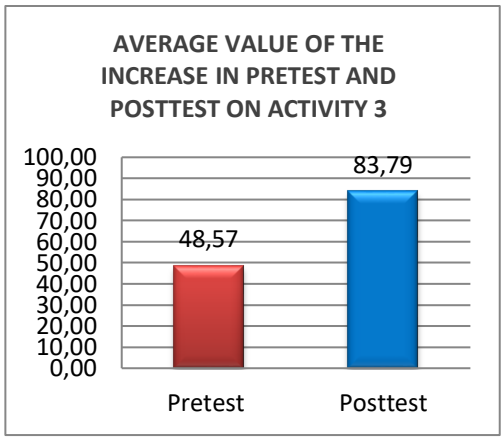

Figure 3. The average score of the comparison before and after program activity 3 takes place.

According to the result of the pre-test and post-test given which showed in Figure 3 above, there was an average increase in knowledge regarding COVID-19 Surveillance in each participant before and after socialization was given. The average score before the socialization was around 48.57 and after the socialization has increased by 83.79. The average score of the pre-test and post-test showed that the average score was almost the same, thus the percentage of the increase was more than 70%, namely 72.50%. It means that the cadres have had good knowledge of COVID-19 Surveillance during Activity 3.

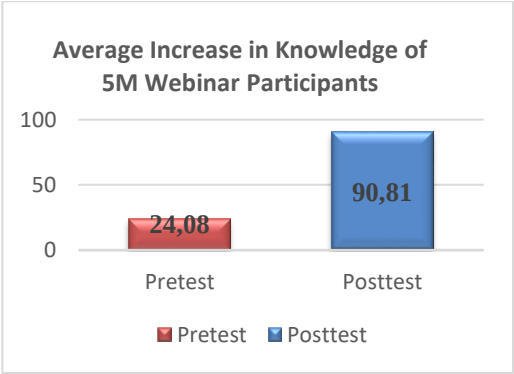

Figure 4. The average score of the comparison before and after the Webinar follow-up plan takes place.

Figure 4 above shows an increase in knowledge before and after Webinar socialization regarding 5M was given to each participant. The average score in knowledge before the socialization was only as much as 24.08 then increased to 90.81 after the socialization was given. This result indicated that the expectation of the 5M Webinar activity to increase the knowledge by 70% in the participants has been achieved, namely 277.12%. It means that 5M Webinar was beneficial for the participants and the material conveyed by the source can be understood easily.

2) Pre-test Post-test Analysis Results

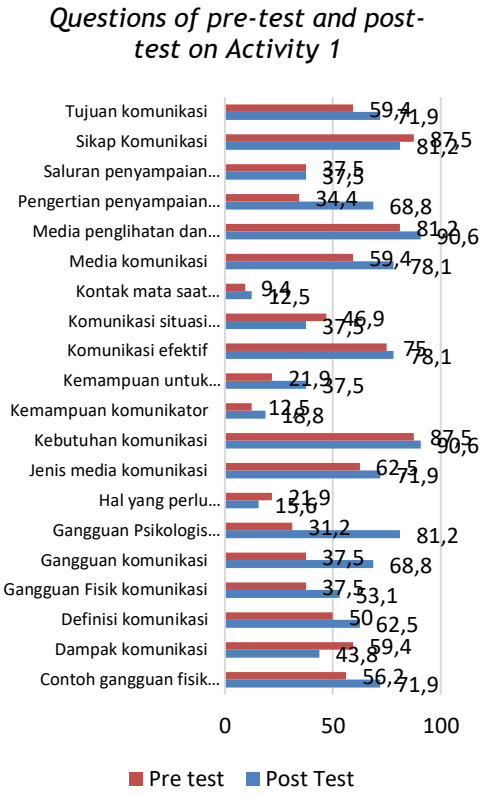

Figure 5. Results of Pre-test and Post-test on Activity 1.

According to the result of the pre-test and post-test given during Activity 1 which showed in Figure 5 above, there was an increase in knowledge of training material regarding how to communicate during the socialization of the 5M Health Protocol including communication psychological disorders, material about the example of physical interference in communication and communication media. The results of this study were similar to the study conducted by Sartika and Susilawati (2021) which stated that there was an improvement in the communication skills of cadres after being given intervention in the form of socialization as seen from the average score achieved which was in line with the standard passing grade (Sartika, 2015).

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During the COVID-19 pandemic, accurate information and the right way to deliver the information related to COVID-19 have become an urgency. The improper communication strategy will eventually cause an unwanted impact. Communication strategy is the best combination of all communication elements including the communicator, messages, channel (media), and receiver until the impact (effect) which is designed to achieve optimal communications goals.

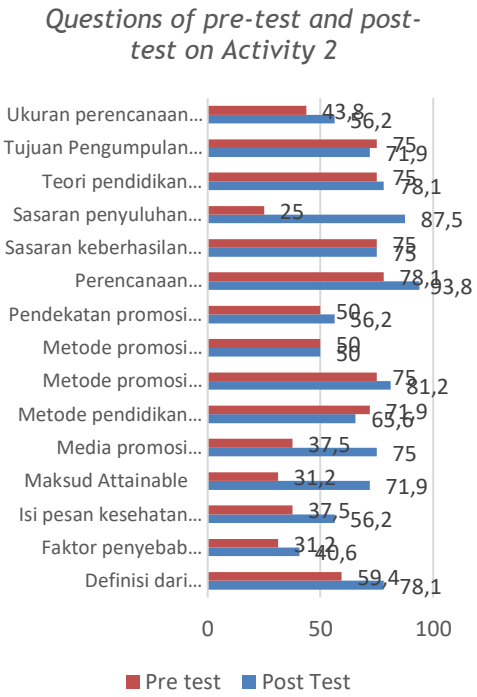

Figure 6. Results of Pre-test and Post-test on Activity 2.

Figure 6 above as seen on the result of the pre-test and post-test given during Activity 2 shows an increase in knowledge of the planning and evaluation training material of 5M Health Protocol socialization activity about socialization targets, health promotion media, and the definition of planning. Health planning is a process to formulate health problem that develops in society, determine the needs and available resources, set the goals, and arrange practical steps to achieve the goals that have been set.

Meanwhile, evaluation is the information assessment process regarding the value and benefits by describing, obtaining, and providing a description of the goals of the object, designs, implementations, and impacts of decision making, as well as accountability needs and existing phenomena.

Planning is the main function of management, while evaluation is the function that is "accompaniment" to management. The success of an organization in achieving its goals depends on planning and the good or bad of an organization will be known through the result of the evaluation. Thus, even though the plan has been arranged well, the expected goals will not be achieved by the organization without evaluation.

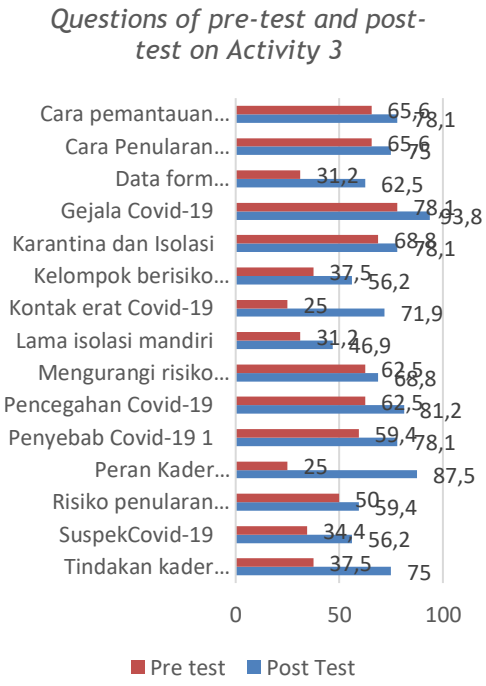

Figure 7. Results of Pre-test and Post-test on Activity 3.

According to the result of the pre-test and post-test given during Activity 3 which showed in Figure 7 above, there was an increase in knowledge of Wani Ngandani Cadres' COVID-19 Surveillance training material regarding the role of cadre in controlling COVID-19, close contact of COVID-19, and cadre's action on COVID-19 patients. Surveillance training has improved the understanding and the skills of cadres, thus the cadres are able to optimize their role in preventing and controlling the spread of COVID-19 in the Pacarkeling sub-district.

Public health surveillance is an activity carried out continuously in the form of systematic data collection, analysis, and interpretation of data regarding an event related to health matters to be used in

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public health actions in order to reduce morbidity and mortality as well as improve health status. A health survey during this pandemic is necessary to be conducted, in addition to determining the health of the local community as well as helping the community leaders and the government to easily find out about the condition of the local community (Schoch-Spana et al., 2007).

3) Comparative Paired T-test Results

According to the normality test data using Kolmogorov-Smirnov, the result showed $p>0.05$, thus the data was normally distributed. The analysis used was the parametric paired t-test.

According to the results of the paired t-test, it is known that there were significant differences (sig <0.05) in the results of the pre-test and post-test on the four training and community service activities. It means that there were significant changes due to the training and socialization given to cadres in four activities (Glenys, 2017).

Table 2. Normality Test Results of Pre-test and Post-test Data on Activities 1 - 3

Group	Description	Score a	Asymp.sig (2 tailed)	Result
Pre-test	*Activity 1*	*0.05*	*0.637*	*Normal*
	Activity 2	*0.05*	*0.709*	*Normal*
	Activity 3	*0.05*	*0.215*	*Normal*
Post-test	*Activity 1*	*0.05*	*0.240*	*Normal*
	Activity 2	*0.05*	*0.238*	*Normal*
	Activity 3	*0.05*	*0.094*	*Normal*

Table 3. Statistical Test of Pre-test and Post-test Score

Paired t-test	95% CI	T	df	Sig.
Pre-test – Post-test Activity 1	*-41.933 -34.629*	*-21.379*	*31*	*0.000*
Pre-test – Post-test Activity 2	*-43.868 -32.203*	*-13.380*	*27*	*0.000*
Pre-test – Post-test Activity 3	*-39.190 -31.238*	*-18.173*	*27*	*0.000*

The cadres who have been trained gained a significant increase in knowledge. The intervention in the form of training caused an increase in understanding and self-confidence after the training and socialization have been carried out. The increase can be due to the prior knowledge of the cadres obtained from media, personal experiences, as well as from peers around.

CONCLUSION

The aim of the study was to determine the increase of knowledge and skills on how to communicate during the socialization of the 5M Health Protocol of "Wani Ngandani" cadres, the knowledge and skills of "Wani Ngandani" cadres to arrange planning and evaluation activity of carrying out 5M Health Protocol socialization, knowledge and skills regarding continuous surveillance on "Wani Ngandani" cadres, and the increase of knowledge related to health protocol during COVID-19 pandemic to the participants of the webinar. According to paired t-test, it is known that there was a significant difference (sig <0.05) in the results of the pre-test and post-test of the four training and community service activities. It means that there was a significant change due to the training and socialization of the cadres in four activities.

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The Effect of Animated Media on Knowledge and Attitudes Regarding Physical Activity

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ABSTRACT

***Background**: There is an increasing prevalence of obesity, and lack of physical activity is the cause of changes in physical activity patterns. Educating children about physical activity is necessary to increase knowledge and change their attitudes and behavior. The media that can be used is animation media. **Objective**: This study aims to describe the behavior and effect of animated media regarding changes in knowledge and attitudes towards physical activity for 8th-grade students. **Methods**: A quasi-experimental study with a non-equivalent control group using 51 samples from JUNIOR HIGH SCHOOL Wahidin Cirebon and JUNIOR HIGH SCHOOL 220 Jakarta and proportioned stratified random sampling. The variables were knowledge and attitudes. The animation media for the control group was from the Ministry of Health, while for the intervention group was created by researchers from the Australian Government (Department of Health) (2019) and the U.S. Department of Health and Human Services (2008). The sample's criteria included having a stable signal and Gmail, being able to use Google Meet, and filling out the pre-test and post-test. Data collection was in one day on April 22nd 2021, for Junior High School Wahidin Cirebon, and June 2nd 2021, for Junior High School 220 Jakarta using Google Form with 29 questions. Data analysis used T-Test Independent, Wilcoxon, and Mann-Whitney. **Results**: The average knowledge scores in control group with animated media from Ministry of Health during pre-test and post-test were 61.00 and 66.00, while intervention group with researcher's animation media during pre-test and post-test were 69.68 and 84.52. The average scores of attitudes in control group during pre-test and post-test were 86.03 and 78.26, while intervention group during pre-test and post-test were 78.77 and 87.73. Positive behavioral descriptions for control group and intervention group were 55% and 48,4%. **Conclusion**: The results showed a change in knowledge and attitudes after intervention for the intervention group and the opposite for the control group. Animated media about physical activity can be used as an educational media because it has more effect on increasing knowledge and attitudes than comparison animation media. Suggestions for further research consist of adding behavioral change variables and intervention more than once during the study.*

***Keywords**: Animation Media, Attitudes, Knowledge, Physical Activity*

INTRODUCTION

The prevalence of overweight children aged 13-15 in West Java is 12%, and obese is 4.9%. Overweight children in DKI Jakarta are at 15.1%, and obese at 10%. According to the types of residence, city regions have a higher number of overweight and obese than village regions. In Indonesia, the highest prevalence of lack of physical activity is in the West Java province, 37.5%, while in DKI Jakarta, 47.8%. In the age category, the highest number with a lack of physical activity is among those aged 10-14 at 64.4% (Riset Kesehatan Dasar, 2018).

The increase in the prevalence of overweight and obese children with a lack of physical activity is caused by changes in physical activity patterns. Children being busy with their gadgets increases their sedentary behavior, whereas obesity risks in children also increase (Zamzani, Hadi and Astiti, 2017). Imbalances in intake and exertion of energy increase obesity risks. Physical activity may change body composition, which means increasing body mass without excessive fats and reducing body fats. Further research on the relationship between obesity and cognitive function is still needed; however, indirect effects of obesity, namely diseases in obese children, are expected to reduce cognitive function.

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Doing physical activity is necessary for adults and children as it can reduce morbidity risks such as obesity, overweight, and other diseases caused by excessive body weight, such as type 2 diabetes mellitus, coronary heart diseases, stroke, cancer, high blood pressure, and bone abnormalities (Utami, Hatijah and Shofiya, 2016). Physical activity can also improve one's psychology by reducing stress, anxiety, and depression (Saleh, 2019).

Aside from health, physical activity can affect children's confidence levels in early adolescence. Children have started to pay attention to their body shape during this period; hence it will result in effects on their confidence levels (Saleh, 2019). The benefits of physical activity can be achieved with support from surrounding environments, such as school. For that reason, schools are advised to hold physical activity sessions every day for 60 minutes with medium intensity, time division can be adjusted so it will not hinder other school activities, but students still do physical activity as they should.

Providing education on physical activity requires using appropriate media or tools to facilitate children's learning process to achieve learning goals. According to Piaget's theory that explains children's mental development theory, the age of 12 and above are included in the formal operational phase category where children can understand argument forms, not get confused by argument sides, and can use concrete operations to form more complex operations. Media function becomes important when every ongoing learning needs a theory application that can be understood easily and does not require much cost (Fathurohman, *et al*, 2015). Children favor animated films because their character visualizations are interesting, full of color, have simple plots, and are easy to accept by children.

In line with that, improving knowledge and attitude on physical activity for junior high school students using animated media through this research is needed to know the description of behavior and effects of animated media regarding the change in knowledge and attitudes toward physical activity for junior high school students.

METHODS

This research had obtained a permit from the Ethics Research Community of Esa Unggul University no. 0127-21,127/DPKE-KEP/FINAL-EA/UEU/V/2021. It was conducted online; the data collection was through Google Form with questions related to physical activity amounted to 29 questions; 10 about knowledge, 9 about attitudes, and 10 about behavior. Questions about knowledge discussed the definition and time of physical activity, screen time outside online learning hours, examples of physical activity, good effects, and bad effects of the lack of physical activity. For questions about behavior, they discussed whether respondents agreed or disagreed with doing physical activity and exercising rather than laying down, watching tv, playing with cell phones, not exercising because of overweight problems, and not exercising because it was tiring. For questions about behavior, respondents were given questions with choices of always, often, sometimes, seldom, and never. The questions were respondents did physical activity daily, exercise 3 days a week and every weekend, miss exercise time because they did not get to do it, play with cell phones for less than 2 hours, feel an elevated mood after exercising, sweat after exercising, and exercise with friends.

Respondents were at their respective homes due to the pandemic, and the time of research was April 22nd, 2021, for Junior High School Wahidin Cirebon, and June 2nd, 2021, for Junior High School 220 West Jakarta, focusing on 8th-grade students. The type of research was quantitative research with the experimental method, and the research design was quasi-experimental with non-equivalent control groups and comparing control groups with intervention groups, then oversaw the results of pre-test and post-test of research subjects.

The data collected in this research were primary data sourced from the students who became the research samples, and secondary data regarding the schools sourced from the schools' archives. The population in this research was all 8th-grade students of Junior High School Wahidin Cirebon, which amounted to 32 students, and Junior High School 220 West

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Jakarta, 248 students. Calculation of the samples was done using previous research's average difference test formula as follows:

$$\sigma^2 = \frac{[(n_1-1)s_1^2 + (n_2-1)s_2^2]}{(n_1-1)+(n_2-1)}$$

$$n = \frac{2\sigma^2[z_{\vdash\alpha/2} + z_{\vdash\alpha/\beta}]^2}{(\mu_1-\mu_2)^2}$$

According to the results above, each sample size for the control and intervention groups was 20 students. After data cleaning, the results obtained 9 students of Junior High School Wahidin Cirebon in the control group and 15 in the intervention group. For Junior High School 220 West Jakarta, the control group contained 11 students and the intervention group 16 students. The total research samples for the control groups amounted to 20 students, and for the intervention groups was 31.

The inclusion criteria of the samples in this research consisted of 8th-grade students of Junior High School Wahidin Cirebon and Junior High School 220 West Jakarta, and samples did not have serious problems (color blind, blind, deaf) in hearing and sight senses, samples were healthy and did not disturb other students' concentrations, samples owned a good wi-fi or cellular network, samples had sufficient internet quota, samples understood and owned an email to join an online Google Meeting, samples followed the research to the end (filled out pre-test, watched the video, filled out post-test). For the exclusion criteria, samples only filled out pre-test or post-test, and samples only saw the animated video without filling out the questionnaire.

In the control groups, samples were given education using an animated media from the Ministry of Health; meanwhile, the intervention groups received an animated media made by the researcher sourced from the Australian Government (Department of Health) (2019) and United States Department of Health and Human Services (2019). This research was carried out in one day with the provision of intervention one time, and the data collection of pre-test and post-test was done on the same day, including knowledge and attitudes on pre-test and post-test questionnaires. The questionnaires had been tested for validity and reliability and thus were appropriate to be used.

In this research, a normality test was done using the Kolmogorov Smirnov, Skewness, and Histogram tests. Results showed that the pre-test and post-test for knowledge in the control groups had a normal distribution. Meanwhile, the pre-test and post-test for attitudes in the control groups and also the pre-test and post-test for knowledge and attitude in the intervention groups had an abnormal distribution. A homogeneity test using the Independent T-Test showed a p-value of 0.114. The conclusion was p-value>0.05, meaning the data variants were the same or homogenous. Comparison between the knowledge before and after the intervention in the control groups used the Dependent T-Test and Wilcoxon test in the intervention groups, and also for attitudes in the control groups. In contrast, comparison between the control and intervention groups used the Mann-Whitney test.

RESULTS AND DISCUSSION

Table 1. Respondents' Characteristics

Respondents' Characteristics	Control		Intervention	
	N (20)	%	N (31)	%
Junior High School Wahidin Cirebon				
Male	4	44.4	4	2.7
Female	5	55.6	11	73.3
Junior High School 220 Jakarta				
Male	2	18.2	5	31.25
Female	9	81.8	11	68.75

Table 1 shows that most respondents were females in the control and intervention groups, and most were from Junior High School 220 Jakarta as many as 27 students. In terms of groups, the

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majority were from the intervention group, which was 31.

Description of Physical Activity Behavior

Table 2. Behavioral Interpretation of Physical Activity of the Control and Intervention Groups

Group	Category	N (20)	Percentage (%)
Control	Positive	11	55
	Negative	9	45
Intervention	Positive	15	48.4
	Negative	16	51.6

According to the research results, 11 respondents in the control groups had positive behavior, while 9 had negative behavior. Analysis results in the control groups show that 5 respondents always did a physical activity, 2 often, 9 sometimes, and 4 seldom. This was in line with previous research, which stated that respondents mostly did mild physical activities than strenuous ones, like sitting, while studying or during break time; and used motor vehicles, which hindered children from moving more often (Atika Maulida, *et al*, 2017).

Other causes were that the COVID-19 pandemic required students to do their tasks at home and perform physical distancing, which made them not go outside. During the COVID-19 pandemic, society had a decrease in physical fitness and an increase in body weight due to the limited room to move (Srivastav *et al.*, 2021).

A research statement in 2021 stated that the COVID-19 pandemic required children to study at home, so schools had a hard time monitoring children's activity (Sitoayu et al., 2021). The same went for exercising; in the statement for that, it was shown that the respondents were not sufficiently active in exercising according to the questionnaire answer results.

Previous research mentioned that online learning required children to stay still in front of a cell phone or computer and not do much moving, leading them to have a sedentary lifestyle, which might cause reduced immunity and bad effects on their health (Khotimah & Wahjuni, 2021).

According to table 2, 15 respondents had positive behavior, while 16 had negative behavior. Analysis results in the control groups showed that 2 respondents always did a physical activity, 7 often, 19 sometimes, and 3 seldom. This was in line with the control groups that adolescents tended to lack in physical activities, one of the causes would be social media that made them lazy to move (Setiawati *et al.*, 2019).

Knowledge Before and After the Intervention in Control Groups

Table 3 Univariate Results of Knowledge and Attitudes in the Control and Intervention Groups.

Variable	Group		Value	Mean ± SE	Minimum	Maximum
Knowledge	Control	Pre-test	61.00	61.00±4.22	10	80
		Post-test	66.00	66.00±3.86	40	90
	Intervention	Pre-test	69.68	69.68±2.98	20	90
		Post-test	84.52	84.52±2.53	50	100
Attitudes	Control	Pre-test	86.03	86.03±4.25	22	100
		Post-test	78.26	78.26±4.99	11	100
	Intervention	Pre-test	78.77	78.77±2.43	44	100
		Post-test	87.73	87.73±2.32	44	100

Table 3 shows that the average score for knowledge of the control groups before the intervention was 61.00, while after it was 66.00. For the average score for attitudes before the intervention was 86.03, while after it was 78.2. Analysis results showed no significant increase before and after the provision of animated media in the control groups. This was because the questions on the knowledge questionnaires were not fully explained in the animated media of the Ministry of Health.

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The animated media for the control groups contained persuasions to do physical activities such as class pickets, then explained the bad effects if one did not do physical activities and the benefits of physical activities. The media did not explain the definition of physical activity, the differences between physical activity and exercise, and the time needed to do physical activity and exercise; thus, the respondents could not answer the knowledge questionnaires correctly. Regardless of the increased knowledge, the calculation did not show a significant increase.

In the pre-test results, questions about the time to do physical activity, time to exercise, screen time outside learning hours, and physical activity that could reduce anxiety and depression, resulted in more wrong answers than the correct ones. After receiving the intervention, there was an increase in the scores for the questions about the time to do physical activity and exercise also about physical activity that reduced anxiety and depression; however, the scores were still consistent for the 3rd question, which asked about the duration for cell phone usage outside learning hours.

On the question about screen time for children, the respondents' answers remained consistent; there was no increase or reduction in the amount of correct and incorrect. This was because the animated media for the control groups did not talk about screen time for children. Thus, the respondents were consistent with their answers before the intervention.

According to the analysis results, the knowledge scores of the respondents before the intervention were mostly within enough category, followed by good and less, with the same percentages. After receiving the intervention, there was an increase in the good category from 30% to 45%. In line with the research of Ningrum (2021), who conducted research using animated media with short intervention (only provided once), which stated that there was an increase in the learning results of students using animated media.

The increased knowledge was caused by the provision of education or information through animated videos, also the increased curiosity and appeal of the respondents, thus resulting in better comprehension and understanding. Regardless of the increased scores, the increase was not significant because the animated media did not explain in detail about screen time outside online learning hours, time to do physical activity and exercise, definition and examples of physical activity, where these were these questions on the questionnaires.

Table 4. Comparation between Knowledge and Attitudes Before and After the Provision of Animated Media in the Control and Intervention Groups

Variable	Group	Score	P-value	α
Knowledge	Control	*Pre-test* *Post-test*	0.056	0.05
	Intervention	*Pre-test* *Post-test*	0.000	
Attitudes	Control	*Pre-test* *Post-test*	0.055	0.05
	Intervention	*Pre-test* *Post-test*	0.001	

The analysis results above show that the p-value in the knowledge of the control groups is 0.056, meaning there was no change in the knowledge before and after the provision of the animated media.

Knowledge Before and After the Intervention in the Intervention Groups

According to table 3, it is known that the average knowledge score in the intervention group before the intervention was 69.68, while after it was 84.52. The average score before the intervention was 78.77, while after it was 87.73.

The respondents mostly answered incorrectly on number 2 and 3 which talked about time to do physical activity and time to use cell phones outside learning hours. However, after receiving the intervention in the form of animated media, they mostly answered correctly. This was

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because the animated media for the intervention group discussed the duration to do physical activity and screen time outside learning hours and these materials were on the question number 2 and 3. The respondents had an increase in scores for 7 questions, and the same scores for 3 questions.

After the provision of the intervention, there was an increase in the good category to 83.9%. The same went for previous research, which concluded that mathematical learning results might increase with the use of animated media in 8th-grade students (Nasir, 2021), and research in 2018 which concluded that there was an increased knowledge in female adolescents after receiving an education using animated media (Hartati & Yuniarti, 2019). An increased knowledge provided by formal and non-formal education may result in immediate impacts for the respondents (Widyawati and Maretty, 2020). Using animated media as learning media is highly useful in increasing learning effectivity and efficiency so the learning results will improve. Animated media that move, produce sound, and contrast colors appeal to children, thus developing positive spirits and impressions. As a result, the respondents will become motivated to pay attention and learn seriously.

In the intervention groups, there was a significant increase in knowledge scores compared to the control groups. This was because the animated media provided to the intervention groups explained the definition of physical activity, time to do physical activity and exercise, advantages, disadvantages, and examples of physical activities. Thus, the respondents could answer the questionnaires correctly. According to the analysis in table 2, the intervention groups had a p-value of 0.000 which means there was a change in the knowledge before and after the provision of animated media.

Attitudes Before and After the Intervention in the Control Groups

Table 5. Interpretation of Attitudes in the Control and Intervention Groups.

Interpretation	Score	Before (%)	After (%)
Control	Positive	80	75
	Negative	20	25
Intervention	Positive	38.7	77.4
	Negative	61.3	22.6

The research results on attitudes in the control groups from the pre-test statement number 1, “respondents prefer to lie down than do activities outside their houses”, produced more negative answers than positive ones. After being provided with the intervention, there was an increase and all statements produced more positive answers. The respondents had an increase in scores for 1 question, a decrease for 7 questions and static scores for 1 question. According to the analysis results on the interpretation of attitude in the control groups, 80% of the respondents showed a positive attitude but experienced a decrease after receiving the intervention to 75%.

Attitudes Before and After the Intervention in the Intervention Groups

There was an increase in attitudes of the intervention groups, which was proved by the decreased number of respondents with negative attitudes and an increased number of respondents with positive attitudes. The use of animated media creates an effective way of learning in a short time and results in the conclusion that something received through audiovisuals will last longer and be better in memory because it involves more of the five senses (Syakir, 2018). Sufficiently strong suggestions on attitudes will provide an affective basis in assessing something so that an attitude direction is formed, which is manifested through action.

Comparison of Knowledge and Attitudes in the Control and Intervention Group

The increase in positive attitudes was not in line with the analysis results of respondents' behavioral descriptions, where 51.6% of respondents showed negative behavior. This could be because the respondents had generated an inner response in the form of an attitude but had not provided a further inner response in the form of action. In addition, respondents had not made their knowledge a basis for action, so the knowledge and attitudes had shown a good response, but the action still showed a negative response. According to table 2, the intervention groups had a p-value of 0.001

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with a value of α = 0.05. It was concluded that there was a change in attitudes before and after the provision of animation media in the intervention groups.

Table 6. Comparison of Knowledge Scores in the Control and Intervention Groups

Variable		P value	α
Knowledge	Control groups Intervention groups	0.000	0.05
Attitudes	Control groups Intervention groups	0.124	0.05

Knowledge

According to the analysis results in table 4, there were significant differences in knowledge scores between the control group and intervention group. Animation is a nutrition education media that facilitates information delivery and message reception in education targets (Syakir, 2018). Learning media helps students understand the learning process better because it is more interactive and involves various senses, such as the senses of sight and hearing, so students will easily remember the material.

The lower score in the control group, which used a comparator animated media compared to the intervention group with animated media made by researchers, does not mean that the animation media was not good. Instead, the content of the animation media did not fully explain physical activity. This was also influenced by various factors, such as media facilities, the intelligence level of each respondent, and extrinsic factors like room condition.

Attitudes

Table 3 shows no significant difference in the attitudes scores between the control and intervention groups; however, according to the average, there was an increase in the scores of the intervention groups, while the control groups had a decrease influenced by how far the content of communication or stimulus that was paid attention to, accepted and understood to obtain a positive response.

The void of a significant increase and difference in scores might have been caused by the main component that formed an attitude was not met. Many factors may influence attitudes, such as personal experience, culture, other people considered important, mass media, etc.

CONCLUSION

There was an increase in the knowledge and attitudes of the intervention groups compared to the control groups, and there was no increase in the knowledge and attitudes of the control groups. This research recommends research developments by adding different variables, such as behavioral change variables, paying more attention to the respondents' environment so they will be in a room with minimum distractions, giving an intervention more than once during the research period so the results will be clearer, animated media being included in between the shift of school subjects, and headmasters assisting the respondents to do physical activity and exercise online, like exercising together online every morning.

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The Effectiveness of Covid-19 Health Posters Using Symbols of Indonesian Traditional Fairy Tales on Knowledge, Attitude, and Behaviour

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ABSTRACT

***Background**: The phenomenon of the outbreak of COVID-19 in various parts of the world has created a global panic that has a tremendous effect on all sides of life. Currently, COVID-19 is still a pandemic in Indonesia. Health appeals and messages circulating to prevent the transmission of COVID-19 have not been fully heeded by the public. Without a strong cultural basis, the change in behaviour is difficult for the community to accept. The social context highlighting descriptive norms for certain types of behaviour caused the command norms to conflict with the highlighted behaviour and dissonance (discomfort) increases. Health messages are designed based on symbols that in Indonesian society may be more effective. **Objective**: This study aims to determine the effectiveness of using traditional Indonesian fairy tale symbols in COVID-19 health posters on knowledge, attitudes, and health behaviours related to COVID-19. **Methods**: A total of 51 respondents aged 18-40 years who registered on the online questionnaire filled a link with the determination of the sample, namely random sampling which measured knowledge, attitudes, and behaviour before and after being given a poster designed using symbols found in traditional fairy tales. This study uses an online pre-test and post-test. Respondents come from various regions in Indonesia. **Results**: Respondents stated that posters with fairy tale symbols were interesting, not monotonous, and educative. After seeing posters designed using symbols from traditional fairy tales, respondents' knowledge about COVID-19 increased by 102%, attitudes increased by 6%, and behaviuor increased by 17%. **Conclusion**: The use of symbols in traditional fairy tales conveyed through poster media is effectively used to convey health messages to the public during the COVID-19 period. Health messages should be designed using symbols rooted in people's culture such as traditional Indonesian fairy tales.*

***Keywords**: COVID-19, Effectiveness, Health Message, Traditional Symbols*

INTRODUCTION

The spread of COVID-19 grows rapidly even across countries. Currently, there are 188 countries that have confirmed contracting COVID-19 (Hanoatubun *et al.*, 2020). The phenomenon of the COVID-19 outbreak in various parts of the world has created a global panic that has had a tremendous effect on all sides of life. In Indonesia, from day to day the number of victims infected with this virus is increasing. As of August 9, 2021, in Indonesia, there were 3,686,740 total positive cases, 3,129,661 recovered, and 108,571 deaths (Satuan Tuga Penanganan COVID-19, 2021). With this growing number, the government has made a policy to suppress, anticipate, and break the chain of the spread of COVID-19. The Indonesian government has set several regulations in dealing with the COVID-19 pandemic, including Large-Scale Social Restrictions (PSBB), work from home (WFH), online schools or lecturers, travel bans, and health protocols to prevent the transmission of COVID-19.

However, in reality, the community has not fully complied with the established regulations (Buana, 2020). Knowing that the stipulation of these regulations definitely has an impact on a number of public activities (Cindrakasih, 2021). The COVID-19 pandemic demands rapid behavioral changes in society. However, without a strong cultural basis, the change

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in behavior is difficult for the community to accept. Due to the social context highlighting a descriptive norm of a certain type of behavior caused the command norm contradicts the highlighted behavior as well as the increase in dissonance (discomfort). The occurrence of change is certainly not desired, let alone planned by the whole community because it causes disorganization in all areas of human life (Prasetya, Nurdin and Gunawan, 2021).

It is necessary to carry out continuous socialization in all regions so that people have awareness which can help them to understand the various dangerous impacts caused by COVID-19 (Syafrida, 2020). The government has taken various ways to prevent, suppress, and break the chain of the spread of this virus. One of the methods used is by conveying the 7M health protocol message (wearing masks, washing hands, keeping distance, staying away from crowds, limiting mobility, avoiding touching eyes, nose, and mouth, and eliminating stigma). However, the health message was not fully heeded by the public. Improper behavior, even tending to underestimate this pandemic is quite disturbing because it can spread COVID-19 more widely. Behavior is one of the factors that affect a person's health status. Preventive actions such as providing education are needed to make people aware of the importance of implementing a clean and healthy lifestyle so as not to contract this disease (Rahmatina and Erawati, 2020).

Although efforts to prevent and control COVID-19 continue to be carried out by the government, the number of victims and patients has not been able to decrease significantly. The widespread circulation of incorrect information regarding health protocols and COVID-19 as well as the behavior of people who are not aware of obeying the government's appeal in this pandemic era is one of the main causes of the difficulty of controlling COVID-19 in Indonesia (Ngadiran *et al.*, 2020). Thus, public awareness of the risks posed by COVID-19 that leads to changing behavior is the main factor to improve individual health and health status in order to avoid COVID-19 (Sampurno, Kusumandyoko and Islam, 2020). Behaviour changes in addition to requiring support from various parties also requires knowledge provided to the community through educational media that are spread so that they are easily accessible and contain messages that are easy to understand. With good knowledge, it will form a good attitude and behavior, such as disciplinary behavior in implementing health protocols during the ongoing COVID-19 pandemic (Sudayasa *et al.*, 2021).

By providing education, information or material can be conveyed so as to increase knowledge which in turn can be obtained by changing behavior that supports efforts to improve health quality (Sukesi *et al.*, 2020). Given the current state of the COVID-19 pandemic, which requires people to avoid gathering or crowding, a health promotion educational media is needed regarding preventing COVID-19 and implementing health protocols that can be accessed by the public easily and anywhere without having to huddle together.

One of the educational media that is often used to educate the public is a poster. A poster is a presentation of a clear, striking, and attractive visual combination with the intention of attracting people's attention to something or influencing someone to act (Kurniawan et al., 2020). The form of a simple poster, presenting one idea and achieving one main goal, colorful, has a special slogan, as well as clear and varied writing can make it easier and faster for the audience to catch the message presented (J, Okatvidanti and Astuti et al., 2019). oster media can also facilitate faster and more efficient delivery of ideas, supported by the rapidly growing social media (Qomarrullah, R; Siahaan, J; Sawir, M; S Wulandari, 2021).

Online educational media, especially content on social media, is considered an effective medium for conveying information to the public (Nurhayati, 2020). Several other research results also showed that education through social media is effective in increasing public knowledge. In addition, social media communication is a fundamental component of many health promotion strategies designed to change health risk behaviors. Social media can influence individual behavior and community values that support the environment and individuals, thus, it is necessary to maintain habits of behavior to be health-conscious (Sampurno, Kusumandyoko and Islam, 2020).

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This study is in line with the results of research on the role of posters as a COVID-19 educational medium on Instagram social media. In this study, responses to COVID-19 educational media posters can be monitored from the number of likes, comments, and views by Instagram users. Not only is posted in the Instagram account feed but it can also be added to the Instagram story feature to get more attention from Instagram users because this poster is presented with an attractive and conceptual design. Instagram users showed interest in the information submitted and gave feedback that the poster is well-received (Indah Melati, Murtafi and Bayu Pambagyo, 2020).

These tales and legends used symbols that are easily understood by the public. Fairy tales express emotional impressions (Anditasari, 2016). In addition, through fairy tales or stories, a person's imagination will develop and be taken to another world that is free and wide (Sari, 2019). Symbols in posters can be made in such a way that new experiences which only appear in imagination can be realized in reality. The use of symbols that are deeply rooted in culture in the design process will strengthen the effectiveness of health messages.

In Indonesia, data on the incidence of COVID-19 has been regularly updated. However, research on the behavior of implementing health protocols on preventing the spread of disease was still lacking (Rahmatina and Erawati, 2020). Moreover, the picture of knowledge that has not been maximized as well as the behavior of the community still tended to not heed health protocols during the pandemic. This needs to be improved and straightened out so that the spread of COVID-19 infection does not increase.

Public awareness is the main thing in breaking the chain of spreading COVID-19. Whatever the concept is implemented, whether it's a lockdown, social distancing, or anything else, if people can't be disciplined and have no high awareness, it will never work. The local government must have a firm strategy so that the appeals issued can be obeyed by the local community. In order to raise public awareness and help them to understand the dangers of COVID-19, it is necessary to carry out continuous socialization in all regions (Yatimah *et al.*, 2020).

One of the efforts that can be made to change knowledge, attitudes, and behavior is to increase public understanding through media that are easily accepted by the public, such as the distribution of posters with symbols of traditional Indonesian fairy tales. Efforts to use visual symbols depart from the premise that visual language has distinctive and even very special characteristics to cause certain effects on the observer. This is sometimes difficult to achieve when expressed in verbal language.

The existence of attributes or symbols is grouped in the categories of non-verbal and verbal communication languages. In verbal language, it can be in the form of writing or speech. In graphic design which later developed into visual communication design, many utilize the carrying capacity of images as visual symbols of messages in order to increase the effectiveness of communication (Pamungkas and Pinandita, 2021). Based on these considerations, the purpose of this research is to increase knowledge and change attitudes as well as behavior by using posters with symbols from traditional Indonesian fairy tales.

METHODS

The type of research used is quantitative research with a cross-sectional method with the aim of testing examples of health messages using symbols in traditional Indonesian fairy tales resulting from the research. This type of research was pretest-posttest without control. The population in this study was the Indonesian people who received information about the research that was distributed via WhatsApp. Data collection was done online using Google Forms within 3 days, starting from August 18, 2021, to August 22, 2021, due to the sufficient number of respondents. The inclusion criteria for this study were Indonesian citizens, aged 18 to 40 years, willing to be respondents who have filled out and signed an online informed consent. Informed consent was signed in the form of a word file that the researcher had previously sent and after it was signed, it was sent back to the researcher. As for the exclusion criteria, the respondent did not fill out one of the pre-test or post-test given. The total

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sample that completed the questionnaire was 51 people.

The method used in distributing posters that have symbols containing health messages was by presenting two posters that can be assessed by respondents through a Google form distributed on Whatsapp. The two posters were one poster with a magician symbol that is closely related to magical beliefs and supernatural powers, which can be associated with phenomena in a society where many myths and hoaxes were spread regarding COVID-19 which is considered not real and only a made-up issue, and one poster with symbols of arrogant characteristic which can be attributed to the large number of people who feel immune from COVID-19, thus violating health protocols. The message was designed using symbols identified from traditional Indonesian fairy tales related to the disease. Respondents were first asked to sign an informed consent and then asked to answer questions to assess their opinion about posters with symbols and measure changes in their knowledge, attitudes, as well as behavior related to COVID-19 after being given the poster. The procedure for the research activities carried out was the aspect of measuring data which consists of data on knowledge, attitudes, and behavior.

The measurement of knowledge was based on 10 questions with alternative answers a, b, c, and d where respondents were free to choose the answers provided, then given the weights True (score 10) and False (score 0), the total score is a maximum of 100. Measurements were carried out before and after the implementation of the intervention. Measurement of the attitude variable was based on 10 questions with alternative answers 'agree' and 'disagree'. Measurement of behavioral variables was based on a ratio scale of 10 questions with alternative answers for the pre-test including always, often, sometimes, rarely, and never. While for the post-test included strongly agree, agree, undecided, disagree, and strongly disagree.

Univariate data analysis was carried out to obtain an overview of the frequency distribution of respondents. This analysis is used to obtain a description of the independent variable (giving health messages with poster media) and the dependent variable (knowledge, attitudes, and behavior about health messages using symbols in traditional Indonesian fairy tales using poster media). Bivariate analysis was carried out to test whether there was a relationship between the influences of poster media in increasing knowledge and changing attitudes as well as behavior by using the Wilcoxon statistical test because the data were not normally distributed, then the results would be narrated. The ethics certificate number in this study is No: 27/EA/KEPK/2021 which was obtained from the Research Ethics Committee of the Faculty of Public Health, Universitas Airlangga.

RESULTS AND DISCUSSION

Table 1. Comparison of Understanding and Clarity between the Symbol Poster and the Standard Poster of the Ministry of Health of the Republic of Indonesia

Opinion	n	%
Fairy tales symbol poster is better	25	49.0
Both are the same	10	19.6
Do not know	9	17.6
Ministry of Health's poster is better	7	13.7
Total	51	100

Most of the respondents (49%) stated that posters with traditional fairy tale symbols were better than the standard posters we chose from the one made by the Ministry of Health. Only 13.7% of respondents stated that the posters made by the Ministry of Health were better (Table 1).

Table 2. Distribution of Average Scores of Knowledge, Attitude, and Behavior of Respondents Before and After Media Posters with Traditional Indonesian Fairy Tales Symbols were Given for Delivering Health Messages during the COVID-19 Pandemic.

Variable	Average		Change	*P-value*
	Before	After		
Knowledge	6.5	13.1	6.6	<0.001
Attitude	10.5	11.2	0.7	0.01
Behavior	22.8	26.7	3.9	<0.001

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This research shows that most respondents rate posters with fairy tale symbols with an average range of 8-9 out of a maximum score of 10. This means respondents thought that posters with traditional Indonesian fairy tale symbols were easy to understand, clear, easy to remember, and quite effective. In line with the results of other studies, posters have advantages over other health promotion media. These advantages include (1) Can simplify and speed up understanding of the message presented. (2) Can be equipped with colors so that it is more attractive to students. (3) The shape is simple without requiring special equipment and easy to place, requiring little additional information. (4) The making is easy and the price is cheap (Sumartono; Astuti, 2018).

The results of the Wilcoxon Rank test showed that after being given a poster with a health message using traditional symbols, the average knowledge rating of respondents increased from 6.5 to 13.1, attitudes increased from 10.5 to 11.2 and behavior increased from 22.8 to 26.7. All of these increases were statistically significant (<0.05) (Table 2).

Communication is said to be effective if the communicator succeeds in conveying what the communicator intended to the communicant (recipient). Communication is considered effective if the stimuli conveyed and intended by the sender of the message are closely related (identical) to the stimuli that are captured and understood by the recipient of the message (Sumartono; Astuti, 2018). There were many studies that examine the effectiveness of posters as media in delivering health messages (Rachmadiah, Dwijayani and Fitria, 2022). Health messages given in the form of posters will certainly be more interesting because posters are loaded with visual images, thus involve one's sense of sight more, what a person sees only involves 30% of the sense of sight, the more exerting the senses when receiving a health message, the higher the level of delivery of the health message to someone in catching the message or counseling material will be more effective (Adriansyah, Rahmah and ..., 2021). Health messages given in the form of posters will certainly be more interesting because posters are loaded with visual images, thus involve one's sense of sight more, what a person sees only involves 30% of the sense of sight, the more exerting the senses when receiving a health message, the higher the level of delivery of the health message to someone in catching the message or socialization material will be more effective (Adriansyah & Rahmah, 2021). The use of media that involves many senses will further increase understanding of information, thus the use of poster media is considered more effective and attractive for respondents to achieve the goal of delivering health messages (J, Oktavidiati and Astuti, 2019).

This research was in line with the research on the effectiveness of poster media which showed the differences in the level of knowledge before and after being given poster media to respondents. Poster media is said to be effective in increasing knowledge regarding Basic Sanitation in SDN 01 Wonosoco students because the post-test score with an average of 88.71 was greater than the pre-test score with an average of 55.46 which indicated an increase in score with a percentage of 55.95% (David Laksamana Caesar, 2020). In line with this, the use of poster media is effective as a medium of socialization to increase knowledge, as seen from the results of the pre-test and post-test scores of 30 mothers of under-five children who were given counseling using poster media. The average value of the pre-test score was 6.717 while the post-test score was 8.183, thus there was a difference in the average pre-test and post-test scores (Winingsih *et al.*, 2020). This research was in line with the health promotion program through posters throwing garbage in its place where posters have effectiveness in delivering health messages as proven by the positive response from respondents (Nursamsam, Rachmat and Thaha, 2020). Another study also showed that health education with poster media was more effective in increasing knowledge of hypertension management compared to providing health education without posters (Ulya and Iskandar, 2017). The results of the same study also obtained the average value (mean) of the pre-test value, namely 64.38 to 83.75 (an increase of 19.37 from initial knowledge) which indicated that the poster media for the diet intervention of autistic children was effective and has an effect on increasing mother's knowledge

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regarding diet interventions for autistic children (Kaka, Takaeb and Riwu, 2020).

Posters have been widely used for communication purposes, including as a communication medium such as a medium in promoting products, used in campaign activities including the PHBS (Clean and Healthy Living Behavior), 7M implementation, and vaccination campaigns. Posters as a communication medium used to convey messages have proven effective in educating consumers in implementing post-meal cleaning activities which were reviewed through the theory of message effectiveness by Willbur Schramm (Triulandari, 2021). The results of other studies proved that direct and indirect counseling using poster media was quite effective in increasing the knowledge of the local community. The difference in public understanding between before and after the counseling was 22%. This showed an increase in public understanding of the health information counseling provided (Yulianis, Fauziah and Kusumawati, 2020).

Previously there had been no research that tested the effectiveness of posters using traditional fairy tale symbols in delivering Health messages, but there were similar studies discussing the effectiveness of posters using symbols. Research that discussed the effectiveness of poster messages using symbols was conducted by Ayu Berlian Triulandari regarding the effectiveness of the #BUDAYABEBERES poster message in educating KFC consumers on clean living behavior in Palu City. The results showed that the average respondent gave a good assessment or strongly agrees with the pictures/symbols on the poster which made it easier for consumers to understand the message. On the other hand, it also showed that the average respondent gave an assessment of agreeing that the words on the poster were clear and easy to understand when using a symbol (Triulandari, 2021). In accordance with this research, the symbols of persuasive messages contained in the design of the Ngayogjazz festival event poster were found in several visualizations based on illustrations, the use of fonts, the use of colors in the background, and typography which made the respondents easier to understand messages from various sides (Ramadhon and Fardiyan, 2018). This research was supported by research on the effectiveness of messages which assumed that if communication is expected to be effective then the messages need to be packaged in such a way that it fits or constitutes the needs of the communicant. The elements that support the effectiveness of the message included: (1) creating needs, (2) attracting attention, (3) symbols that are understood, and (4) ways of obtaining (Marlina, Saleh and Lumintang, 2009).

The 2020 study also stated the same regarding the evaluation of educational programs with videos and posters on people's behavior in dealing with COVID-19 (Preliminary Study), which concluded that health education using posters and videos can change people's behavior towards a healthier direction in dealing with COVID-19 (Rahmatina and Erawati, 2020). This study has the advantage of testing the effectiveness of using traditional Indonesian fairy tale symbols through posters as the media. By using the effectiveness testing method, namely pre-test and post-test related to changes in knowledge, attitudes, and behavior of respondents after seeing health posters with traditional Indonesian symbols. Training and counseling using poster media plays a major role in changing behavior as a result of the adoption of information that a person gets either quickly or slowly (Iqbal and Winarsih, 2020). The delivery of health messages has the main goal of changing behavior by improving knowledge (cognitive), attitudes, and practices (getting access to health information, using the information), thus can be used to improve or maintain health. In addition, one of the factors of forming a person's attitude is social communication in the form of information received by the individual (J, Okatvidanti and Astuti et al., 2019). Behavior change experienced by the community was due to an increase in knowledge about the benefits of behavior and how to change their behavior (Buana, 2020).

CONCLUSION

There was a significant change in the knowledge, attitudes, and behavior of respondents after being given posters with symbols of traditional Indonesian fairy tales, thus the symbols in traditional fairy tales conveyed through poster media were effectively used to deliver health messages to the public during the COVID-19 period.

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The use of traditional Indonesian fairy tale symbols to convey health messages during the COVID-19 period can be used as input for the government to deliver health messages in the future. Based on the results of respondents' opinions regarding the advantages of posters, the respondents also said that the presence of symbols to convey health messages could help a better understanding and remembering the health messages conveyed. Thus, the public will have the possibility to better remember and understand health messages with the use of traditional Indonesian fairy tale symbols in it.

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Husband's Support as Delivery Companion During the Covid-19 Pandemic at Pratama Clinic

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ABSTRACT

***Background**: Giving birth in the midst of the COVID-19 pandemic requires extra efforts to ensure the safety of mothers and babies from the threat of the coronavirus. Childbirth assistance is needed to provide physical, emotional, and psychological support so that the birth process has a positive meaning for mothers, husbands, children, and families. A husband's support as a delivery companion during the COVID-19 pandemic needs to be considered in terms of preparation for childbirth at home, experience in assisting at the place of delivery, and expectations regarding assistance for subsequent deliveries.* ***Objective**: To analyze the husband's support in terms of preparation for childbirth, experience accompanying childbirth, and husband's expectations regarding subsequent delivery assistance during the COVID-19 pandemic.* ***Method**: This research used a qualitative descriptive method, namely by conducting in-depth interviews with husbands whose wives gave birth at the Pratama Clinic, Surabaya. The dependent variable is the husband's support and the independent variable is the preparation, experience, and expectations of the delivery companion. Sampling used purposive sampling that met the inclusion criteria, namely mothers with normal delivery and exclusion, namely mothers with complications in their pregnancy so that they were referred to the hospital, the sample size was 10 participants from a total population of 18 mothers who gave birth in July 2021. The study was carried out in July-August 2021 with discourse analysis by collecting documents, interviews, and observations.* ***Results**: The husband's support in terms of preparation before his wife gives birth during the COVID-19 pandemic was quite good at paying attention to body resistance and maintaining health protocols so that the swab test results were negative and could give birth at the desired clinic. The husband's experiences when accompanying his wife to give birth during the COVID-19 pandemic were stressful and more complicated because a swab test was required and there were no other family members to accompany her and the husband was worried about a referral to the hospital. The husband hoped that the birth of the next child will not be in a situation of the COVID-19 pandemic.* ***Conclusion**: The husband understood and realized that his support and attention from preparation before delivery until the baby's born is very important so that the mother can give birth smoothly at the desired place of delivery, with the hope that the mother gives birth comfortably and the baby's mother is safe.*

***Keywords**: COVID-19 pandemi, Delivery companion, Husband's support.*

INTRODUCTION

The labor process is a stressful situation, during which the mother will experience worried, nervousness, fear, and pain due to contractions. A mother giving birth requires strong support and the presence of the closest people who provide encouragement and love in order to help the delivery process run smoothly. One of the closest people's support is the support of a husband. The benefits of the husband's presence during the labor process are that the husband can calm and strengthen the mother's psyche because the husband can provide support and encouragement as well as increase the emotional closeness of husband and wife because husbands witness the struggle of mothers in giving birth to their children, husbands are always there when needed, mothers feel comfortable and there is more energized when the husband accompanies. Mothers do not feel alone when giving birth because there are those who accompany,

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provide support, and provide encouragement (Ginting, 2019).

According to (Ratnanengsih, 2021) a companion must prepare mentally to provide a pleasant atmosphere for maternity mothers. Childbirth assistance is beneficial for the psychological and smooth delivery of the mother. Mentoring for a husband who is mentally ready to accompany his wife during the delivery process can provide benefits, including:

1) Gives a sense of calm and psychological reinforcement to the wife;
2) The husband is the closest person who can provide a sense of security and calm that is expected by the wife during the delivery process. In the midst of uncomfortable conditions, the wife needs someone to lean on, support, and encouragement to reduce her worries and fear;
3) Always there whenever needed;
4) By being beside the wife, the husband is ready to help and provide whatever his wife needs;
5) The emotional closeness of husband and wife increases;
6) The husband will witness the struggle of his wife's life and death when giving birth to their child so that it makes him love his wife even more;
7) Cultivating a fatherly instinct;
8) The husband will respect his wife more;
9) Seeing the sacrifice of the wife during the delivery process, the husband will be able to appreciate his wife more and maintain her behavior because he will remember how much his wife sacrificed.

There are several advantages of childbirth assistance, namely showing the effectiveness of physical support such as massaging the back of the mother that sicks, removing maternal sweat, and emotional as well as psychological (providing support and encouragement) during the labor and delivery process. It showed that the constant presence of a companion during labor and delivery will result in 1) APGAR Score < 7 less; 2) The duration of labor getting shorter; 3) Greater satisfaction of mothers in their childbirth experience; 4) Fewer births with certain action procedures (forceps, vacuum or cesarean section) (Jahriani, 2019).

In early 2020, the world was shocked by an outbreak of new pneumonia, namely Coronavirus Disease 2019 (COVID-19) caused by Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). Giving birth in the midst of the COVID-19 pandemic requires extra preparation to ensure the safety of mothers and babies from the threat of the Coronavirus. To avoid the wider spread of COVID-19, the government was forced to adopt a policy of social distancing and physical contact restrictions in the form of staying at home, working from home, studying as well as worshiping at home. The policy issued by the government, one of those including Social Distancing, which is possible to reduce or inhibit the spread of the virus. This effort is considered very effective in preventing sick people from making direct contact with other people who are not sick so as to prevent transmission. The same applied to the policies used at the place of delivery. Health workers are trying to prevent the number of infected people from increasing by limiting the number of families who accompany during childbirth and have carried out a Rapid Swab Test for COVID-19 or PCR (Polymerase Chain Reaction) with negative results (Kresna and Ahyar, 2020).

The COVID-19 pandemic has an impact on all aspects, one of which is the health aspect which has resulted in limited face-to-face activities with health workers in Ante Natal Care (ANC) services. This raises anxiety for pregnant women regarding labour and delivery preparation during the COVID-19 pandemic (Ahmad *et al.*, 2021).

In maternal health services in the field of delivery assistance, efforts must be made to minimize the number of staff members entering the room and unit, there must be a local policy that stipulates personnel who participate in the process. Only one person (spouse/family member) can accompany the patient. Accompanying persons should be informed about the risk of transmission and they should wear appropriate PPE during accompanying patients (Kemekes, 2020).

Pratama Anugrah clinic Surabaya before the COVID-19 outbreak required husbands or families to accompany every mother who was about to give birth. The health protocol regarding delivery process companions who are allowed to enter the delivery room is only one person who has

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undergone a COVID-19 test with a negative result. The results of the preliminary research conducted showed that before the COVID-19 pandemic almost 100% of mothers gave birth accompanied by their husbands or families, but since the COVID-19 pandemic, the data obtained from January 2021 to March 2021, from 30 mothers who gave birth in Primary Clinics, there were 8 who gave birth without husband's assistance or about 26% because their husband's Rapid Test result was reactive.

According to the explanation above, the description of the husband's support as a delivery companion is studied in terms of preparation, experience, and expectations of assisting during the COVID-19 pandemic. Another benefit that is expected in this research including to educate other married couples if they have to give birth during the COVID-19 pandemic, paying attention to preparations for childbirth, and experiencing accompanying their wives to give birth to stay comfortable as well as calm, and not contract the Coronavirus.

METHODS

The population in this study were the husbands of mothers who gave birth at the Pratama Clinic. The total number of participants obtained as many as 10 people. This research was qualitative research with a descriptive phenomenological approach. The source of data in this study was the recording of the interview. The technique used was non-probability sampling; the determination of participants was done by purposive sampling. Selection of sources based on the inclusion and exclusion criteria that have been set. Inclusion criteria were mothers with physiological delivery and exclusion criteria were mothers with complications in their pregnancy so that they were referred to the hospital. Discourse analysis techniques in qualitative research by conducting in-depth interviews.

The variables studied in this study were the husband's support as a delivery companion during the COVID-19 pandemic in preparation, experience, and expectations of delivery companions. This research was conducted from July 2021 to August 2021. The research ethics certificate number is 194/EC/KEPK/FKUA/2021.

RESULTS AND DISCUSSION

Table 1. Characteristics of Research Subjects based on Age, Education, Occupation

Code	Age	Education	Occupation
S1	25	High School	Private-employee
S2	27	High School	Private-employee
S3	22	Bachelor	Self-employed
S4	32	High School	Self-employed
S5	37	Bachelor	Private-employee
S6	35	High School	Private-employee
S7	33	Diploma 3	Private-employee
S8	34	High School	Private-employee
S9	28	Bachelor	Private-employee
S10	30	Bachelor	Private-employee

Characteristics of the husband as a delivery companion showed that 20% of the total respondents were aged >35 years and 70% were aged 20-35 years.

Table 2. Research Subjects Based on Delivery Companions

Code	Delivery Companions	COVID-19 Test Result
Subject	Yes/No	NR/Reactive
S1	Yes	NR
S2	Yes	NR
S3	Yes	NR
S4	Yes	NR
S5	No	Reactive
S6	Yes	NR
S7	Yes	NR
S8	Yes	NR
S9	Yes	NR
S10	Yes	NR

Due to the sake of mutual safety, before entering the delivery room, a COVID-19 test was carried out with the result that 1 out of 10 respondents tested positive for COVID-19, thus the respondent could not accompany his wife to give birth.

The husband's opinions regarding the need to accompany his wife during childbirth include:

> *"Karena istri sedang berjuang untuk melahirkan buah hati kami, jadi sudah selayaknya Saya bertanggung jawab dan berkewajiban untuk menjaga serta mendampingi istri Saya untuk melahirkan." (S2, 27 th)*
>
> "Because my wife is struggling to give birth to our baby, I should be responsible and obliged to look after and accompany my wife to give birth." (S2, 27 years old)

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"Karena Istri butuh teman sebagai pengobat rasa sakit saat melahirkan. Dan suami adalah orang terdekat dan paling cocok untuk menemaninya." (S10, 30 years old)

"Because my wife needs friend as a pain reliever during childbirth. And her husband is the closest and most suitable person to accompany her." (S10, 30 years old)

"Karena bisa membuat istri lebih tenang, nyaman dan punya semangat lebih untuk persalinan normal." (S3, 22 years old)

"Because it can make my wife calmer, more comfortable and is more encouraged for a normal delivery." (S3, 22 years old)

The husband's opinion regarding the importance of husband's support to accompany the wife during childbirth brings a positive value, namely by providing the energy of love and attention it is expected to be able to reduce pain during contractions and encourage the wife to be patient in facing the labor process so that the mother can give birth to a healthy baby safely.

Husband's Preparation as Delivery Companions During the COVID-19 Pandemic

The husband as a delivery companion can provide benefits, including providing a sense of calm and psychological reinforcement for the wife, in the midst of uncomfortable conditions during facing the birth process, the wife needs support and encouragement to reduce her worries and fear. By being on the wife's side, the husband is ready to help whatever his wife needs, the emotional closeness of husband and wife increases, the husband will witness the life and death struggle of his wife during giving birth to their child so that he loves his wife even more (Iin Indriani, 2018).

Giving birth in the midst of the COVID-19 pandemic creates worries among maternity mothers, therefore, it's needed for preparation efforts from both the maternity mother and the husband as the delivery companion, thus they can give birth at the desired place of delivery and also preparations to prevent the transmission of the coronavirus to the baby who will be born.

Husband's support in terms of preparation for childbirth during the COVID-19 pandemic based on interviews with several respondents as follows:

"Persiapannya menjaga istri supaya saat dilakukan test Swab negatif, karena kemarin sempat tanya-tanya persyaratan melahirkan disini harus test kesehatan dan menunjukkan hasil test swab nya negatif. Saya juga menerapkan protokol kesehatan yang ketat di keluarga, walaupun di rumah saat keluar kamar kita tetap memakai masker karena kita ada beberapa orang disana tidak cuman keluarga kita saja masih gabung bersama orang tua. Makan juga sendiri-sendiri, saya dari bepergian pulang ke rumah harus semprot desinfektan dulu." (S1, 25 years old)

"The preparation is to take care of the wife so that when the swab test is carried out, the result can be negative because yesterday I was wondering about the requirements for giving birth here must have a health test and the result of the swab test should be negative. I also apply strict health protocols in the family, even at home when we leave our room we still wear masks because we have several people there, not only our families but also our parents. I also eat alone, I have to spray disinfectant first once arrived home from traveling outside." (S1, 25 years old)

"Jaga kesehatan supaya waktu melahirkan tidak jatuh sakit, persiapan finansial dan mencari klinik yang nyaman. Protokol di rumah diterapkan, bahkan di rumahpun pakai masker, kemana-mana bawa handsanitizer. Tidak sering ketemu orang." (S5, 37 years old)

"Take cares of health to prevent being sick during childbirth, prepares financially, and find a clinic that is comfortable. Protocols are applied at home, even at home still wear masks, and carry hand sanitizer everywhere. I don't see people very often." (S5, 37 years old)

"Kita jaga imun entah itu minum vitamin, makan bergizi supaya tidak sakit saat di swab. Lain itu Saya

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menyarankan ibu untuk ikut yoga hamil karena yoga kan sama juga dengan olah raga. Kalau untuk Saya sendiri, Saya menjaga diri dengan tidak berkerumun dengan orang benar-benar dibatasi." (S8, 34 years old)

"We maintain our immunity, whether it's taking vitamins, eating nutritious food so we don't get sick when we are getting the swab test. Other than that, I advise the mother to join pregnancy yoga because yoga is the same as exercise. As for myself, I take care of myself by not gathering with people which is really limited." (S8, 34 years old)

"Persiapan melahirkan yang pertama sifat emergency nya, seperti Rumah Sakit rujukan jika ada apa-apa. Di rumah saya mengurangi mobilisasi, kantor pun menerapkan WFH (Work from Home) jadi bisa mengurangi kegiatan berkerumun." (S2, 27 years old)

"Preparation for childbirth is first of all emergency characteristic, such as a referral hospital if something goes wrong. At home I reduce mobilization, the office also applies WFH (Work from Home) so I can reduce crowding activities." (S2, 27 years old)

"Jaga kesehatan supaya waktu melahirkan tidak jatuh sakit, persiapan finansial dan mencari klinik yang nyaman. Protokol di rumah diterapkan, bahkan di rumahpun pakai masker, kemana-mana bawa handsanitizer. Tidak sering ketemu orang." (S7, 33 years old)

"Take cares of health to prevent being sick during childbirth, prepares financially, and find a clinic that is comfortable. Protocols are applied at home, even at home still wear masks, and carry hand sanitizer everywhere. I don't see people very often." (S7, 33 years old)

"Jujur ada persiapan, yang paling utama persiapan mental kita, kita harus siap saat di swab dan menerima apapun hasilnya. Persiapan Saya selanjutnya mendekatkan diri kepada Sing Kagungan Kersa (Tuhan Yang Maha Kuasa), dengan berdo'a dan shalawatan semoga selalu sehat dan tidak ada apa-apa. Kemudian menyiapkan dana jika harus di rujuk ke Rumah Sakit." (S1, 25 years old)

"Honestly there is preparation... the most important thing is our mental-preparation, we must be ready when we are getting the swab test and accept whatever the results are. My next preparation is to draw closer to Sing Kagungan Kersa (God Almighty), by praying and shalawat hoping that we will always be healthy and nothing will happen. Then prepare funds if you have to be referred to the hospital." (S1, 25 years old)

The husband as a delivery companion can provide benefits, including providing a sense of calm and psychological reinforcement for the wife, in the midst of uncomfortable conditions during facing the birth process, the wife needs support and encouragement to reduce her worries and fear. By being on the wife's side, the husband is ready to help whatever the wife needs, the emotional closeness of husband and wife increases, the husband will witness the life and death struggle of his wife during giving birth to a child so that it makes him love his wife even more (Wulandari, Mariyati and Winarti, 2021).

The results of interviews related to the husband's preparation in accompanying his wife to give birth during the COVID-19 pandemic showed that husbands had a good preparation in terms of financial preparation, paid attention to the needs of maternity mothers, and paid attention to stamina by exercising as well as taking vitamins. Paid attention to health protocols by reducing mobilization, not being in the crowd, wearing masks, diligently washing hands, and bringing hand sanitizer as well as a disinfectant for both their own health and the wife as well as the family before the delivery process. Prepared the choice of place of delivery, and a place of referral in case of an emergency and financial matters.

Husband's Experience as Delivery Companions During the COVID-19 Pandemic

Giving birth during the COVID-19 pandemic, the Pratama Clinic applies conditions for husbands as delivery companions for undergoing the COVID-19 test and are allowed to enter the delivery room if the COVID-19 test showed negative results. The husband's opinions regarding the conditions for delivery companions

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who require a COVID-19 test were as follows:

"Saya dilakukan Test Swab COVID-19, rasanya sekarang semua persyaratan masuk Rumah Sakit minimal harus dilakukan Test Swab. Saya pribadi setuju diterapkan peraturan ini, dari kantor pun tiap 2 minggu sekali Saya dilakukan Test Swab dan tidak masalah". (S1, 25 years old)

"I did a COVID-19 swab-test, it seems that now before entering hospitals require at least carried out a swab test. I personally agree that this rule is applied, even from the office every 2 weeks I get a swab test done and it doesn't matter." (S1, 25 years old)

"Setuju saja dilakukan Test Swab COVID-19, Saya sudah beberapa kali melakukan Test Swab ini dan rasanya sudah menjadi hal yang biasa dilakukan pada masa pandemi COVID-19 demi menjaga keselamatan istri dan bayi yang akan dilahirkan juga." (S2, 27 years old)

"I agree that the COVID-19 Swab Test should be carried out, I have done this Swab Test several times and it feels like it has become a common thing to do during the COVID-19 pandemic in order to maintain the safety of my wife and the baby who will be born as well." (S2, 27 years old)

According to the husband's experience, the mandatory COVID-19 swab test for delivery companions is a common thing during the current pandemic. For the safety of both the maternity mother, the baby who will be born, and health workers as birth attendants.

The results of the interview according to the experience of the husbands who have accompanied the wife in giving birth previously and giving birth during the COVID-19 pandemic were as follows:

"Meyakinkan istri Saya bisa melahirkan secara normal, karena istri Saya kemarin sempat putus asa minta operasi. Suasana berbeda dengan kelahiran anak pertama saat sebelum pandemi, karena Saya orang Madura biasanya keluarga semua datang ikut mendo'akan tapi sekarang sepi yang boleh mendampingi hanya 1 orang dan sudah di swab negatif. Saya bilang sama keluarga tidak usah datang kesini, tungguen ae nak omah (tunggu saja di rumah)," (S7, 33 years old)

"Convincing my wife that she can give birth normally, because yesterday my wife was desperate to ask for surgery. The atmosphere is different from the birth of the first child before the pandemic because I'm a Madurese, usually, the whole family comes to pray but now it's quiet, only 1 person can accompany and has done the swab test with a negative result. I told the family that they don't have to come here, just wait at home instead (just wait at home)," (S7, 33 years old)

"Selama mendampingi melahirkan sama saja seperti anak pertama, hanya karena masa pandemi lebih diperhatikan kesehatannya dan saat di kamar bersalin memakai masker." (S3, 22 years old)

"While accompanying the delivery process, it is the same as the first child, only because of the pandemic; more attention is paid to health and should wear a mask in the delivery room." (S3, 22 years old)

Meanwhile, the experience of the husband who accompanied his wife to give birth for the first time were as follows:

"Grogi dan takut. Saya merasa ikut merasakan istri kesakitan saat kontraksi dan Saya kasih semangat istri dan tidak memperlihatkan diri kalau Saya juga takut supaya istri semangat." (S8, 34 years old)

"Nervous and scared. I feel like I can feel my wife's pain during contractions and I encourage my wife and not showing myself that I am also afraid so that my wife can be encouraged." (S8, 34 years)

"Cukup mendebarkan dan sebetulnya nggak tega, istri rasanya kok mengeluh terus punggungnya sakit. Namun Saya meyakinkan proses persalinan bisa lancar karena bidan cukup informative dengan menjelaskan kemajuan persalinan dan selalu memberi motivasi untuk semangat serta mengajarkan Saya acara memijat dan istri merasakan semakin nyaman." (S10, 30 years old)

"It's quite thrilling and actually I can't bear it, my wife tends to complain

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that her back hurts. But I assure that the delivery process will go smoothly because the midwife is quite informative by explaining the progress of labor and always give motivation and teaches me how to massage and my wife feels more comfortable." (S10, 30 years old)

"Senang dan kaget karena ini pengalaman pertama Saya ternyata melahirkan itu begini, sebetulnya nggak tega tapi bagaimana lagi Saya harus menguatkan diri." (S9, 28 years old)

"I'm happy and surprised because this is my first experience to know that giving birth is like this, actually I can't bear it but however I should strengthen myself." (S9, 28 years old)

Meanwhile, the husband who did not succeed in accompanying his wife to give birth because the results of the Rapid Antibody Test were reactive was as follows:

"Saya tidak mendampingi istri melahirkan karena saat Rapid Test Antibody hasilnya Reaktif kemudian saya cari laborat diluar dan Swab Antigen hasilnya Negatif jadi saya baru mendampingi setelah hasil Swab Antigen keluar setelah melahirkan." (S5, 37 years old)

"I did not accompany my wife to give birth because when the Rapid Antibody Test was resulted Reactive, then I looked for a laboratory outside and the result of the Antigen Swab was negative, so I only got to accompany after the Antigen Swab results came out after giving birth." (S5, 37 years old)

The husband's experience in assisting his wife in giving birth was found to have 4 themes, namely:

1. The husband's feelings when accompanying his wife during the delivery process were positive feelings (glad, touched, and happy) and negative feelings (worried, scared, nervous, and sad);
2. The husband's way of dealing with psychological changes during accompanying his wife in the delivery process was by doing deep breathing relaxation techniques and spiritual activities such as surrendering, praying, and dhikr to God Almighty;
3. The husband's support during accompanying his wife in the delivery process consisted of physical support, such as holding hands, stroking hair, head, and stomach as well as massaging the wife's back; there was also informative support including giving motivation in the form of words of encouragement, dhikr, and istighfar mentioning God;
4. The reason the husband accompanied the wife during the delivery process was because of the desire of the participants themselves for having a sense of obligation and responsibility to accompany the wife during the delivery process.

The process of childbirth is an uphill battle for every woman who does not escape from fear and worries. Worries are not only experienced by maternity mothers but also by delivery companions including families, especially husbands who also experience worriness.

The mother who was accompanied by her husband during the delivery process stated that her husband was very supportive while in the delivery room by fulfilling the mother's psychological needs including comforting by giving praise, comforting by giving a massage, encouraging and convincing the wife to be patient while waiting for the opening process and fulfilling the biological needs by feeding foods and drinks.

The interview results according to the experience of the husband who accompanied his wife to give birth to their first child stated that the husband felt empathy, nervous, and worried about the smooth opening process but tried to strengthen the wife by giving a massage, giving his body to lean on, fulfilling the wife's need for food and drink and carrying out the midwife's direction. The experience of a husband who previously accompanied his wife to give birth felt calmer, the only difference was when accompanied during the COVID-19 pandemic should be wearing a mask and required to do a COVID-19 swab test.

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Husband's Expectaions as Delivery Companions During the COVID-19 Pandemic

The husband's expectations regarding childbirth assistance for the birth of the next child based on the results of the interview were as follows:

"Taati protokol kesehatan karena kita tau istri ini lagi hamil kalau kita tidak menjaga protokol kesehatan dengan baik, takutnya apa yaa… terpapar semua jadi apa ya… semua jadi berantakan semua yang sudah direncanakan karena kuatir kalau dirujuk ke Rumah Sakit karena COVID-19 makanya semua protokol kesehatan harus dijalankan." (S1, 25 years old)

"Obey the health protocols because we know that the wife is pregnant if we don't follow the health protocols properly, we are afraid that... all will be exposed to the virus... everything will be a mess, everything that has been planned because of worried to be referred to the hospital because of COVID-19, that's why all health protocols must be done." (S1, 25 years old)

"Penting jaga kesehatan menjelang persalinan agar bisa melahirkan di bidan saja, rawan kalau ke Rumah Sakit saat pandemi begini." (S9, 28 years old)

"It's important to take care of the health before giving birth so that can give birth in a midwife; it's risky to going to the hospital during a pandemic like this." (S9, 28 years old)

"Jaga kesehatan, semoga pandemi cepat selesai biar nggak repot pakai masker terus." (S4, 32 years old)

"Take care of our health; hopefully, the pandemic will end soon so we don't have to keep wearing masks." (S4, 32 years old)

"Alhamdulillah Saya bisa mengikuti apa kata istri Saya dan inginnya nanti Saya juga bisa mendampingi lagi saat melahirkan anak kedua." (S6, 35 years old)

"Alhamdulillah, I was able to follow what my wife said and I wish that later I would get to accompany again when giving birth to the second child." (S6, 35 years old)

"Ta'ati protokol kesehatan karena kita tau istri ini lagi hamil kalua kita tidak menjaga protokol kesehatan dengan baik takutnya terpapar semua rencana jadi berantakankarena kuatir kalua dirujuk ke rumah sakit karena terpapar COVID-19, mekanya semua protokol kesehatan harus dijalankan." (S1, 25 years old)

"Obey the health protocols because we know that the wife is pregnant if we don't follow the health protocols well, we are afraid that all plans will fall apart because we are worried about being referred to a hospital due to the exposure to COVID-19, all health protocols must be followed." (S1, 25 years old)

Meanwhile, the expectations of husbands who fail to assist their wives in giving birth regarding childbirth assistance was as follows:

"Kalau dari saya, mending nggak usah Rapid Antibodi deh, langsung Swab Antigen saja karena Rapid Antibodi menurut Saya kurang mewakili kondisi saat ini. Menurut yang saya pahami Rapid Antibodi saat kondisi tidak fit bisa jadi hasilnya reaktif padahal sebenarnya belum tentu terpapar COVID-19. Memang cukup beresiko saat mendampingi, tapi Saya rasa langsung Swab Antigen saja nggak papa. Untuk suami-suami yang lain, nggak usah takut untuk dilakukan Swab Antigen supaya lebih yakin" (S5, 37 years old)

"As for me, it's better not to have Rapid Antibodies, instead do the Antigen Swab because Rapid Antibodies in my opinion do not represent current conditions. According to what I understand, Rapid Antibodies if carried out when the conditions are not fit, the result can be reactive while in fact not necessarily exposed to COVID-19. It's quite risky when accompanying, but I think it is okay to just do the swab antigen directly. For other husbands, don't be afraid to do an Antigen Swab to be surer." (S5, 37 years old)

The readiness of the husband as a delivery companion is considered to be crucial in shaping a person's behavior, thus several maternity centers in Indonesia have made policies to include the husbands in midwifery care as the delivery

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companions. According to (Noviana and Puspitasari, 2016) the readiness of the husband in assisting his wife in giving birth included in the ready category was as much as 70.3%.

The husband's expectations regarding childbirth assistance included hoping that when giving birth to the next child it will not be during the COVID-19 pandemic so there is no need to wear a mask, maintaining the health protocols, and hoping not being referred to a hospital by always maintaining health.

As for the husband whose Antibodies Rapid Test resulted to be Reactive hoped that the clinic will complete its facilities with an Antigen Swab or PCR examination.

CONCLUSION

It can be concluded that, *first*, the preparations carried out for the wife before giving birth. Implement the health protocols both inside and outside the house. Prepare a referral hospital. Maintain the health of the wife thus when the swab test is carried out, the result can be negative, and can give birth in the desired place. Remind the wife to take pregnancy vitamins, eat nutritious food, exercise, and maintain immunity. Forbid the wife to leave the house.

Second, the preparations carried out for his own self. Maintain body immunity by taking vitamins, adequate rest, and regular exercise. Reduce traveling. Implement health protocols. Pray and draw closer to God Almighty. WFH (Work from Home). Self-disinfect as well as the equipment that has been used from traveling.

Third, the experience of the husbands who previously have accompanied the wife in giving birth, including: The husband motivates the wife to be able to give birth normally. Calmer in accompanying in the delivery room than when accompanying the birth of the first child. The different experience when accompanying the first child was during the pandemic only one person is allowed to accompany, required to wear a mask, and had to do a swab test before entering the delivery room.

Fourth, the husband hoped that the wife can still give birth normally with the help of the midwife again. Obeying the health protocols. Keeping the wife healthy during pregnancy and being able to give birth at the clinic of her choice. Preparing a delivery place and a referral hospital according to the planned choice.

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Systematic Review: Information Exposure on Family Planning Associated with Contraceptive Use

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ABSTRACT

***Background**: The use of contraceptive methods by couples of childbearing age can be influenced by the information received on Family Planning (FP). FP information can be received or accessed from various sources or channels such as electronic and printed mass media, promotional media (posters and leaflets), social media, and even face-to-face communication with certain parties who understand FP. Several studies have discussed it.* ***Objective**: Using a Systematic Literature Review and Meta-Analysis, this study seeks to present logical evidence from the published literature regarding the relationship and effect of information exposure about FP on contraceptive use.* ***Method**: Literature searches were performed on the Scopus indexing engine and the PubMed database using several keywords such as "FP message", "FP communications", and "media exposure and FP". Studies should have specified criteria, such as they were published between January 2015 and December 2020, and the research locations were either in Indonesia or abroad.* ***Results**: The search results found 742 studies, and 22 studies were selected. Based on the review process, the relationship and effect of exposure to FP information on contraceptive use could be mapped through communication channels in general, namely mass media exposure about FP information, and specific communication channels, namely exposure to FP information through television, radio, print media, digital communication, and face-to-face communication.* ***Conclusion**: The use of contraceptive methods, both modern and non-modern, was strongly influenced by FP information received by couples of childbearing age; however, some information channels proved insignificant.* Therefore, *further researchers can follow up on several recommendations based on this result. Various communication channels in delivering FP messages or information remain a determining factor that must be considered by further researchers, given the rapid development of media such as online media.*

***Keywords**: contraception, FP, information, meta-analysis.*

INTRODUCTION

The decision of using contraception to implement birth spacing or to limit births is assumed to be shaped by understanding gained from exposure to or access to information about certain contraceptives (Konkor *et al.*, 2019). Because contraceptive use is a matter that concerns an individual related to health problems, hence sufficient information about Family Planning (FP) is needed by individuals as a basis for understanding it.

FP is an important agenda to minimize unwanted pregnancies, especially in developing countries where the birth rate is still high. Rapid population growth will have implications on increasing poverty, neglecting health status, decreasing access to education, narrowing job opportunities, and even environmental impacts (Husnah, Masni and Hadju, 2019). Therefore, many developing countries are trying to reduce the rate of population growth by optimizing FP programs (Okigbo *et al.*, 2015; Ajaero *et al.*, 2016; McCarthy *et al.*, 2020).

Several previous studies on the determinants of FP participation tended to focus on demographic and health survey data of particular regions or countries (Demographic Health Survey), such as age, religion, education, marital status, economic status, and place of residence. There were factors of media exposure, information exposure, or media

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access that were tested, but previous research tended to measure these factors with "Yes" or "No" answers on accessing media (Ajaero *et al.*, 2016; Dasa *et al.*, 2019; Konkor *et al.*, 2019). Existing studies did not comprehensively measure individual attitudes regarding FP information accessed or received from mass media, social media, printed promotional media, or face-to-face communication. However, previous studies still showed a relationship between media exposure and FP information with the use of FP.

One of the strategies applied in the promotion of the FP program was using mass media to make the public pay attention to the benefits of participating in the program.

The process of communication, information, or messages on FP that are presented to the public has a positive effect on influencing a person's attitudes and behavior. Research evidence has shown that communication could build awareness, increase understanding and ultimately lead to willingness for behavioral change (Ajaero *et al.*, 2016; Dasa *et al.*, 2019; Konkor *et al.*, 2019); not only the information exposure but also the quality of the information should be credible.

Furthermore, the mass media is considered a credible source of information and has the capacity to build attention, increase the level of understanding, and influence individual behavior towards FP (Ajaero *et al.*, 2016; Konkor *et al.*, 2019). The role of the mass media cannot be ignored in the intervention of FP programs. Previous research has found that media could positively influence people's adoption of FP methods thus, so intense exposure to FP campaigns was necessary, but moderate exposure to FP information might also be enough to change attitudes and trigger discussions on contraceptive use.

In addition to using mass media to convey FP messages, face-to-face communication can also be a strategy implemented in building public attention about FP. The results showed that the FP information lecture method, education delivered by religious leaders, medical officers, or FP cadres, were able to influence people's decisions to participate in FP programs (Winarni and Dawam, 2016; Husnah, Masni and Hadju, 2019; Jones *et al.*, 2020). This indicates that face-to-face exposure to FP information is needed to increase contraceptive use.

Several researchers have conducted extensive studies on media exposure and FP information as a determinant of contraceptive use in FP with different study designs and results. Therefore, this study aims to conduct a systematic literature review and meta-analysis to present logical evidence from previous studies or literature that have been published regarding the relationship between exposure to FP information and the use of contraceptive methods. The results of a systematic review and meta-analysis of previous studies or literature are expected to provide an overview of mapping studies on contraceptive use and FP by specifically highlighting media exposure and FP information as well as their effects on contraceptive use.

METHODS

Studies that met the specified inclusion criteria were selected for further review. To be selected, studies should examine or identify factors or interventions that relate to or influence a person's behavior regarding FP. More specifically, the study should contain elements of delivering or accessing FP messages either through mass media, electronic intermediaries, or face-to-face. Studies should be published between January 2015 and December 2020. Studies should be published in reputable Scopus indexed journals, or in the PubMed database. The full manuscript of the study could be accessed and published in English. The exclusion criteria were the direct opposite of the predetermined inclusion criteria.

Systematic literature review and meta-analysis were carried out following the Preferred Reporting Items for Systematic Review and Meta Analysis Flow Diagram (PRISMA) guidelines. This research obtained the required study data from the Scopus indexing engine and the PubMed electronic database. Keyword combinations in the search were applied with Boolean Operators (AND and OR). The search strategy applied included the use of related titles/abstract/keywords: FP message, FP communication, FP information, media exposure and FP, and information exposure and FP. This study

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presented a PRISMA flowchart which explained the stages of selecting articles according to PRISMA guidelines (Gahungu, Vahdaninia and Regmi, 2021; Page *et al.*, 2021).

The selected studies were then assessed regarding the title, abstract, and then an assessment of the entire manuscript (Bramer *et al.*, 2018). Duplicated studies were removed from the list at initial screening. The studies that had met the predetermined criteria were set for further review. A total of 22 selected studies were extracted for information regarding the author, year of publication, study method/design, sample, research setting and location, the purpose of FP messages, the channel of delivery or access to FP messages, and core findings of the selected studies for review. Findings from this systematic literature review and meta-analysis were presented using narrative synthesis and were followed by a meta-analysis.

RESULTS AND DISCUSSION

The article search results in the Scopus and PubMed databases found 742 articles that were relevant to the keywords used, and after the article filtering was applied from 2015-2020, thus 357 articles remained. The remaining articles were re-filtered for duplicate articles and remained 342 articles. After screening by title or abstract, 319 articles were excluded. Finally, the remaining 23 articles were read entirely, and based on the predetermined inclusion criteria, 22 articles were selected for further review.

In a span of six years (2015-2020), the most selected research was published in 2020 with a total of seven studies, four studies in 2019, two studies in 2018, three studies in 2017, two studies in 2016, and four studies in 2015. These results showed that the number of studies that discussed exposure to FP messages, which were published in reputable journals, varied each year. The data showed that there was an increase in the number of studies that discussed exposure to FP messages and were published in reputable journals from 2018-2020. Still, in 2021 there were no studies on FP with the specified criteria.

Furthermore, 22 studies used quantitative methods. Of these studies, 16 studies used a cross-sectional study design, one systematic literature review/meta-analysis, and five studies used an experimental design. None of the studies used qualitative methods. The use of quantitative methods was indeed more suitable because these studies aimed to see the relationship or influence between variables. The majority of studies also still used secondary data, namely the results of surveys conducted by certain institutions in a country (Demographic Health Survey) to determine demographic and health issues, including the use of mass media, use of electronic mobile, and access to FP messages. Therefore, the majority of the results of these studies becaome representative of the state of the country regarding FP. Three studies whose research settings were based on community or the people of a particular city in a country, and one research whose research setting was based on health facilities. There were studies that also specifically used rural and urban communities as samples.

Regarding the tendency of previous studies to use secondary data from Demographic and Health Surveys conducted by certain institutions in a country, future researchers need to consider using data from primary surveys whose measurement instruments are developed by the researchers so the overview of the condition of the community will be more up-to-date. In addition, the previous studies that were reviewed did not clearly state the theory that was the theoretical basis for their research (Speizer *et al.*, 2018; Husnah, Masni and Hadju, 2019; Jadhav and Weis, 2020). Whereas in FP research which was closely related to aspects of attitude and behavior, it was quite possible for researchers to rely on one particular theory, such as the theory of reasoned action, theory of planned behavior, social cognitive theory, and other theories that focus on changing individual behavior (Grishina, 2018; Yang and Wu, 2019; Ajzen, 2020; Lin, 2020).

Furthermore, studies on contraceptive use and FP were found to be predominantly conducted in African countries (44 countries). Several pieces of research were conducted in Asia (8 countries) and America (3 countries). More specifically, there were 12 studies conducted in Africa, six studies in Asia, two studies in America, and two studies conducted on the three continents.

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Research on FP was mainly carried out in Africa because, indeed, the countries in the continent ware classified as developing countries whose population growth rates were still not well controlled, so there were many intervention efforts for people to be willing to implement FP programs, one of which was by using contraceptives. There were two studies conducted in Indonesia, one of the categorized developing countries. Indonesia was also a country that sought to maintain the rate of population growth.

The studies selected for the review focused on looking at the factors associated with exposure to FP messages and the use of contraceptive methods in FP. Existing studies also looked at the delivery of FP messages to the community, which in turn had a relationship or influence on the response or behavior of the public regarding FP. Seven studies looked at the specific use of modern contraceptive methods. A total of 10 studies looked at the general use of FP methods. One study looked at the use of FP during the puerperium. Two studies looked at the Unmet Need decisions of couples of childbearing age. One study looked not at the impact of delivering or accessing FP messages but rather the factors that make people access FP messages.

The review results of existing studies also show that the public uses several media to convey or access FP messages. Seven studies tried to look at the factors of television access in the use of FP or contraceptive use. Four studies looked at radio access factors. Five studies looked at the factors of access to print media (magazines, newspapers, flyers, and posters). Five studies looked at the factors of receiving SMS/Instant Messaging related to FP messages. Six studies calculated the factor of face-to-face communication, and one study looked at the factor of receiving e-mail messages for FP. Eight studies did not clearly mention the media used by the public in accessing FP messages. Furthermore, this literature review study also described several findings from previous studies that were reviewed.

Mass Media Exposure Related to FP Messages on the Use of Contraceptive Methods

Several studies selected for review did not specifically mention the types of mass media accessed by the public to obtain FP information. Three studies showed that mass media exposure to FP messages affected contraceptive use (Osmani *et al.*, 2015; Babalola, Figueroa and Krenn, 2017; Rutaremwa and Kabagenyi, 2018). Furthermore, one study also found that accessing FP messages increased an individual's intention to use contraception, which in turn influenced contraceptive use (Wasswa, Kabagenyi and Atuhaire, 2020), but this study did not specifically measure the specific sources of FP information accessed by the public.

In contrast to previous studies, two studies showed that media exposure to FP messages had no effect on the use of modern contraceptive methods (Jacobs *et al.*, 2017; Ahmed and Seid, 2020). Previous studies had also shown that urban women who were exposed to FP messages tended not to use modern contraceptives (Ahmed and Seid, 2020). Outside the context of mass media, it turned out that one study showed that social media exposure was related to people's decisions to become an Unmet Need or desire not to use FP even though they did not want to get pregnant (Winarni *et al.*, 2019).

Furthermore, there were other findings from the selected studies. Two studies showed that radio and television ownership was associated with modern contraceptive use (Dasa *et al.*, 2019; Packer *et al.*, 2020), because it was assumed that ownership of radio and television allowed people to access FP messages. Two other studies found that living in a village also tended to prevent people from getting access to FP messages from the mass media (Dasa *et al.*, 2019; Konkor *et al.*, 2019).

Television and Radio on the Use of Contraceptive Methods

The results of six studies showed that accessing FP messages through television significantly affected the use of contraceptive methods positively as a form of participation in FP programs (Habibov and Zainiddinov, 2015; Okigbo *et al.*, 2015; Ajaero *et al.*, 2016; Winarni and Dawam, 2016; Speizer *et al.*, 2018; Jadhav and Weis, 2020). However, another study also showed that receiving FP messages via TV did not significantly affect the use of modern contraceptive methods (Jadhav and Weis, 2020).

Furthermore, two studies showed that receiving FP messages via radio had a statistically significant positive effect on

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the use of contraceptive methods (Ajaero *et al.*, 2016; Jadhav and Weis, 2020). Specifically, previous studies had also found that receiving FP messages via radio affected the use of modern contraceptive methods (Jadhav and Weis, 2020). In contrast to this, two studies showed that exposure to FP messages via radio did not significantly influence the decision to use both modern and non-modern contraceptives (Habibov and Zainiddinov, 2015; Speizer *et al.*, 2018).

This finding implied that TV and radio still had the potential to be the preferred information channels to obtain information such as information on FP and contraception. Therefore, these two channels of information still need to be taken into account by future researchers when measuring the impact of mass media exposure on behavior change. However, it must be noted that radio and TV may not significantly encourage changes in individual behavior, so there are other things that must be considered as determinants of contraceptive use, such as social, economic, and cultural factors (Ajaero *et al.*, 2016; Konkor *et al.*, 2019).

Print Media on the Use of Contraceptive Methods

There are several print media that serve as channels for FP information and can be accessed by couples of childbearing age, such as newspapers, leaflets, and posters. Two studies showed that there was a significant positive effect between exposure to FP messages through newspapers and contraceptive use (Ajaero *et al.*, 2016; Jadhav and Weis, 2020). The use of modern contraceptives was also influenced by exposure to FP messages through newspapers (Jadhav and Weis, 2020). However, only one study showed that contraceptive use was not significantly positively affected by exposure to FP messages in newspapers (Speizer *et al.*, 2018). Furthermore, one study showed that media leaflets about FP information were able to influence Unmet Need's decision to use contraceptives (Husnah, Masni and Hadju, 2019). Likewise, exposure to FP messages through posters showed that it significantly affected contraceptive use positively (Winarni and Dawam, 2016).

This finding implied that although communication technology had developed into electronic media, information channels in the form of print media could still be used for information dissemination. Print media was also a medium that was accessed by couples of childbearing age to get information about FP. Furthermore, the difficulty of accessing electronic media also made couples of childbearing age tend to access print media such as newspapers, leaflets, and posters (Konkor *et al.*, 2019). Therefore, information channels from print media also still need to be taken into account by further researchers to understand media exposure in predicting changes in individual behavior.

SMS/Instant Messaging and Email on the Use of Contraceptive Methods

Three studies showed that receiving SMS and Email about FP significantly influenced the use of both modern and non-modern contraceptives (Bocanegra *et al.*, 2017; Jadhav and Weis, 2020; Jones *et al.*, 2020). In contrast to the three studies, other studies showed that SMS or instant messaging did not significantly increase the use of both modern and non-modern contraceptive methods. Receiving SMS about FP did not significantly increase women's use of modern contraceptives (Hu *et al.*, 2020). Furthermore, instant messaging about FP also did not significantly make women accept and use modern contraceptive methods (McCarthy *et al.*, 2020).

Based on the results of this study review, SMS and instant messaging regarding FP messages or information showed varying results; namely, there were significant and insignificant influences on the use of contraceptive methods in FP. The implication is that further researchers still need to investigate and further identify the impact of modern communication channels in the dissemination of FP information, such as via SMS, WhatsApp messages, and email. All three are forms of electronic and digital communication channels that are ideal for remote behavioral intervention. The availability of mobile phones and even smartphones that are growing both in urban and rural areas opens up opportunities for delivering information to the public (Suffoletto, 2016; Carrión-Yaguana, Alwang and Barrera, 2020).

Face-to-face Communication on the Use of Contraceptive Methods

The delivery of FP messages is also carried out face-to-face in several settings such as counseling, events, and two-way communication through figures. Three

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studies showed that FP messages conveyed by religious and informal leaders significantly affected the use of both modern and non-modern contraceptive methods positively (Okigbo *et al.*, 2015; Winarni and Dawam, 2016; Speizer *et al.*, 2018). Two other studies showed that FP information education methods increase contraceptive use (Tilahun *et al.*, 2015; Husnah, Masni and Hadju, 2019). Two other studies also showed that information exposure by medical staff or health care providers and FP workers affected contraceptive use (Winarni and Dawam, 2016; Jones *et al.*, 2020). In addition, another previous study found that interpersonal community events could also be an alternative to conveying FP messages and had been shown to have a significant effect on the modern contraceptive use. (Okigbo *et al.*, 2015).

The implication is that the delivery of information to the public is not only through mediated communication channels such as TV, radio, newspapers, SMS, and instant messaging, but also through face-to-face communication channels, both interpersonal and group. Face-to-face communication channels have been identified as a major factor in disseminating information and as an important factor in the effect of health campaigns on actual health behavior (Donné, Jansen and Hoeks, 2017).

Discussion

This study systematically reviewed previous studies that were published on the relationship and effect of exposure to FP information on individual behavior to use contraception in FP. Exposure to information about FP either through mediated or face-to-face communication channels was a concern in this review. The results of this review were based on 22 selected studies published in reputable journals in the period 2015-2020. These studies had tested the determining factors or determinants, especially those related to exposure to FP information on the use of both modern and non-modern contraceptive methods, with varying results. The articles reviewed provided evidence of contraceptive use outcomes by comparing and highlighting factors and predictors found in existing studies. Several factors and predictors were statistically significant and not significant and interesting to discuss.

In several previous studies, exposure to mass media about FP information had been shown to increase contraceptive use (e.g. Babalola, Figueroa and Krenn, 2017; Rutaremwa and Kabagenyi, 2018). This reinforced the assumption that the mass media has an important role in the demographic transition and public health (Rutaremwa and Kabagenyi, 2018; Konkor *et al.*, 2019). Messages in the mass media are widely used to reach large populations through regular use of existing media with a high share of messages and information conveyed (Bakibinga *et al.*, 2016). At the same time, it must be a concern that conveying FP information and messages through the mass media is still quite relevant today. Indeed, several previous studies explain that exposure to FP information in the mass media does not significantly increase the use of contraceptive methods (e.g. Jacobs *et al.*, 2017; Ahmed and Seid, 2020). This may be explained by factors of social, economic, and cultural differences in an area and even a country, which can affect the quality and quantity of information conveyed through different mass media (Ahmed and Seid, 2020).

Mass media is still a powerful communication tool or channel to create awareness about specific health issues and stimulate people's desire to seek more information about specific health issues (Sano *et al.*, 2016; Konkor *et al.*, 2019). Furthermore, exposure to information in various mediated communication channels also cannot be separated from the media attention of individuals. Media attention is the exposure or use of certain types of media such as television, radio, newspapers, print media, the internet, and even social media. Media attention is the tendency of people to consciously put forth cognitive effort for certain types of media messages (Gong *et al.*, 2021).

Specifically, in several studies, exposure to FP information on TV and radio each affected the use of contraceptive methods (Speizer *et al.*, 2018; Jadhav and Weis, 2020). Another study also showed that accessing FP information in newspapers could increase the use of contraceptive methods (Ajaero *et al.*, 2016). Information and messages conveyed through mass media communication channels, both print and electronic, to promote FP programs had proven to be one of the most impactful public health

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interventions to prevent unwanted pregnancies (Konkor *et al.*, 2019). Therefore, it is assumed that communication and promotion of FP programs are still relevant to optimizing mass media communication channels such as TV, radio, and newspapers to deliver FP information and messages to the public.

Furthermore, in particular, the strong influence of television is because exposure to information through the media has more benefits, such as images or visualizations, aspects of beauty and attractiveness, reaching a broader target, and can be broadcast repeatedly (Winarni and Dawam, 2016). Evidence showed that watching television could affect a person's attitudes and behavior, one of which was related to fertility behavior (Ajaero *et al.*, 2016; Winarni and Dawam, 2016).

In harmony with television, radio is also still one of the best communication channels in developing countries because radio prices are relatively affordable, and its broadcasts also reach a wider audience (Habibov and Zainiddinov, 2015). Therefore, the aspect of mass media in conveying FP information and contraceptive methods remains a communication channel that further researchers and practitioners must consider in the field related to FP.

However, it is also possible that exposure to FP information in several mediated communication channels such as television, radio, and newspapers does not have an impact on increasing contraceptive use. The results of a review of previous studies also explained this fact (Speizer *et al.*, 2018; Jadhav and Weis, 2020). It could be caused by various factors that actually should also be considered in the intervention of FP programs, such as social, economic, and cultural factors (Ajaero *et al.*, 2016; Konkor *et al.*, 2019). Considering that the decision to use contraception in FP is a personal matter regarding health issues, aspects of individual perceptions and beliefs about contraceptive methods also need to be considered in the communication and promotion of FP (Asare, 2015; Prasanti, 2018), and needs to be reviewed by further researchers in investigating the relationship and its effect on contraceptive use.

Face-to-face communication channels, both interpersonal and group, can also be optimized in the delivery of FP information and contraceptive methods. Several theories have explained that face-to-face communication channels, especially interpersonal communication, were the main factors in the dissemination of information, such as in the two-step flow theory, innovation diffusion theory, and word-of-mouth communication theory (Donné, Jansen and Hoeks, 2017). Therefore, the information conveyed by midwives, health workers, FP instructors, or FP cadres has the potential to influence the intentions and even behavior of couples of childbearing age in participating in the FP program using contraception (Winarni and Dawam, 2016; Husnah, Masni and Hadju, 2019). Furthermore, discussing health issues in an informal social environment, such as with friends, relatives, and family, can also influence health behavior, so it is also interesting for future researchers to look at aspects of social norms when researching behavior change (Lim *et al.*, 2019; Liu *et al.*, 2020).

CONCLUSION

The use of modern and non-modern contraceptive methods was shown to be significantly influenced by FP information received by couples of childbearing age. Mediated communication channels such as television, radio, newspapers, print promotion media, SMS/instant messaging, and even email were proven to play an important role in increasing the use of contraceptive methods. In addition, exposure to FP information from face-to-face communication channels was also shown to be an important factor influencing contraceptive use. However, some mediated communication channels did not significantly increase contraceptive use.

Recommendations from the results of this review of existing studies are that practitioners of delivering FP information still need to optimize the use of mediated communication channels such as electronic mass media, print media, and digital media, considering the rapid development of the media such as online media and social media, and practitioners also need to optimize face-to-face communication channels. For further researchers, exposure to FP information from mediated and face-to-face communication channels still needs to be further tested for its effect as an investigation and evaluation of FP

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communication and promotion. Regarding several communication channels that have been shown to not significantly increase contraceptive use, practically and theoretically, practitioners and further researchers need to consider and investigate other factors that are assumed to influence contraceptive use, such as social, cultural, economic, and individual beliefs.

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