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"Optimizing Early Child Growth Development for Future Adolescent in Sustainable Development Era:
Does Enviromental Affect The Child Health "

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"OPTIMIZING EARLY CHILD GROWTH DEVELOPMENT FOR FUTURE ADOLESCENT IN SUSTAINABLE DEVELOPMENT ERA : DOES ENVIROMENTAL AFFECT THE CHILD HEALTH"

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PREFACE

This volume contains papers presented at the 2022 1ST Polkesraya International Conference, which was held during November 16th, 2022 in Palangka Raya, Indonesia.

PIC provides a scientific platform for both local and international scientists, engineers and technologists who work in all aspects of medical and health. In addition to the contributed papers, internationally known experts from several countries are also invited to deliver keynote and invited speeches at PIC 2022.

The volume includes 17 selected papers which were submitted to the conference from universities, research institutes and industries. Each contributed paper has been peer-reviewed by reviewers who were collected organizing and technical committee members as well as other experts in the field from different countries. The proceedings tend to present to the readers the newest researches results and findings in the field of medical and health.

Much of the credit of the success of the conference is due to topic coordinators who have devoted their expertise and experience in promoting and in general co-ordination of the activities for the organization and operation of the conference. The coordinators of various session topics have devoted a considerable time and energy in soliciting papers from relevant researchers for presentation at the conference.

The chairpersons of the different sessions played important role in conducting the proceedings of the session in a timely and efficient manner and the on behalf of the conference committee, we express sincere appreciation for their involvement. The reviewers of the manuscripts, those by tradition would remain anonymous, have also been very helpful in efficiently reviewing the manuscripts, providing valuable comments well within the time allotted to them. We express our sincere and grateful thanks to all reviewers.

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THE EFFECTS OF SOCIAL MEDIA AND BODY SHAMING ON SELF ESTEEM AMONGST ADOLESCENT

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Abstract

Purpose: Physical appearance is one of the first individual characteristics that other people notice and has an important impact on social interactions. People with negative thoughts and feelings about their bodies are more likely to have certain mental health conditions, such as eating disorders and depression. A negative body image can also lead to low self-esteem, which can affect many areas of life. Body image has become a major concern for many people, especially young people, a lot of time and money is spent every day thinking about and changing one's body appearance. Disturbed body image can lead to problems such as loss of appetite, anorexia nervosa, abnormal weight changes, sleep disturbances, mental disorders, slow responses and irrational guilt, all of which are public health problems. One of the factors that cause a decrease in body image, especially in adolescents, is the use of social media and exposure to body shaming from other parties.

Methodology: A cross-sectional study was performed among 155 adolescents in a school-based setting. Physical Self Esteem, Media and Technology Usage and Attitudes and Body shaming were analyzed. The variables were all assessed with well-validated instruments

Findings: For Media and Technology Usage and Attitudes variables, it was found that dependence on television ($p = 0.033$), internet ($p = 0.027$) and social media (0.029) had a relationship with negative body image of adolescents in SMAN 1 Palangka Raya City. And there is a relationship between the history of body shaming treatment with adolescent body image with a value of $p = 0.031 < 0.05$

Limitation: The limitation of this study is that it is necessary to develop a more relevant variable questionnaire when used in Indonesia.

Contribution: This research can contribute to improving the quality of life and mental health for adolescents, and this research can be an initial study to develop appropriate interventions to improve adolescent self-esteem.

Keywords: Self esteem, social media, body shaming, adolescent

1. Introduction

Physical appearance is one of the first individual characteristics that other people notice and has an important impact on social interactions. Appearance in general and body image in particular have become very important constructs in contemporary society (Tiggemann, 2011). Body image is not only a cognitive construct, but also a reflection of attitudes and interactions with other people. The tendency to associate physical attractiveness with positive personal qualities has become a cultural stereotype, not only in western culture, but globally as well. The perfect body image in mass media, advertisements, and social media weighs on the subconscious mind, making people accept that "what is beautiful is good," with physical attractiveness often associated with success.

Women or men with a positive body image are more likely to have good physical and mental health. People with negative thoughts and feelings about their bodies are more likely to have certain mental health conditions, such as eating disorders and depression. A negative body image can also lead to low self-esteem, which can affect many areas of life. They usually don't want to be around other people or obsess constantly about what to eat or how much exercise to do (Office on Women's Health, 2017).

Body image is how and what you think and feel about your body. This includes the image of a person's body that they have in mind, which may not match their actual body shape and size. Body image is a dynamic perception of one's body - how it looks, feels, and moves. It is shaped by perceptions, emotions, physical sensations, and is not static, but can change in relation to moods, physical experiences, and the environment. (Gupta et al., 2016) . A positive or healthy body image is feeling happy and satisfied with the body you have, and feeling comfortable with and accepting your appearance. A negative or unhealthy body image is a feeling of being unhappy with how you look. People who feel this way often want to change their body size or shape. A healthy body image is very important. When people feel comfortable with their bodies, they tend to have good self-esteem and mental health and a balanced attitude towards eating and physical activity (Raising Children Australia, 2019).

Body image is related to self-esteem, interpersonal trust, eating and exercise, sexual experience, and emotional stability. Among adults, body satisfaction has been associated with fulfillment with personal interactions and overall happiness in life, healthy food choices and physical activity performance, and increased sexual enjoyment and activity frequency. In contrast, among young adolescents, body shape and weight dissatisfaction have been linked to a number of psychological ailments from eating disorders to major depression (Gupta et al., 2016).

Some individuals will go to great lengths to achieve the desired physical appearance. They will go on diet, exercise, surgery, and use weight loss drugs. Body image has become a major concern for many people, especially young people, a lot of time and money is spent every day thinking about and changing one's body appearance (Ghahremani et al., 2018).

Adolescents are in a period of transition, marked by the emergence of newfound cognitive capacities and changing societal expectations, which profoundly shape and alter the nature of self-esteem. Having positive self-esteem during adolescence affects overall feelings of well-being, motivation, and emotional responses. Positive feelings about self are central to the promotion and maintenance of psychological health and successful adaptation. Generally, self-

esteem is accepted as an indicator of mental and social adjustment and a mediator of behavior. Adolescents who have a positive self-image will be very cheerful, while adolescents with low self-esteem will experience effective depression. High self-esteem is associated with many positive attributes of leadership ability, satisfaction, and social behavior including low anxiety and depression and high academic and physical performance (Altintaş & Aşçi, 2008).

Variables related to body image are self-concept, self-esteem, general health and depression; each has an effect on body image or is influenced by it. Disturbed body image can lead to problems such as loss of appetite, anorexia nervosa, abnormal weight changes, sleep disturbances, mental disorders, slowed responses and unreasonable feelings of guilt, all of which are public health problems. (Ghahremani et al., 2018).

One of the factors that cause a decrease in body image, especially in adolescents, is the use of social media. Social media is a unique form of media in which users are exposed to content primarily created by peers, and to a lesser extent, family members. However, similar to traditional mass media, social media platforms also expose users to media content featuring models and other celebrities (Prieler & Choi, 2014). Social media is a web-based interactive platform that allows users to create and distribute content. Social media is not inherently positive or negative in terms of its effect on the body esteem of its users, on the contrary, its effect is highly dependent on how it is used. It has been proposed that users tend to use social media to fulfill various uses and satisfaction based on individual factors such as depression or low self-esteem (Perloff, 2014).

It is possible that individual factors such as social comparison tendencies may also serve as driving factors for social media use. It is critical that this potential relationship between individual factors, motivation for social media use, and negative health outcomes receive further examination because of the rapid and continuous increase in social media use that is occurring (Puglia, 2017).

Referring to the background above, the researcher is interested in examining the relationship between the use of technology media and body shaming on adolescent self-esteem.

2. Literature review and hypotheses development

There is an association between low self-esteem and negative outcomes for young people's behavioural and mental health problems, including health-compromising behaviours such as substance abuse, early sexual activity, and eating problems. low self-esteem significantly predicted adolescent eating and other health-compromising behaviours. With

regard to mental health, a correlation has been detected between low self-esteem and depression, anxiety and adolescents' suicidal ideation and attempts (Nguyen et al., 2019).

Self-esteem is an overall evaluation of the person's value, expressed in a positive or negative orientation towards himself. Its development starts from birth and is constantly changing under the influence of experience. Especially important is the role of self-esteem in the process of adolescence. During this period, it correlates with both academic achievement and mental health (Minev et al., 2018). Self-criticism is the punishment or derogation people deliver to themselves when they assess that they have not met internally instigated standards. As such, it is a broad pattern of thinking regarding the self that occurs in response to any perceived failure. Thus, like self-esteem it is a global self-cognition which theoretically should create a negative schema that forms the basis of depressive thinking(Gittins & Hunt, 2020).

The higher the self-esteem of adolescents, the better their health promotion behavior; The higher the sense of interpersonal ability, the more able to implement social support behavior; The higher the sense of physical ability and physiological value, the more able to implement sports behavior; The higher the sense of academic ability, the more able to implement nutritional behavior; The higher the external recognition and physiological value, the better the performance of nutritional behavior and stress management; The higher the internal evaluation, the more able to implement health responsibility and exercise behavior (Liu et al., 2022).

Social media users are extensively exposed to photographs displaying idealized self-presentations. This poses a potential threat to youth's appearance self-esteem, but the negative impact may depend upon types of social media engagement. Youth who actively post updates (i.e., self-oriented social media use) may position themselves to receive positive feedback and appearance confirmation and thus show enhanced self-esteem, whereas youths who mostly view and respond to other's posts (i.e. other-oriented social media use) are exposed to these idealized presentations, while not receiving positive feedback on their own appearance, which may result in reduced self-esteem(Steinsbekk et al., 2021).

While promising and insightful, earlier work on the effects of social media use on self-esteem leaves two important gaps that, if filled, could further improve our understanding of this effect. First, many previous studies, have investigated how time spent on social media could affect adolescents' self-esteem. It is possible, though, that time spent on social media may be too "neutral" to arrive at a true understanding of the effect of social media use on self-esteem. After all, most self-esteem theories emphasize that it is the valence (the positivity or negativity)

rather than the duration of experiences that predict fluctuations in self-esteem. It is assumed that self-esteem surges when we succeed or when others accept us and drops when we fail or when others reject us (Valkenburg et al., 2021).

Findings show that social media use is prevalent among adolescents as 90% of 13–17 year old participants have reported using at least one social media platform. In fact, many researchers have shown social media usage occurring earlier than age 13, with users as young as 10 using social media platforms. This usage has potentially increased amidst the COVID-19 pandemic whereby adolescents have reported using social media to maintain connections with others. This presence entails consistent monitoring of how they present themselves, and how that presentation compares to others, which in turn impacts the versions of the self they share with others. These versions include their hoped for (e.g. high academic achiever) or feared selves (e.g. inconsistent academic achiever) which have been referred to as possible selves (Mann & Blumberg, 2022).

The discrepancy in meeting beauty standards encourages a problem that is often encountered, such as the problem of body shaming that occurs especially for teenage girls. Body shaming is an act that is characterized by criticizing or criticizing negatively the appearance and shape of a person's body. Body shaming is also often considered only as a joke for perpetrators who unknowingly actually refer to forms of verbal, emotional violence that can affect the psychological condition of the victim in the form of trauma, anxiety, and excessive worry. In some countries the phenomenon of body shaming occurs, such as in America body shaming can be considered as a form of bullying, discrimination, and personal abuse because commenting on someone's body shape is not something that is common (Ramahardhila & Supriyono, 2022).

The impact caused by body shaming is very broad in scope. Teenagers who are victims are more at risk of experiencing various health problems, both physically and mentally. The act of body shaming can cause shame about body shape or image so high that it can make a person depressed. Psychologically, victims of body shaming will experience psychological distress such as high levels of anxiety, depression and thoughts of suicide. Victims of body shaming tend to have low psychological well-being, such as feeling unhappy, low self-esteem, feelings of anger, sadness, depression and anxiety. threatened in certain situations (Sartika et al., 2021).

Body shaming is a form of emotional verbal violence that is often not realized by the perpetrator because it is generally considered normal. Generally, victims are middle-school age teenagers, because at this time they are still adapting to their bodies and are very concerned

about their bodies, in contrast to adults who tend to be indifferent to their physical appearance (Saragih & Humaira, 2022).

3. Research methodology

A cross-sectional study was performed among 155 adolescents in a school-based setting. Physical Self Esteem, Media and Technology Usage and Attitudes and Body shaming were analyzed. The variables were all assessed with well-validated instruments. The population in this study were all students in SMA 1 Palangka Raya City. Bivariate analysis is an analysis carried out to see the relationship between two variables, namely between the independent variable and the dependent variable of Physical Self Esteem and Negative Body Image of Adolescents. The analysis used in this study is Chi-square correlation analysis.

4. Results and discussions

a. Results

From the process of distributing questionnaires, 155 respondents were found, namely teenagers who filled out the questionnaire. From 155 respondents, 32 respondents had a negative body image according to the assessment of adolescent body image using the Rosenberg Scale.

Table 1. Distribution of Respondents based on Self Esteem at SMAN 1 Palangka Raya City

Self Esteem	n	%
Low	32	20,6
Normal	123	79,4
Total	**155**	**100%**

Data Source : Primer

Table 1 showed that from 155 adolescent respondents, as many as 123 adolescents (79.4%) had a good body image and 32 adolescents (20.6%) had a poor body image according to the Rosenberg scale.

Table 2. Distribution of Respondents based on the Use of Media and Technology at SMAN 1 Palangka Raya City

Media and Technology Usage and Attitudes	Normal		Addicted		Total	
	n	%	n	%	n	%
Email	77	49,7	78	50,3	155	100.0

Text Message	42	27,1	113	72,9	155	100.0
Smartphone	14	9,0	141	91,0	155	100.0
Television	84	54,2	71	45,8	155	100.0
Media Sharing	71	45,8	84	54,2	155	100.0
Internet	52	33,5	103	66,5	155	100.0
Game	86	55,5	69	44,5	155	100.0
Social Media	29	31,6	106	68,4	155	100.0
Online Friends	41	26,5	114	73,5	155	100.0

Data Source : Primer

Table 2 showed that 91% of adolescents are addicted on smartphones, 72.9% are addicted to short messaging and 68.4% are addicted to social media. The level of addiction on media and technology is measured based on The Media and Technology Usage and Attitudes Scale.

Table 3. Distribution of Respondents based on History of Body Shaming at SMAN 1 Palangka Raya City

Body Shaming	n	%
Yes	123	79,4
No	32	20,6
Total	**155**	**100%**

Data Source : Primer

Table 3 shows the distribution of adolescents who have received body shaming. A total of 123 adolescents (79.4%) admitted to having received body shaming. Meanwhile, the distribution of body parts receiving body shaming action can be seen in Table 4.

Table 4. Distribution of Respondents based on Body Parts that Receive Body Shaming at SMAN 1 Palangka Raya City

Body Parts	n	%
No Act of Body Shaming	32	20,6
Weight	90	58,1
Face	69	44,5
Hair	17	10,9
Skin Color	48	30,9
Teeth	5	3,2
Scar/Deformed Body Part	3	1,9
Height	9	5,8

Data Source : Primer

Table 4 menunjukkan distribusi responden berdasarkan bagian tubuh yang mendapatkan perlakuan body shaming di SMAN 1 Kota Palangka Raya. Table di atas menunjukkan bahwa bagian tubuh yang paling sering menjadi sasaran body shaming adalah berat badan dengan presentase 58,1% dan wajah dengan presentase 44,5%.

Table 5. Distribution of Respondents based on When the Body Shaming Occured at SMAN 1 Palangka Raya City

Tingkatan	n	%
Elementary School	21	13,5
Middle School	55	35,5
High School	79	51,0
Total	**155**	**100%**

Data Source : Primer

Table 5 shows that 51% of adolescents receive body shaming treatment at the high school level.

Table 6. Distribution of Respondents based on Requesting Help on Body Shaming Treatment at SMAN 1 Palangka Raya City

Requesting Help	n	%
No	5	3,3
No Need	63	40,6
Didn't Want to	12	7,7
Friends	35	22,6
Girlfriend/Boyfriend	1	0,6
Family	38	24,6
Teacher/School	1	0,6
Total	**155**	**100%**

Data Source : Primer

Table 6 shows that 40.6% of teenagers feel no need to ask anyone for help regarding the body shaming they receive. And 24.6% of teenagers have asked for help from their parents regarding the body shaming they have received.

Table 7. Distribution of Respondents based on the Need to Discuss Body Shaming at SMAN 1 Palangka Raya City

Yes/No	n	%
No	35	22,6
Yes	120	77,4
Total	**155**	**100%**

Data Source : Primer

Table 7 shows the results that 77.4% of adolescents feel the issue of Body Shaming needs to be discussed.

Table 8. Distribution of Respondents based on Ever Doing Body Shaming to Others at SMAN 1 Palangka Raya City

Doing Body Shaming to Others	n	%

No	54	34,8	
Yes	11	7,1	
Maybe	90	58,1	
Total	**155**	**100%**	

Data Source : Primer

Table 8 shows the distribution of respondents whether they have been perpetrators of body shaming treatment to others. A total of 7.1% said they had, 58.1% said it was possible and the remaining 34.8% said they had never done body shaming to other people.

Furthermore, the bivariate analysis carried out consisted of the use of media and technology factors, as well as the history of body shaming factors on adolescent body image. For media and technology usage factors, it is divided into several subcategories, namely: Use of email, use of short messages, use of smartphones, television, computer equipment, internet, games, use of social media, and the number of online friends.

Table 9. The Relationship between the Use of Media and Technology on Adolescent Self Esteem at SMAN 1 Palangka Raya City

Media and Technology Usage and Attitudes	Self Esteem						p
	Normal		Low		Total		
	n	%	n	%	n	%	
Email							
Normal	58	75,3	19	24,7	77	100.0	0,218
Addicted	65	83,3	13	16,7	78	100.0	
Short Messages							
Normal	33	78,6	9	21,4	42	100.0	0,883
Addicted	90	79,6	23	20,4	113	100.0	
Smartphone							
Normal	9	64,3	5	35,7	14	100.0	0,144
Addicted	114	80,9	27	19,1	141	100.0	
Television							
Normal	72	85,7	12	14,3	84	100.0	0,033
Addicted	51	71,8	20	28,2	71	100.0	
Media Sharing							
Normal	57	80,3	14	19,7	71	100.0	0,793
Addicted	66	78,6	18	21,4	84	100.0	
Internet							
Normal	36	69,2	16	30,8	52	100.0	0,027
Addicted	87	84,5	16	156,6	103	100.0	
Game							
Normal	70	81,4	16	18,6	86	100.0	0,483
Addicted	53	76,8	16	23,2	69	100.0	
Social Media							
Normal	44	89,8	5	10,2	49	100.0	0,029
Addicted	79	74,5	27	25,5	106	100.0	

Media and Technology Usage and Attitudes	Self Esteem						p
	Normal		Low		Total		
	n	%	n	%	n	%	
Online Friends							
Normal	30	73,2	11	26,8	41	100.0	0,254
Addicted	93	81,6	21	18,4	114	100.0	
Total	**123**	**79,4**	**32**	**20,6**	**155**	**100.0**	

Data Source : Primer

Table 9 shows the results of the analysis of the relationship between the use of media and technology with adolescent self esteem. Of the 9 points analyzed, Dependence on Television (p=0.033), Internet (p=0.027) and Social Media (0.029) has a relationship with the low self esteem of adolescents in SMAN 1 Palangka Raya.

Table 10. Relationship Ever Get Body Shaming Against Adolescent Self Esteem at SMAN 1 Palangka Raya City in 2020

Body Shaming	Self Esteem						p
	Normal		Low		Total		
	n	%	n	%	n	%	
No	21	65,6	11	34,3	32	100.0	0,031
Yes	102	82,9	21	17,1	123	100.0	
Total	123	79,4	32	20,6	155	100.0	

Data Source : Primer

Table 10 shows the relationship between body shaming and adolescent self esteem at SMAN 1 Palangka Raya City. The results of the analysis showed that there was a relationship between body shaming and adolescent self esteem with p value = 0.031 <0.05.

b. **Disscussion**

In this study, there were 32 (20.6%) adolescents who had poor body image in SMAN 1 Palangka Raya City by measuring using the Rosenberg Self-Esteem Scale. Rosenberg Self Esteem Scale is an individual's assessment of the condition of his current ability (actual/real self), which is often compared with the condition of the individual's desired ability (ideal self) which is assessed by asking as many as 10 question points with an answer scale ranging from 0-3 and will classified into Body Image Less (≤15) and Enough (>15). From the process of distributing questionnaires, 155 respondents were found, namely teenagers who filled out the questionnaire. From 155 respondents, 32 respondents had a

negative body image according to the Rosenberg Scale. Due to the process of administering the intervention, 60 samples were needed which were divided into 30 for the intervention group and 30 for the control group, so respondents who had a Rosenberg scale score on the verge of being in the poor category (enough = 16-18) were included as the control group.

Adolescents are very sensitive to appearance problems and negative criticism of their appearance will reduce their body image and self-confidence. The surrounding environment and influens have a very high influence on adolescent self-esteem. From the results of the analysis of this study, it was found that the use of media and technology as well as a history of body shaming treatment to respondents had a relationship with the body image or self-esteem of adolescents at SMAN 1 Palangka Raya City.

1) Media and Technology Usage and Attitudes

In this study, the measurement of dependence on the use of Media and Technology uses The Media and Technology Usage and Attitudes Scale, in which there are 60 questions consisting of several sub-sections, namely, use of email, use of short messages, use of smartphones, television, computer equipment, internet. , Games, Use of Social Media, and the number of online friends. Of these several questions, each subsection is considered to be dependent when the respondent chooses an answer choice that has a score of 5 or more (Hasan Özgür, 2016).

The results showed that 91% of adolescents were dependent on smartphones, 72.9% were dependent on short messages and 68.4% were dependent on social media. Media has a positive and negative influence on teenagers. Teenagers often look for information on the Internet although most of it is used as a means to meet and communicate with friends (Olumide & Ojengbede, 2016). It is necessary to highlight the important role of the media in shaping the personality and self-confidence of adolescents. Intervention programs need to utilize this media to reach more youth and steps must be taken to prevent youth from abusing the media.

The results of the bivariate analysis showed that from the 9 points analyzed, dependence on television (p = 0.033), internet (p = 0.027) and social media (0.029) had a relationship with negative body image of adolescents in SMAN 1 Palangka Raya. The results of other studies show a similar halt. Research in Hong Kong shows that children or adolescents who watch TV <1 hour per day have better self-esteem scores than those who watch TV more than the average (β = 0.09; 95% confidence interval = 0.02-0.16) (Mak et al., 2020). or the internet variable, one of the studies conducted in Iran. The

results of the study showed that 40.7% of students experienced internet addiction. A significant correlation emerged between depression, self-esteem and internet addiction. Regression analysis shows that depression and self-esteem can predict the variance of internet addiction to some extent, the variable self-esteem or self-image increases the predictive power of internet addiction scores by 1%, and the correlation of this variable is 0.33 with internet addiction scores (Bahrainan et al., 2014). here is a reciprocal relationship between the internet and self-esteem or body image. In addition to internet addiction can cause teenagers to be exposed to media images in forming adolescent ideas about the ideal body, it turns out that teenagers who tend to be harsh with themselves with severe self-criticism and judge themselves as unworthy are more prone to internet addiction. More research is also needed to provide a better understanding of the phenomenon of internet addiction and its relationship to self-esteem, personality, and culture (Błachnioa et al., 2016).

The main finding of a study conducted in Pakistan showed that around 88% of people made social comparisons on Facebook and of that 88%, 98% of comparisons were upward social comparisons. This research further proves that there is a strong relationship between social media and self-esteem. The increase in the use of social media causes the individual's self-esteem to decrease. One hour spent on Facebook every day resulted in a decrease in one's self-esteem score of 5.574 (Jan et al., 2017). The results of other studies show that the use of social media such as Instagram has an influence on social comparison, proximal results, and adolescent self-image. These findings provide important theoretical and practical implications for the design of health education and campaigns in this digital era to enhance the positive effects of social media on health and emotional well-being (Jiang & Ngien, 2020).

Social Media is a unique form of media in which users are exposed to content primarily created by peers, and to a lesser extent, family members. However, similar to traditional mass media, social media platforms also expose users to media content featuring models and other celebrities (Prieler & Choi, 2014). Social media is a web-based interactive platform that allows users to create and distribute content. Social media is not inherently positive or negative in terms of its effect on the body esteem of its users, on the contrary, its effect is highly dependent on how it is used. It has been proposed that users tend to use social media to fulfill various uses and satisfaction based on individual factors such as depression or low self-esteem (Perloff, 2014).

2) Body Shaming

Body shaming itself is an act of mocking or insulting by commenting on a person's physical (body shape and size) and appearance either directly or indirectly. The comments are also given either to yourself or to others. Body shaming is considered detrimental because it can lead to a "vicious cycle" of judgment and criticism. Messages from the media and from each other often imply that we should want to change, that we should care about looking slimmer, smaller, and darker. And if we don't, we worry that we run the risk of being the target of body-shaming comments to others (Vargas, 2019).

Research shows that as many as 123 adolescents (79.4%) admitted to having received body shaming treatment. The body parts that are most often targeted by body shaming are body weight with a percentage of 58.1% and the face with a percentage of 44.5%. 51% of teenagers get body shaming treatment at the high school level. And as many as 77.4% of teenagers feel the problem of body shaming should be discussed. This is because the issue of body shaming is still rarely discussed in Indonesia. The campaign regarding the suppression of bullying and body shaming has not been optimally implemented.

Research conducted in Makassar shows that adolescents often consider themselves to have received body shaming, namely 17.9% of adolescents think that they often receive body shaming treatment from others, 75% state that sometimes they receive body shaming treatment. The treatment of body shaming is considered to be the most carried out by his friends, which is 67.5%. The most body shaming treatment experienced by adolescents is related to weight or obesity at 57.1%. The experience caused 42.9% of adolescents to form thoughts to fight, but still more 57.1% chose silence. This thought led to the emergence of 64.3% of adolescents choosing to be silent and shut down, 39.3% to be insecure, 21.4% to withdraw from the environment (Gani & Jalal, 2020).

n this study, it was statistically proven that there was a relationship between Body Shaming and Low Body Image. Where the results of the chi square analysis show the value of p = 0.031. Body Shaming has a strong relationship with vulnerability to eating problems and acts as a mediator in the relationship between low self-esteem and risk of eating disorders among obese and non-obese children (Iannaccone et al., 2016). Research in Pekanbaru also showed the same results, namely the statistical test results

of p-value of 0.036 which means there is a relationship between self-image and body shaming behavior in students in Pekanbaru (Hidayat et al., 2019).

Often the problems of self-esteem, body image and getting body shaming treatment are difficult problems to be faced by teenagers themselves. Health problems, depression and trauma can affect a teenager's self-image. The problem of fulfilling nutrition, eating disorders can have a bad impact on the body of adolescents.

5. Conclusion

1) For Media and Technology Usage and Attitudes variables, it was found that dependence on television ($p = 0.033$), internet ($p = 0.027$) and social media (0.029) had a relationship with low self esteem of adolescents in SMAN 1 Palangka Raya City.

2) There is a relationship between the history of body shaming treatment with adolescent self esteem with a value of $p = 0.031 < 0.05$

Limitation and study forward

The limitation of this study is that it is necessary to develop a more relevant variable questionnaire when used in Indonesia. Meanwhile, for further research, it can be investigated related to interventions that can be used to improve body image and self-esteem in adolescents.

Acknowledgement

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THE EFFECTIVENESS OF TERAPI TARI MANASAI (TTM) OVERCOME POWERLESSNESS IN THE ELDERLY WITH CHRONIC DISEASES

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Abstract

Purpose: To determine the effect of Therapy "Terapi Tari Manasai" (TTM) or Manasai Dance on the powerlessness of the elderly with chronic diseases in the Menteng Health Center

Methodology: This study used a quasi-experimental pre and post-test design. The sample in this study was elderly with chronic diseases recruited in the Menteng Public Health Center, Palangka Raya City as many as 33 respondents, taking a simple random sampling technique. The data collection strategy was to give TTM for four weeks, three times a week, for 5-10 minutes. Researchers assessed powerlessness before and after TTM with a questionnaire consisting of 10 questions. This research pays attention to ethical principles during the research. Analysis of the data used is a Dependent sample t-test.

Findings: "Terapi Tari Manasai" (TTM) effectively overcame powerlessness in the elderly with chronic diseases significantly ρ-value = 0.005.

Limitation: TTM was not carried out together in one place, and there was less interaction between the elderly, so it was not optimal.

Contribution: "Terapi Tari Manasai" (TTM) was one of the treatment programs for the elderly with chronic diseases who experience powerlessness

Keywords: elderly, dance therapy, powerlessness, manasai

1. Introduction

Mental health problems that are handled start from mild conditions, such as psychosocial problems often experienced by the elderly, considering they are vulnerable, especially those who experience chronic diseases, such as hypertension, diabetes mellitus, and osteoarthritis. The 2018 Central Kalimantan Province Basic Health Research results show that there are 59.07 people with hypertension in the 55-64 year age group, 49.06 in the 65-74 year age group, and 72.51% in the age > 75. There are 17.63% of Osteoarthritis sufferers in the 55-64 year age group, 23.74% in the 65-74 year age group and 21.03% in the age > 75. Patients with Diabetes Mellitus in the age group 55-64 years there is 5.9%. In the age group 65-74 years, there are 3.6%; at the age> 75, there are 4.9%. Existing data shows that the elderly are vulnerable to chronic diseases. These various conditions can cause psychosocial problems in the elderly such as powerlessness, so the elderly lack the energy to carry out activities.

The elderly feel frustrated in their activities, are depressed, avoid interaction with others, and depend on others. The decline in physical condition affects the mental attitude of the elderly so that, in the

end, it can reduce the quality of life and aggravate chronic diseases. Stress conditions will trigger a decrease in body resistance so that the welfare of the elderly is not optimal. (Noviestari, Ibrahim, Ramdaniati, Deswani. 2019). The results of a preliminary study on the elderly in 10 elderly found that 70% had hypertension, 20% had osteoarthritis, and 10% had Diabetes. The results of unstructured interviews of the elderly said that they often asked for help, were limited, and were less enthusiastic in participating in daily activities, doubted their abilities and experienced a decrease in energy in carrying out various activities.

Psychotherapy in 2000 can be a problem of powerlessness and improve the quality of life of the elderly, one of which is tariff therapy. The results of research by Koch, Riege, Tisbom, Biodo, Martin and Beelmann (2019) on "The Effect of Dance and Dance Movement Therapy on Psychological Outcomes Related to Health. A Meta-Analysis Update shows that there is a significant effect on dance therapy to reduce depression and anxiety, in addition to improving a person's quality of life and psychomotor abilities.

2. Literature review and hypotheses development
Elderly
The elderly are included in the elderly group, namely those aged 60 years and over (Center for Data and Information of the Indonesian Ministry of Health, 2009). Meanwhile, according to the Law of the Republic of Indonesia Number 13 of 1998 concerning the Welfare of the Elderly and the Central Statistics Agency in 2010, it is stated that the elderly are men or women aged 60 years or more. Based on the consideration of the elderly age limit above, the researcher refers to the determination of the elderly age of the Ministry of Health of the Republic of Indonesia and the Law on Elderly Welfare, aged 60 years and over.

The development of the elderly, based on Erikson's theory, is at the stage of ego integrity versus despair; that is, individuals who successfully pass this stage will be able to achieve self-integrity. On the other hand, those who fail will pass this stage. the stage of despair (despair), the elderly experience a stressful condition. , rejection, anger. Furthermore, despair from the reality they face (Keliat, Helena & Farida, 2011). The experience of loss in childhood causes depression, and low personality appearance in daily life, a person with cognitive problems, such as negative thoughts about himself, the environment and the future, have thoughts and beliefs that he cannot do something

(Stuart, 2009)). The decline in health conditions causes the problem of powerlessness in the elderly so that their quality of life decreases.

Townsend (2009) states that various factors in a person's life can cause depression if there is no good coping in dealing with it. The current development of the elderly is a continuation of previous developments. This failure is not addressed with good coping and causes a sense of dissatisfaction and hopelessness, which can cause depression in the elderly.

As a person ages, he slowly detaches from social life or withdraws from his environment. In addition, there will be Triple Loss, namely losses that occur simultaneously, namely roles, social contacts and reduced value of social commitment (Cumming & Henry, 1961 in Meiner and Lueckenotte, 2006). These are confirmed by Maryam (2008) that the elderly will experience depression due to changes in social roles in society. Furthermore, Fontaine (2009) states that life events that are considered stressful such as a lack of interaction with other people, cause depression.

Powerlessness

NANDA (2012) states that powerlessness is the perception that one's actions will not significantly affect the outcome, the perception of a lack of control over the current situation or situations that will occur in the future. At a low level, one will reveal fluctuations in energy level, passive. These symptoms are anger, dependence on others that results in irritability, not performing self-care being challenged, not increasing facial expressions regarding the inability to perform previous activities, expressions of performing previous tasks, expressions of doubt about role performance, and expressions of frustration at the inability to perform previous activities. , fear of being separated from the caregiver, guilt, inability to know care information, not participating in care, not participating, passive, expressing true feelings, and hatred. Furthermore, in the severe stage with characteristics, namely apathy, depression to poor physical conditions, stating that they cannot control the situation, including treatment.

With elderly depression, as a response to the powerlessness of the disease, the physical experience is getting worse. It increases the mortality rate due to the inability to seek treatment in the direction of improvement. The impact of depression is based on epidemiological studies showing that depression experienced for more than four years raises the risk of cancer by around 88% (Mauk,

2010). Then physical health conditions because someone who suffers from depression can not metabolize glucose in the brain properly.

Terapi Tari Manasai (TTM)

Dance/movement therapy, also known as therapy, is the use of movement and dance psychotherapy to support the body's intellectual, emotional, and motor functions. As a form of expressive therapy, it looks at the correlation between movement and emotion. Dance therapy can be performed on a person while recovering from an eating disorder, but it can also help improve body image and self-esteem. The meaning of dance therapy is the existence of interrelated movements and emotions, expressions and creativity that can help improve communication skills for better relationships.

Dance therapy consists of several types ranging from traditional dances, such as ballroom, to more subtle forms of movement, such as yoga and stretching. A therapist will use movement to help clients achieve emotional, cognitive, physical and social integration. Benefits include stress reduction and mood management. The therapist responds to movement, assessing body language, nonverbal behaviour, and emotional expression to develop interventions to address the client's specific needs. Movement is the therapist's primary way of observing, paying attention, and implementing therapeutic interventions.

Important skills that can be acquired during the dance movement therapy process include:

1. Learn how to develop and trust the ability to be empathetic present.

2. Able to respond authentically and honestly.

3. Learn how to translate nonverbal gestures into insights that can be used in recovery.

Manasai dance is a traditional dance from Central Kalimantan. This dance is a social dance that pleases the community in welcoming guests who come. While dancing, a person uses properties such as a shawl and performs rhythmic movements. The joy of doing this dance is expected to impact the elderly who experience powerlessness and social isolation positively. The results of research by Jimenez, Brauninger and Meekums (2019) on "Dance movement therapy with elderly people with mental conditions: A systematic review. There is increased social interaction, communication and cognitive function in the elderly who are given motion therapy rates.

The results of Yonisa's research (2018) show that (1) a form of presentation in traditional Manasai dance is a social dance or group dance in which there is a presentation structure that includes; Movement, make-up, and clothing, musical accompaniment, property, and floor patterns. (2)

characteristics in the Manasai dance represent the values in the conception of the Ngaju Dayak people's view of life, namely "Belom Bahadat", which is the ideal of life for the Dayak people. The conception of "Below Bahadat" in behavior and actions includes the words of each person, which is a picture of the culture or identity of the Dayak people. "Below Bahada" is also described in the philosophy of "Betang Culture", namely "Different ethnicity, religion is not a barrier, it has been entrenched from our ancestors, living in harmony always develops, that is what is called Betang Culture". The philosophy of "Betang Culture" also means "Where the Earth is Stepped on.

3. Research methodology

This quantitative research method used a "Quasi-Experimental Pre-Post Test without a Control Group" design. Researchers provided treatment to one group, and it was conducted before and after.

$$O1 \longrightarrow X \longrightarrow O2$$

Notes :

X : Terapi Tari Manasai

O1 : powerlessness before therapy

O2 : powerlessness after therapy
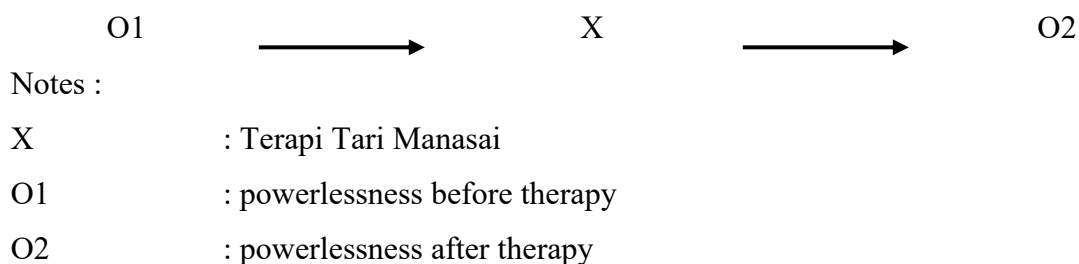
The hypothesis in this study are as follows:

The condition of the elderly's powerlessness improved after manasai dance therapy.

The population in this study was elderly living in the the Menteng Public Health Center coverage area.

The sample in this study was taken by simple random sampling, with the following inclusion and exclusion criteria.

Inclusion Criteria:

1. Elderly > 60 years old

2. Elderly with chronic disease > 6 months

3. Elderly could communicate, read and write.

4. Elderly participated in dance activities

5. Elderly had family members who can communicate online through Online

Exclusion Criteria:

1. Elderly have severe mental disorders.

2. Elderly with chronic disease with severe physical condition and unable to carry out activities.

The sample size in this study was 33 samples, and the determination of the sample size with a limited formula, namely:

$$n = \frac{N. Z^2_{1-\alpha/2} . \sigma^2}{(N-1)d^2 + Z^2_{1-\alpha/2.} \sigma^2}$$

Notes :

n	: Minimum Sample Size
$Z^2_{1-\alpha/2}$	: Normal distribution value
σ^2	: variance in population
d	: precision (0,01)
N	: Population

This research was conducted in September – December 2020; starting from the administration of research, TTM was carried out for 12 meetings at the UPT Puskesmas Menteng Palangka Raya. Data collection was carried out in 1 month. The research was conducted in Menteng Health Center, Jekan Raya District, Palangka Raya City, Central Kalimantan Province. Ethical considerations were considered in this study, considering that this research is related to humans, and its application considers the rights of research subjects.

The technique of collecting data from this study was to collect data from respondents using a list of questionnaire questions to measure powerlessness before and before TTM. Data collection and implementation of guided therapy online. Researchers and enumerators coordinated with the elderly with the assistance of family members or caregivers and elderly cadres who mastered online communication.

Researchers, enumerators, and elderly cadres held a meeting. Researchers explained the research process and the Manasai Dance Therapy (TTM) module and shared youtube links as a tool to implement therapy. Respondents who were monitored in the implementation used smartphones at the agreed time. Therapy was given three times a week, 5-10 minutes for four weeks.

The data processing used in this study is as follows:

1. Edit

The editing process was carried out after the data has been collected to check the completeness of the data for data continuity and uniformity.

2. Coding

Coding was conducted to facilitate data processing, namely providing symbols for each data that has been collected

3. Tabulation

Grouping data into a table containing the nature of each variable and following the research objectives were processed using a computer program, with the results presented in tabular form. The data was collected and processed. Next process was to analyze the data as follows:

Univariate data analysis was carried out on the characteristics of the respondents. The formula calculates this analysis:

$$P = \frac{f}{N} \times 100\%$$

Information :
P : Presentation
f : Number (frequency of occurrence)
n : All samples presented.

According to Nursalam (2013), bivariate analysis produces a relationship between the two variables concerned, namely the dependent variable and the independent variable. The statistical test is determined based on the type of data to be tested and the type of hypothesis. The analysis in this study is as follows:

Table **1**

Bivariate Analysis of Research Variables

No	Variable	Variable	Analysis
1	powerlessness before TTM in the treatment group (data ratio)	powerlessness after TTM in the treatment group (data ratio)	*Dependent* sample t-test

4. Results and discussions

A. Result

Table 2
Characteristics of the elderly who are powelessness with chronic diseases. (n=33)

Variable	n	%
Gender		
• Women	21	63,6%
• Man	12	36,4%
Education		
• Advance	8	24,2%
• Intermediate	15	45,5%
• Basic	10	30,3%
Profesi		
• Worked	14	42,4%
• Retired work	9	27,3%
• Unemployment	10	30,3%
Marital status		
• Marry	18	54,5%

• Widow / Widower / Divorce	15	45,5%
Cronic Desease		
• Hypertention	14	42,4%
• Diabetes Mellitus	7	21,2%
• Osteoarthritis	4	12,1%
• Heart disease	2	6,1%
• Gout	2	6,1%
• Others (Gastritis, Asthma, COPD, Deafness)	4	12,1%

Table 2 shows the characteristics of the elderly, 21 people (63.6%) of respondents were female, 15 people (45.5%) had secondary education, 14 people (4.42%) worked, 18 people (54.5%) were married, 14 people (42.4%) hypertention.

Table 3

Characteristics of Respondents by Age (n=33)

Variabel	Usia (tahun)
Mean	67,48
Median	67
Modus	70
Minimum	60
Maximum	87

Tabel 4

The effect of Manasai dance therapy (TTM) on the problem of increasing powerlessness in the elderly in the Menteng Health Center (n=33)

Variable	n	MIN - MAX	Mean	Standard Devices	CI (95%)
Before	33	12 - 36	25,27	5,84	23,20 – 27,34
After	33	11 - 27	20,33	5,04	18,33 – 21,11

The questionnaire about powerlessness consists of 10 questions, with the best scale of 1 and the highest being 4. The minimum score is ten, and the maximum is 40. Powerlessness increases the lower the score.

Table 4 shows the condition of powerlessness in the elderly before giving manasai therapy intervention; for as many as 33 respondents, the average score of powerlessness was 25.27, with the lowest score of 12 and the highest of 36. After administering manasai therapy to

these 33 people, the average score of powerlessness was 20. .33 with the lowest value of 11 and the highest of 27.

Table 5
Normality test (n=33)

Variable	Normality Test Used	Result (Skewness / Se skewness)	Range value (-2 s.d. 2)	Information
Score powerlessness before TTM	Skewness : 0,214 Standard error skewness : 0,409	0,214 / 0,409	0,523	Normal distribution
Score powerlessness after TTM	Skewness : 0,294 Standard error skewness : 0,409	0,294 / 0,409	0,71	Normal distributed data

Table 5 shows that the data is normally distributed. Therefore the data analysis used was paired t-test.

Table 6

Table of Analysis of Differences in Powerlessness Scores Between Before and After

TTM (n=33)

Variable	n	MIN - MAX	Mean	Standard Deviation	Value of correlation	Difference means	P value
Before	33	12 - 36	25,27	5,84	0,876	4,93 (3,94 – 5,93)	0,005
After	33	11 - 27	20,33	5,04			

In Table 6, the average score of powerlessness before the Manasai dance intervention was 25.27; after the intervention, the average score of powerlessness was 20.33. The difference in the score of powerlessness after the manasai dance was a decrease of 4.93 points. Statistically, there was a difference in the mean score of powerlessness before and after treatment with a p-value of 0.005 (α < 0.05). The correlation value (r) squared was 76.7%, which shows that presenting the Manasai dance played a role of 76.7% in decreasing the score of powerlessness, while other factors cause the rest.

B. Discussions

The results showed that the elderly were more female than male (63.6%). This condition is generally following the demographic distribution of the population in Indonesia (Muhith & Siyoto, 2016). There are more women, but on the other hand, women are prone to psychological problems.

Elderly with secondary education, namely junior high and high school, in this study, were accounted for more than 45.5%, this condition certainly affected a person's mindset in responding to the circumstances around him and what he was experiencing. However, psychological conditions are not solely dependent on cognitive patterns. Even though they have secondary education, the elderly can experience powerlessness.

The number of elderly who worked in this study was 4.42%. This condition shows that the elderly were still productive. Being productive in the elderly needs to be a concern considering having chronic diseases and a helpless response. It is important to pay attention to the welfare of the elderly.

The results shows that 54.5% of married elderly had benefits that were one of the support systems for the elderly, in line with the theory proposed by Sunaryo et al. (2015). Spouses, both husband and wife, are a source of support for the elderly, considering that in their old age, they live far from children who already have their own household lives.

The Effect of Manasai Dance Therapy (TTM)

Manasai Dance Therapy (TTM), based on research results, is effective in overcoming the problem of powerlessness, where there is a decrease in powerlessness scores of 4.93 points. This shows that Manasai Dance Therapy (TTM) can be used as an alternative treatment for the elderly with powerlessness because it has a significant positive impact on p-value 0.005 ($\alpha < 0.05$). Some of the comments from the elderly who participated in this manasai therapy activity were that they became more enthusiastic because it was accompanied by cheerful music and some of the elderly felt happy to do it with their grandchildren and supported by their children, husband or wife.

Starting the TTM activity requires effort to move the body and a lack of enthusiasm to follow the movement, but after a few times starting to get used to it even though it is different from the existing

guidelines. However, when they enjoy his upbeat music, they start to get excited and feel like a fun sport.

The effectiveness of this TTM in overcoming powerlessness, in line with the research of Koch, Riege, Tisbom, Biodo, Martin and Beelmann (2019), when performing dance movements, the elderly psychomotor moves and the music from the accompanying dance becomes a spirit stimulator so that eventually the elderly who previously felt unable, less enthusiasm and less activity for the better. This is in line with the correlation of Manasai dance which played a role of 76.7%.

However, this TTM still needs improving, considering the problem of powerlessness did not reach the lowest value. Several things cause this condition; among others, this activity will be better if done together because the energy of the elderly with each other will increase with the interaction in doing this TTM. The existence of communication in performing this dance gives more meaning to overcoming the psychological problems of the elderly such as the results of research by Jimenez, Brauninger, and Meekums (2019), namely social interaction and communication during dance movement therapy. Therefore, it is necessary to reconsider TTM at home by involving the participation of family members if the situation does not allow the elderly to gather with other older people.

Another interesting thing from the study's results, namely TTM, is that other factors can reduce the problem of powerlessness in the elderly who experience chronic diseases. This needs to be explored and improved further so that elderly care is more comprehensive and the elderly become prosperous in old age.

5. Conclusion

a. Characteristics of the elderly who experience powerlessness, namely the average age of 67 years, female (63.6%) secondary education (45.5%) 14 people, working (4.42%), married (54.5%) and older people with chronic diseases who suffer from hypertension (42.4%).

b. Manasai Dance Therapy (TTM) is effective in overcoming the problem of powerlessness significantly, namely p value 0.005 ($\alpha < 0.05$), as well as having a positive impact of 76.7% in overcoming the problem of powerlessness. This is in line with other studies that have shown a positive effect of dance therapy on the elderly.

Limitation and study forward

Further research needs to be conducted on Manasai Dance Therapy (TTM) with different settings to make it more optimal, which must be done together so that there is interaction and mutual activation of the energy of happiness between respondents. In addition, quasi-experimental research can be carried out with the control group or combined with other treatment techniques to overcome the problem of powerlessness in the elderly at home.

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FAMILY EXPERIENCES IN CARING FOR ADOLESCENT WITH MENTAL DISORDERS: A QUALITATIVE STUDY

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Abstract

Purpose: The purpose of this study was to describe the experience by family caregiver of adolescent with mental disorders.

Methodology: This study was a qualitative study with phenomenological approach. The participants were fifteen family caregiver of adolescent with mental disorder. Interviews were semi-structured and ranged from forty-five minutes to one hours. Data were analyzed using collaizi method.

Findings: This study found eight emerged theme from family experience in caring for adolescent with mental disorders. The themes were *Barriers to health-seeking behavior; Facilitator to health-seeking behavior; lack of adolescent involvement in treatment;* hide the condition of teenagers from others; *challenges in social life of adolescent; challenges in academic achievement of adolescent; Family efforts to care for adolescents with mental disorders; and Family hope for adolescent with mental disorder.*

Limitation: This study have limitation that only interviewing the experiences of one of family caregiver, so that the point of view of a adolescent with mental disorder and other family members is limited.

Contribution: This study highlighted the needs of mental health education program to increase parent, school, peer and adolescent literacy; collaborate to offer effective help to adolescent with serious mental health problems in academic area, and adolescent involvement in the treatment process should be enhanced in family of adolescents with mental disorder to reach optimal recovery.

Keywords: psychosocial mental health nursing; adolescents; recovery; mental disorder

1. Introduction

The number of people with mental disorders in the world is 450 million people with the largest percentage of contributors to the burden of disease being mental disorders (14.4%), in Indonesia it is 13.4% (1). One in 10 children aged 5-16 years is diagnosed with a mental health problem (Royal College of Nursing, 2016) with 10-20% of adolescents experiencing *underdiagnosed* and *undertreated* (Viora, 2018). In Indonesia, According to RISKESDAS 2018, more than 19 million people aged over 15 years experienced mental and emotional disorders, and more than 12 million people aged over 15 years experienced depression (Biro Komunikasi dan Pelayanan Masyarakat, 2021). At the age of adolescents (15-24 years) have a depression percentage of 6.2%.

Parents and caregivers had an important role to put on contact of their children to mental health care, often acting as gatekeepers to accessing professional services (Reardon et al., 2018), helping children grow and develop to their full potential (Ambikile & Outwater, 2012) and in

supporting them through prolonged periods of recovery. Prior study stated that parents of children with chronic illness report various levels of social, financial and emotional burdens (Angold et al., 1998). Parents and caregivers of adolescent with emotional and behavioural disorders often experience significant burden associated with care of the child. The problem of health services in Indonesia is related to mental health services in the form of a gap in inadequate mental health facilities (Idaiani & Riyadi, 2018; Leijdesdorff et al., 2021), lack of mental health human resources (R.D. Tristiana et al., 2018), delays in diagnosis and seeking health care, stigma and discrimination against people with mental disorders cause delays in access to mental health facilities (Lal & Malla, 2015; R.D. Tristiana et al., 2018), and treatment gaps (Idaiani & Riyadi, 2018).

Adolescents with personal and social development disorders have a high risk of experiencing mental disorders as adults which will affect their opportunities to obtain education and employment and in the long term have negative consequences for health, economy, social and quality of life (Palmquist et al., 2017). An important issue that faces adolescent with mental health problems is the negative social stigma associated with mental illness.

Recovery has become a prominent concept in the scientific literature and policies on mental health. Prior study found that it is appropriate and valid to use 'recovery' in the treatment process for adolescents. However, while adults share various facets of the recovery process with their adolescent counterparts, there are also significant differences such as physiological change, the impact of peers, identity development and the role of family (Ward, 2014). Other study also highlighted the need for a more clear focus on healthcare services role and participation in adolescent's recovery processes, at the same time as family involvement needs to be further investigated and operationalized (Moberg et al., 2022).

2. Literature review and hypotheses development

Prior research that explored family role in enhancing recovery in adolescent with substance abuse found that family enhance adolescent recovery through *assessment support, instrumental, informational, and social (Sari et al., 2021). Parent's role in enhancing recovery toward adolescent with mental disorder need to be explored.* The purpose of this study was to describe the experience by family caregiver of adolescent with mental disorders especially in promoting adolescent recovery and caring for adolescent with mental disorder.

3. Research methodology
Design
This study was a qualitative study with phenomenological approach.

Participants
Study participants were parents or family caregiver of adolescents with mental disorder. The recruitment process was offered via social media. The sampling method used purposive sampling. For inclusion: parents or family caregiver of adolescents (10-24 years), Bahasa language capability and agree to be participant of the study.

Data Collection

Two participants were pre-interviewed to determine the outline of the interview. Due to isolation, prevention of epidemic, and control requirements, interviews were conducted by telephone, whatsapp voice, or face-to-face. Interviews were semi-structured and ranged from forty-five minutes to one hours. At this time, expectations regarding time commitment, audio taping, consent process, and storage of collected data were discussed and potential risks and benefits of the study were identified. The participants were assured of their right to terminate their involvement at any time during the process and their ability to contact the researcher at any time by telephone. Consent forms were signed.

Table 1 Semi-structured interview questions

Question
1. Please describe about your experience in caring for client since the client first appeared symptoms and was taken to a health facility related to mental problems?
2. Please describe about the difficulties and challenges you have faced and how to overcome them?
3. Please describe about your experience with family, friends and neighbors around the house regarding the client's condition?
4. Please describe the meaning of heal/recover from mental disorders for you?
5. Please describe how did you do to achieve the recover condition of the client?
6. Please describe about your hopes and desires regarding the client's condition?

Data analysis

Data were transcribed immediately after the interview finished and analyzed using Colaizzi's method. Colaizzi's analysis is divided into seven step namely: (1) Reading and re-reading the verbatim materials to obtain general understanding of the research object; (2) Extracting statements related to the research problem; (3) Summarizing, extracting and encoding the extracted data; (4) Summarizing the encoded ideas and seeking common concepts to form themes and theme groups; (5) Performing a detailed description of the relationship between the theme and the research object; (6) Stating the essential structure that constitutes the phenomenon; (7) Returning the final analysis to the research object for verification. Two researchers independently analyzed, coded, summarized, and refined the interview materials to form primary and secondary themes. Discrepancies were solved by discussions and coming to consensus with experienced peers within the research team. participants were contacted via telephone if doubts arose during data confirmation.

4. Results and discussions

The number participants in this study was 15. The relationship of participants with client were sister (2 participants), mother (8 participants), father (3 participants) and grandmother (2 participants).

Table 2 Demographic characteristics of participants

Participants	Gender	Age (year)	Education level	Jobs	Relation with patients	Diagnosis of patients	Patient's age
P1	Female	23	Senior high school	College's Student	sister	Schizophrenia	17

P2	Female	45	Senior high school	Housewife	Mother	Depression	16
P3	Female	39	Senior high school	Housewife	Mother	Anxiety	16
P4	Male	51	Bachelor's degree	Employer	Father	Depression	15
P5	Female	40	Senior high school	Housewife	Mother	Anxiety	18
P6	Female	38	Senior high school	Housewife	Mother	Anxiety	18
P7	Female	43	Senior high school	Housewife	Mother	Depression	17
P8	Female	62	Junior high school	None	Grandmother	Schizophrenia	15
P9	Male	45	Bachelor's degree	Employer	Father	Anxiety	16
P10	Female	41	Senior high school	Employer	Mother	Anxiety	17
P11	Female	28	Senior high school	Employer	Sister	Anxiety	15
P12	Male	49	Senior high school	Employer	Father	Depression	16
P14	Male	30	Bachelor's degree	Employer	Brother	Depression	15
P15	Female	51	Senior high school	Housewife	Mother	Depression	17

Theme 1 Barriers to health-seeking behavior

The results of the theme analysis found that the theme of parental and caregiver barriers in health-seeking behavior is the category of parental knowledge deficit about mental problems in adolescents, negative attitudes of parents about mental problems, community stigma. The lack of knowledge of parents or caregivers about mental problems in adolescents that causes delays in examinations in health services is found from the statement:

"...the symptoms are visible...but the family doesn't understand the problem (mental problem)" (sister, 23 years old)

"At first I thought it was my child's behavior when there was a problem, I just let it go, I didn't know that my child was sick like that" (mother 45 years)

Barriers to health-seeking behavior, namely negative attitudes of parents about mental problems conveyed by participants:

"In my heart it was like when I had a psychological problem, but I dismissed that thought, I didn't believe it, so I took it to a smart person, I was afraid if it really did (suffering from mental problems)" (mother 39 years old)

"...the client is taken to a psychologist who tests his/her interest/aptitude... my parents did not believe that my brother was sick" sister 23 years old

"My child is a strong child, it is impossible for my child to be mentally ill, at that time I did not .. like it is impossible for my child to have a weak mind, like that" (father, 51 years old)

Barriers to health-seeking behavior, namely the still high stigma from the community about mental problems conveyed by participants:

"It's like I'm afraid if it's true (suffering from mental problems), people will definitely blame me and my husband and then they look bad" (mother 40 years old)

"There are also next door neighbors who are disturbed, that's really being avoided, I'm afraid to be treated the same as them" (mother 38 years old)

Theme 2 Facilitator to health-seeking behavior

The results of the analysis show that the themes that encourage parents and caregivers in seeking help behavior are symptoms that are increasing towards violence, suggestions from other people who are considered competent, requests from teenagers, literacy of parents or caregivers

about mental problems. parents and caregivers bring clients to health services when the client shows dangerous behavior and the symptoms shown are increasing, this is as stated by the participants as follows:

"*When he started attacking his mother, father, and getting worse, it was only then that he was taken to a psychologist, who was eventually referred to a psychiatrist*" (sister, 23 years old)

"*His head was banging against the wall, I shouted to stop but instead he said rudely and hit me, finally I asked the neighbors in front of the house to take me to the hospital*" (mother 43 years old)

"*The tantrums at home kept running out and beating the neighbors, so they were taken to the hospital*" (grandmother 62 years old)

The motivators for parents and caregivers in seeking help are suggestions from other people who are considered competent as conveyed by participants:

"*At first, you were adamant that you didn't want to take him to the hospital. At that time, the nurse, who happened to be the nurse, said that you had ordered him to see a psychiatrist before it got worse. After being told, you finally wanted to take him to the hospital*"(Sister 28 years old)

"*At that time I told the ustadz (religion figure) in my area, he was asked to be examined by a doctor as well so that the medical and spiritual path would be like that*" (father 45 years old)

The driving force for parents and caregivers in seeking help behavior is requests from adolescents, as conveyed by participants as follows:

"*The child said, Ma, I feel really sad, I'm afraid, Mom, it's like I'm not alone, then at first I just gave motivation, but how come this child seems so unpredictable, sometimes suddenly cries, and often invites me to check, finally I went to the doctor...*" (Mother 39 years old)

The driving force for parents and caregivers in seeking help behavior is parental or caregiver literacy about mental problems as conveyed by participants as follows:

"*Yes, I often follow the news (about mental problems), read on social media, chat with relatives who happen to be health people, when my child seems to change, although at first I thought there might be a problem again, but how come it's getting worse, like I don't want to? out of the room, then finally he screamed in the room, I immediately took him to the doctor*" Father 49 years old

Theme 3 lack of adolescent involvement in treatment

The third theme is the behavior of parents or caregivers who do not involve adolescents in the treatment process, namely not conveying the illness suffered by adolescents to adolescents who have mental problems, adolescents are less involved in control activities and taking medication. The behavior of parents or caregivers that does not involve adolescents in the treatment process is not conveying the illness suffered by adolescents to adolescents who have mental problems, as conveyed by participants as follows:

"*...My brother (client) was informed about his illness recently (since he was diagnosed more than 1 year, the family still doesn't accept it).*" (sister 23 years old)

"I didn't tell you, I was afraid that the child would be okay, so I said it's okay, it's just an ordinary illness, the important thing is not to be stressed and to be diligent in taking medicine" (Mother 41 years old)

The behavior of parents or caregivers who do not involve adolescents in the treatment process, namely adolescents are less involved in control activities and taking drugs, as conveyed by participants as follows:

"...every control my mother came... told the doctor about her behavior, while the younger brother didn't come..." (sister 23 years old)

"If I take control and take my own medicine, I'm sorry if I meet a friend or neighbor at the hospital later" Mother 37 years old

"Just take the medicine, the child never comes, except when he has a fever" Grandmother 58 years old

Theme 4 **hide the condition of *adolescents* from others**

The results of data analysis showed that the behavior of parents and caregivers hides the condition of adolescents from others, hides the condition of adolescents from school friends, hides the condition of adolescent clients from neighbors. Parents and caregivers hide the condition of teenagers who have mental problems from their school friends as stated by the participants as follows:

"Parents only told the homeroom teacher about the condition of the younger brother, but they were asked not to tell his friends" (sister 23 years old)

"Yes, I didn't say it, Ms. (to my school friends), only to the homeroom teacher, if my child has a psychological problem, I can't bear it later, his friends will be strange to my child" (mother 38 years old)

Parents and caregivers hide the condition of adolescents who experience mental problems from neighbors as stated by participants as follows:

"When a client attacks a neighbor, a family who apologizes but doesn't tell his sister's condition, because he is cornered and bullied ..." (sister 23 years old)

"Yes, I didn't say anything to the neighbors, because I was afraid that it would be gossip" (mother 40 years old)

Theme 5 challenges in social life of adolescent

The difficulties experienced by adolescents who experience mental problems face difficulties in their social life, namely the difficulty of building relationships with other people, being shunned by some school friends. The difficulties experienced by adolescents who experience mental problems face difficulties in their social life, namely the difficulty of building relationships with other people as stated by the participants as follows:

"...to mingle with people (clients) having trouble... so often stay at home" (23 years old sister)

The difficulties experienced by adolescents who experience mental problems face difficulties in their social life, namely being shunned by some school friends, as stated by participants as follows:

"...there are friends who accompany but there are also those who don't want to be close..." (23 years old sister)

"... the brother vented to his friend via whatsapp..." (23 years old sister)

Theme 6 challenges in academic achievement of adolescent

The challenges experienced by adolescents with mental health problems are in academic achievement in the form of difficulty focusing on learning at school. The challenges experienced by adolescents with mental health problems are academic achievement in the form of difficulty focusing on learning at school, as stated by participants as follows:

"clients continue their activities as usual but clients become unable to focus on learning" (23 years old sister)

The challenges experienced by adolescents with mental health problems are in academic achievement in the form of parents and caregivers replacing doing client tasks, as stated by participants as follows:

"Some of the client's tasks are helped by my mother, because when my sister has a lot of tasks, it sometimes relapses..." (sister 23 years old)

Theme 7 Family efforts to care for adolescents with mental disorders

Families seek to increase knowledge by seeking information from social media about associations or organizations that deal with mental problems in adolescents as stated by participants as follows:

"...mother is looking for information from the Indonesian Schizophrenia Union in Facebook...but not a group in the real world..." sister 23 year old

Theme 8 Family hope for adolescent with mental disorder

Expectations of parents and caregivers on adolescents who experience mental problems, namely independent clients and knowing the illness they are suffering from, stigma in society on adolescents with mental problems can decrease.

"My hope is that my sister will be normal again, know what the pain is and be independent..." sister 23 year old

"...so that people around you don't give a negative stigma to mental disorders" sister 23 years old

"...clients are able to take a shower, eat alone even though sometimes it's not clean.." sister 23 year old

DISCUSSION

The purpose of this study was to describe the experience by family caregiver of adolescent with mental disorders especially in promoting adolescent recovery and caring for adolescent with mental disorder. The study found that parent experience barriers in health-seeking behavior such as parental knowledge deficit about mental problems in adolescents, negative attitudes of parents about mental problems, and community stigma. The results of this study found that parents have less

knowledge about psychiatric problems so they do not immediately bring teenagers to get treatment. The results of previous studies stated that (Villatoro et al., 2018) the individual's inability to recognize symptoms or problematic behavior will interfere with the process of seeking help behavior where problem recognition is the first order before deciding to seek help and choose treatment.

Parents' negative attitudes about mental problems in adolescents also prevent parents from seeking help. Parent still have negative views toward people with mental illnesses. There still limited references about mental help-seeking among Indonesian population. Previous study found that most (78.3%) parents had negative attitude to childhood psychiatric disorders (Habib, 2020). Parental attitudes are an important factor in adolescents seeking help because adolescents depend on their parents to take them to health facilities (Wang et al., 2004). The study also found that increased symptoms shortened the time parents took their children to a health facility. This finding showed that healthcare team should conduct health education program to enhance mental health literacy for parents. The education is hoped could develop a more positive parent's attitude to psychiatric disorders including childhood psychiatric disorders which will lead to reduction in childhood psychiatric disorders and later adversities.

The results of previous studies stated that stigma on psychiatric problems affects parents' mindsets, so that when children show symptoms of mental problems, parents tend to consider their children's behavior as normal behavior to protect their families and adolescents are labeled or stigmatized by others. Denying the child diagnosis is a form of loss and grief (Richardson et al., 2013). Such grief may negatively affect family members' physical and psychological health and also the relationship with their relative. This finding showed that healthcare team should encouraging parents to deal with the emotions and responses they face regarding their child's diagnosis.

Stigma in society against people with mental problems is still widely found. The results of previous studies indicate that stigma from society is an obstacle for clients and families in carrying out health care (Rr Dian Tristiana et al., 2018)

This study also found that the facilitator of parents to seeking help behavior are symptoms that are increasing towards violence, suggestions from other people who are considered competent, requests from teenagers, literacy of parents or caregivers about mental problems. Parents are less likely to take their child with them even though they know that their child is showing symptoms of the disorder. When the symptoms of the disorder get worse and start to bother people around the child, such as violent behavior, self-injury, parents tend to take their child to health services. This is what causes adolescents with mental problems to be diagnosed late and treated too late. These findings indicate the importance of increasing parental knowledge in recognizing and dealing with mental disorders in adolescents.

This study found that parents or caregivers still did not involve adolescents with mental problems with the treatment they received. Most parents and caregivers do not tell teenagers about the illness suffered by the teenager because they are afraid that it will add to the psychological burden of the teenager. Prior study found that engaging adolescent in activities with a focus on relatedness, autonomy and competence may have specific therapeutic potential (Stanton et al., 2020). Adolescent autonomy to engage with treatment should be based on the personal goals and values of each adolescent client as part of recovery (Lavik et al., 2018).

Parents and caregivers hide the condition of adolescents from others, hides the condition of adolescents from school friends, hides the condition of adolescent clients from neighbors. This disclosure is caused by the public and self-stigma of mental illness (Buchholz et al., 2015). This finding highlighted that healthcare services need to develop program that assess the parent' perceptions about mental illness and their ability in communicate about mental health issue.

The difficulties experienced by adolescents who experience mental problems face difficulties in their social life, namely the difficulty of building relationships with other people, being shunned by some school friends. Peer relationships help the adolescent find ways to overcome issues they are facing. Friendships did play a positive role in the children's ability to socially adjust but only if the friend was supportive (Adkins, 2019).

The challenges experienced by adolescents with mental health problems are in academic achievement in the form of difficulty focusing on learning at school. The challenges experienced by adolescents with mental health problems are academic achievement in the form of difficulty focusing on learning at school. the social consequences of mental health problems are not the inevitable result of diminished functional ability but, rather, reflect negative social responses (McLeod et al., 2012). Mental distress has been linked to lower academic self-efficacy and poor study progress (Grøtan et al., 2019). School should collaborate with parents and health services to make it possible to offer effective help to students with serious mental health problems.

Expectations of parents and caregivers on adolescents who experience mental problems, namely independent and knowing the illness they are suffering from and stigma in society on adolescents with mental problems can decrease.

5. Conclusion

This study highlighted that healthcare team should conduct health education program to enhance mental health literacy for parents to develop a more positive parent's attitude to psychiatric disorders; encouraging parents to deal with the emotions and responses they face; increasing parental knowledge in recognizing and dealing with mental disorders in adolescents; assess the parent' perceptions about mental illness and their ability in communicate about mental health issue; collaborate with parents and health services to make it possible to offer effective help to students with serious mental health problems; and the needs of adolescent involvement in the treatment process should be enhanced in family of adolescents with mental disorder to reach optimal recovery.

Limitation and study forward

This research has the limitation of not exploring the whole family and only exploring one family member so that the information provided is purely from one family's point of view. Further research needs to add other family members who are also caregivers for adolescents with mental disorders to obtain more complete and complete information

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INTERVENTION STUDY ON IMPROVING THE ABILITY OF HEALTH CADRES IN THE PRACTICE OF CARING FOR LOW BIRTH WEIGHT (LBW) INFANTS

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Abstract

This study aims to evaluate the impact of LBW infant care training on the ability of health cadres to practice LBW infants care in the East Jakarta area. The study used a quasi-experimental design without a control group by measuring before and after being given treatment. The research population is health cadres in 10 sub-districts in East Jakarta. The sample was selected purposively from 65 villages (10 sub-districts) with a total of 109 health cadres. The treatment given was training on LBW infants care. The method used is an interactive discussion about LBW infants care, especially Kangaroo Method Care (KMC), demonstration of infection prevention, KMC, and breastfeeding positions. The media used are modules and booklets about LBW infants care. Paired T Test was used to evaluate changes in health cadres in the practice of caring for LBW infants before and after the intervention. The results of the analysis showed that there was a significant increase in the average value of knowledge by 14.30%, attitude by 6.38% and practice by 15.45%. The change in value (p=0.000) proved that the intervention in the form of education and assistance to cadres had a significant impact on increasing the ability of health cadres to practice LBW care. The final model of the study showed that the variables for being a cadre, education status, employment status and post-training attitude were factors that significantly (p=0.000) influenced the value of LBW care practices in health cadres. The limitation of this study is the pandemic situation which causes the measurement of LBW care practices to be carried out online. Some cadres have difficulty in carrying out proper educational practices, especially the KMC redemonstrations. The results of this study are expected to contribute to reducing.

Key Words: Health Cadre; LBW infant; Practice of caring; Training

1. Introduction

Low birth weight infants (LBW) contribute to neonatal mortality by 60-80% (WHO, 2014). LBW globally continues to be a significant public health problem and is associated with a variety of short-term and long-term child health consequences. Based on data from Riset Kesehatan Dasar (Riskesdas) Indonesia, in 2013 it was reported that the percentage of LBW was 10.2%, a slight decrease compared to 2007 of 11.5% (Riset Kesehatan Dasar, 2019).

The survival of LBW in the hospital is increasing, which is characterized by the return of LBW to home. The transition of LBW from hospital to home should be prepared as an important step for the subsequent survival of LBW (Gupta et al., 2019). Sustainable care to the community and home is considered to be an important component in improving the quality of health care, especially for

vulnerable patients, such as LBW (Jefferies et al., 2014). One that has an important role is the support system of the community.

In Indonesia, health services at the community level are mostly supported by a large number of health cadres. Health cadre is a support system that has an important role to support health in the community, and can contribute to interventions to improve infant survival (Aliganyira et al., 2014). Health cadres have been widely involved in infant and toddler health services in the community through Posyandu, but there has not been much reported on the role of health cadres in LBW services in the community. The results of the field analysis reported that the majority of health cadres have never been exposed to LBW or how to care and monitor in the field. This is what underlies the research carried out with the aim of evaluating how much impact LBW care training has on the ability of health cadres to practice LBW care in the East Jakarta area.

2. Literature review

Babies are said to have LBW if their birth weight is less than 2500 grams, which is weighed within one hour after birth or twenty-four hours after birth. It is estimated that 15% to 20% of all births worldwide are LBW, representing more than 20 million births per year. This number continues to grow every year (WHO, 2015). Although the survival of LBW infant is increasing and the baby can be sent home when the condition has stabilized even though the weight has not reached 2500 grams, in reality, mothers and families are not necessarily ready to take care of LBW at home. As stated by Jefferies et al.(2014)which states that although parents receive health education while in the hospital, basically parents often feel not ready to care for their babies at home.

Several studies report that the success of mothers in practicing LBW infant care is influenced by family and community support. The family as the closest person to the mother can help reduce maternal anxiety in practicing LBW infants care at home (Pratomo et al., 2018). Health cadres have an important role as activators and providers of health information for the community around their environment. An analysis showed that 41-72% of newborn deaths could be prevented by existing interventions such as family, community and clinic based. Approximately 50% of preventive interventions carried out are community-based by involving health volunteers in the community (Gladstone et al., 2015).

In Indonesia, the type of service that involves health cadres is maternal and child health, including guidance and counseling regarding newborn care, danger signs in babies and toddlers. Although health cadres have been heavily involved in health services for babies and toddlers in the community, through Posyandu, there have not been many reports of the role of health cadres in LBW infants services in the community. The extent of the role of health cadres to monitor the ability

of families to practice LBW care at home has not been widely reported in Indonesia. Meanwhile, health cadres can be an important support system for LBW mothers and their families, by providing assistance and support for mothers to practice LBW care properly. The practice of LBW care in question is essential care that must be carried out on babies, including the implementation of Kangaroo Method Care (KMC), Exclusive Breastfeeding, Hand Washing, Newborn Hygiene Care and Immunization (Kementerian Kesehatan RI, 2010).

The purpose of this study was to determine the extent to which changes in the ability of health cadres in carrying out LBW infants care practices after training as an effort to help improve the behavior of mothers in carrying out LBW infant care at home. The urgency of this research is the need for continuity of care for LBW infant from the hospital to home with support from the environment around LBW mothers. The involvement of health cadres as public health drivers to monitor the health of LBW infant by assisting mothers and families in carrying out proper LBW infant care is expected to reduce morbidity and infant mortality, especially LBW infants.

3. Research methodology

Study setting

The study was conducted in East Jakarta from July to October 2021. This research has received an ethical review from the Polytechnic Ministry of Health Jakarta III Ethics Commission with certificate number PKJ3/061/VIII/2021. The implementation of research activities has also obtained permission from the East Jakarta Sub Department of Health.

Study design

The study used quasi-experimental design without control group by measuring pretest before given treatment and posttest after given treatment. The treatment provided in the form of LBW care facilitator training which includes the implementation of Kangaroo Mother Care (KMC), exclusive breastfeeding, hand washing with soap, newborn hygiene care and Immunization. The training is conducted online and offline in accordance with local government policies.

Sample

The research population is health cadres in 10 sub-districts in East Jakarta. The research samples were representatives from each sub-district who met the following criteria: (1) actively carrying out their duties as cadres in the past year, (2) at least graduated from junior high school, and (3) willing to be involved in monitoring or mentoring mothers who have low birth weight, at least once a week. The sample was selected purposively from 65 villages (10 sub-districts) with a total of 109 health cadres. The determination of the selected health cadres also obtained approval from the Posyandu

coordinator at the Puskesmas and the local sub-district head.

Intervention

The intervention provided was training for LBW Care facilitators in the Community. The training participants were the head of the Family Welfare Empowerment (PKK) at the sub-district level, the head of the the Mother and Child Health (KIA) Pokja in the sub-district, the head of the sub-district and village-level cadres and health cadres. The training lasts for 2 days within 7 hours/day, from 8 a.m. to 3 p.m. The material presented was an introduction to LBW infants and LBW infants care at home. The method used in the training is the delivery of information or education about LBW care, especially Kangaroo Method Care (KMC), interactive discussions, and demonstrations (infection prevention, KMC, breastfeeding position).

The media used in the training were modules and booklets about caring for LBW babies at home. This media was developed from the guidelines for LBW infants and Maternal and Child Health of the Indonesian Ministry of Health and the results of expert discussions. The modules and booklets contain information on the Kangaroo Method of Care (KMC), breastfeeding and hand washing techniques. Prior to use, the modules and booklets were tested to determine the level of attractiveness, completeness, acceptance, trustworthiness, relevance, persuasiveness and involvement to match the expected results. The KMC demonstration was carried out using a doll and a long cloth or KMC sling.

Measures

Measurements were carried out 2 times, namely before the start of the training and after receiving the training. The data collected were assessed through interviews using a questionnaire that included demographics (age, education level, employment status, length of time being a cadre and trainings that cadres had attended), knowledge, practices and attitudes towards the care of LBW infants. The questionnaires were tested for validity and reliability on 20 health cadres in the Jatiwarna Sub-district, Bekasi. Prior to data collection, written informed consent was obtained from all health cadres.

Analysis

Paired T Test was used to evaluate changes in health cadres in the practice of caring for LBW infants before and after the intervention. Multiple Linear Regression Analysis was used in assessing the Final Model of the Impact of LBW infants Care Training on LBW infants Care Practices in Health Cadres. Data processing was carried out with the help of a computer and using SPSS 22.0.

4. Results and discussions

Results

Health Cadres Assessment skills to practice LBW care are as follows:

Description of Health Cadre Characteristics

The number of health cadres as the research subjects were 109 people. Most of the cadres are 50 years old (65%), secondary education level (57.8%) unemployed (59.6%) and the majority have served as health cadres for more than 5 years (57.8%) (Table 1).

Table 1. Overview of Health Cadre Characteristics, Year 2021

Variable	Total (n=109)	Percentage (%)
Age		
< 45 years old	44	40
45 years	65	59
Educational status		
Elementary (No school and elementary school)	41	37.6
Intermediate (junior and high school)	63	57.8
High (Higher Education)	5	4.6
Cadre period		
< 2 years	23	21.1
2-5 years	23	21.1
5 years	63	57.8
Job status		
Doesn't work	65	59.6
Working	44	40.4

The Effect of LBW infants Care Training on Health Cadres

Using the Paired T Test, the effectiveness of the training intervention on health cadres was evaluated (Table 2). The knowledge of health cadres before and after training about LBW care was significantly different, with an average difference of 1,450, according to the findings of the pretest and posttest statistical knowledge tests, with a value of p = 0,00 (p<0,05). The training results in a 14,30% increase in knowledge. The application of LBW infant Treatment likewise showed a significant difference, with an average score difference of 2,486 indicating an intervention effect of 15.45%. There was a substantial difference in scores on the importance of cadres' attitudes toward LBW care, with an average score difference of 1,450 and an intervention impact of 14.30%. The fact that there was a significant difference in values between measurements taken before and after the training intervention shows that the intervention's influence on health cadres's knowledge, behaviors, and attitudes about LBW infants care was significantly increased.

Table 2. The Effect of LBW infant Care Training on Health Cadres, 2021

Variables	Mean ± SD			P value
	Before Training Intervention	After Training Intervention	Difference average	
Knowledge	10.14±1.803	11.59±1.916	1.450	0.00
Intervention Effect: Pre-Post	14.30%			
Practice	6.73±1.798	7.77±1.405	1.073	0.00
Intervention Effect: Pre-Post	15.45%			
Attitude	39.00±4.166	41.49±4.008	2,486	0.00
Intervention Effect: Pre-Post	6.38%			

In the following stage, bivariate selection is done to identify the factors that influence cadres' capacity to provide LBW infants care in order to assist mothers and families who have LBW in providing LBW care at home. If there are factors that are significantly extremely important associated to the LBW infant care practice variable but have a p value > 0.25, then these variables can be included in the multivariate model. Variables that have a p value (p value) 0.25 will then be included in the multivariate modeling.

For the variables of cadre age, length of time as a cadre, knowledge and attitude of health cadres towards LBW infants care, were analyzed using the correlation test. Analysis of education variables and working time as cadres (in weeks) using the Anova test. Job status variable analysis was carried out using the T test.

Based on the results of bivariate selection, the variables included in the multivariate modeling are:

Table 3. Candidate Variables for Multivariate Modeling

No	Variable	p value	Information
1	Cadre age	0.416	Not Candidate
2	Time serves as a cadre	0.095	Candidate
3	Educational status	0.001	Candidate
4	Working time as a cadre	0.511	Not Candidate
5	Employment status	0.000	Candidate
6	Knowledge of post training cadres	0.859	Candidate since substantially related to the value of LBW care practice
7	Post-training cadre attitude	0.135	Candidate

Based on table 3, the variables that are included in the multivariate modeling are the length of time being a cadre, education, job status, knowledge and attitude of post-training cadres.

The Effect of LBW Care Training on LBW infants Care Practices for Health Cadres

Multivariate analysis was used to assess the impact of LBW care training on LBW care practices. The analysis was carried out using Multiple Linear Regression Test since the dependent variable of LBW Nursing Practice was numerical

Table 4. Complete Modeling of the Impact of LBW Care Training on LBW Care Practices for Health Cadres, East Jakarta, 2021

Variable	β	SE	P value
R Square		0.587	
Constant	4,620	1,152	0.000
Time serve as a Cadre	-0.039	0.013	0.003
Educational status	-1,490	0.211	0.000
Employment status	0.711	0.247	0.005
Post Training Knowledge	0.102	0.052	0.051
Post Training Attitude	0.090	0.024	0.000

Additionally, the largest p value is gradually removed from the confounder assessment until all p values are 0.05. Post-Training Knowledge was the variable that was omitted (p value = 0.051), and since the outcome was not confounded, it could be excluded. The final model, which is shown after the Post-Training Knowledge variable has been deducted, is shown below because all of the variables have p values less than 0.05. (Table 4).

Table 5. Final Model of the Impact of LBW Care Training on LBW infants Care Practices for Health Cadres, East Jakarta, 2021

Variable	β	SE	p value
R Square		0.571	
Constant	5,474	1.082	0.000
Time serve as a Cadre	-0.041	0.013	0.002
Educational status	-1,424	0.211	0.000
Employment status	0.684	0.250	0.007
Post Training Attitude	0.098	0.024	0.000

In other words, the four independent factors (having been a cadre for a long time, having a job, having an education, and having a post-training attitude) can explain the dependent variable of LBW care practices by 57.1% in the final model that was developed. Given that the model's p value is

0.000, it can be inferred that the four variables strongly predict the variables related to how LBW infant care is provided by different health cadres.

The equation of the line from the Final Model obtained is as follows:

> **The Value of LBW Infant Treatment Practices on Health Cadres** =5.474 - 0.041(Time serve as a Cadre) - 1.424 (Education Status) + 0.684 (Employment Status) + 0.098 (Post Training Attitude)

Based on the final model of the equation, the value of LBW infants care practices for health cadres is as follows:

a. The lower the experience (long) being a cadre, the value of LBW infants care practice decreased by 0.041 after controlling for variables of educational status, employment status, and post-training attitudes.

b. The lower the education of health cadres, the lower the value of LBW infants care practice by 1.424 after controlling for the old variables to become cadres, work status, and post-training attitudes.

c. The more positive the attitude of cadres towards LBW infants care, the value of LBW infants care practices increased by 0.098 after controlling for the variables of being a cadre, education status and employment status.

d. In cadres unemployed, the value of LBW infants care practice increases by 0.684 after controlling for the old variables to become a cadre, the educational status of cadres and post-training attitudes.

According to the findings, the Occupational Status of Cadres is the factor that most significantly affects the value of LBW infants Care Practices for Cadres.

Discussions

Description of Health Cadre Characteristics

The characteristics of health cadres in this study are in accordance with several other similar studies, which obtained the characteristics of cadres with age ≥ 45 years, length of work > 5 years and not working (Dewi & Martha, 2020 ;Mustikawati, 2019) This indicates that persons who dedicate themselves to being cadres are typically older and unemployed. Age had a substantial impact on knowledge of Posyandu cadres, according to research on the subject done in Magelang. The study's findings also revealed a positive direction (positive r-value), indicating that age positively correlated with the health cadres' skills (Siti Munfarida, 2012). As you age, your grasping capacity and thinking

will also increase, resulting in higher learning outcomes. At a sufficient age, the level of strength and maturity of health cadres increases in thinking and working, yet over time there will be a physical decrease that affects thinking and working due to aging.

Research findings also show that the majority of cadres have a history of serving more than 5 years. The results of research by Siti Munfarida, 2012, showed that there was a significant positive relationship with high strength (r = 0.776), between the length of time being a cadre and the skills of a health cadre, which shows that the longer a person has been a Posyandu cadre, the better the skill level. Lawrence Green in Notoatmodjo (2007) states that one of the predisposing elements that influence a person's behavior is experience. This demonstrates that the health cadres serve the people who visit the Posyandu services for a longer period of time the longer they perform their tasks.

The results of the study indicate that most cadres have a secondary education. An individual's perspective, in turn, can have an impact on how they behave (Notoatmojo, 2017). The more knowledge someone has, the easier it will be for them to absorb information. On the other hand, having less education can make it difficult for someone to adopt new values.

The Effect of LBW Infants Care Training on Health Cadres

The results showed a significant effect of training on increasing knowledge by 14,30%, on practice by 15,45% and cadres' attitudes towards LBW care by 6,38%. One of the efforts to develop human resources, especially in terms of knowledge, skills, abilities and attitudes is through training.

According to Ariff et al. (2010), training is necessary to advance cadre knowledge and is conducted on a regular basis to improve cadres' capacities to deliver counseling and health services in the public sector, particularly with regard to maternal and neonatal health. The Home Based Neonatal Care Model was used to implement similar training in Gadchirolli, India. Health professionals are involved in identifying and treating babies who were born prematurely or with low birth weight. Cadres receive training to provide newborn monitoring and assistance as well as to spot preterm babies or LBW in their neighborhood. Within 10 years of applying the model, there was a decrease in the incidence of LBW births and neonatal morbidity (sepsis, birth asphyxia, hypothermia and drinking problems). The findings in this study are also in accordance with the results of research from Siti Munfarida, 2012, which reported a significant relationship between training and the level of knowledge and skills of Posyandu cadres (p < α 0.05),

For the activities' objectives to be successfully met, health cadres must be provided with the necessary knowledge and abilities to do their duties. Training is one of the actions done, especially to enhance the role of health cadres in the community. The study's conclusions demonstrated that

cadres were more motivated to teach LBW moms and families how to practice LBW care at home if they had a more favorable attitude toward the significance of ongoing care once the infant had gone home. A positive attitude can be formed by increasing the knowledge and skills of health cadres about LBW care. Several studies have reported that the involvement of health cadres in the implementation of health programs in the community can reduce morbidity and mortality of LBW in the community (Chan et al., 2016).

The Effect of LBW infants Care Training on LBW infants Care Practices for Health Cadres

The findings in the study indicate that the value of LBW infants care practices is lower in cadres with shorter service periods as well as cadres with lower education levels. The more positive the cadre's attitude towards the importance of continuous LBW care when the baby returns home, the higher the cadre's motivation to educate LBW mothers and families to practice LBW care at home. The value of LBW infants care practices is increasing in cadres unemployed.

According to the research's conclusions, health cadres' attitudes play a role in the occurrence of LBW infants care practice activities. Information on LBW infants care knowledge has minimal effect on modifying the behavior of cadres to practice LBW infants care for women or families who have LBW if they do not have a good attitude about LBW infants care. It takes more than just knowledge to change conduct. A health education program must do more than just provide knowledge to be successful. An essential quality that must be developed for behavior modification is a positive attitude. Attitude change is achieved not only by changing one's information or perception of an object, but by changing the underlying motivation. Attitude change is generally considered more difficult to carry out than knowledge change, but is more important because it is more directly related to future behavior (Gadsden et al., 2016). The research findings also show that unemployed health cadres can improve the ability of health cadres to practice LBW infants care. Health cadres unemployed have more time to participate in Posyandu activities

In this study, health cadres who have participated in MCH and nutrition program activities in their region can also help moms and families with low birth weight, including those who are born in the community and those who return from home. This is based on numerous community-based newborn care models. hospital while it was still in operation. Continuous care at home is thought to be a crucial part of enhancing the standard of healthcare, especially for patients who are more fragile, such LBW (Jefferies, 2014). The American Academy of Pediatrics (AAP) recommends that follow-up child care be carried out in a primary health care center or at home (Bang et al., 2005). Several

studies reported that family-based health was carried out in the form of health education programs starting from the hospital to returning home (Jefferies, 2014). Other studies have also shown that education and health assistance for parents carried out by people around the family in the community are very important and effective for increasing infant survival which is characterized by a decrease in the incidence of morbidity and mortality (Lassi et al., 2016).

Health cadres are extensions of the public health center in the community in carrying out the public health center program. Minister of Home Affairs Regulation No.19 of 2011, concerning Guidelines for the Integration of Basic Social Services in Integrated Service Posts (Posyandu) states that Posyandu and community health cadres are organized so that the community can obtain basic health services to accelerate the reduction of maternal and infant mortality. Health cadres are a support system that has an important role to support health in the community, and can contribute to interventions to improve infant survival (Amelia et al., 2021). According to one analysis, family, community, and clinic-based interventions can avert 41-72% of neonatal fatalities. An estimated 50% of preventative interventions are community-based and involve community health volunteers. In their study, Yam et al. (2010) found that home-based interventions, intense health education and counseling, multidisciplinary health services, and telephone follow-up care can all help maintain continuity of care for patients.

Increased efforts to mobilize the community need to be supported by government and non-government can be the key for sustainable interventions for LBW infants care in the community, one of which is the involvement of health cadres as formal cadres in the public health system (WHO, 2015) Another effort in the community movement is the involvement of the participation of existing organizations in the community. Women's community organizations such as the Family Welfare Development group (PKK) can play a role in promoting LBW care practices in the community. Several studies report the success of the participation of community organizations in maternal and infant health. A combined analysis of RCTs from Bangladesh, India, Nepal, and Pakistan, involving women's community support groups as part of a community health intervention, showed that women's involvement in the intervention led to a 30% reduction in neonatal mortality. The reduction in neonatal morbidity also occurs through the promotion of efforts and early initiation of breastfeeding and health-seeking behavior (RR=1.87; 95% CI= 1.36–2.58) (Bhutta, 2017). Another study, which was a 2013 systematic review, showed that the support of a group of women who practiced participatory learning and action, specifically identifying and prioritizing maternal health problems during pregnancy, childbirth, and the postpartum period had an impact on a 23% reduction in maternal mortality and a decrease in maternal mortality. neonatal by 20% (Prost et al., 2013).

The study's findings indicate that continued care including the closest support system to LBW mothers and their families is required to ensure the sustainability of their ability to carry out LBW care practices. Posyandu cadres, also known as health cadres, are proof of the community's involvement in shaping community health as a whole. To promote the health of mothers and newborns, health cadres must become volunteer health workers in the community. When it comes to reporting instances involving health issues in nearby public health center inhabitants, health cadres have strong social connections with the nursing staff. To equip health cadres for overseeing LBW infants cases and aiding LBW women and families, cross-sectoral collaboration between public health center and sub-districts is required. Community-based interventions are an important platform for improving health care delivery. Community-based care is an important component of sustainable care using community resources (Marston et al., 2013).

5. Conclusion

Health cadres who attend LBW infants care training are mostly ≥45 years old with elementary school education, unemployed and have served as cadres for more than 5 years. There was a significant increase in the value of knowledge, practices and attitudes of health cadres before and after the training. The increase in the average value of cadres ' knowledge about LBW infants care before and after the training intervention amounted to 1,450 (14.30%), LBW infants care practices amounted to 2,486 (15.45%), and attitudes towards LBW infants care amounted to 1,450 (6.38%). The final model of the study showed that the variable length of cadres, education status, employment status and post-training attitudes are factors that significantly affect the value of LBW infants care practices in health cadres. The lower the (old) experience of the cadre and cadre's education, the lower the value of LBW care practices, while the more positive the cadre's attitude towards LBW infants care, the better the value of LBW care practices. In non-working cadres, the value of LBW infants care practices will also increase after other controls. Based on the four variables, the biggest influence is the employment Status of cadres. Based on the objectives set, the training provides the effect of improving the knowledge, practices and attitudes of health cadres towards LBW care.

Limitation and study forward

The limitation of this study is that the pandemic situation causes the measurement of LBW infants care practices to be carried out online. Some cadres have difficulty practicing properly, especially Kangaroo Mother Care (KMC), which is a new thing for health cadres. Providing videos on how to conduct KMC is one solution to overcome the problem of limited practice of KMC directly. The results of this study for the future are expected to contribute to the implementation of health

programs in the community in reducing the morbidity and mortality of LBW in the community by involving health cadres to achieve these goals.

Acknowledgement

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ACUTE TOXICITY TEST (LETHAL DOSE$_{50}$) OF ETHANOL EXTRACT OF FRUIT AND SEEDS OF BITTER GOURD (*Momordica charantia Linn*) ON MALEMICE *Mus musculus*

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Abstract

The purpose of this study was to show that bitter melon fruit and seeds were safefor consumption by testing the toxicity by determining the LD$_{50}$ value of the ethanol extract of bitter melon fruit and seeds using the Thompson-Weil method and their effect on animal behavior. The test animals used were 23 male white mice (*Mus musculus*) with an average weight of 25 grams and divided into 5 groups.Giving a solution of bitter melon fruit and seed extract orally with various doses: 100 mg/kgbw, 50 mg/kgbw, 25 mg/kgbw and 12.5 mg/kgbw and administration of steriledistilled water as a control group. Mice were observed individually for 1 hour, 2 hours, 4 hours and 24 hours after administration of the extract by looking at the number of dead animals and the visible toxic symptoms. After that, it was observed for 2-14 days after treatment. The results of the research on bitter melon extract found that 1 mice died at a dose of 100 mg/kgbw (20%), while at other doses there were no mice that died. The results of the research on bitter melon seed extract were 1 mice died at a dose of 100 mg/kgbw (20%), at a dose of 50 mg/kgbw, 2 mice died (40%), and at a dose of 12.5 mg/kgbw, mice died much 1 mice (20%), while at other doses no mice died. This indicates that the extract of bitter melon fruit and seeds is included in the non-toxic category.The administration of the extract test material did not cause toxic symptoms in which all rats had normal activities. So that bitter melon and bitter melon seeds are safe for consumption.
Key words : Momordica charantia,_ Extract, Toxicity_ Mus musculus, Thompson-Weil

1. Introduction

Momordica charantia or bitter melon has been widely used by humans as medicinal plants. African people use bitter melon one of them as an antidiabetic. Bitter gourd extracts, especially insulinmimetics and polyphenols, have the potential to lower blood glucose (B Joseph, D Jini. 2013). Toxicity is a term in toxicology which is defined as the ability of a compound to causedamage or injury. The term toxicity is a qualitative term that occurs or does not occur depending on the amount of toxic compound elements that are absorbed. Acute toxicity test is part of a preclinical test designed to measure the toxic effect ofa compound. Acute toxicity refers to the toxic effects that occur after oral administration of a single dose within 24 hours. The median lethal dose or LD50 is a statistical measure after a single dose that is often used to express toxic dose level as quantitative data. While clinical symptoms, physiological symptoms and

toxicmechanisms as qualitative data (Jenova, 2009). The process of destruction only occurs when the target organ has accumulated in sufficient quantities of the toxic part or its metabolites, so this does not mean that the highest accumulation of the toxic agent is in the target organ, but it could also be elsewhere. Furthermore, for most of the toxic compounds at high concentrations in the body will cause more damage. The concentration of toxic compounds in the body is the amount of poison exposed, then related to the rate of absorption, the amount absorbed, and relatedto the distribution, metabolism and excretion of these toxic compounds (Donatus, I.A., 2005). The Thompson-Weil method using the LD_{50} calculation list is a method that is often used in determining the level of toxicity of a compound. This method was chosen because it has a fairly high level of confidence, accurate results, and does not require a large number of experimental animals (Mustapa, 2018).

2. Literature review and hypotheses development

Abundant pre-clinical studies have documented the anti-diabetic and hypoglycemic effects of *M. charantia* through various postulated mechanisms. However, data on clinical trials with human subjects are limited and flawed by poor study design and low statistical power. Most acute toxicity studies are designed to determine the $LD_{50}$of a drug. The LD_{50} of a drug is defined as a single dose of a substance that is statistically estimated to kill 50% of experimental animals (Radji and Harmita, 2008). This test is carried out by giving the chemical being tested once or several times within 24 hours, then observed for 14 days (Hendriani, 2007). shortly after administration with a certain dose. At least four levels of dosage are recommendedin acute toxicity testing, these doses range from a low dose that is not or nearlylethal to all test animals to the highest dose that can be tolerated kill all or almost allof the test animals (Fadli, 2015). The purpose of the acute toxicity test of atraditional drug is to determine the acute toxicity potential (LD_{50}) to assess variousclinical symptoms, the spectrum of toxic effects, and the mechanism of death(Angelina et al, 2008). For the acute toxicity test of traditional medicines, it isnecessary to carry out at least one rodent species, namely mice or rats (Lu, 1995).The initial procedure for determining the acute toxicity of a new compound is toestablish a range of doses to be administered to test animals. The recommendeddose is at least four dose levels, ranging from the lowest dose that has not yet giventhe death effect of all test animals

to the highest dose that can kill all or almost all ofthe test animals (Donatus, 1998). The principle of this toxicity test is that a testsubstance is administered orally using a probe with a 3 inch intubation needle with aball-tipped tip in predetermined doses in several groups of experimental animals.Furthermore, observation for 14 days after administration to see the toxic effectsand death. The final result will be LD_{50} (Barile, 2005: OECD, 1981). Basically, the LD_{50}test value that must be reported in addition to the number of animals that died,must also mention the duration of the observation. If the observations were madewithin 24 hours after treatment, then the result was written "LD_{50} 24 hours".However, as development progresses, this is no longer considered, because ingeneral the LD_{50} test is carried out in the first 24 hours, so writing the test results"LD_{50}" alone is sufficient to represent the LD_{50} test observed in 24 hours. The writingof the results must be accompanied by the duration of the observation (Loomis, 1987). Philippus Aureolus Theophratus Bombast von Hohenheim (1493-1541) stated that everything that is efficacious as medicine is poison, only the dose makes it non- toxic (Wirasuta, 2016). Toxicity tests on *Artemia salina Leach* larvae showed the result that administration of bitter melon extract showed potential acute toxicity (Cahyadi Robby, 2009). The results of other studies related to bitter melon plants show that bitter melon leaf extract is toxic with an LC_{50} value of 200.2 ppm. (Mangirang F, 2019). The results of research conducted by Temarwut FF, in 2022, on shrimp larvae showed that the aqueous extract of bitter gourd has high toxicity with an LC_{50} value of 0.82 ppm. Test results on seeds of similar plants show that dumbaya (*Momordica cochinchinensis*) seed extract in *Mus musculus* causes liver cell damage and is unsafe when used in the long term or for 14 days (Mampa AS. 2017). The doseof bitter melon extract (EBP) 250 mg/kg BW, EBP given to experimental rats is still considered safe for liver cells and testicular organs. As for the kidneys up to a dose ofEBP 1000mg/kg BW, EBP is still relatively safe. EBP doses of 500, 750, and 1000 mg/kg BW were considered unsafe for liver cells and testicular organs. As for the kidneys up to a dose of EBP 1000mg/kg BW, EBP is still relatively safe. The doses of EBP 500, 750, and 1000 mg/kg BW, which were given were considered unsafe for liver cells and testicular organs. The EBP given is still considered safe for liver cells and testicular organs. As for the kidneys up to a dose of EBP 1000mg/kg BW, EBP is still relatively safe. EBP doses of 500, 750, and 1000 mg/kg BW, are considered unsafe for liver cells and testicular organs (Adimunca, Cornelis, 2000)

3. Research methodology

Young bitter melon fruit and seeds obtained from the Traditional Market / Pasar Rawu Serang City. It is dried and blended to get powder/flour.

Extract Making

The extraction method used is the maceration method in which 400 grams of simplicia seeds and bitter melon powder are put into an inert or glass topless container and then 1000 mL of ethanol solvent is added. Stir using a stirrer and occasionally shaken. Let stand for 1-2 days after that, separated residue and filtrate using filter paper. The obtained filtrate was collected and concentrated. Furthermore,evaporation is carried out by means of evaporation to separate the required substance from the solvent.

Test Animal Setup

Experimental animals (Mus musculus mice) with a weight range of 23-28 g were acclimated for 10 days in order to adapt to the environment and during the adaptation process the mice were fed corn, carrots and water from cucumbers. Micewere also fasted to eat for 8 hours but were still given water before treatment.

Dosing

The dose used was based on research by Dwi Ari Nugrahani and Vivi Sofia (2011) on the ethanol extract of bitter melon fruit and seeds given orally to experimental animals, namely the highest dose: 8 g/kg BW, it was found that it had no significant effect on the SGPT-SGOT value. The doses used in this study were as follows:

Extract dilution

Dilution	Dose 1 : 100 mg	Dose 2 : 50 mg	Dose 3 : 25 mg	Dose 4 : 12,5 mg
Extract	4000 mg	2 ml (Dose 1)	1 ml (Dose 1)	1 ml (Dose 1)
DMSO (solvent)	1 ml	-	-	-
Aquabidest steril	9 ml	2 ml	3 ml	7 ml
Final volume	10 ml	4	4	8

Test Animal Grouping

As many as 23 mice were randomly divided into five treatment groups, namely one control group that was given aquadest and four treatment groups that were given a dose of extract so that each group of test animals consisted of 5 male mice.

Acute Toxicity Test (LD$_{50}$)

In the LD$_{50}$ acute toxicity test, each treatment group was given extracts of bitter melon fruit and seeds which had been dissolved into distilled water orally using a probe with different dose levels, namely 4 dose level groups and 1 control group.

4. Result and discussions

The extraction process does not use hot methods such as reflux or cold heat such as soxhlet because it is feared that there are groups of compounds that are not resistant to heating such as flavonoids which are easily oxidized at high temperatures (Koirewoa, 2012). According to Sundari (2010) the possibility of damage to chemical compounds contained in a natural material can be avoided because it is not accompanied by heat.

In this study, the experimental animal used was male white mice (*Mus musculus*). Mice were chosen because of their small size, easy maintenance and care. Male mice are not affected by the estrus cycle which can cause unstable hormone activity which will later affect the observation process (Lu, 1995). In this test, the administration is done orally using a probe. This route is adapted to people's habits in consuming bitter melon.

After the intervention of bitter melon extract in experimental animals with a predetermined dose orally, the results obtained:

LD$_{50}$ Test Results of Pare Fruit Extract(Dosage 0.5 g/Kg Bw)

No	Dosage	M1	M2	M3	M4	M5	% Death	Description
1	100mg/25 g	-	-	-	-	-	0	
2	50mg/25 g	-	+	-	-	-	20	
3	25mg/25 g	-	-	-	-	-	0	*Non-toksic*

No	Dosage						% Death	Description
4	12,5mg/25 g	-	-	-	-	-	0	
5	Control	-	-	-	-	-	0	

In the table above, it can be seen that at a dose of 50 mg/kg bw, one mice died 24 hours after treatment, although their physical activity seemed normal. This is due tointerference from the dominant mice in the group.

After treatment of bitter melon extract test material, all mice had normal activities and did not show any toxic symptoms. The results of the toxicity test were obtained,namely in group I after treatment of bitter melon extract there were no deaths and mice were active as usual. From these results it can be concluded that a dose of 100 mg/kgbw is not toxic or does not cause toxic symptoms.

The results of the intervention of bitter melon seed extract in experimental animalswith doses that have been determined orally, the results obtained are:

LD_{50} Test Results of Pare Seed Extract(Dosage 0.5 g/Kg Bw)

No	Dosage	M1	M2	M3	M4	M5	% Death	Description
1	100mg/25 g	-	-	-	-	-	0	
2	50mg/25 g	-	-	-	-	+	20	
3	25mg/25 g	-	-	-	+	+	40	Non-toksic
4	12,5mg/25 g	-	-	-	-	+	20	
5	Control	-	-	-	-	-	0	

According to Marlinda et al (2012), the active compounds contained in medicinal plants are almost always toxic when given in high doses. All poisonings occur due to reactions between toxic substances and receptors in the body (Katzung, 2002). Oral administration of ethanol extract of fruit and bitter melon seeds causes the active substance contained in the extract to be absorbed in the digestive tract and then undergo a process of distribution and metabolism.

Death of mice at a dose of 50 mg/kg bw after treatment of bitter melon seed extract test material within 24 hours. At a dose of 25 mg/kg bw there were mice that died after being given the extract. This occurs because the mice experience shortness of breath due to choking. At a dose of 12.5 mg/kg bw, there were mice that dead onday 6. In general, all mice were active as usual (normal) and no toxic

symptoms were seen.Factors that affect the LD$_{50}$ value include species, strains, gender, age, weight, gender, nutritional health, and stomach contents of experimental animals. Administration technique (time of administration, ambient temperature, humidity and air circulation) and human error

5. Conclusion

The results of the research on bitter melon extract found that 1 mice died at a dose of 100 mg/kgbw (20%), while at other doses there were no mice that died. The results of the research on bitter melon seed extract found that 1 mice died at a dose of 100 mg/kg body weight (20%), at a dose of 50 mg/kg body weight 2 mice died (40%), and at a dose of 12.5 mg/kg body weight it was found 1 mice died (20%),while at other doses no mice died. This indicates that the extract of bitter melon fruitand seeds is included in the non-toxic category. The treatment of the extract test material did not cause toxic symptoms in which all mice had normal activities. So that the fruit and seeds of bitter gourd are safe for consumption.

Limitation and study forward

Further research is needed on the toxicity test of bitter melon fruit and seed extracton white rats of the Wistar strain so that the dose used can be higher.
It is necessary to perform SGOT-PT examination and histological examination of theliver tissue

Acknowledgement

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THE RELATIONSHIP OF KNOWLEDGE WITH THE ATTITUDE OF YOUTH ABOUT PHYSICAL ACTIVITY TO PREVENT DM TYPE II

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Abstract

Purpose: This study aimed to determine the relationship between knowledge of adolescent attitudes about physical activity towards the prevention of type II DM.
Methodology: The research design used correlation analysis with a cross-sectional approach, and the research population was all SMAN 3 Palangka Raya students. The number of samples as many as 44 people with a simple random sampling technique. The research instrument used a knowledge and attitude questionnaire, and the data that had been collected were analyzed using the chi-square test.
Findings: Adolescents' knowledge of physical activity towards the prevention of type II DM was essentially good (70.5%), and student attitudes were mostly good (81.8%). Based on Chi Square's analysis, there is a meaningful relationship between knowledge and attitudes about physical activity towards the prevention of type II DM (ρ value < 0.0 5)
Limitation: The extent of the study using instruments is that there is a possibility that the answers given by respondents do not represent the actual conditions.
Contribution: This research is expected to contribute to the teachers at SMAN 3 schools regarding students' knowledge and attitude the knowledge and attitudes of students about the importance of physical activity in the prevention of type II DM.

Keywords: Knowledge; Attitude; Diabetes Mellitus type II; Physical Activity

1. Introduction

Diabetes can lead to premature death and is a significant trigger for blindness, heart disease and kidney failure worldwide (Kementerian Kesehatan RI., 2020). A total of 463 million people aged 20-79 years had diabetes in 2019, or 9.3% of the total population of the same age (IDF, 2021). By gender, 9% of women and 9.65% of men suffer from DM. The prevalence of DM will increase in 2030, it will be 578 million, and in 2045 it will be 700 million. The risk factors for diabetes mellitus (DM) type II are more caused by lifestyle and are included modifiable factors. Obesity, lack of activity, dyslipidemia, history of cardiovascular disease, hypertension and dietary imbalances (P2PTM Kemenkes RI, n.d.). Lifestyle modification is closely related to risk factors for non-communicable diseases (NCDs), including DM, dietary regulation, physical activity, pharmacological therapy and family support. Physical activity

should be done in one day for at least 30 minutes or one week for 150 minutes with moderate intensity (50-70% *maximum heart rate*). The ease of transportation modes and sedentary activities (such as playing on cell phones and watching TV) affect teenagers' lack of physical activity. There is data on the national average proportion of the population with a level of physical activity less than ten years of age, which increased by 33.5 per cent compared to 2013, showing a higher sedentary lifestyle (R.I, 2019).

The knowledge possessed by the individual will affect his behaviour because it will make him understand what is needed and be responsible for what he needs. Behaviour starts from a knowledge (cognitive) which means that he knows the material first; eventually, that knowledge will create an attitude and action (Karyoso, 1999). Knowledge about DM disease will shape behavior or an action to be taken to prevent DM (Effendi & Makhfudli, 2009 in (Silalahi, 2019), so that knowledge about physical activity for the prevention of type II DM is very important for adolescents considering adolescent behavior from an early age will affect level of health in old age. A preliminary study at SMAN 3 Palangka Raya found that 6 out of 10 students did not know about the risk factors for type 2 DM and said they rarely exercised.

2. Literature review and hypotheses development

A study from (Silalahi, 2019) on 70 students and students of Muhammadiyah High School Surabaya found that the knowledge of students and students was related to efforts to prevent Diabetes Mellitus type 2 (*p-value* $0.0001 < \alpha = 0.1$ so that $p < \alpha$), with the majority of respondents being women (59%) and the age of the most respondents in the range of 15-19 years (96%). This type of research is quantitative with cross-sectional essay d. The study by (Natalansyah et al., 2019) with the purpose of the study was to determine the relationship between obesity and increased blood sugar levels when in adolescents at SMAN 2 Palangka Raya, and it was found that there was a significant relationship between obesity and an increase in blood sugar levels during (p-value 0.020, $\alpha < 0.05$). The study by (Ramli et al., 2021) with a total sample of 394 adolescents with an age range of 15-19 years obtained the results of the highest respondent knowledge level was in the good category (53.8%), the attitude of most respondents was in the good category (72.6%), while DM type II prevention practices were also in the good category (76.4%). Data were obtained using questionnaires to measure the level of knowledge, attitudes and behaviours about diabetes mellitus, risk factors and prevention of diabetes mellitus. Statistical data analysis using descriptive analysis.

Study by (Lutfiawati, 2021) with the research objectives is to find out the relationship between the level of dietary knowledge and risk factors DM in adolescents at SMAN 14 Tangerang regency obtained results of a significant relationship between the level of dietary knowledge and dm risk factors (p-value 0.000 <0.05). Design quantitative research with descriptive method. The study population was adolescents aged 16-17 years, and the sampling technique used purposive sampling with a total sample of 72 respondents. The instrument used is in the form of a questionnaire sheet containing several questions. A study by (Ramadhani et al., 2022) in 1479 women aged 20-25 years who visited Posbindu, 23.73% had DM, and 21.17 had less physical activity category. In the multivariate analysis, it was found that there was a relationship between physical activity and DM after being controlled with the perancu variable, namely obesity, and less vegetable fruit consumption (AOR 2.7 95% CI: 1.97-3.72), which is as fast aspeople with less physical activity have a 2.7 times greater chance of having DM after being adjusted to the role variable, namely obesity and low consumption of vegetables and fruits. It can be implied that there is a relationship between physical activity and DM disease; physical activity can prevent DM.

The study by (Veridiana & Nurjana, 2019), aimed to examine the relationship between consumption patterns and physical activity with the incidence of DM in Indonesia based on Riskesdas data in 2013. The total sample was 722,329 people aged over 15 years. The study's results found the habit of consuming processed foods (biscuits) and low physical activity as risk factors for DM. Individuals with the tradition of eating biscuits have a 1,198-time chance of suffering from DM compared to people who do not have the habit. Physical activity has a vital risk factor for the incidence of DM in Indonesia. Those with mild and moderate physical activity habits had a 3,198 and 1,933 times chance of developing DM, respectively, compared to those with individuals with had a pattern of strenuous physical activity. Studies by (Alza et al., 2020) in 24 people with type 2 DM obtained a picture of physical activity levels in respondents suffering from DM 66.7% with a group of mild physical activity, and 33.3% with moderate physical activity levels. Research is descriptive with a cross-sectional design. The sampling technique in this study was total sampling. Data collection for physical activity variables was carried out using questionnaires included in the Physical Activity Level. The conclusion obtained was a picture of the fasting blood glucose levels of respondents having controlled and uncontrolled fasting blood glucose levels with light physical activity had uncontrolled fasting blood sugar levels. In contrast, respondents with moderate physical

activity had held fasting blood sugar levels. This shows that the higher a person's movement, the more controlled his blood glucose levels are.

Study by (Qifti et al., 2020) with descriptive research with a cross-sectional approach. The research sample was 171 high school students in Padang City. A total of 48% the age 16 years, 33.3% the age 17 years, 16.4% are aged 15 years, and 0.6% are 19 years. As many 64.3% with female gender and 35.7% male. The body mass index was obtained by 52.5% with BMI ≥ 25 Kg/m² and 47.4% with BMI < 25 Kg/m². Students with a family history of DM sufferers are 64.9%, and have no family history of 35.1%. The study concludes that adolescents with risk factors should run a blood glucose check and be given health education to cause self-awareness in preventive efforts as early as possible. Study by (Widiyoga et al., 2020) on 34 dm type II patients n wounds at Griya Bromo Malang Clinic who participated in the prolanis program obtained results that there was a relationship between knowledge level and physical activity regulation (p = 0.006 < α = 0.01). Type quantitative research with cross-sectional design. The study by (Almutairi et al., 2022) reported factors associated with physical activity before and during coronavirus disease 2019 (COVID-19) among high school students in Jeddah, KSA. Research methods with cross-sectional online surveys on 1. 500 high school students aged 11 to 15. Characteristics of sociodemography; knowledge, attitudes, and behaviors of physical activity; and information about the impact of COVID-19 on physical activity were collected. Physical activity knowledge, attitudes, and behaviors were compared before and during COVID-19 restrictions and between genders. Regression analysis is performed to assess the determinants of physical activity. The study's results showed that women students were significantly more likely to report physical activity knowledge better than men (p <0.001). However, men are considerably more likely to participate in physical activity than women (p <0.001). About 60% of students reported their physical activity decreased during COVID-19 isolation. Most students do not participate in the recommended daily physical activity levels during covid-19 lockdowns and school closures.

Study by (Ryninks et al., 2015) with the aim investigating young people's attitudes, and understanding physical activity in glycemic control in Type 1 Diabetes Mellitus. The research method by dividing the focus group by age 11–14 and 15–16 years was carried out on twelve adolescents with Type 1 Diabetes from a more extensive study investigating physical activity and fitness. Qualitative analysis of focus group data was carried out using Interpretive Phenomenological Analysis. Study's results obtained four themes that can be identified i.e.,

use of exercise, knowledge, and understanding, information and training, and "you can do anything". Young people feel that exercising helps them manage their diabetes and has psychological and physical impacts on their bodies. They reported a lack of knowledge and understanding of diabetes among school staff and other young people. The incredible feeling of young people is that although diabetes impacts their lives, physical activity can occur as usual with preparation, physical activity can take place as usual. The study concludes that while young people are aware of exercise's material and psychological benefits in managing their diabetes, they have difficulties in school. Professional support and discussions with young people, providing tailored strategies for managing Type 1 Diabetes while exercising, is much needed.

3. Research methodology

This type of research is correlational with a cross-sectional approach. The sampling technique in this study was simple random sampling. The instruments used to collect this research data were demographic, knowledge data questionnaires, and attitude questionnaires about physical activity prevention of DM type 2. The knowledge questionnaire about the risk factors of DM type 2 physical activity sourced from (Aethelstone, 2017) in this questionnaire amounted to 10 statements, of which there were 5 negative statements and 5 positive statements. While the attitude questionnaire on risk factors of DM type 2 physical activity was adopted from (Yunanto, 2017), which amounted to 14 statements, 7 positive and 7 negative, the measurement of questionnaire statements used a Likert scale. Data processing using computer applications.

4. Results and discussions

The respondents' characteristic data comprised 15-18 years (90.9%), the majority of women (68.2%). The majority of respondents did not know about their family history, whether they had a history of DM or not, which amounted to 43.2%. Respondents who knew of a history of DM in their family were 22.7%, and respondents who stated that there was no history of DM in their family were 34.1%. This is the same as the results of a study by (Ramli et al., 2021); the majority of respondents are 15 years old (32.5%), the dominant gender is female (59.9%); study by Qifti, Malini & Yetti (2020) of a total sample of the majority (48%) aged 16 years, 33.3% aged 17 years. Most of the respondents (64.3%) were female. Meanwhile, the

characteristics of students with a family history of DM 64.9%, and do not have a family history, which is 35.1%. (Isnaini & Ratnasari, 2018) stated that individuals with a family history of DM would be 10,938 times more likely to suffer from type 2 DM due to heredity than individuals who do not have a family history. In this case, close family such as mothers, fathers, and siblings.

Study results were obtained as a large part of respondents who knew knowledge with good categories total 70.5%, and respondents who had less category knowledge 6.8%. Many respondents had a good attitude, 81.8%, and a bad attitude 18.2%. This result is the same as the research conducted by (Ramli et al., 2021), namely the highest level of knowledge of respondents is in the excellent category (53.8%) as well as the attitude of most respondents is in the superb type (72.6%). The study by Almutairi, Burns & Portsmouth (2022) found that female students were significantly more likely to report knowledge of better physical activity compared to men (p <0.001). Nevertheless, men substantially participate in physical activity compared to women (p <0.001). Individuals who have a level of knowledge at the level of know (know) means that they can remember again a material that has previously been studied or stimulation that has been obtained before until this level of knowledge is the lowest, b er with individuals with a level of knowledge at the application level (application) whichis a level of ability to use or apply material that has been obtained in one particular condition in real life (Notoadmodjo, 2010).

The results of the study were obtained by the majority of respondents with good knowledge and attitudes, amounting to 90.3%. Respondents with good knowledge and a lack of attitude amounted to 9.7%; respondents with sufficient knowledge and a good attitude amounted to 70.0%. Respondents with sufficient expertise and lack of attitude amounted to 30.0%. Respondents with insufficient knowledge but good attitudes amounted to 33.3%. Respondents who had little knowledge and attitudes were also 66.7%. Statistical results test knowledge variables with attitude show data *P-value* = 0.028, meaning that there is a relationship between knowledge and attitude about physical activity to the prevention of DM type 2. The results of this study are the same as the results of (Silalahi, 2019) research, that there is a meaningful relationship between knowledge about DM type 2 and preventive measures of DM type 2 in students of Muhammadiyah 7 Surabaya High School (p-value 0.0001<α= 0.1; p<α). Similarly, the results of a study by Widiyoga, Saichudin & Andiana (2020) which obtained results there was a relationship between the level of knowledge and the

regulation of physical activity (p = 0.006 < α = 0.01) in non-wound type 2 DM patients at the Griya Bromo Malang Clinic.

5. Conclusion

The results of this study concluded that the majority of respondents aged 15-18 years (90.9%), the majority were female (68.2%), the majority of respondents did not know about their family history (whether they had a history of DM or vice versa) which amounted to 43.2%. Respondents who knew of a history of DM in their family were 22.7%. The study results were obtained as a large part of respondents had knowledge of good categories with a total of 70.5%, and respondents who had less category knowledge by 6.8%. The majority of respondents had a good attitude 81.8%, and a bad attitude of 18.2%. Based on the statistical knowledge test with an attitude showing data *P-value* = 0.028, there is a relationship between knowledge and attitude about physical activity to the prevention of type 2 DM. The age of adolescence can determine how their health condition will be old, and the earlier the adolescent knows the risks that can be caused by an unhealthy lifestyle, the greater the chances of enjoying the results with optimal health in old age.

6. Limitation and study forward

It is possible that the respondent in answering the questionnaire did not match the actual conditions. It is expected that the number of respondents, and research variables can be increased again.

7. Acknowledgement

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STUNTING PREVENTION BEHAVIOR BASED ON DYNAMIC SELF DETERMINATION OF SELF CARE AND POSITIVE DEVIANCE MODELS

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Abstract

Purpose: This study describes the dynamic self-determination of self-care (SDSC) and positive deviance (PD) models in changing stunting prevention behavior

Methodology: The study was a quasi-experimental design with a sample of 90 mothers who had children aged 7-36 months taken by purposive sampling. 30 mothers were given SDSC intervention, 30 were given PD intervention, and the other 30 were in the control group. This study conducted from July – October 2019. The variables studied were feeding behaviors, parenting behavior, personal hygiene behavior, environmental cleanliness and air sanitation, and health service seeking behavior. Paired t-test and Multivariate Analysis of Variance (MANOVA) test was used

Findings: The results of the paired t-test in the PD group shows that feeding behaviour has a score of 0.015, parenting behaviour shows a score of 0.029, personal hygiene behaviour has score of 0.018, while environmental cleanliness and water sanitation show the score of 0.000, and Health service seeking behavior has a score of 0.000. In the SDSC group, the feeding behavior shows a score of 0.013, parenting behaviour has a score of 0.040, personal hygiene behaviour has a score of 0.231, environmental hygiene and water sanitation have a score of 0.000, and health service seeking behavior shows a score of 0.000. The results of the Manova test showed that $p = 0.002$, simultaneously, and there was an effect of PD and SDSC on stunting prevention behavior

Limitation: this study did not compare with the neutral group which was given the standard intervention

Contribution: The results of this study can be used as a reference in the handling of stunting in the community, especially areas that are the locus of stunting

Keywords: Dynamic Self-determination of Self-care, Positive Deviance, Prevention Behavior, Stunting

1. Introduction

One of the main problems in handling stunting in Indonesia is it only handles the children, but there has been no serious effort to change the mother's behaviour in stunting prevention, so that the risk of stunting will remain (Beal et al., 2018). Changes in mother's behaviour depend on the willingness of the mother and the support and commitment of all related stakeholders to prevent stunting. Behaviour is a fundamental thing that a mother must possess in order to become a habit that is applied in her daily life. Health education, giving additional food to infants, posyandu services are considered to be less effective to prevent stunting due to the fact that often mothers who have been given health education and understanding about stunting do not apply them in daily life, so new strategies are needed and should be originated from the mothers themselves and local wisdom in stunting prevention(Perkins et al., 2017) (Laksono et al., 2019).

The Dynamic Self Determination of Self Care assisting model is a model where families are encouraged to actively manage their health care needs independently according to their abilities. A model of assistance to families is by providing education, support, care, information, and planning health needs. Respondents had been given the widest opportunity to develop their own plans for what changes would be made regarding stunting prevention, thus respondents were more easily apply them in daily life so that the behavior that has changed would be relatively lasting than behavior caused by the intervention of others. Respondents were constantly encouraged and motivated to dynamically determine their care, meaning that the greatest motivation of patient self-care comes from within themselves. Stunting prevention behaviors that has changed later are slowly expected to become a habit in daily life (Rice, 1999).

Assistance with positive deviance models is an innovation in efforts to eradicate malnutrition in the community. This approach identifies the target positive deviance (under nutrition toddlers) and non-positive deviance (normal undernourished toddlers) to be carried out. While the process of new knowledge transformation to the target of positive deviance is carried out in the form of face-to-face counseling directly with mothers of toddlers or caregivers, the process of transferring new knowledge between the two families is carried out by assistants / cadres who have been trained (Brian Keeley, 2019). Positive deviants have identified positive and beneficial behaviours for child development in terms of feeding behaviour, parenting behaviour, personal hygiene behaviour, environmental hygiene behaviour and water sanitation and health care seeking behaviour (Palupi et al., 2019). Favourable habits

that are based on local culture and are very possible to be applied have been collected by researchers then be transferred to respondents in non-positive deviance group (Bullen, 2011).

Positive Deviants classically share their experiences of health behaviors that are applied daily to the respondents, where their daily behavior turns out to support the growth and development of their children even though they do not have adequate knowledge about good health behaviors and not from families with sufficient financial capacity(Roche et al., 2017a)

2. Literature review and hypotheses development

Study conducted by (Chek et al., 2022) The positive deviance approach helps to recognize the common feeding practices and the local wisdom unique to the urban poor population. After a positive deviance study in 2000 found that successful pregnancies had increased consumption of meat and vegetables, daytime rest, and antenatal care; less second-hand smoke exposure; and symptoms of no urinary tract infection (Ahrari et al., 2006). Based on study (Kestler-Peleg et al., 2015), the findings supported the structure of the Breastfeeding Motivation Scale according to self-determination theory. Nutrition education by applying the self-determination theory can increase support for autonomy (Thaha et al., 2021). Self-determination theory (SDT)-a theoretical perspective-and motivational interviewing (MI)-a set of clinical techniques-have both been used in health behaviour intervention contexts (Patrick & Williams, 2012). Positive Deviance methodology has much to offer as a powerful means of changing behaviours and improving health and nutrition status for mothers, infants, children, and families (Schooley & Morales, 2007). The PD/Hearth interventions support mothers to improve infant and young children's nutrition practices and reduce underweight (Roche et al., 2017b). There has been a wide application of Self-Determination Theory (SDT) to understanding motivation and regulation of eating and weight (Zimmer-Gembeck et al., 2019). Positive deviant mothers (those with children with a HAZ > 0) largely exhibited optimal infant and young child feeding practices explained by maternal information seeking behaviours; mothers acknowledging the importance of maternal health; and social support (D'Alimonte et al., 2016).

3. Research methodology

This research was an experimental research design with pre and post-test with control group design. The study was conducted over 4 months from July – October 2019

Population and sample: Ninety mothers who have children aged 7-36 months in Wonorejo village Singosari Malang were recruited using purposive sampling technique in June 2019. The

inclusion criteria for samples were as follows: 1) Mothers who have children aged 7-36 months, 2) Not a single parent. Exclusion criteria for sample were respondents who did not follow the intervention given. Sample divided into 3 groups by random allocation, 30 respondents as treatment group 1, 30 respondents as treatment group 2, and 30 others as control group. The treatment for group-1 was given assistance for stunting prevention of the dynamic self-determination of self-care model for 1 month continuously. The treatment group-2 was given assistance for stunting prevention of the positive deviance model for 1 month continuously. Mother's behaviour about stunting prevention is taken before and after assistance. Mother's behaviour is assessed in terms of feeding behaviour, parenting behaviour, personal hygiene behaviour, environmental hygiene behaviour and water sanitation, health care seeking behaviour. Questionnaire had been tested for the validity and reliability which showed that the instrument was valid and reliable, it was used to measure the mother behaviour in stunting prevention.

The criteria of mother's behaviour in stunting prevention as follows:

a. Feeding Behaviour, good: score 52-66, fair: score 37-51, bad: score 22-36
b. Parenting behaviour, good: score 59-75, fair: score 42-58, bad: score 25-41
c. Personal hygiene behaviour, good: score 10-12, fair: score 7-9, bad: score 4-6
d. Behaviour of environmental hygiene and water sanitation good: score 10-12, fair: score 7-9, bad: score 4-6
e. Health seeking behaviour good: score 38-48, fair: score 27-37, bad: score 16-26

Statistical analysis: Normality test data was done before determining statistical test using Spahiro-Wilk test. To analyze the difference of mother behaviour before and after test, we used Paired T test. *Analysis of Varians* (*MANOVA*) was used to analyze the difference of mother behaviour among groups. The level of significance was p<0.

4. Result and Discussion

1) Characteristic of Respondents

This study shows some of characteristics observed from respondent as follow:

Table 1: Characteristics of Treatment and Control Group

Subject Characteristic	Self-Dynamic group		Positive group	Deviance	Control group	
	(n=30)	%	(n=30)	%	(n=30)	%
Age (year)						
15 – 25	18	60	20	67	21	80
26 – 35	12	40	10	33	9	20
Total	30	100	30	100	30	100
Level of Education						
Elementary	10	33	14	47	11	37
Junior high school	13	44	10	33	11	37
Senior high school	7	23	6	20	6	20
College					2	6
Total	30	100	30	100	30	100
Occupation						
Jobless	16	54	19	64	15	50
Private sector	4	13	7	23	7	23
Enterpreneur	10	33	4	13	8	27
Total	30	100	30	100	30	100
Family income (Rp)						
<2.000.000	5	17	5	17	4	13
2.000.000-5.000.000	20	66	18	60	20	67
5.000.000-10.000.000	5	17	7	23	6	20
Total	30	100	30	100	30	100

Table 2. Stunting Prevention Behaviour (Pre-test and Post-test) In the Dynamic Self Determination of Self Care Group

Sub Variable	Self-Dynamic group		Delta (Δ)	p value
	Pre Test Mean ±SD	**Post Test Mean± SD**		
Feeding behaviour	137,00±29,602	116,93± 7,440	20,07	0,013
Parenting behaviour	86,73± 17,169	77,47± 4,688	9,27	0,040
Personal hygiene behaviour	90,80± 20,481	84,87± 6,058	5,93	0,231
Environment hygiene and water sanitation behaviour	27,00± 4,071	20,20± 0,561	6,80	0,000
Seeking health service behaviour	94,60± 0,910	96,20± 0,862	1,60	0,000

Table 3. Stunting Prevention Behaviour (pre-test and post-test) in the *Positive Deviance* Group

Sub Variable	Positive deviance group		Delta (Δ)	p value
	Pre Test Mean ±SD	Post Test Mean± SD		
Feeding behaviour	135,27±28,14	116,27± 6,58	19,00	0,015
Parenting behaviour	85,93± 14,67	77,47± 4,68	8,47	0,029
Personal hygiene behaviour	91,67± 19,29	84,47± 6,08	7,20	0,118
Environment hygiene and water sanitation behaviour	27,60± 4,05	19,13± 0,92	8,48	0,000
Seeking health service behaviour	94,60± 0,91	96,20± 0,91	1,60	0,000

Table 4. Stunting Prevention Behaviour (pre-test and post-test) in the *control g*roup

Sub Variable	Control group		Delta (Δ)	p value
	Pre Test Mean ±SD	Post Test Mean± SD		
Feeding behaviour	132,40± 29,08	117,67± 21,45	14,73	0,004
Parenting behaviour	84,00± 16,76	72,00± 20,07	12,00	0,077
Personal hygiene behaviour	95,07± 18,88	84,80± 8,20	10,27	0,064
Environment hygiene and water sanitation behaviour	25,40± 3,64	22,47± 3,09	2,93	0,066
Seeking health service behaviour	94,87± 0,92	96,13± 0,94	1,27	0,080

Mother's behaviour in stunting prevention has changed after being given assistance with the dynamic self-determination of self-care model. Table 2 shows that feeding behaviour, parenting behaviour, environmental hygiene and water sanitation, health seeking behaviour obtained a significant value of $p < 0.05$, while the personal hygiene behaviour did not change significantly p value> 0.05 (table 2)

The behaviour of stunting prevention has changed after being given assistance with the positive deviance model. Table 3 shows that feeding behaviour, parenting behaviour, environmental hygiene and water sanitation, health seeking behaviour obtained a significant value of $p < 0.05$, while the personal hygiene behaviour did not change significantly p value> 0.05 (table 3)

The majority of stunting prevention behaviour has not changed in the control group. Table 4 shows that child care behaviour, personal hygiene, environmental hygiene and water sanitation, the behaviour of seeking health services has no significant change with p> 0.05, while the feeding behaviour has changed significantly with p <0.05 (table 4)

1) Mother's behaviour in stunting prevention after being given assistance with the dynamic self-determination of self-care model

Table 2 shows that feeding behaviour, parenting behaviour, environmental hygiene and water sanitation, health seeking behaviour obtained a significant value of p <0.05, while the personal hygiene behaviour did not change significantly p value> 0.05. The dynamic self-determination of self-care model is a model where families are encouraged to actively manage their health care needs independently according to their abilities through consistent and ongoing assistance (Rice, 1999). This assistance was carried out for 1 month in which the assistance was carried out in 6 steps. The first step, respondent was given classical education about feeding behaviour, parenting behaviour, personal hygiene behaviour, environmental hygiene behaviour and water sanitation, the utilization of health services. Step 2 respondents have been asked to arrange simple plans for the next 2 weeks regarding feeding, care, personal hygiene, environmental hygiene and water sanitation, and health services which they can apply every day on a daily basis. Step 3 respondents were asked to practice their plans in their home. Step 4 was a home visit/ home care to ascertain whether the respondent has started implementing the plan properly or not. The assistant continually provides education, motivation, care, information about stunting prevention behavior. Discussing with respondents, modifying plans according to needs, conducting advocacy with puskesmas Ardimulyo as needed is done every day to each respondent. Step 5 respondents were allowed to apply the experiences they had gained from stage 1 to stage 5. This step is the saturated phase where the stunting prevention behaviors that have changed later are slowly expected to become a habit in daily life. At this stage respondents were discharged without assistance. The assistant continues to make a home visit once a week or if needed by the respondent via telephone contact. The step 6 is the final evaluation of a series of interventions

Through the assistance steps above, the respondents already have confidence about their ability to achieve performance levels by using their experience of past events that affect their lives. To instill this belief in respondents, researchers and their partners have continuously provided motivation that they can change their behavior. Researchers have given the widest opportunity to respondents to develop their own plans for what changes will be made regarding stunting prevention. Respondents dynamically do their own "care" for their children and this will bring strong self efficacy to him[7-8]

2) Mother's behaviour in stunting prevention after being given assistance with the *Positive Deviance* model

Assistance with a positive deviance model is another approach in the effort to eradicate malnutrition in the community. In this study, positive deviants identified positive and beneficial behaviours for child development in terms of feeding behaviour, parenting behaviour, personal hygiene behaviour, environmental hygiene behaviour and water sanitation and health care seeking behaviour. Favourable habits that are based on local culture and are very possible to be applied are collected by researchers to then be transferred to respondents in the non-positive deviants group.

The positive deviants have classically shared their experiences of health behaviours that are applied daily to the respondents, where their daily behaviour is apparently supporting the growth of their children even though they do not have adequate knowledge about good health behaviours and not from families with sufficient financial capacity.

Assistance has been carried out in a respondent's home for twelve days (six days per week) continuously with different material each day but are interconnected. Through this intervention model, it is expected that mothers of toddlers will be able to master all materials more easily. The material taught during the intervention is divided into 4 steps: the first step is introducing various types of food sources that are usually processed by positive deviance family and their nutritional content, feeding by positive deviance mothers of toddlers and carried out for 1 day. The second step was given material parenting in the positive deviance family carried out for 1 day. The third step was given materials for personal hygiene, environmental hygiene and water sanitation. The fourth step of the material is the utilization of health services.

In this study there were no changes in personal hygiene behaviour in respondents who had been given a dynamic self-determination of self-care and positive deviance. Factors that have been identified by researchers that are likely to be the causes are knowledge and cultural factors. Table 1 shows that the majority of respondents had an elementary school education. Knowledge is an important aspect in a person to be able to access all forms of change in life. With knowledge someone will be easier to find solutions to solve all problems of life. The poor state of knowledge of the mother causes he to have no knowledge outside of her environment(Augner, 2018)

In addition, values and culture are also closely related to personal hygiene behaviour(Lin et al., 2018). Based on the results of interactions with respondents during the study it can be concluded that they have believed that their personal hygiene is in accordance with what should be because so far their children and family have never experienced illness related to lack of personal hygiene. According to them the children have never experienced worm disease although they rarely use footwear, rarely wash their hands with soap except when bathing. They believe that children who are too clean will not be strong and will get sick easily. The majority of local people believe the same thing. This habit seems to have become a deep-rooted culture that the hygiene of children and families is good, and they lack of understanding and ignore self-cleaning hygiene that is too detailed such as having to wash hands with soap under running water, nails should not be dirty and long, and the obligation to use footwear.

5. Conclusion

The Dynamic Self Determination of Self Care and Positive Deviance models have been able to change maternal behaviour in terms of preventing stunting in aspects of feeding, care, environmental hygiene and water sanitation, seeking better health services. But does not change personal hygiene behaviour

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DESCRIPTION OF ANXIETY LEVEL OF STUDENTS OF POLYTECHNIC MINISTRY OF HEALTHY PALANGKA RAYA WHEN FACING CLINICAL PRACTICES DURING THE COVID-19 PANDEMIC

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Abstract

Purpose: Describes the level of anxiety of Poltekkes Kemenkes Palangka Raya students when facing clinical practice during the Covid-19 pandemic.

Methodology: This study uses a quantitative descriptive research design, with primary data types obtained directly from the HARS scale online questionnaire. The population in this study were Poltekkes Kemenkes Palangka Raya students who were practicing clinically during the Covid-19 pandemic, with a total sample of 76 people.

Findings: There were 49 people (64%) not experiencing anxiety, 16 people (21%) experiencing mild anxiety, 8 people (11%) experiencing moderate anxiety, and 3 people (4%) experiencing severe anxiety.

Limitation: The number of respondents in this study actually did not meet the number of research samples that had been planned, namely 115 total sampling people, but because the time used to collect questionnaire data was long enough, the researchers had to give a target to close the questionnaire form space in order to immediately continue processing data and results. so that the number of respondents in this study were 76 respondents.

Contribution: This research can be information for research sites, respondents and researchers regarding the level of student anxiety when facing clinical practice during the Covid-19 pandemic.

Keywords: Anxiety; College Student; Clinical Practice; Covid-19

1. Introduction

Covid-19 has greatly affected human life, and has threatened the world with increasing numbers of deaths. According to the WHO, as of September 6, 2021, there were 220,563,227 confirmed positive cases with a death toll of 4,565,483 cases. This situation can affect mental health and cause psychological distress such as anxiety. Anxiety is the emergence of an attitude or feeling of fear faced by a person. During this pandemic period, students often feel anxious when they have to undergo clinical practice. Clinical practice is a learning process carried out by students in hospitals or health centers, by applying knowledge into actual actions on patients.

According to research conducted by (Puji et al., 2021) there are research results as many as 52.9% of student respondents experience high anxiety during the pandemic.

During this Covid-19 pandemic, many universities are conducting online or online learning. However, it is different from the clinical practice that will be faced by health students. Clinical practice is a learning process carried out by students in hospitals or puskesmas, by applying or practicing the knowledge that has been gained during lectures into actual action on patients. Often students feel anxious when they have to undergo clinical practice.

Many factors can cause students to feel anxious when undergoing clinical practice, one example is the hospital's clinical practice environment and the current pandemic situation. Because students feel worried about the possibility of making mistakes that will endanger the patient when taking action (Basok Buhan, 2020) And students are also worried about the possibility of being exposed to the Covid-19 virus. Based on this background, the author is interested in conducting a study of the level of anxiety that occurs in the students of the Health Polytechnic of the Ministry of Health of Palangka Raya who are practicing clinically during the Covid-19 pandemic.

2. Literature review and hypotheses development

Anxiety is a feeling that arises when a person is facing a situation that is felt to be life-threatening. This anxiety can make a person feel uncomfortable and afraid of the surrounding environment (Serenity, 2019). Anxiety levels are closely related to feelings of uncertainty and helplessness. According to Suliswati (2004) in Yulifah (2020) there are four levels, namely as follows:

a. Mild Anxiety : Associated with the stress experienced daily. Individuals are still alert and wide-ranging perception, sharpen the senses. Can motivate individuals to learn and be able to solve problems effectively and generate growth and creativity.

b. Moderate Anxiety

   Individuals focus only on the mind that is of concern, there is a narrowing of the field of perception, can still do things with the direction of others.

c. Severe Anxiety

   The field of individual perception is very narrow. His attention to detail is small and specific and can't think of anything else. All behaviors are intended to reduce anxiety and require a lot of prompting or direction to focus on other areas.

d. Panic

Individuals lose self-control and attention to detail is lost. Due to the loss of control, it is unable to do anything even with commands. There is an increase in motor activity, reduced ability to relate to others, perceptual deviations and loss of rational thought, unable to function effectively. Usually accompanied by personality disorganization.
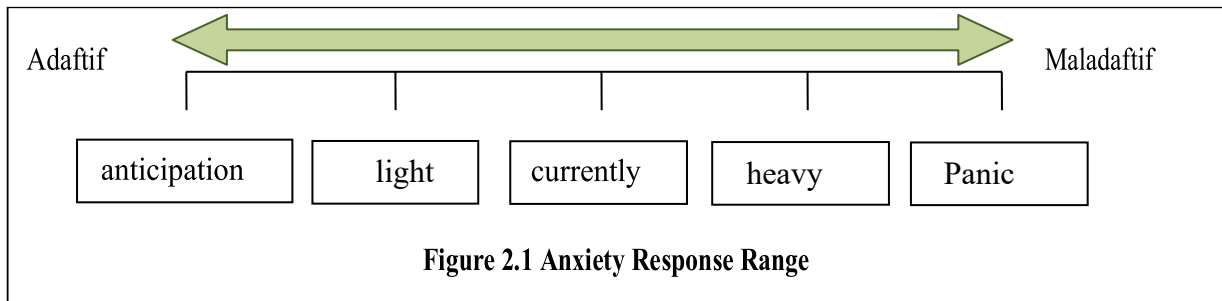
Figure 2.1 Anxiety Response Range

Factors that cause or affect anxiety can be divided into two, namely external factors (Physical Integrity Threats and Self-System Threats) and internal factors (Age, Stressor, environment, gender, education).

Central Kalimantan province which continued to increase until 6 September 2021 totaled 43,926 cases and 1,332 cases died (Covid19.go.id, 2021). (Palangka Raya City Health Office, 2021). This situation can affect mental health and can also cause psychological stress in the community such as anxiety and fear. The American Psychlogy Association says symptoms of anxiety can include dizziness, shaking, sweating, and a fast heart rate (Clinton et al., 2021).

This condition also occurs among students, such as the results of research proposed by (Puji et al., 2021) which states that 52.9% of student respondents experience high anxiety during the pandemic. (Croll et al., 2020) in (Hardiyati, 2020), also stated that during the Covid-19 period, there was an increase in anxiety, fear, and depression in students who were undergoing clinical practice, students were worried about the possibility of being exposed to the Covid-19 virus. during clinical practice.

According to Harif Fadillah, General Chair of the Indonesian National Nurses Association (PPNI) said that in the monitoring system there were 400 nurses who were positively infected

with the Covid virus, and 29 nurses who died from Covid-19 from May to June 2021. (CNN, 2021) . This is one thing that can cause anxiety in students.

3. Research methodology

This study uses a quantitative descriptive research design, with primary data types obtained directly from the HARS scale online questionnaire. The population in this study were Poltekkes Kemenkes Palangka Raya students who were practicing clinically during the Covid-19 pandemic, with a total sample of 76 people.

4. Results and discussions

There were 49 people (64%) not experiencing anxiety, 16 people (21%) experiencing mild anxiety, 8 people (11%) experiencing moderate anxiety, and 3 people (4%) experiencing severe anxiety.

Tabel 1.1. Frequency Distribution of Respondents Based on Anxiety Levels of Poltekkes Kemenkes Palangka Raya Students When Facing Clinical Practice During the Covid-19 Pandemic

Anxiety Level	(f)	(%)
No Anxiety	49	64
Mild Anxiety	16	21
Moderate Anxiety	8	11
Severe Anxiety	3	4
Panic	0	0
Total	**76**	**100**

From the results of table 1.1 it can be explained that of the 76 respondents there were 49 respondents (64%) did not experience anxiety, 16 respondents (21%) experienced a mild level of anxiety, 8 respondents (11%) experienced a moderate level of anxiety, as many as 3 people respondents (4%) who experienced severe levels of anxiety.

The results of the analysis show that there are still students at the Poltekkes Kemenkes Palangka Raya who experience mild to severe anxiety when facing clinical practice during the Covid-19 pandemic. this agrees with what was stated by (Serenity, 2019), that anxiety is a painful and unpleasant experience or feeling, arising from a reaction of tension in the body due to an impulse controlled by an autonomic nervous system. Anxiety is a feeling that arises when a person is facing

a situation that is felt to be life-threatening so that it makes a person feel uncomfortable and afraid of the environment around him.

However, research put forward by Yulifah (2020) states that mild anxiety can be related to tensions experienced daily such as being overly alert so as to make a person have a broad perception, so that they can motivate themselves to learn and be able to solve problems effectively and generate growth and creativity. Moderate anxiety is in the form of an individual's focus only on the thoughts that are of concern to them, there is a narrowing of the field of perception, but they are still able to do something under the direction of other people. Severe anxiety is anxiety characterized by a very narrow individual's perceptual field, focusing on specific details, unable to think about other things, and needing lots of orders or directions to focus on other areas.

This study agrees with Sukesih's research (2020) which found that some respondents did not experience anxiety during clinical practice, this was because the respondents already knew and understood government directives and policies regarding how to prevent and transmit the Covid-19 virus. such as frequently washing hands, using masks, regularly cleaning and also disinfecting surfaces of items that are always used, keeping a safe distance, and avoiding people who have a fever or symptoms, also increasing body resistance, through a healthy lifestyle such as consuming nutritious food, drinking water sufficient. accompanied by vitamins, adequate rest and regular exercise (Diah Handayani, 2020).

Table 1.2. Distribution of Respondents' Anxiety Levels Based on Age in Students of the Poltekkes Kemenkes Palangka Raya When Facing Clinical Practice during the Covid-19 Pandemic

Usia Responden	Anxiety Level								$\sum n$	(%)
			Mild Anxiety		Moderate Anxiety		Severe Anxiety			
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)		
18 years	1	100	0	0	0	0	0	0	1	1,3
19 years	10	72	1	7	1	7	2	14	14	18,5
20 years	28	61	12	26	6	13	0	0	46	60,5
21 years	7	64	2	18	1	9	1	9	11	14,5

	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)	Σn	(%)
22 years	1	50	1	50	0	0	0	0	2	2,6
23 years	2	100	0	0	0	0	0	0	2	2,6
Total	49	64	16	21	8	11	3	4	**76**	**100**

From table 1.2 above, the average age that experiences mild anxiety is more, namely 60.5% at the age of 20 years. This is the opinion of research conducted by Ika Marissa, (2017), According to the stages of their development, students are in the early adult stage (emerging adulthood) which is a transitional period from the adolescent development stage to the adult stage at the age of 18-25 years. Age is a thing or condition that is seen as the basis for assessing the development and maturity of an individual. Susi (2021) also stated that a much older age tends to have more experience in dealing with problems, a more mature age usually has a good coping mechanism in dealing with problems. This statement is also reinforced by Namirotu's research (2018) that the older the age of individuals is usually better at controlling the emotions they feel. Meanwhile, Yulifah (2020) Someone who is young is more likely to experience anxiety than someone who is older.

Table 1.3 Distribution of Respondents' Anxiety Levels Based on Gender in Students of the Poltekkes Kemenkes Palangka Raya When Facing Clinical Practice During the Covid-19 Pandemic

Gender	Anxiety Level								Σn	(%)
	No Anxiety		Mild Anxiety		Moderate Anxiety		Severe Anxiety			
	(n)	(%)	(n)	(%)	(n)	(%)	(n)	(%)		
Male	6	75	1	12,5	1	12,5	0	0	8	11
Famale	43	63	15	22	7	10	3	5	68	89
Total	49	64	16	21	8	11	3	4	**76**	**100**

that individuals with the female sex are more likely to experience anxiety disorders than men (Kaplan & Sadock, 2010 in Namirotu, 2018). According to research conducted by Vellyana (2017) in Herni (2021) which states that the gender factor can significantly affect a person's level of anxiety, it is also mentioned that the female gender is more at risk of experiencing anxiety compared to the male gender. Women are more prone to anxiety than men, because of differences in the brain and hormones in both, besides that women and men also experience differences in responding to events that occur in their lives. Therefore, female students experience anxiety more often than male students (Walean, 2021 in Herni, 2021).

5. Conclusion

Most of the students did not experience anxiety and there were some students who experienced mild anxiety, moderate anxiety, and severe anxiety when facing clinical practice during the Covid-19 pandemic.

Limitation and study forward

The number of respondents in this study actually did not meet the number of research samples that had been planned in the research proposal, namely 115 people (total sampling),
the number of samples also does not represent all study programs

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TURMERIC DRINK REDUCES BODY ODOR DURING MENSTRUATION

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ABSTRACT

Aim of study. Body odor has a very negative effect on socializing. Body odor can make self-conscious and low self-esteem. Body odor is often a disturbance in activities at work, socializing, and meeting. The purpose of this study was to determine the effect of turmeric drink on body odor. **Method**. This research was conducted at State Middle School 5 Palangka Raya. The research design used was a quasi-experimental pretest-posttest with control design. Samples were 25 for the intervention group and 25 for the control group. The treatment consisted of consuming tamarind turmeric drinks in the intervention group and consuming tamarind drinks for the control group. Treatment for 3 days, with a frequency of 2 times per day. Data analysis using Mann Whitney test. **Result.** There was a significant difference in the value of body odor between the groups that consumed turmeric drink and those who did not consume turmeric drink ($p = 0.000$). Based on subjective data, it was found that body odor decreased by 63% in the group consuming turmeric drink and in the control group there was no decrease in body odor.
Conclusion. Turmeric drinks can reduce/eliminate body odor

Keywords: Body odor, turmeric.

1. Introduction

Body odor has a very negative effect on socializing. Body odor is often an indication that a person cannot keep his body clean. Body odor can make self-conscious and low self-esteem. Body odor is often a disturbance in activities both at work, socializing, and meeting. Body odor is closely related to the sweat released by the body. Some women complain that their body odor increases during menstruation (Fielding, 2011).

Several attempts have been made to reduce the activity of bacteria in decomposing body sweat. The efforts that have been made are with topical deodorants which are sold in the market under various names. Topical efforts are of course limited to certain areas such as the armpits, whereas for other apocrine gland areas such as the pubic area and head hair nothing has been done. Efforts to

reduce body odor systemically are certainly very effective in overcoming the problem of body odor as a whole. One systemic effort that is believed to reduce body odor is to consume turmeric.

2. Literature review and hypotheses development

The body has two types of sweat glands, namely eccrine and apocrine glands. Eccrine glands open onto the surface of the skin, while apocrine glands are found in areas where hair grows, such as the scalp, armpits and pubis. These two glands secrete different types of sweat. The sweat from the eccrine glands is mostly water and salt, but the apocrine glands secrete sweat which contains fats, proteins and carbohydrates (vemale, 2013). The sweat secreted from the apocrine glands plays a major role in the process of body odor. Sweat which contains fat, protein and carbohydrates is highly favored by bacteria.

Basically sweat does not smell. Body odor occurs when bacteria on the surface of the skin break down sweat from the apocrine glands into volatile acids and release an unpleasant odor. There are two types of acids that cause body odor to be unpleasant, namely: propionic acid or propanoic acid which smells like vinegar and is the result of the breakdown of sweat by propionibacteria, bacteria that live in the ducts of the sebaceous glands of adults and adolescents; The second type of acid is isovaleric acid produced by the bacterium staphylococcus epidermis (Maria, 2013). During menstruation, body odor is more pungent, not because of menstrual blood, but during menstruation, the metabolism increases so that it produces more sweat. At the time of menstruation approaching the work of the apocrine glands increases, so that a lot of apocrine gland sweat is produced and there is also a lot of material that can be broken down by propionibacteria and epidermal staphylococcus bacteria. This process causes an increase in body odor during menstruation. (Kuukasjarvi S, ed al, 2004).

Turmeric is a plant that functions as an antimicrobial, antibacterial, reduces blood fat and cholesterol levels, and is able to cleanse the blood (Olivia, et al, 2009). Turmeric can eliminate intestinal inflammation (Ukil, et al, 2003). Turmeric is efficacious in inhibiting the process of microvascular inflammation (Lukita-Atmadja, et al, 2002). Turmeric also based on phytochemical analysis contains analgesics (Navarrol, et al, 2002). Tamarind turmeric is categorized as an herbal drink that can function as a medicine (Dinda, E., 2007). Turmeric is believed to be able to reduce body odor, even body odor during menstruation can be reduced by consuming turmeric drinks. The

role of turmeric in being able to reduce body fat levels and its ability to prevent the activity of bacteria that cause body odor encourages researchers to prove evidence based on this matter through research. The hypothesis of this study is that drinking turmeric can reduce body weight during menstruation.

3. Research methodology

This research was conducted at State Middle School 5 Palangka Raya. The research design used was a quasi-experimental pretest-posttest with control design. This study used the treatment of consuming turmeric plus tamarind and sugar in the intervention group, while the control group only consumed tamarind and sugar. Drinks are given 2 times a day in the morning and evening for 3 days. Measurement of body odor twice, namely before treatment and after treatment. Measurement of body odor using a scale of body odor degrees 1-10 (Havlicek J, *ed al. 2006*) and laboratory examination by measuring the acidity level of the armpit swab using a pH meter Dr.Meter pH – 100 High accuracy. The sampling method in this study was random sampling and according to the inclusion and exclusion criteria. Based on previous research Anintida, A.Y (2010) who conducted research using the intervention of tamarind turmeric drink and changes in menstrual pain assessed at a significance level (α)= 0,05, s = 0,53, mean difference = 0,43. Calculation of sample size using the mean difference formula. The calculation results obtained sample for each group is 25 people \. The inclusion criteria in this study were adolescents who experienced menstruation every month, did not consume herbs or drugs during or before menstruation. Exclusion criteria, namely sick adolescents who needed treatment or rest and were outside the location when the study was taking place. The criteria for dropping out are if you do not carry out the intervention by consuming $\geq 25\%$ of turmeric drinks or 1 time. The statistical test used to see the relationship between the independent variable and the dependent variable is the Mann Whitney test. The multivariable analysis used is linear regression.

4. Results and discussions

An overview of the characteristics of the research subjects in both the intervention group and the control group can be seen in the following table.

Table 1. Distribution of Research Subjects

Characteristics		Group						p
		Intervention			Control			
		n = 25			n = 25			
		n	%	mean	n	%	mean	
Age	16 years	6	24		16	32		
	17 years	12	48	16,96	10	40	17,04	0.497
	18 years	7	28		7	28		

Note: n = number of samples, *p = p value*

It is known that the value of p> 0.05. This value means that the control group and the intervention group have the same or homogeneous characteristics. The results of bivariate analysis of body odor values before treatment and after treatment in both the intervention group and the control group can be seen in Table 2.

Table 2. Value of Body Odor Before and After Treatment of Each Group

Group	Measurement		P
	Mean Rank		
Intervention	0,00	13,00	0,000*
Control	8,25	10,50	0,338*

*Wilcoxon test

The results of the analysis in the intervention group showed a p value <0.05 (0.000), which meant that there was a significant difference in the value of body odor before treatment and after receiving treatment, with a difference of 13. The results of the analysis in the control group showed a p value > 0.05 (0.338) which means there is no significant difference in the value of body odor before and after treatment. Analysis of data on changes in the value of body odor components in two different groups, namely the control group and the intervention group, can be seen in table 3

Table 3. Differences in changes in body odor values

Group	Measurement		P
	Mean Rank		
Control - Intervention	13,00	38,00	0,000*

* Mann Whitney

The test results showed a p value <0.05 (0.000), this means that there is a significant difference in the average value of body odor between the control group and the intervention group. The results of this study are reinforced by subjective data collected using a questionnaire as shown in Table 4 and Table 5.

Table 4. Assessment of changes in body odor before and after treatment using a questionnaire in the control group

No	Body Odor Changes Before And After Treatment	percentage
1	Body odor increases	50 %
2	Permanent body odor	50 %
3	Reduced body odor	0 %
		100 %

Tabel 5. Penilaian Perubahan Bau Badan Sebelum dan Sesudah Perlakuan Menggunakan Kuesioner Pada Kelompok Intervensi

No	Body Odor Changes Before And After Treatment	percentage
1	Body odor increases	0 %
2	Permanent body odor	37,5 %
3	Reduced body odor	62,5 %
		100 %

Tables 4 and 5 show changes in body odor before and after treatment in both the control and intervention groups. There was a difference in the results between the two groups based on the subjective data of the study participants. In the control group stated that the treatment material did not result in a reduction in body odor and even 50% thought body odor increased during menstruation. In contrast to the intervention group that consumed turmeric. Based on subjective data, it is known that most of them, namely 62.5%, felt their body odor reduced after consuming turmeric drinks and none of them felt their body odor had increased.

All research subjects consumed the same food provided by the hostel, only drinks and snacks that they bought outside and did not include food criteria that cause body odor. The external variable that was tested for analysis was the physical activity variable. The physical activity variable based on the results of the questionnaire obtained 2 categories, namely light physical activity and moderate physical activity, no heavy physical activity. The results of the external variable bivariate analysis on body odor values can be seen in table 6.

Table 6. Effect of External Variables on Body Odor

Physical Activity Variables	Body Odor Value Mean Rank	P
Control Group:		0,906

Light Activity	13,50	
Moderate Activity	12,93	
Intervention Group:		
Light Activity	18,50	0,177
Moderate Activity	12,25	

Table 6 shows the results of bivariate analysis of physical activity and body odor values. The results of the analysis showed that the p-value in both the control and intervention groups was > 0.05. P value = 0.906 and 0.177 showed that there was no significant difference in the value of body odor in mild and moderate physical activity in each group. The results of the bivariate analysis on the external variables which show no significant difference in value, means that the multivariate test does not need to be continued.

Turmeric, which has antimicrobial, antibacterial and antifungal properties, is very useful in reducing body odor. The process of forming body odor is closely related to the sweat produced by humans. The sweat produced by the apocrine glands contains fats, proteins and carbohydrates. This sweat is produced by apocrine glands which are found on hairy skin surfaces such as the head, armpits and pubis. Sweat like this is favored by bacteria and microbes. Bacteria such as propionicteria indeed live in the sebaceous glands or sweat glands and epidermal staphilococcus which live under the skin. Body odor occurs when bacteria break down sweat from the apocrine glands into volatile acids which release an unpleasant odor. There are two types of acids that cause body odor to be unpleasant, namely: propionic acid or propanoic acid which smells like vinegar and is the result of the breakdown of sweat by propionibacteria, a type of bacteria that lives in the ducts of the sebaceous glands of adults and adolescents; isovaleric acid produced by the epidermal staphylococcus bacteria, which causes a cheese-like odor (Maria, 2013). Administering drugs or topical deodorants can indeed reduce body odor because it reduces the number of bacteria on the surface, it's just that propionibacteria live in the sebaceous glands and staphylococcus under the skin so they can't eliminate most of the sweat-decomposing microbes that cause body odor.

This study used research subjects during menstruation because during menstruation there is an increase in the work of the apocrine glands and body odor. This process causes an increase in body odor during menstruation. The use of a systemic tamarind drink is certainly very effective in reducing body odor. Turmeric is a plant that functions as an antimicrobial, antibacterial, antifungal

(Olivia, et al, 2006). Tamarind turmeric drink can stop the activity of propionic bacteria and staphylococcus in the sebaceous glands and epidermis. Based on the results of this study, the final evidence was that the acidity level of the armpits was significantly different between the groups that consumed turmeric drink and those who did not consume turmeric drink.

Turmeric besides functioning as an antimicrobial, anti-inflammatory, antibacterial, antifungal, analgesic, anti-tumor, cancer prevention, it also functions to reduce blood fat and cholesterol levels, and is able to cleanse the blood. (Olivia, et al, 2006). Fat and cholesterol as one of the materials secreted through the apocrine sweat glands are highly favored by bacteria. The more material that is released, the more bacteria prefer to decompose it so that more decomposition end products result which cause body odor. Because turmeric drinks are theoretically able to reduce fat and cholesterol levels, thereby helping to reduce body odor. Subjective assessment using a body odor questionnaire supports the results carried out objectively from the calculation of the pH of the body odor-producing substance.

5. Conclusion

Turmeric drinks can reduce and even eliminate body odor during menstruation. Tamarind turmeric drink can reduce the activity of propionic bacteria and staphylococcus found in the sebaceous glands and epidermis as a cause of body odor.

Limitation and study forward

The sample of this study was limited to adolescents and did not represent all ages of women who were still menstruating. Further research can be carried out by comparison with the age levels of women starting from adolescence, early adulthood, and late adulthood.

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THE EFFECTIVENESS OF POSTER MEDIA CONTAINING STUNTING INFORMATION AS AN EDUCATIONAL MEDIA IN INCREASING MOTHER TODDLER KNOWLEDGE

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Abstract

Purpose: This study aims to find out how effective poster media is in increasing public knowledge, especially pregnant women and mothers who have toddlers.

Methodology: This type of research uses an experimental method with the One Group Pretest-Posttest Design approach. This research was conducted in the working area of the East Kelayan Health Center at Harapan Bangsa Posyandu, Kelayan Tengah Village. The number of samples taken were 20 mothers who had toddlers who were taken by accidental sampling technique.

Findings: The mean score for the pretest was 7.45 and for the posttest it was 7.50. Based on the results of statistical tests showed that there was no significant difference in knowledge between before and after being given poster media (p-value = 0.972). The percentage change in knowledge shows a positive rank of 35%, a negative rank of 30%, and there is no change of 35%.

Limitation: This study does not describe and categorize the characteristics of research respondents. In addition, no further research was conducted on any factors that could affect knowledge.

Contribution: This study useful for health promotion area.

Keywords: Stunting, poster, knowledge.

1. Introduction

Stunting is a health problem in the world, including in Indonesia, which is the focus of the government's health development. Stunting is a chronic growth disorder in children due to malnutrition, recurrent infections, and inadequate psychosocial stimulus. Indonesia is the country with the fifth largest prevalence of stunting in the world (Ni'mah & Nadhiroh, 2022).

The factors which causing stunting can be grouped into direct and indirect causes. The direct causative factors include the lack of practice of exclusively giving colostrum and breast milk, consumption patterns of children, and infectious diseases that children suffer from. Indirect causes include access and availability of food ingredients as well as sanitation and environmental health (Wulandari Leksono et al., 2021).

According to the World Health Organization (WHO), the prevalence of stunting under five in 2020 is 22% or around 149.2 million children under five in the world (World Health Organization, 2021).

The results of the Indonesia Nutrition Status Survey (SSGI) in 2021 conducted by the Ministry of Health, the stunting prevalence rate in Indonesia in 2021 reached 24.4% or decreased 6.4% from 30.8% in 2018 (Media, 2022). Stunting data in South Kalimantan Province based on SSGI 2021 data, stunting prevalence is at 30.0% or above the national figure of 24.4% (Bayu, 2022).

Stunting is associated with an increased risk of morbidity and mortality, decreased physical capacity, impaired development, and functioning of children's motor and mental conditions. In addition, stunting has a negative impact on children's cognitive, motor, and verbal development. In the future, stunted children have a higher risk of obesity and other diseases. In addition, children's learning capacity and performance as well as productivity and work capacity are also not optimal. The bad impact of stunting also affects reproductive health (Wulandari Leksono et al., 2021).

Various efforts have been made by the Government, including through the Integrated Health Center (Posyandu). However, the results obtained were not optimal because they did not involve all aspects of society (Sartika et al., 2021). Therefore, it is necessary to carry out alternative solutions to fundamental problems related to stunting, one of which is through efforts to increase mother's knowledge regarding the problem of stunting.

Several studies have shown that increasing knowledge can be the basis for the formation of healthy behavior changes in society. Research conducted by Caesar & Prasetya (2020), it was found that there was an increase in respondents' knowledge before and after being given posters related to basic sanitation with a percentage increase of 59.95%. The results of this study are supported by research Qomarrullah et al., (2021) regarding the effectiveness of poster media in improving health protocols in Papua and it is known that the knowledge of respondents before receiving the poster media intervention was 70%, then there was an increase after being given the poster media to 80%. Therefore, the application of poster media is very effective in increasing knowledge of COVID-19 health protocols.

Increased knowledge can be done by providing health education related to stunting using various health promotion media, such as posters. Posters are short messages in the form of pictures with the aim of influencing someone to be interested in something, or influencing someone to act on something (Astuti et al., 2018). Some of the advantages of poster media are as follows; (1) can

simplify and speed up the understanding of the messages presented. (2) Can be equipped with colors so that it is more attractive to students. (3) The form is simple without the need for special equipment. The use of posters as a communication medium for health communication and easy placement, requires little additional information. (4) It is easy to manufacture and cheap (Astuti et al., 2018). Based on this, it is necessary to know the effectiveness of using poster media on the knowledge of toddlers mothers related to information about stunting.

2. Research methodology

This type of research uses an experimental method with the One Group Pretest-Posttest Design approach. This research was conducted in the working area of the East Kelayan Health Center at Harapan Bangsa Posyandu, Kelayan Tengah Village. The number of samples taken were 20 mothers who had toddlers who were taken by accidental sampling technique.
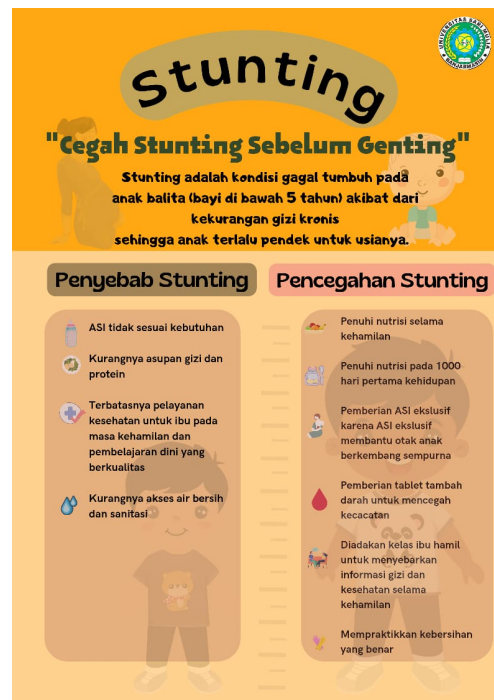
Figure 1. Media Poster Contains Information about Stunting

In **Figure 1** is a media poster containing information about stunting which is then tested for its effectiveness in changing the knowledge of mothers who have toddlers. This was done using a

questionnaire instrument consisting of 9 statements. Statements consist of two types, namely positive statements (5 items) and negative statements (4 items). Questionnaire details are presented in table 1 and a list of questionnaire statements is presented in table 2.

Table 1. Questionnaire Statement Details

No	Statement	n	Statement Number
1	Positive	5	1,2,5,6,9
2	Negative	4	3,4,7,8

Table 2. Questionnaire Statement List

No	Statement	Yes	No
1.	Stunting is a condition of failure to thrive in children under five (infants under 5 years old as a result of chronic malnutrition so that children are too short for their age.		
2.	Breast milk is not according to needs is a cause of stunting in children.		
3.	One way to prevent stunting is to reduce your intake of nutrients and protein.		
4.	Fulfillment of nutrition during pregnancy is a cause of stunting in children.		
5.	The fulfillment of nutrition during the first 1000 days of life is very important for stunting prevention.		
6.	The cause of stunting in children is lack of access to clean water and sanitation.		
7.	Giving iron tablets is a cause of stunting in children.		
8.	Exclusive breastfeeding can cause stunting in children.		
9.	The holding of classes for pregnant women to disseminate information on nutrition and health during pregnancy is one way to prevent stunting.		

3. Results and discussions

The research results obtained were tested statistically and presented in table 3.

Table 3. Statistical Test Results

	Mean	*p*-value	Positive Ranks	Negative Ranks	Ties
Pretest	7,45	0,972	35%	30%	35%
Posttest	7,50				

In **Table 3**, it is known that the average value for the pretest is 7.45 and for the posttest is 7.50. Based on the results of statistical tests showed that there was no significant difference in knowledge between before and after being given poster media (p-value = 0.972). The percentage change in knowledge shows a positive rank of 35%, a negative rank of 30%, and there is no change of 35%.

The results of this study are not in line with research conducted by Caesar & Prasetya (2020) which states that poster media is effective in increasing knowledge. Education is a learning process towards a better change in a group or society (Septiyani et al., 2021). Knowledge is very closely related to education that with higher education, the person will have wider knowledge. Low education does not guarantee that a mother does not have sufficient knowledge (Ramdhani et al., 2020).

This could be because in this study no screening or criterion of respondents was carried out beforehand. The criteria for respondents aim at interfering factors such as age, education level, economic level and others. these confounding factors should be controlled in advance so as not to affect the results obtained.

4. Conclusion

It was concluded that the provision of media posters containing information on stunting was not significantly effective in changing the knowledge of mothers of children under five.

Limitation and study forward

This study does not describe and categorize the characteristics of research respondents. In addition, no further research was conducted on any factors that could affect knowledge.

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RURAL-BASED HEALTH SERVICE SYSTEM IN SERAYULARANGAN VILLAGE PURBALINGGA REGENCY

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ABSTRACT

Community-Based Disaster Risk Reduction (CBDRM) is a collaborative effort by Pentahelix in disaster risk reduction. Serayu Larangan Village is one of the tourist villages in Purbalingga Regency which has tourism potential with a high intensity of visits from various regions. Emergency conditions can happen to anyone, anytime and anywhere. The existence of the potential of this tourist village requires a model of village community empowerment in a systematic and planned health service system so that it can provide health services in a comprehensive, swift, precise and plenary manner. This study aims to develop a model of village community empowerment in a rural-based health service system by forming a tourism village disaster preparedness team that involves all components of the village community. The research design is a quasi-experimental design with a quasi-experimental pretest-posttest design without a control group design. Quantitative research method with quasi-experimental pretest-posttest design without control group design to evaluate the level of knowledge and skills of the community in disaster preparedness and daily emergencies in tourist areas. The results of this research is the increased knowledge (p <0.05), and the skills of village volunteer (p <0.05) regarding disaster risk reduction. Disaster preparedness training for village volunteers could improve the knowledge and skills of volunteers in disaster risk reduction. Village volunteers have tough tasks and duties, so special volunteers are needed in disaster risk reduction, called village disaster preparedness teams

Keywords: Volunteers, rural based, disaster preparedness

INTRODUCTION

Disaster management has undergone a responsive paradigm shift to become prevention, multi-sectoral, decentralized and a shared responsibility of all components of society. Thus, disaster management is a joint responsibility of the government, the community and other parties such as the business world and so on. One manifestation of this paradigm shift is the existence of a Community-Based Disaster Risk Reduction (CBDRM) program by optimizing the mobilization of resources that are owned and controlled by the local community and become an integral part of the life and daily life of the community. CBDRM has proven to be effective in increasing community awareness and participation in disaster risk reduction. Some previous research is the existence of VDPO (Volunteer

Disaster Preparedness Organization) which was formed in Japan since 2007 can also increase community preparedness and community participation in disaster risk reduction (1). Next is CERT (Community Emergency Response Teams), this institution is also proven to be able to improve preparedness and handling emergency conditions at the community level (2)

There are several models for implementing CBDRR in Indonesia such as disaster resilient villages which are programs of BNPB, disaster prepared villages from the Indonesian Ministry of Social Affairs and active standby villages which are programs from the Indonesian Ministry of Health and several other names from various versions of non-governmental organizations and the government and donor agency. Everything is still in the stage of looking for the best form. CBDRR trials in various places are considered to have died young due to the implementation of the program which is not continuous and integrated, although some have shown encouraging results (3).

Volunteers are one component of the community that has great potential in empowering rural communities, therefore it becomes an obligation for the government to provide strengthening and empowerment of health volunteers in improving community health status. The intended volunteers strengthening is a multidimensional process that helps maintain / develop benefits for their lives, communities and social life by acting / acting on issues / issues that they consider important. It can be concluded that everyone has their own strengths. Therefore the best way to improve each person's ability is to involve them to improve their abilities with sufficient knowledge, skills and facilities (4). Strengthening volunteers means providing knowledge and skills to volunteers to become skilled volunteers in disaster preparedness. In this program, increasing the capacity of volunteers is needed in the context of community-based disaster risk reduction.

Emergency condition can happen to anyone, anytime and anywhere, so the handling of emergency patients must be carried out by people closest to the victim, such as ordinary people, special lay people, and health workers according to their competence. The concept of handling emergency patients is "time saving is life and limb saving". Due to the very limited response time to save the patient's life and/or limbs, treatment must be systematic and on a priority scale. Actions taken must be fast, precise and accurate according to standards. Currently there is a trend of increasing emergency cases that occur in households, workplaces and what needs to be considered is crowded places such as tourist attractions. If an emergency occurs at the workplace, household or

tourist attraction, the quickest helpers who can provide assistance are those closest to the victim, not just health workers. So it is clear that in order to minimize mortality and disability due to medical emergencies, the response time must be shortened. To achieve the target response time of less than 10 minutes, the Ministry of Health at the district/city level has developed a Public Safety Center (PSC) as the spearhead of a safe community which is a public facility that combines elements of an emergency ambulance118, police110 and firefighters. 113. Whereas at the village level, in accordance with the concept of a standby village which prioritizes community empowerment through Polkesdes with officers who have acquired the knowledge and skills to perform first aid in accidents (first responders) before the sufferer gets further assistance at the nearest health agency (Puskesmas and/or Hospital) (5)

Based on the results of research by Kamaluddin et al (2021) regarding the village-based Integrated Emergency Management System (SPGDT), that in providing health services in emergency conditions at the village level, regulations and priorities are needed in the management of health assistance, transportation regulations in the village-level referral system, the need for a special team in the regulation and management system for providing health assistance as well as health service standards in the emergency response system at the village level. The existence of a high and "original" sense of gotong royong and shoulder to shoulder at the village level is a cultural spirit in building village-based SPGDT. The gotong royong character possessed by residents as social capital overcoming problems is evident from the nature of spontaneity, extending labor or material assistance, thinking about what they can contribute and immediately implementing it (6,7)

The formation of a village disaster preparedness team requires regulation and support from the village to district governments. The formation of this team is expected to become a "pilot project" or pilot for other villages. The nature of kinship and hand in hand that has been built in providing assistance to people who are sick in the village is the main capital so that social capital and local wisdom become more optimal and beneficial both in terms of humanity, life saving, administration and rural socio-economic aspects (8).

The preparation of rural-based SPGDT requires a regulation and communication system that is fast, precise and easily accessible by the community in reporting emergency cases and first aid needs. Transportation regulations and referral systems at the village level are important in the

implementation of village-based SPGDT. Therefore, the formation of a village disaster preparedness team and supported by the creation of a communication application and referral system that is fast, precise and easily accessible by the village community is expected to be a solution in implementing village-based SPGDT in order to realize Rural-Based Disaster Risk Reduction (PRBBK) towards safe community conditions.

Serayularangan Village is one of the villages that has the potential to develop and progress which has been developed since 2017 in Purbalingga Regency. Serayularangan Village has several potentials that can be developed to optimize. This village has the strength of a tourist attraction in the form of the Loh Jinawi Market and natural landscapes. In addition, the unique culture and history of the community is also an attraction for urban communities. In Serayularangan Village there is also a home industry village that has the potential to be developed as a means of learning for the younger generation from the surrounding village environment, culinary tours for making palm sugar, home-based batik industries and also Outbound. With the potential and uniqueness that exists, Serayuban Village is a tourist village that has the potential to invite visitors both domestic and foreign. Therefore, as a village that has a lot of tourism potential, of course the provision of health services to local residents and visitors is one of the priorities in village government service management planning. This is very supportive in forming a village-based integrated emergency response system.

Based on the above background, a community empowerment model is needed in a rural-based health service system which is a synchronization of several CBDRM programs in order to create a rural-based safe community. The community empowerment model in a rural-based health care system can also be applied to dealing with everyday emergencies in the village community as an integrated village-level emergency management system.

METHODS

This research used quasi eksperiment non equivalent pre and post test group without control design. This quantitative research used to assess the effectiveness of disaster preparedness training on the level of knowledge and skills of health volunteers in community-based disaster risk reduction. The population in this study were all health volunteers residing in disaster prone areas desa Serayularangan. The total population of health volunteers are 85 people. The number of samples to

be respondents is calculated using the calculation of the hypothesis test for two population means formula. The selection of volunteers samples was calculated using WHO sample size determination in health studies program. Based on research by Alim et al. (2014), the standard deviation was 0.5312, the mean of the intervention group was 4.87 and the control group was 4.09; in order to obtain the results of a minimum sample calculation of 15 samples. To add an efffect design, the number of samples is multiplied by two so that the number of samples is 30. To anticipate the drop out the researchers added samples so that the minimum sample for the intervention group was 32 people. The sample selection uses a proportional random sampling technique with consideration of representatives of each cluster in the village.

Samples were taken proportionally in each cluster in the village. It takes 32 volunteers, so that each cluster will be selected 3-4 volunteers in each village who will be the target sample. The instrument used to measure the knowledge level of volunteers in disaster preparedness was the Disaster Preparedness Knowledge Instrument for Health Volunteers (9)

This training is in collaboration with the Banyumas Health Department and the Banyumas Regional Disaster Management Agency (BPBD). After the training is completed, the next step the researcher collects and analyzes is discussing with the observer regarding the implementation of the new training. After discussing with the observer and getting notes during the implementation of the training activities that have been carried out, the researchers then evaluated using the Kirkpatrick theory.

RESULTS

Research data was obtained through pre-test and post-test assessments in the intervention and control groups. Furthermore, the data collected was analyzed using paired t test and independent t test. This sub-chapter presents the results of the study consisting of the characteristics of respondents, the results of the paired t test for volunteers knowledge, the independent t test for volunteers knowledge, the paired t test for volunteers skills and the independent t test for volunteers skills.

1. Description of respondent characteristics

The following is the result of univariate analysis of the characteristics of respondents based on their level of education, age and length of time as volunteers

Table 1. Distribution of respondent characteristics by level of education

Variable	Intervention	
	f	%
Education level		
Elementary	11	34.4
Junior High School	5	15.6
Senior High School	16	50

Table 1 shows a description of the characteristics of respondents based on the level of education of health volunteers. The education level of the respondents was dominated by high school (50%).

Table 2 Distribution of respondent characteristics based on age and length of time as health volunteers

Variable	Intervention Group				
	Mean	Sd	Med	Min	Max
Age	40.56	6.42	41	27	52
Time being volunteers	10.75	6.29	9	4	29

Table 2 Based on the table it can be seen that the average age of respondents in the intervention group was 40.56 with a standard deviation of 6.420. Based on the length of time being a health volunteers, the average length of time being a volunteers was 10.75 years with a standard deviation of 6.299.

2. **Differences in the value of pre-test and post-test volunteers knowledge**

Table 3 Results of analysis of paired t test for pre-test and post-test knowledge scores

Variable	Mean	SD	Median	Min	Max	*P*

Knowledge pre test scores	82,76	5,50	82.9	70.7	90.2	0.000
Knowledge post test scores	90,91	3,67	90.2	80.5	97.6	

Table 3 shows a significant increase in the volunteers's knowledge of disaster preparedness from 82.76 to 90.91. The results of paired t test analysis on knowledge scores in the two groups showed different results, p values obtained 0,000 (p <0.05). This shows that did differences in knowledge occur before and after treatment.

3. **Differences in the value of pre-test and post-test volunteers skills**

Table 4 Results of analysis of paired t test for pre-test and post-test volunteers skills

Variable	Mean	SD	Median	Min	Max	P
Pre test score of lifting skills	44,53	16,76	45	20	75	0,000
Post test score of lifting skills	81,40	13,0	82.5	60	100	
Pre test score of basic life support skills	41,8	13,3	42	21	66	0,000
Post test score of basic life support skills	84,3	8,19	85	66	96	
Pre test score of stop bleeding skills	45,4	16,88	44	20	74	0,000
Post test score of stop bleeding skills	82,1	11,6	84	60	100	
Pre test score of dressing and splint skills	43,00	14,25	40	20	70	0,000
Post test score of dressing and splint skills	82,7	10,04	84	64	100	

Based on table 4 above it can be seen that all skills increased significantly between before and after training. The lifting skill was originally 44.53 increasing to 81.40. The skills to provide basic life support from 41.8 increased to 84.3. The skill to stop bleeding increased from 45.4 to 82.1. Likewise, the skill in dressing and splinting showed an increase in average from 43.00 to 82.7.

The results of paired t test on all skills obtained a value of p 0,000 (p <0.05). This shows that all disaster preparedness skills differed between before and after the training.

DISCUSSION

Village health volunteers are one of the nation's development assets. Village health volunteers have many roles both formally and informally. Not only in accordance with its name, village health volunteers play a role not only in terms of the health sector, especially the degree of health in the community but the various roles and functions of other sectors attached to the village health volunteers or often called "bu kader". Health volunteers are one of the spearheads in the field of health because health volunteers are considered to be the closest figures to the community who are expected to do their work voluntarily without demanding compensation (10). This day, health volunteers have quite a number of tasks and activities such as being a volunteers of Posyandu for toddlers, elderly Posyandu, volunteers of Toddler Family Development (BKB), PSN volunteers (Eradication of Mosquito Nest), Volunteers of Adolescent Family Development (BKR) and so on.

In 2010, the Ministry of Health of the Republic of Indonesia issued decision number 1529 / MENKES / SK / X / 2010 regarding general guidelines on developing active alert villages. This is defined as a village that is able to provide basic health care services and clean water, basic sanitation services, community-based disease control, clean and healthy living behavior (PHBS) and community empowerment to respond to emergencies and natural disasters (11). With the existence of the active alert village program, the role of health volunteers should be needed in the success of the program and one of the indicators or tasks of health volunteers is in the field of emergency and disaster preparedness.

Based on the results of research that has been done, disaster preparedness training can improve the level of knowledge and skills of health volunteers in disaster risk reduction. The results of the paired t test analysis on the score of knowledge of the two groups showed different results. In the intervention group p values were 0,000 (p <0.05) while in the control group p values were 0.794 (p> 0.05). This shows that only in the intervention group did differences in knowledge occur before and after treatment. The results of the analysis using the independent t test also

showed a significant difference between the intervention and control groups on the knowledge score about disaster preparedness before and after the training of health volunteers in the Banyumas Regency (p = 0,000).

Disaaster volunteers who get more information from training and education about emergencies and disasters will get more information and knowledge than those who have never been exposed to training at all. Based on literature review conducted by Kamal, Songwathana & Sia (2012)(12), it was found that training related to emergencies was one of the factors that could increase the knowledge of community health volunteers about emergency relief during disasters. Kano, Siegel & Bourque (2005)(13) also argue that training and education are an important part of the preparation of skills for community health volunteers to be active contributors in the provision of emergency assistance. An information obtained by an individual will stimulate his mind and abilities which will then increase the individual's knowledge (14).

Village volunteers consist of people who live in the community who contribute to primary health care to improve health status. Volunteers play an important role in the crisis phase or the emergency phase because many victims can be saved in the first hours after the crisis (15). Evidence shows that disaster volunteers can play an important role in the development and achievement of emergency management (16). Disaster volunteers are classified in the category of trained lay people who will be the main focus, because they are the first responder in preventing exposure to local hazards to the community. Their role depends on the level of training that has been followed (17,18) .

Disaster volunteers can play an important role in improving disaster response and recovery because of their potential and effectiveness in improving community health, increasing disaster preparedness, "mastering the terrain" (getting to know their own residential areas), and of course the relationship of trust between all parties concerned. These activities build social capital and significantly increase community resilience in anticipating future disasters (19) There are several aspects of knowledge and skills that must be mastered by a disaster volunteers in the emergency phase during a disaster including early warning, first aid, disaster triage, logistics and communication, search and rescue and organizing teams (12,20).

Early preparedness is very necessary for the community members, especially those in disaster prone areas or areas. Knowledge in early preparedness can increase understanding of disaster risk so that it can know how to respond in an emergency situation (21–23). Early warning is important in disaster risk reduction systems, disaster volunteers must be prepared to understand the situation and characteristics of disaster events and have attention about early warning, mobilization and evacuation. This is the first action in the emergency phase or response phase during a disaster that must be communicated to the public (24,25). In addition, volunteers also need to identify available resources and equipment that can be used for early detection and send notifications to inform the public (26,27).

First aid and basic life support are very important actions that can be taken when a disaster occurs, such as clearing the airway, pulmonary resuscitation, stopping bleeding, managing shock and musculoskeletal stabilization (13). In emergency situations, airway obstruction, bleeding, and shock often cause death. The top priority for disaster volunteers to perform airway clearance manually, control bleeding, and shock management are basic actions in first aid (2,28)

Disaster volunteers can provide first aid measures to victims in the impact zone and help other volunteers to provide directions / directions for victims and evacuation routes (29). Disaster volunteers can work together with other teams in the process of finding and rescuing disaster victims. Disaster volunteers can act as informants and directions in the search and rescue of victims.

Disaster volunteers are considered more in control of their own regions or communities and must know transportation plans and know where transport vehicles will be located (30). Immediately after the evacuation or removal of the victim, the disaster volunteers can conduct an assessment to the victim by providing simple actions according to his competence in order to assist the medical team in providing first aid to the disaster victims. The next action is to help prepare transportation for the victims to the nearest health center or hospital using the prepared ambulance (31,32).

What must be well understood by community disaster volunteers is knowledge of disaster triage. In disaster conditions, priority and selection of disaster victims is needed to improve the quality and accuracy of the assistance done to disaster victims. In providing assistance to disaster

victims, a disaster volunteers can sort out disaster victims according to his ability so that it can help other health workers in providing health assistance. According to CERT (2011), the triage system is to classify patients in each medical condition. The classification uses the principle of Simple Triage and Rapid Treation (START) by using a color coding system which is divided into four levels, namely: 1) immediate medical care, 2) delayed care, 3) non urgent or minor, 4) died or almost died.

Disaster volunteers must also have a good understanding of logistics and communication. In post-disaster conditions, disaster volunteers can play a role in delivering important logistics such as clean water, sanitation and hygiene to disaster victims (33). This is important because after an area is hit by a disaster, many aid donors are constrained in providing logistical assistance due to infrastructure damage that occurs, such as roads, bridges or airports. This can cause delay in assistance received by disaster victims (34). Displacement techniques in disaster conditions can be carried out by disaster volunteers in collaboration with other disaster volunteers such as fire fighting, emergency medical services, police and so on. The priority of the search and rescue team is to find and evacuate victims from the impact zone and move them to the medical post after triage.

Based on the research, after conducting disaster preparedness training for disaster volunteers, the researchers found an increase in village disaster volunteers skills in disaster preparedness which included how to move victims or lifting (p = 0,000), perform basic life support (p = 0,000), stop bleeding (p = 0,000) and dressing splints on victims with musculoskeletal trauma (p = 0,000). But this did not occur in the control group without intervention in the form of disaster preparedness training. Of the four skills that were tested in the control group, there were two skills that significantly improved, namely basic life support skills (p = 0,000), and splint dressing (p = 0.008). While the other two skills, namely how to move the victim / lifting and stopping the bleeding, did not increase significantly (p> 0.05).

In the implementation of disaster preparedness training for village disaster volunteers carried out by several methods, namely lectures and questions and answers, practice, case studies and role play (mini simulation). The use of appropriate methods and training instructors in learning activities is very necessary because to facilitate the learning process so that it can achieve optimal

results. Without a clear method, a licensed and certified instructor, the learning process will not be directed so that learning objectives that have been set are difficult to achieve optimally. Skills in disaster preparedness are applied by practical methods. This method provides a way for disaster volunteers to apply, test and adapt theories to actual conditions through practice so that they will get excellent lessons for developing and perfecting the skills needed.

The practice of disaster preparedness skills is carried out and demonstrated one by one by all trainees. So, when taking the post test data of volunteers skills, qualitatively and the observations made by the examiner, it was very apparent that there was confidence in the volunteers carrying out these actions. Then the next method is role play or mini simulation. The role playing learning model is a way of mastering learning materials through the development of imagination and appreciation in which there are rules, goals, and elements of pleasure in conducting the teaching and learning process (35).

Role playing activities or disaster simulations are positive activities, and provide interesting experiences to the participants (36) and can increase knowledge and skills in disaster preparedness (37). Simulation technique is one method that can equip participants in facing disasters (38) and can demonstrate skills with situations approaching actual conditions (39,40). This method is one alternative in learning that can help trainees to be better prepared in facing disasters and by knowing how to handle situations if disasters occur (41) According to the results of research by Morrison and Catanzaro (2010) in Nadian et al., (2014) 79.5% of the methods of using simulations in training have helped trainees understand the actual situation when faced with danger (42). Disaster preparedness training also increases knowledge, skills and behavior in training simulations (43)

Training and education in disaster preparedness is an important element in disaster risk reduction. Therefore the method and formulation of disaster preparedness training must be comprehensive and well targeted to all components of the nation. An increase in the knowledge and skills of disaster volunteers in disaster preparedness, shows the importance of disaster preparedness training for village disaster volunteers in the context of community-based disaster risk reduction and as one of the supporting factors for the establishment of an active alert village.

The village disaster alert team can be formed from the participation of village communities, government support, the health department, BPBD and other stakeholders who are involved in disaster preparedness and emergency response. Of course the realization of this team is one component in order to create a rural-based safe community that will support the optimization of safe communities at the national level. That is a condition / condition that is expected to guarantee a sense of security and health of the community by involving the active role of the whole community, especially in the handling of daily emergencies and during disasters (48).

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BIOINFORMATICS INVESTIGATION OF VIRULENCE FACTORS OF *PROPIONIBACTERIUM ACNES* TARGETED BY EPIGALLOCATECHIN-3-GALLATE (EGCG)

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Abstract

Purpose: This study aimed to investigate and analyze virulence factors of *Propionibacterium acnes* targeted by phytocompound epigallocatechin-3-gallate (EGCG).

Methodology: Several bioinformatics approaches were employed to identify the targets, and evaluate their functional role and virulence property. Additionally, the BepiPred program v.2 was used to identify the peptide epitopes found in the virulence factors. PSORTb v.3 was also used to uncover the subcellular localization of the virulence factors of *P. acnes*.

Findings: EGCG was found to target several virulence factors of *P. acnes* such as Ser/Thr protein kinase, ABC transporter-associated permease, and methylated-DNA--protein-cysteine methyltransferase important for the survival of *P. acnes*.

Limitation: This study was computational research. Therefore, several laboratory experiments are needed to prove this bioinformatics finding.

Contribution: The finding of this study may contribute to the advancement of natural product investigation by uncovering molecular mechanisms of EGCG against *P. acnes*.

Keywords: *Bioinformatics, Epigallocatechin-3-gallate (EGCG), Propionibacterium acnes, Virulence factors.*

1. Introduction

The largest organ of the body, the skin, is made up of several important microbial groups that are important for skin health. These include Staphylococcus, Propionibacterium, Streptococcus, Corynebacterium, and Malassezia (Barnard & Li, 2017). The Gram-positive anaerobic bacterium *Propionibacterium acnes* is a big part of the normal microbiota of human skin. Furthermore, *P. acnes* is thought to play a key role in the pathophysiology of acne vulgaris, which is a common skin disease (McLaughlin et al., 2019). Additionally, this bacterium has been linked to inflammation and the development of acne (Liu et al., 2015).

Acne vulgaris is the eighth most common disease in the world, affecting about 10% of the world's population (Hay et al., 2014). Symptoms of the disease can range from mild to severe (Moradi Tuchayi et al., 2015). The condition can continue or start for the first time in adulthood, especially for women (Tan et al., 2018). Acne can have serious social and psychological implications, especially when symptoms are severe and scarring occurs (McLaughlin et al., 2019).

The treatment of acne at various ages and in pregnant women is still limited to the use of antibiotics, which might lead to antimicrobial resistance. Antibiotics such as erythromycin and clindamycin can contribute to the development of bacterial resistance in *P. acnes* (Leyden et al., 2011). Therefore, there is a need and a public interest in finding new compounds with better healing properties for acne vulgaris (Hamdy et al., 2017; Sinha et al., 2014). Green tea leaves from *Camellia sinensis* are high in polyphenols like epigallocatechin-3-gallate (EGCG), the main polyphenol in green tea and the most extensively researched (Li et al., 2015). Previous studies reported that EGCG can kill pathogenic bacteria (Jeon et al., 2014; Taylor et al., 2005). Furthermore, EGCG has been documented to inhibit the growth of *Pseudomonas aeruginosa* and *Escherichia coli* isolated from skin wounds (Jeon et al., 2014). Another study showed the antimicrobial activities of EGCG against multi-drug resistance (MDR) *E. coli* and MDR *Staphylococcus aureus* (Parvez et al., 2019). Recently, EGCG has been reported to improve acne in humans by inhibiting *P. acnes* (Yoon et al., 2013). However, the underlying molecular mechanism of EGCG against *P. acnes* has been poorly studied. Therefore, in this study, we aimed to investigate the virulence factors of *P. acnes* targeted by EGCG to elucidate the mechanism of action of EGCG.

2. Research methodology

This study was bioinformatics research involving several computational tools to identify and analyze virulence factors of *P. acnes* targeted by EGCG. The compound protein-interaction prediction was done by STITCH v.5.0. The identified proteins of *P. acnes* targeted by EGCG were then analyzed for their functional class using web-based VICMPred software. The prediction of the virulence property of the proteins was done using the VirulentPred program. In addition, BepiPred v.2 and PSORTb v.3 were employed for epitope and subcellular protein localization analysis, respectively.

3. Results and discussions

Bioinformatics analysis using STITCH v.5.0 identified ten proteins of *P. acnes* targeted by epigallocatechin-3-gallate (EGCG) (Figure 1). Those ten important proteins (upp, PPA0729, PPA1671, PPA1558, PPA0628, PPA1428, PPA0097, PPA1532, PPA0184, and PPA1644) were shown in identifier codes with different protein names, function, and property. Interestingly, some proteins targeted by EGCG had interacted with one another (PPA1644, upp, PPA0729, and PPA0184).
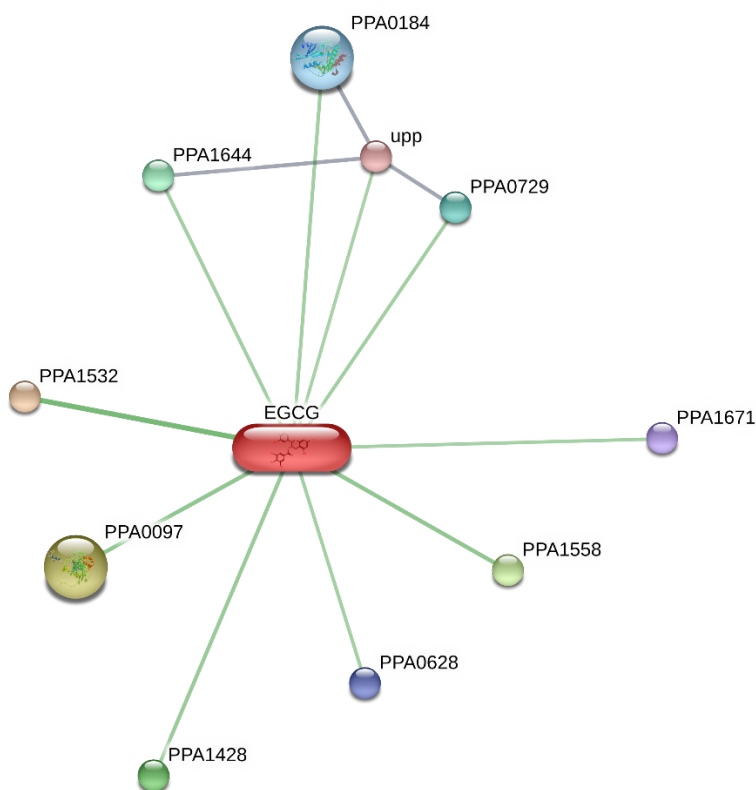

Figure 1. Interaction of EGCG with the significant proteins of *P. acnes*

EGCG was found to interact with a plethora of crucial proteins in *P. acnes* (Table 1). Those crucial proteins were related to cellular processes including uracil phosphoribosyltransferase, dihydrofolate

reductase, N-succinyldiaminopimelate aminotransferase, methylated-DNA--protein-cysteine methyltransferase and serine/threonine protein kinase (PPA1644). Meanwhile, Ser/Thr protein kinase (PPA0729), ABC transporter-associated permease, catalase, Ser/Thr protein kinase (PPA0184), and enoyl-ACP reductase were associated with the metabolism of *P. acnes*. Interestingly, in this study, we highlighted that serine/threonine protein kinase (PPA1644), Ser/Thr protein kinase (PPA0729), and Ser/Thr protein kinase (PPA0184) were the same type of kinase, however, VICMPred and VirulentPed analysis identified they were different in terms of functional class and virulent property. Further analysis among proteins of *P. acnes* using VirulentPred identified four proteins considered as virulence factors of *P. acnes*, namely Ser/Thr protein kinase (PPA0729), ABC transporter-associated permease, methylated-DNA--protein-cysteine methyltransferase, and serine/threonine protein kinase (PPA1644) with VirulentPred Score of 0.847, 1.054, 0.6193, and 0.8824, respectively.

Table 1. List of proteins of *P. acnes* that interacts with EGCG

Organism	Identifier	Protein which interacts with EGCG	VICMPred Functional Class	VirulentPred	VirulentPred Score
P. acnes	upp	uracil phosphoribosyltransferase	Cellular process	Non-Virulent	-0.302
	PPA0729	Ser/Thr protein kinase	Metabolism	Virulent	0.847
	PPA1671	dihydrofolate reductase	Cellular process	Non-Virulent	-1.022
	PPA1558	ABC transporter-associated permease	Metabolism	Virulent	1.054
	PPA0628	N-succinyldiaminopimelate aminotransferase	Cellular process	Non-Virulent	-0.913
	PPA1428	methylated-DNA--protein-cysteine methyltransferase	Cellular process	Virulent	0.6193
	PPA0097	catalase	Metabolism	Non-Virulent	-0.865
	PPA1532	enoyl-ACP reductase	Metabolism	Non-Virulent	-0.128

| PPA1644 | serine/threonine protein kinase | Cellular process | Virulent | 0.8824 |
| PPA0184 | Ser/Thr protein kinase | Metabolism | Non-Virulent | -0.944 |

The four important virulent proteins of *P. acnes* were then predicted their epitope sites using Immune Epitope Database (IEDB). The results of epitope prediction showed that Ser/Thr protein kinase (PPA0729), ABC transporter-associated permease (PPA1558), methylated-DNA--protein-cysteine methyltransferase (PPA1428), and serine/threonine protein kinase (PPA1644) possessed 13, 9, 8, and 13 sites of the epitope, respectively (Figure 2). The identification of many peptide epitopes justified the use of EGCG as the phytocompound with antimicrobial activity against *P. acnes*.
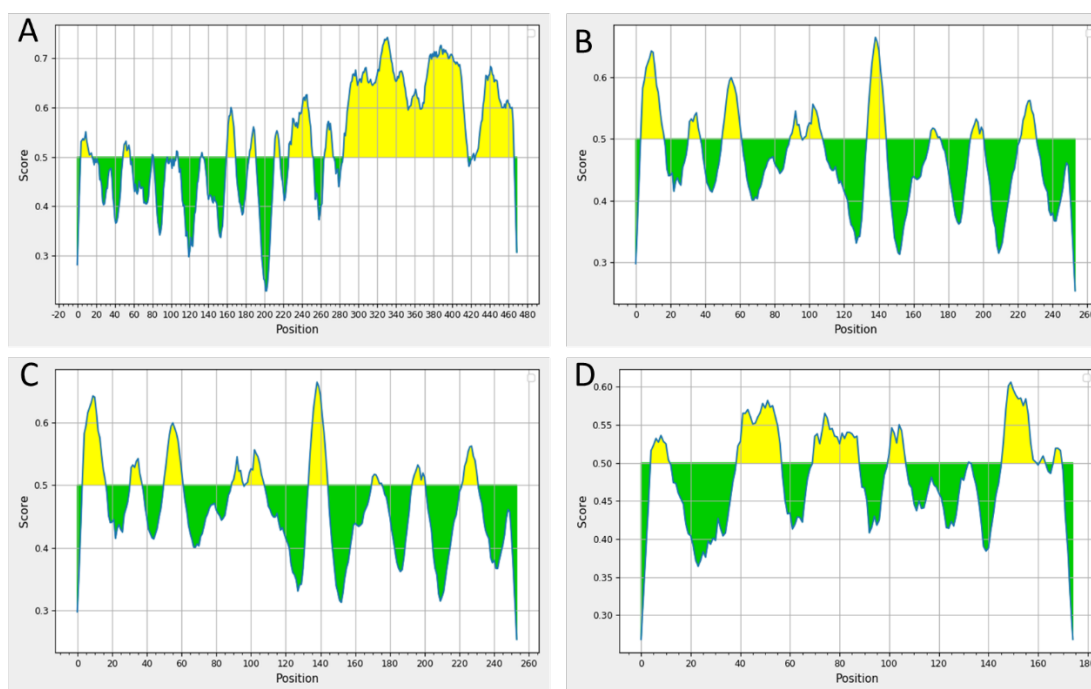
Figure 2. Predicted epitopes on the virulence protein (A) Ser/Thr protein kinase (PPA0729), (B) ABC transporter-associated permease (PPA1558), (C) methylated-DNA--protein-cysteine methyltransferase (PPA1428), and (D) serine/threonine protein kinase (PPA1644).

Furthermore, the subcellular localization of each virulent protein was studied by using PSORTb v.3. It has been identified that Ser/Thr protein kinase (PPA0729) and ABC transporter-associated permease (PPA1558) were localized in the cytoplasmic membrane. Meanwhile, the localization of

methylated-DNA--protein-cysteine methyltransferase (PPA1428) was unknown and serine/threonine protein kinase (PPA1644) was identified in cytoplasmic (Table 2).

Table 2. Subcellular localization of virulent proteins of *P. acnes*

Organism	Protein identifier	Functional protein	Subcellular location
P. acnes	PPA0729	Ser/Thr protein kinase	Cytoplasmic Membrane
	PPA1558	ABC transporter-associated permease	Cytoplasmic Membrane
	PPA1428	methylated-DNA--protein-cysteine methyltransferase	Unknown
	PPA1644	serine/threonine protein kinase	Cytoplasmic

In the previous study, EGCG decreased the viability of *P. acnes* and most importantly, EGCG significantly improved acne in an 8-week randomized, split-face, clinical trial, and was well tolerated (Yoon et al., 2013). The mechanism of actions of EGCG against *P. acnes* has been studied in this research. Our computational study found four virulence factors of *P. acnes* targeted by EGCG including Ser/Thr protein kinase (PPA0729), ABC transporter-associated permease (PPA1558), methylated-DNA--protein-cysteine methyltransferase (PPA1428), and serine/threonine protein kinase (PPA1644). Those four important proteins were critical for *P. acnes* since they were associated with metabolism and cellular process. Specifically, the virulence determinants of pathogenic bacteria consist of sensor/signaling proteins of the serine/threonine protein kinase (STPK) family, which have the dual function of sensing the environment and subverting specific host defensive systems. STPKs can detect a wide variety of signals and coordinate many cellular processes to generate an appropriate response. STPKs are crucial virulence factors that modulate global host responses during infection (Canova & Molle, 2014). ABC transporters serve either as importers, carrying nutrients and other molecules into cells, or as exporters, pumping toxins, drugs, and lipids across cell membranes (Rees et al., 2009). In addition, ABC transporters play a crucial role in bacterial pathogenesis and virulence as well as facilitate bacterial pathogenicity by facilitating the acquisition of essential nutrients (Akhtar & Turner, 2022). In the meantime, methylated-DNA-protein-cysteine methyltransferase (MGMT) adopts a secondary structure of a three-stranded antiparallel β-sheet and three alpha helices. It has been hypothesized that MGMT confers

thermostability to the protein, however, its precise role remains unknown (Hashimoto et al., 1999). The interactions between EGCG and proteins of *P. acnes* that have been identified in this study may answer how EGCG works against *P. acnes*. However, several experiments are important to be conducted to confirm our findings.

4. Conclusion

Epigallocatechin-3-gallate (EGCG) can be employed as an antimicrobial agent to eradicate *P. acnes*. The mode of action of EGCG as an inhibitor of Ser/Thr protein kinase, ABC transporter-associated permease, and methylated-DNA--protein-cysteine methyltransferase will make it an ideal medication for use in therapeutic applications.

Limitation and study forward

This research was a bioinformatics study. Therefore, the findings of this study can be confirmed by the laboratory experiments to prove the real molecular mechanism of EGCG against *P. acnes*.

Acknowledgment

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THE EFFECT OF PERSONAL SAFETY SKILL ANIMATION VIDEO ON THE KNOWLEDGE LEVEL OF SCHOOL AGE CHILDREN ABOUT SEXUAL VIOLENCE

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Abstract

Purpose: The purpose of this study was to determine the effect of Personal Safety Skill Animation Videos on the Knowledge Level of Sexual Violence Prevention in School-Age Children.
Methodology: This research method uses a Quasi Experiment with a sample of 84 respondents. The study was conducted at SD N 23 Marapalam Padang from May to August 2022.
Findings: The results of this study obtained that the average level of knowledge of prevention before being given an animated Personal Safety Skill video was 18.50 and the average level of knowledge of prevention after being given an animated video of Personal Safety Skill was 27.75.
Limitation: The limitation of researchers in conducting this study was from a large sample. Researchers limited the population in the study to children aged 10-11 years or children in grade 4 of elementary school.
Contribution: This research is a research in the field of pediatric nursing and psychiatric nursing which was carried out at SD N 23 Marapalam, Padang City. It is hoped that this research can prevent school-age children from the risk of sexual violence.
Keywords: Knowledge, personal safety skills, school age children, sexual violence, videos.

1. Introduction

Elementary school age is the age where it is known as the transition period from early childhood to late childhood until approaching pre-puberty. Children of this age need to be prepared to enter puberty along with the growth and development that occurs in them so that students need to be given information about sexual education (Dewi et al., 2020). School-age children are at risk of experiencing sexual violence because children tend not to have the strength to resist the perpetrator's wishes, the perpetrator's threats to the victim physically and psychologically. In addition, children do not understand about the behavior that must be avoided and the impact or consequences that will come from the act of sexual violence (Septiani, 2021).

World Health Organization (2017) explains that sexual violence is all actions carried out with the aim of obtaining sexual acts or other actions directed at a person's sexuality by using coercion regardless of the relationship status with the victim. Violence against children is an act that is carried out intentionally by perpetrators that can cause harm or harm to children, both physically and psychologically (Utami, 2018). Data on violence against children was obtained in 2021, namely 12,556 cases of child abuse. The highest data on violence against children is sexual violence. Data on sexual violence obtained is almost 45% experienced by children, cases of psychological violence are around 19% and physical violence is around 18% (SIMFONI-PPA, 2021).

The prevalence of sexual violence against children (0-17 years) ranged from 4.4% to 37.6% of whom were girls in Cambodia and Swaziland. This prevalence is more than 25% for most of the nine low- and middle-income countries. The prevalence of sexual violence against boys (0-18 years) was 5.6% in Cambodia to 8.9% in Zimbabwe and 21.2% in Haiti. In the United States, 26.6% of girls and 5.1% of boys were found to be sexually abused and sexually assaulted by the time they were 17 years old (WHO, 2018).

According to Komisi Perlindungan Anak Indonesia (KPAI) in 2016 to 2020, children as victims of sexual violence (rape/obscenity) each year experienced an increase in cases. In 2016 with 192 cases, 2017 decreased from 2% in 2016 which was 188 cases, in 2018 there were 182 cases and in 2019 there was an increase from the previous year by 4%, namely 190 cases, and in 2020 there was a significant increase of 120% cases with incidents of sexual violence as many as 419 cases. There are no cases of children as victims of sodomy/pedophilia from 2016 to 2019, but in 2020 there were 20 cases. Data on children victims of online sexual crimes in 2016 were 112 cases, in 2017 there was a 12% increase in cases, namely 126 cases, in 2018 and 2019 there was a decrease of 7% and 25%, namely 116 cases and 87 cases, and in 2020 there was an increase again as much as 18% that is 103 cases. Data on child pornography victims from social media in 2016 was 188 cases. In 2017 and 2018 there was a decrease in cases of 24% and 5%, namely 142 and 134 cases, and in 2019 there was an increase in cases with a percentage of 10%, namely 148 cases, and in 2020 there was a considerable decline with a percentage of 39%, namely 91 cases (KPAI, 2021).

There were 108 cases of sexual violence in West Sumatra Province in 2016, in 2017 there were 116 cases, in 2018 there were 58 cases and in 2019 there were 105 cases of sexual violence against children. Data from the Women's Empowerment and Child Protection Office of West Sumatra Province, in 2020 there were 282 victims of sexual violence against children and in 2021 there was an increase in cases with a total of 349 cases. Sexual violence against children in West Sumatra is increasing, especially the city of Padang at this time is considered very worrying (Nugrahmi & Mariyona, 2021). Based on a report handled by the Padang City Police, the number of incidents of sexual violence against children in 2021 increased from the previous year. The data obtained from January to November 2021 is that there were 85 cases of sexual violence against children (Wismi, 2021).

Many factors cause children to become victims of sexual violence. Factors causing sexual violence against children when viewed from the point of view of perpetrators of sexual violence are seen from 2 factors that cause sexual violence, namely internal factors and external factors. Internal factors, these causative factors are factors that exist within the individual. This factor can be seen specifically in the individual and his relationship with sexual crimes such as biological, moral, and psychological. External factors, external factors are factors that come from outside the actors such as mass media, economy, and socio-culture (Zahirah et al., 2019). Other risk factors for the incidence of sexual violence against children can be viewed from 3 aspects, namely society/social, parents and family situations, and children (Dania, 2020).

Children who are victims of sexual violence certainly have an impact on them. The impact of sexual violence tends to have a traumatic impact on both children and adults. There are 4 types of impact of trauma due to sexual violence experienced by children, namely betrayal (betrayal), a child must have great trust in his parents and that trust is understood and understood, sexually traumatized (traumatic sexualization), women who experience sexual violence tends to refuse sexual relations and as a consequence become victims of domestic sexual violence; Feelings of helplessness (powerlessness), nightmares, phobias, and anxiety are experienced by the victim accompanied by pain. Feelings of helplessness cause individuals to feel weak and less effective in carrying out activities and work,

stigmatization, sexual violence can make victims feel guilty, ashamed, have a bad self-image (Zahirah et al., 2019).

Children, especially elementary school age children, are very vulnerable to sexual violence. This is because their psychological conditions are not the same as adults. Children have not been able to act rationally like adults who can prevent and protect themselves from dangerous situations, the self-security skills possessed by children will really help them to avoid the dangers of sexual violence (Juarni et al., 2017). In children aged 10 years when given information about knowledge, children effectively absorb information well as they get older (Akgul et al., 2020). The age range is 10-12, where knowledge is strongly influenced by age and environmental factors, as you get older, your grasping power and mindset will also develop so that the knowledge gained will improve. The development of cognition in middle-aged children in the form of increased information processing and communication, increased attention and reasoning, as well as increased language skills such as reading so that it can lead to an increase in the average value of students' knowledge after being given sex education. (Vidayanti et al., 2020).

Efforts that can be made to prevent sexual violence can be done using personal safety skills. One of the factors that affect Personal Safety Skill is the knowledge that the child has. Personal Safety Skills can also be done by training children to improve skills in protecting themselves. Personal Safety Skills or personal safety skills are a set of skills that must be mastered by children in order to maintain their safety and avoid acts of sexual violence. Personal Safety Skills consist of three skill components. The first is recognize, namely the ability of children to recognize the characteristics of people who have the potential to commit sexual violence (predators). The second is resist, namely the child's ability to survive the treatment or acts of sexual violence they experience. The third report, namely the child's ability to report sexually unpleasant actions or behavior he received from adults, being open to parents so that parents can monitor the child's condition (Umar et al., 2018).

Personal Safety Skills can be done using animated video media that can make it easier for children to receive information because in animated video media there are moving images and audio as explanations so that they are easier to understand and not boring so that the material presented is

more interesting to learn. The animated video media used contains an explanation of the characteristics of people who have the potential to commit sexual violence, then how to survive acts of sexual violence, as well as explaining how to report sexually unpleasant acts or behavior they receive, reporting to people who are sexually assaulted. trust and dare to tell parents so that parents are able to monitor the condition of their children (Tirtayanti, 2021).

Vidayanti et al.,(2020) said that for children aged 10-12 years, animated media is effective for increasing sex knowledge of school-age children because with easy explanations of material in presenting information that is quite complex, attracts attention so that it increases motivation and has the ability to increase retention (memory). Ponza et al. (2018) said that the sample of his research on the fourth graders of animated video effectively gave a significant influence on student achievement with the results based on field trials being in very good qualifications, namely 97.16%. In line with previous research, Margaretta & Kristyaningsih (2020) that there is an effect of sexual education using animated videos on knowledge of sexuality and ways to prevent sexual violence for school-age children.

The results of the initial survey conducted on 10 May 2022 with the Principal at SDN 23 Marapalam said that there had been no counseling or efforts regarding sexual prevention. The results of interviews with 10 students, 7 students do not know how to do sexual prevention, 2 students say run when sexual violence occurs and 1 student says scream and run if sexual violence occurs. While the survey was also conducted at SD Muhammadiyah Padang. The school principal said that he had conducted counseling regarding the prevention of sexual violence. The results of interviews with 10 students, 5 students said they ran from the perpetrators, 3 students said they reported to their parents and 2 students still did not know how to prevent sexual violence. From the description of the problem, the researcher conducted a study on the Effect of Personal Safety Skill Animation Videos on Knowledge Levels of Sexual Violence Prevention in School Age Children.

2. Research methodology

Study Design

This research is a quantitative research type using a design Quasi Experiment *pretest and post test without control group design*.

Setting

The study was conducted at SD N 23 Marapalam Padang from May to August 2022.

Research Subject

The sample size was 84 people with inclusion criteria in this study, namely willing to become respondents by signing a statement letter willing to become respondents known by their parents, cooperative respondents and already smart reading, grade 4 students (aged 10-11 years) and respondents have never received Personal Safety Skills. While the exclusion criteria in this study were the respondents did not participate in all research activities completely and the respondents were not present at the time of the study.

Instruments

In this study, the researcher gave a questionnaire to determine the respondents' knowledge about Personal Safety Skills. Researchers provide an explanation of Personal Safety Skills using animated video media. To measure changes in respondents' knowledge, at the end the researchers conducted a post test. The instrument used in this study is the Children's Knowledge of Abuse Questionnaire. The questionnaire for the knowledge of preventing sexual violence in children was taken from research conducted by Leslie M. Tutty (2002). This CKAQ questionnaire was then tested for validity that was carried out by Yulianti (2019) shows that all items in the questionnaire are valid with a value of r count > r table. The results of the reliability test yielded an Alpha Crombach coefficient of 0.712, which means that it is reliable. Knowledge score ranges from 0 to 33.

Data Analysis

The analysis was done to see the effect of Personal Safety Skill. The test used was paired t test because the data is normally distributed.

Ethical Consideration

This research has passed the ethical review by the Research Ethics Commission Team, Faculty of Medicine, Andalas University in an effort to protect the human rights and welfare of research subjects (753/UN.16.2/KEP-FK/2022).

3. Results and discussions

Table 1

Characteristics of Research Respondents Based on Gender, Socio-Economic and Mother's Education (n=84)

Characteristics of Respondents	Frequency	%
Gender		
Man	24	28,6
Woman	60	71,4
Total	84	100
Socio-Economic		
< Rp.2.000.000	16	19
≥Rp.2.000.000	68	81
Total	84	100
Mother's Education		
No educational background	0	0
Low level of education	1	1,2
Moderate Level of education	59	70,2
High level of education	24	28,6
Total	84	100

Table 1 shows that the distribution of respondents by gender is mostly female, namely 60 people (71.4%). The distribution of respondents based on socio-economic status shows that most of them have an income of Rp. 2,000,000 as many as 68 people (81%). The distribution of respondents based

on mother's education shows that the majority of mothers with secondary education are 59 people (70.2%).

Table 2

Differences in Knowledge of School Age Children Before and After Giving Personal Safety Skills Using Animated Videos (n=84)

Variable	Animated Videos			p
	Mean	**SD**	**95%CI**	
Knowledge				
Before	18,50	1,275	-9,668 ;	<
After	27,75	1,387	-8,832	0,001*

Table 2 shows that there are significant differences in the knowledge of school-age children before and after being given Personal Safety Skills using animated videos (p<0.05).

Based on the research, the results showed that before and after the Personal Safety Skill animated video intervention, there was a mean difference of 9.25. Based on the results of the independent t-test, the p value < 0.000 (p <0.05) indicates that there is an effect of the Personal Safety Skill animation video on the knowledge of preventing sexual violence in school-age children at SD Negeri 23 Marapalam, Padang City. Another study also explained that there was an effectiveness of Personal Safety Skill on increasing the ability to prevent sexual violence in children with p-value = 0.012 (p<0.05) (Umar et al., 2018). Another study explained that there was an increase in students' knowledge about preventing sexual abuse before and after being given counseling using animated video media (Sri Tirtayanti, 2021).

After being given animated videos for 2 times, students' knowledge by being given 2 viewings of animated videos made the knowledge of preventing sexual violence increase more than being given 1 time animated video. Through animated videos students are given information about the definition of sexual violence, forms of sexual violence and certain bodies that should not be touched. This is because the discussion on the video that is shown is very interesting, accompanied by appropriate animations of children talking, writings and pictures about the organs of the body that should not be touched (Nurbaya et al., 2020).

Animated media in learning serves to attract students' attention to learn so that they can provide faster understanding. The use of animated video media with easy explanation of material in research has several advantages such as making it easier to present fairly complex information, attracting attention so that it increases motivation and has the ability to improve memory and can increase knowledge (Vidayanti et al., 2020).

Providing sexual education through animated videos can provide individuals with knowledge and create behavior in a person, especially in the introduction of sexual education in children (Margaretta & Kristyaningsih, 2020). According to the results of the study, the provision of an animated Personal Safety Skill video for preventing sexual violence can increase the knowledge of school-age children because the animated video that is shown contains the notion of sexual violence, ways to prevent sexual violence by recognizing the characteristics of perpetrators of sexual violence, body parts that should not be used. being touched by other people and which body parts are allowed to be touched by others, saying no if something happens that the child does not like or dislikes, and how to report sexual violence in the event of an incident of sexual violence against a child. Animated Personal Safety Skill videos are presented with animated video media that are made as attractive as possible so that children are interested in watching animated videos.

Using animated video media that can make it easier for children to receive information because in animated video media there are moving images and audio as explanations so that they are easier to understand and not boring so that the material presented is more interesting to learn (Tirtayanti, 2021). The animated video media used contains an explanation of the characteristics of people who

have the potential to commit sexual violence, then how to survive acts of sexual violence, as well as explaining how to report sexually unpleasant acts or behavior they receive, reporting to people who are sexually assaulted. trust and dare to tell parents so that parents are able to monitor the condition of their children (Sri Tirtayanti, 2021).

4. Conclusion

Implementation of providing Personal Safety Skills using animated videos in increasing the knowledge of school-age children. This is expected to increase students' awareness of the risk of incidents of sexual violence against children.

5. Limitation and study forward

The limitation of researchers in conducting this study was from a large sample. Researchers limited the population in the study to children aged 10-11 years or children in grade 4 of elementary school. Subsequent studies could consider the large size of the sample, as all children are at risk of sexual assault outside the home.

6. Acknowledgement

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THE INFLUENCE OF GUIDED IMAGERY TECHNIQUE WITH SAPE DAYAK MUSIC AUDIO ON ANXIETY LEVELS OF PATIENTS UNDERGOING HEMODIALYSIS THERAPY AT DORIS SYLVANUS HOSPITAL OF PALANGKA RAYA

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Abstract

Purpose: This study aims to identify the effect of guided imagery techniques with sape Dayak music audio media on the anxiety level of patients undergoing hemodialysis at Doris Sylvanus Palangkaraya hospital of Palangka Raya.

Methodology: The design used in this study uses a research design: "ONE GROUP PRE-TEST-POST-TEST DESIGN". In this study, the population was patients with chronic kidney failure who underwent hemodialysis therapy at dr. Doris Sylvanus Hospital Palangka Raya. The sampling technique in this study used a purposive sampling technique that met the inclusion criteria, namely as many as 34 people.

Findings: The results showed that at α 5% there was a significant change in the average respondent's anxiety level before and after being given an intervention in the form of guided imagery relaxation therapy with sape Dayak music as media (p value $0.000 < α 0.005$).

Limitation: The open/public hemodialysis service room (1 room for 14 beds and hemodialysis equipment) makes it a bit difficult for researchers to intervene, because in ideal conditions this therapy would be better if it was carried out in a special room that provides tranquility so that the therapeutic communication process becomes the point important in cognitive therapy can be achieved.

Contribution: Guided imagery technique with audio media of Sape Dayak music is proven to be able to reduce the anxiety of patients undergoing hemodialysis therapy at Dr. Doris Sylvanus P. Raya Hospital and can be recommended as a therapy in overcoming anxiety experienced by patients.

Keywords: Guided Imagery, Sape Dayak, Anxiety

1. Introduction

Replacement therapy such as hemodialysis and kidney transplantation is often followed by psychological problems that can have an impact on the course of the disease (Margono, 2001). Psychological disorders found in patients with kidney failure undergoing hemodialysis therapy include depression, marital relations and sexual function, and non-compliance with diet and medication. Another psychological problem that often occurs in patients undergoing hemodialysis is anxiety. Anxiety is confusion, fear of something that will happen with no clear cause associated with feelings of uncertainty and helplessness. Anxiety is an emotional response to a non-specific object that is subjectively experienced and combined interpersonally (Stuart, 2009).

Anxiety in chronic kidney failure clients who are undergoing hemodialysis therapy require good and appropriate nursing interventions, one of which is through guided imagery therapy. Guided imagery is a process that uses the power of the mind to move the body to heal itself and maintain health or relax through communication within the body involving all senses including touch, smell, sight, and hearing (Potter & Perry, 2005). Guided imagery therapy is a relaxation method to imagine or imagine places and events associated with a pleasant sense of relaxation (Kaplan & Sadock, 2010). Based on the description above, the author is interested in researching "The Effect of Guided Imagery Techniques with Sape Dayak Music Audio Media on Anxiety Levels of Patients Undergoing Hemodialysis Therapy at Dr. Doris Sylvanus Hospital Palangka Raya".

2. Literature review and hypotheses development

Anxiety is a manifestation of various mixed emotional processes that occur when people are experiencing feelings of pressure and inner conflict or conflict. There are aspects that are conscious of anxiety such as fear, helplessness, surprise, guilt, or being threatened, as well as aspects that occur outside of awareness and cannot avoid these unpleasant feelings (Jatman, 2000). The emergence of kidney failure has always been a frightening specter, moreover until now efforts to cure it have not satisfied many people, even though various methods have been tried (Suwandi, 2002). Patients with end-stage chronic kidney disease suffer from serious and fatal disease, they only hope to live through dialysis. They must also adapt to the self-limitation of dialysis and must learn to live with chronic illness and possible death threats. This situation is a psychosocial stressor in patients with end-stage CRF which can have an impact on psychiatric disorders, such as anxiety, depression and insomnia (Siregar, 2002).

The attachment of end-stage CRF patients to HD machines for their survival will result in continuing psychological impacts. Psychological reactions that are closely related to HD therapy are fear and anxiety responses, depression, suicidal tendencies, social dysfunction, and psychosexual problems (Suwandi, 2002). Psychological factors that accompany CRF patients are related to the frequency of clients undergoing regular HD and intra-dialysis complications, such as hypotension, muscle spasms, nausea, vomiting, headaches and fever. Meanwhile, the factors associated with anxiety in CRF

patients undergoing hemodialysis include duration of therapy, frequency, and the presence of complications during HD (Margono, 2001).

Qualitative research conducted by Nugroho in 2004 identified patients with kidney failure undergoing hemodialysis experiencing anxiety caused by injections of local anesthetic drugs, insertion and removal of needles, as well as complications that may arise during hemodialysis. While the factors that cause anxiety are worries about losing a job so that they cannot pay for hemodialysis, worrying about losing assets to pay fees, disrupting biological integrity such as body image, complications that arise, and feeling very heavy thinking about continuing hemodialysis costs (Nugroho, 2004). Junait's research in 2003 showed that kidney failure patients undergoing hemodialysis mostly experienced anxiety with varying levels, ranging from 13% mild anxiety, 50% moderate, 20% severe, and 3% panic (Junait, 2003).

End-stage CRF patients undergoing HD also experience several adaptation stages, including the honey moon period, this period starts from the first week of HD to six months, where the patient still receives dependency on the HD machine and still has self-confidence and appreciation. The period of disenhancement-discouragement (disappointment-despair) begins after six months to twelve months of HD therapy, this is often marked by changes in behavior due to stress. The long term adaptation period occurs after one year of undergoing HD, usually the patient begins to accept the limitations, weaknesses and complications of dialysis (Margono, 2001).

Snyder and Lindquist (2002) define guided imagery as imagination guidance as an intervention of the human mind and body using the power of imagination to gain physical, emotional and spiritual affect. While other experts argue that guided imagery is a technique that uses individual imagination with directed imagination to reduce stress (Patrica and Kalsum, 2012). Guided imagery can be categorized as mind-body medicine therapy by Bedford (2012) by combining guided imagery with mind meditation as a cross-modal adaptation. Guided imagery uses the power of the mind to move the body to heal itself and maintain health or relax through communication in the body involving all senses including touch, smell, sight and hearing (Potter & Perry, 2005). Guided imagery techniques

are used to manage coping by imagining or imagining something that starts with a relaxation process in general, namely asking clients to slowly close their eyes and focus on their breaths, clients are encouraged to relax, empty their minds and fill their minds with images to create peace. and calm (Smeltzer & Bare, 2008).

Sampe or sape is a musical instrument that serves to express feelings, both feelings of joy, love, longing, and even a sense of sorrow (Apokayan in Amoris, 2015). Sape is a musical instrument or instrument originating from the Dayak Kenyah and Kayan tribes who have a very important role in the life of the Dayak Kenyah tribe and have a deep philosophy. In every event or traditional ceremony, this musical instrument is always played. Sape is also one of the musical instruments used to express mood. Usually several people will gather and play sape while telling stories about their experiences. Usually each individual has his own memories and when someone plays sape, the resulting taste will be very different from other sape players (Amoris, 2015). Until now, Dayak elders still believe in the belief in sape's luck, for example when sape is played in a traditional ceremony. When the sound of the sape is heard, all the people will be silent, then you can hear the faint chanting of prayers or mantras that are recited together. In an atmosphere like this, it is not uncommon for some of them to be possessed by spirits or ancestral spirits. Sape is also played at folk festivals or gawai padai events, until it is played to accompany graceful dances.

Along with the development of the times, the sape then not only functions as a musical instrument to express feelings, but the sape is also often played together with other musical instruments. In this study, sape music was used as background music used in guided imagery relaxation techniques, to find out how it affects the anxiety level of patients undergoing hemodialysis at RSUD Dr. Doris Sylvanus Palangka Raya.

3. Research methodology

This research uses quantitative research with Quasi Experiment design. Quasi-experimental research is a study that tests an intervention on a group of subjects with or without a comparison group, but it is not randomized to include subjects in the treatment or control groups. The design used is one group

pre-test and post-test design, which is a design that treats one group without comparison. The effectiveness of the treatment was assessed by comparing the value of the pre-test with the post-test.

The research design of one group pre-test and post-test design is a design that is commonly used in research, where the purpose of this study is to determine the effect of guided imagery therapy on the patient's anxiety level.

This research was conducted in the period January - December 2019 (research schedule attached) and data collection and implementation of research interventions lasted for approximately six months, starting from the development of proposals to improvements and preparation of research results reports. As for the place of research, Moleong (2010) suggests several things that need to be considered in determining the place of research, namely by studying substantive theory and exploring the focus and formulation of research problems to determine whether there is conformity with the reality in the field, and also taking into account geographical limitations and practical aspects such as time, cost and effort. This research took place in the Hemodialysis room at RSUD Dr. Doris Sylvanus Palangka Raya.

In this study, the population was all patients undergoing hemodialysis therapy in the Hemodialysis Room of RSUD Dr. Doris Sylvanus Palangka Raya. The sampling technique in this study used a consecutive sampling technique of 34 people who met the inclusion criteria, namely: patients with chronic kidney failure, undergoing hemodialysis therapy at RSUD dr. Doris Sylvanus Palangka Raya, aged 16-60 years, and willing to be examined and signed a consent letter.

4. Results and discussions

Data was collected through the distribution of anxiety questionnaires to prospective respondents, namely CKD patients undergoing hemodialysis at dr. Doris Sylvanus Palangka Raya. Researchers conducted research after obtaining permission from RSUD Dr. Doris Sylvanus Palangka Raya, then the researcher approached the Head of the Hemodialysis Room and explained the aims and objectives of the research. After getting permission from the Head of the Room to conduct research, the researcher then took the initial data on the level of anxiety after previously giving an explanation to the prospective respondents about the aims and objectives of the study.

The results of statistical tests using the dependent sample t-Test (Paired t-Test) showed that there was a difference in the average level of anxiety of respondents before and after the intervention, namely before the intervention was 41.94 and after the intervention was 38.00. This shows that the level of anxiety after being given guided imagery therapy with Sape Dayak audio media decreased significantly by 3.94 with p value = 0.000 (α 0.05). Based on the results of these statistical tests, it can be concluded that at 5% there is a significant difference in the average level of anxiety before and after being given intervention in the form of guided imagery therapy with sape Dayak audio media (p value 0.000 < 0.005).

Table 1 anxiety levels intervention	Variable	N	Mean	SD	SE	t	p value	Differences in before and after
	Anxiety level							
	a. Before	34	41,94	8,41	1,44	8,066	0,000	
	b. After	34	38,00	7,45	1,27			
	Difference		3,94					

Anxiety is an emotional experience and is a response that occurs when a person faces pressure or events that threaten his life (Slamet, 2001). In this study, it was found that patients undergoing hemodialysis experienced anxiety ranging from mild to moderate. The presence of anxiety in patients in this study is supported by qualitative research conducted by Nugroho in 2004 at Telogorejo Hospital, Semarang, which reported that all patients undergoing hemodialysis experienced anxiety. This situation is in accordance with the literature that anxiety generally occurs in patients with chronic kidney failure because this disease is perceived as a threat. Patients undergoing hemodialysis really expect to live from the hemodialysis machine and must adapt to the restrictions, learn from

living with chronic illnesses and possible death threats (Siregar, 2002). Besides that, chronic kidney failure causes many changes in the body's systems, and this causes psychological problems, especially since until now efforts to cure it have not satisfied many people, even though various methods have been tried (Suwandi, 2002). This situation is supported by the literature that anxiety can be caused by threats to a person's integrity, including impending physiological incapacity, or decreased capacity to carry out activities of daily living, and threats to a person's self-system that can harm identity, self-esteem, and social functioning. integrated within a person (Stuart, 2009).

In this study, it was found that the majority of respondents who experienced anxiety had a high school education level (50%). This condition may be a factor that contributes to the emergence of anxiety in patients undergoing hemodialysis. This is supported by previous research by Junait (2003) which found a relationship between education and socioeconomic status with anxiety in terminal kidney failure patients undergoing hemodialysis. According to the literature, a low level of education and economic status will cause the person to easily experience anxiety. The level of education of a person or individual will affect the ability to think, the higher the level of education, the easier it is to think rationally and capture new information, including in describing new problems (Stuart, 2009).

The results of this study indicate that before the intervention, the majority of patients experienced moderate anxiety with an average anxiety score of 41.94. These results are similar to the results of a previous study conducted by Junait (2003), which reported that most patients undergoing hemodialysis experienced moderate anxiety (50%), then severe anxiety (20%), and mild anxiety (13%). According to Margono (2001), in patients with chronic kidney failure undergoing hemodialysis, anxiety is also influenced by the length of time undergoing hemodialysis. Almost all respondents in this study were still undergoing hemodialysis in the range of 0 – 5 years, which allowed the patients to adapt. According to the literature, patients with end-stage chronic kidney failure undergoing hemodialysis experience several stages of adaptation, including the honey moon period. This period starts from the first week of hemodialysis to six months, where the patient is still dependent on the hemodialysis machine, and still has self-confidence and respect (Margono, 2001).

This study found that the majority of patients (55.9%) who underwent hemodialysis were more than 46 years old, which allowed the patients to be more mature, accustomed and experienced in

responding to emerging anxiety. This is supported by expert opinion that someone who has a younger age is more likely to experience anxiety disorders than someone who is older (Varcarolis, 2000). In addition, mature individuals, namely individuals who have personality maturity, will be more resistant to experiencing disturbances due to stressors.

Guided imagery therapy is one form of psychotherapy that can be given to CKD patients undergoing hemodialysis, because guided imagery as an intervention through the guidance of the imagination of the human mind and body, uses the power of imagination to get physical, emotional and spiritual effects when the patient undergoes a series of complex procedures. , so that the patient is expected to become more relaxed and his mind can be distracted from negative things.

The results of this study indicate that after intervention in the form of guided imagery therapy with sape Dayak audio media, there was a decrease in anxiety levels from moderate to mild anxiety with an average anxiety level score of 38.00. This is in accordance with what was stated by Carter (2006) that guided imagery can be applied to relax muscles and change negative emotions so as to help reduce stress levels, causes and symptoms that accompany stress/anxiety. CKD patients undergoing hemodialysis therapy have feelings of shame, inferiority and helplessness due to physical weakness that makes them dependent on this dialysis therapy. More complex problems occur because financial problems and poor prognosis of CKD disease which can lead to death make the anxiety of CKD patients will get worse and prolonged (chronic). This is what causes CKD patients to always have negative thoughts about themselves, their abilities and their future. By giving guided imagery therapy, it is hoped that the negative thoughts of CKD patients can become more positive thoughts about themselves at this time and the abilities they still have so that CKD patients can live the rest of their lives more productively and with quality.

This research uses guided imagery technique with audio media of Sape Dayak music. This is done by researchers because remembering that Sape Dayak music has always been used in various traditional ceremonies and also medical rituals. Sape is a musical instrument or instrument originating from the Dayak Kenyah and Kayan tribes who have a very important role in the life of the Dayak Kenyah tribe and have a deep philosophy. In every event or traditional ceremony, this musical instrument is always played. Sape is also one of the musical instruments used to express

mood. Usually several people will gather and play sape while telling stories about their experiences. Usually each individual has his own memories and when someone plays sape, the resulting taste will be very different from other sape players (Amoris, 2015). The Dayak Kenyah have practiced healing diseases through Sape music since ancient times. According to Miku Loyang, one of the sape players from the Sarawak smoke river, said that when healing by rowing, the sape must be played (Amoris, 2015).

The benefits of calming music and being able to create a relaxed atmosphere were combined by researchers with guided imagery techniques that guided respondents to reduce the anxiety they experienced. The results of statistical tests in this study using the dependent sample t-Test (Paired t-Test) showed that the level of anxiety of respondents after being given guided imagery therapy with Sape Dayak audio media decreased significantly by 3.94 with p value = 0.000 (α 0 ,05). Based on the results of these statistical tests, it can be concluded that at 5% there is a significant change in the average level of anxiety of respondents before and after being given an intervention in the form of cognitive therapy (p value 0.000 < 0.005). The results of this statistical analysis are in line with those stated by Purnama (2015), that guided imagery relaxation techniques can be used to reduce anxiety by imagining a situation or series of pleasant experiences that are guided by involving the senses, which in this case optimizes the sense of hearing (audio).) accompanied by Sape Dayak music.

5. Conclusion

Based on the results of statistical tests using the dependent test sample t-Test (Paired t-Test) shows that there is a difference in the average level of anxiety of respondents before and after the intervention in the form of guided imagery relaxation techniques with audio media of sape Dayak music, namely before the intervention was 41 ,94 and after intervention was 38.00. This shows that the level of anxiety after being given guided imagery relaxation therapy with Sape Dayak music audio media has decreased significantly by 3.94 with p value = 0.000 (α 0.05). Based on the results of these statistical tests, it can be concluded that at 5% there is a significant difference in the average level of anxiety before and after being given an intervention in the form of guided imagery relaxation therapy with sape Dayak audio media (p value 0.000 < 0.005).

The intervention has been shown to be able to reduce the anxiety level of chronic kidney failure patients undergoing hemodialysis at the BLUD General Hospital, dr. Doris Sylvanus Palangka Raya.

Limitation and study forward

The open/public hemodialysis service room (1 room for 14 beds and hemodialysis equipment) makes it a bit difficult for researchers to intervene, because in ideal conditions this therapy would be better if it was carried out in a special room that provides tranquility so that the therapeutic communication process becomes the point important in cognitive therapy can be achieved.

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GEMAS APPLICATION ABOUT STUNTING PREVENTION FOR INCREASINGTHE KNOWLEDGE OF BREASTFEEDING MOTHERS

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ABSTRACT

Background: Stunting is a condition of failure to thrive due to chronic malnutrition, occurring since the baby is in the womb. Android smartphones as an effort to increase knowledge about stunting prevention of breastfeeding mothers.

Purpose: This study aims to determine the effect of giving the Gemas application on stunting prevention on the knowledge of breastfeeding mothers.

Methodology: Experimental research method with control group pretest and posttest design. Theresearch was carried out in the Community Health Center 2 Sokaraja area for 3 months in 2022. The population in this study were all breastfeeding mothers in the working area of Community Health Center 2 Sokaraja, Banyumas Regency, totaling 107 breastfeeding mothers as of February2022. The sample in this study were breastfeeding mothers, located in the working area Community Health Center 2 Sokaraja, has an Android-based smartphone and is willing to be a respondent. Total sample of 40 respondents divided into 20 intervention groups and 20 controls. Multi-stratified proportional random sampling technique. The questionnaire used to measure knowledge about stunting prevention, smart phones, and PPE sets (masks, hand sanitizers, gloves,face shields). Data analysis used paired t test (Paired-samples t test).

Findings: The average increase in knowledge of the control group was 2.9, which was smaller

than the intervention group's 4.3. Statistically, there is a difference in the increase in the value of knowledge about stunting prevention in respondents who are given the Gemas application and those who are not given the Gemas application ($0.003 < \alpha$ (0.05)). Statistically, there is a differencein the increase in the value of knowledge about stunting prevention in respondents who are giventhe Gemas application and those who are not given the Gemas application ($0.003 < \alpha$ (0.05)).

Limitation: Samples of study were only taken from one area of Public Health Centre. It could

bebetter if the samples of study were taken from some areas of Public Health Centre

Contribution: Therefore, the using of media that is based on smartphone can be used to increaseknowledge of breastfeeding mothers because it is more practical, easy to access and almost everyone currently has these devices.

Conclusion: The Gemas application about stunting prevention has a significant effect for increasing the knowledge of breastfeeding mothers.

*Keywords***:** Gemas application, stunting, knowledge, breastfeeding mothers.

1. Introduction

Stunting is malnutrition in infants in the first 1000 days of life that lasts a long time andcauses delays in brain development and child development. Due to chronic malnutrition, stuntedbabies grow shorter than the standard height for toddlers of their age. But remember, stunting mustbe short in stature, while those with short stature are not necessarily stunted (Kedeputian BidangAdvokasi, 2021). The condition of failure to thrive in children under five due to chronicmalnutrition, so that children are shorter than their age is called stunting. This malnutrition occurssince the baby is in the womb, so that it has an impact on children becoming sicker more easily,less cognitive abilities, and even in the long term it can cause economic losses," (Djauhari, 2017).

The condition of the mother who is malnourished can encourage the occurrence of babies with low birth weight. Pregnant women who experience CED will have a negative impact on themselves and the baby they are carrying. This is in line with Fajriana & Buanasita (2018) Chronic Energy Deficiency during pregnancy will result in Low Birth Weight Babies (LBW) where the baby's weight is <2500 g which will interfere with the growth and development of the child, premature babies, even to the point of sudden death of the mother or baby. This situation can lead to stunting.

In 2017, around 22.2% or 150.8 million toddlers in the world were stunted. More than half of the stunted toddlers in the world come from Asia, which is as much as 50%. Based on the resultsof a research study on the nutritional status of toddlers in Indonesia in 2019, the stunting rate has fallen to 27.67 percent (K. A. Ahmad et al., 2022). The stunting toddler rate in Central Java in 2017 (28.5%) has increased compared to 2014 (22.6%), 2015 (24.8%), as well as in Banyumas

Regency which has increased in 2017 (24.5%)) compared to 2014 (19.1%), and 2015 (22.8%) (Yankes DKK Banyumas Regency, 2019). Data from the Banyumas Regency Health Office in 2019 found 16,581 cases of stunting in Bayumas Regency and specifically in Purwokerto City there were 1,042 stunting cases (Suprianto, 2020). Banjarsari Kidul Village is 10 locus of stuntingvillages in Banyumas Regency in 2022 (Sadiyanto, 2021).

The causes of stunting in the stunting locus village in Pati Regency according to (Ernawati,2020) are: 1) lack of food intake; 2) inadequate parenting; 3) short descent; 4) not getting exclusive breastfeeding; 5) not getting Early Breastfeeding Initiation; 6) lack of environmental sanitation; 7)LBW; 8) during pregnancy women experience anemia. The results of other studies show that exclusive breastfeeding, birth weight, immunization, and parental income have a relationship withrisk factors for stunting (Setianingsih et al., 2022).

The results of previous research regarding the evaluation of the implementation of stunting prevention programs show that stunting prevention through specific nutrition intervention programs has not reduced stunting below 20% because, among other things, there is no specific funding for specific nutrition interventions (Muthia et al., 2020). The results of routine activities at Posyandu Desa Banjarsari Kidul which were carried out on February 13 2019 by distributing questionnaires to pregnant women, nursing mothers and mothers of toddlers to be filled in which contained stunting, the results obtained from 68 participants with an average of 56.67% regardingstunting . Thus it is necessary to increase knowledge to form positive attitudes in society as a wayto prevent stunting. This prevention can be in the form of providing health education using the media. The increasing use of smartphones gives the author the idea to create android-based media which can be downloaded in each respondent's smartphone . Android smartphones as an effort toincrease youth knowledge and attitudes about stunting prevention behavior. Education through digital applications is in accordance with the current generation, so it is expected to be able to reach many teenagers in a short time (Ahmad & Nurhidaya, 2020).

Based on a 2021 International Duta Comparation (IDC) survey, there are 80% of smartphoneusers during the first 15 minutes after waking up. Most of the use of smartphones in everyday lifeis just to play games and check social networks so that they are always

connected with other users(Rahmi, 2021). The Indonesian Central Bureau of Statistics (BPS) recorded cellular phone usage of around 62.84% or 355.62 million subscribers, an increase compared to 2010 of 38.05% (BPS, 2021). The use of the internet via smartphones in Indonesia is very high, reaching 167 million people (89%) of the total population of Indonesia (Kemenkominfo, 2021).

This application is a special android-based application that contains topics of discussion about stunting. One can read and study health information about stunting on the Smartphone. The use of smartphones as learning media is proven to increase knowledge. This is in accordance with research conducted by (Fitriami & Galaresa, 2022) that there is an effect of stunting education using the android application (p) 0.0001 <0.05 on increasing the knowledge and attitudes of mothers at the Tenayan Raya Pekanbaru Health Center. Learning media using Android-based Smartphones have proven to be of high quality based on research results that the TePytha application as an Android-based interactive learning media has received a positive response fromstudents and is practically used as a medium for learning mathematics (Artanti et al., 2022).

This study aims to analyze the effect of giving the Gemas application on stunting preventionon the knowledge of breastfeeding mothers. It is hoped that this research can increase the knowledge of breastfeeding mothers and avoid stunting and breastfeeding mothers for up to 2 years, so as to create a generation of golden children who are not stunted.

Treatment of stunting according to Sandjojo (2017) includes Specific Nutrition Interventions, and Sensitive Nutrition Interventions. Specific Nutrition Intervention is an intervention aimed at children in the first 1,000 Days of Life (HPK) and contributes to a 30% reduction in stunting. Specific nutritional intervention activities carried out include providing supplementary food to pregnant women to overcome chronic energy and protein deficiencies, addressing iron and folic acid deficiencies, overcoming iodine deficiency, and administering blood-boosting tablets to pregnant women (Hundoyo, 2018). Supporting interventions by providing calcium supplementation and pregnancy checks with the target of Breastfeeding Mothers and Children Aged 0-6 Months namely Encouraging early initiation of breastfeeding (jolong/colostrum breastfeeding), and Encouraging exclusive breastfeeding (breastfeeding

sufficient to reduce the risk of infant infection (Anisa, 2012)).3). Interventions targeting Breastfeeding Mothers and Children Aged 7-23 months are Encouraging the continuation of breastfeeding until the age of 23 months accompanied by complementary feeding, consuming milk as a good source of animal protein. Providing zinc supplementation, fortifying iron into food, and providing complete immunization. According to the Coordinating Ministry for Human Development and Culture- Secretariat of the Vice President of the Republic of Indonesia (2019) includes a) Promotion and counseling for exclusive breastfeeding b) Promotion and counseling for infant and child feeding (PMBA) c) Management of malnutrition d) Provision of additional food for recovery malnourished children e) Growth monitoring and promotion f) Providing vitamin A supplementation g) Providing nutritional powder supplementation, such as Taburia h) Providing immunization

The effects of stunting include the level of intelligence, susceptibility to disease, reducing productivity and then inhibiting economic growth, increasing poverty and inequality (RI Ministry of Finance, 2018). According to Sandjoyo (2017) the adverse effects of stunting are disruption of brain development, intelligence, impaired physical growth, metabolic disorders in the body, decreased cognitive ability and learning achievement, decreased immunity so that you get sick easily, and a high risk of developing diabetes, obesity, heart disease and blood vessels, cancer, stroke, and disability in old age. All of this will reduce the quality of Indonesia's human resources, productivity and competitiveness of the nation

According to Musfiqon (2012), health education cannot be separated from the media. Media is divided into 2 parts, namely print and electronic media. Print media such as leaflets, booklets, posters and others. Electronic media such as television, radio, PowerPoint, smartphones and others(Maulana 2013). In this study, researchers used electronic media as a medium for distributing information. The media is media in the form of a smartphone application that contains topics around stunting prevention, such as understanding, causes or influencing factors, impacts and ways to prevent stunting. The application is named "Gemas (Golden Child Movement)". Submission of information media using applications is supported by research conducted by Purbasari (2013) that the delivery of information using smartphone media is very effective, especially among adolescents.

The Gemas Gadget application is available in the play store or app store. Everyone can download for free. The Golden Child Gadget application contains information about stunting including understanding, influencing factors, impacts, and treatment of stunting in breastfeeding mothers. The golden child gadget application is also accompanied by pictures to increase the knowledge of breastfeeding mothers regarding stunting prevention.

2. Literature review and hypotheses development

The use of smartphones as learning media is proven to increase knowledge. This is in accordance with research conducted by Fitriami & Galaresa (2022) that there is an effect of stunting education using the android application (p) 0.0001 <0.05 on increasing knowledge and attitudes of mothers at the Tenayan Raya Pekanbaru Health Center. Learning media using Android-based Smartphones have proven to be of high quality based on research results that the TePytha application as an Android-based interactive learning media has received a positive response from students and is practically used as a medium for learning mathematics (Artanti et al., 2022). The results of this study are similar to the results of research where there are significant differences in knowledge before and after being given the Mother Smart Grounding (MSG) program to mothers in preventing stunting in the Work Area of the Puuwatu Health Center, Kendari City (Andriani et al., 2020). The results of research conducted on cadres also found that the median % increase in knowledge of cadres about stunting before and after being given the ABS(Stunting-Free Children) application was 25.1% and there was a significant difference between knowledge before and after giving stunting-free children to the application cadres (p value <0.001)(Handayani et al., 2019). The results of other studies also found that education using whatsapp media showed an increase in knowledge of 84.6% and was greater than education using other methods such as lectures and booklets19 (Melati et al., 2021). The results of a similar study on the knowledge and attitudes of mothers and toddlers found that there was a significant average difference between the pre-test knowledge data and the post-test knowledge data for research respondents with the result p=0.001 (p<0.05) (Waisnawa et al., 2021).

The use of other applications to increase knowledge was found in the research by Sekarwatiet al. (2022) that there is an effect of the Android-based Ayo Dedis application on

increasing knowledge of balanced nutrition in pregnant women before and after application administration with results (p <0.05). Stunting education using the android application has an effect on increasingthe knowledge and attitudes of mothers at the Tenayan Raya Pekanbaru Health Center (p 0.000 1

<0.05) (Fitriami & Galaresa, 2022). According to Yuni et al. (2022) that the Smart Acceptor android car application can increase PUS women's knowledge about family planning. The media "Acenting Seni" is able to increase the knowledge and attitudes of respondents regarding preventing stunting from an early age (Medinawati et al., 2022). The use of the IMPORTANT ROLE Application has an effect on increasing the knowledge of cadres (Andayani et al., 2022). Gemas application can impact significantly the knowledge and attitude of teenagers in preventingstunting (Mulidah et al., 2022).

3. Research methodology

The research design used was an experimental with control group pretest and posttest design,with the research design consisting of an intervention group and a control group which carried outpretest and posttest (Nursalam, 2014). This research was carried out in the working area of Sokaraja 2 Public Health Center, Banyumas Regency because the Sokaraja 2 Health Center area is a stunting locus village in Banyumas Regency in 2022. The population is all breastfeeding mothers in the working area of Sokaraja 2 Health Center, Banyumas Regency in 2022. The sample in this study is breastfeeding mothers with research criteria of breastfeeding mothers, located in the working area of the Sokaraja 2 Public Health Center, have an Android-based Smartphone and are willing to be respondents. The sample consisted of 20 respondents in the intervention group and 20 in the control group, with a total sample of 40. The sampling technique used was random sampling. The research variables consisted of the independent variable which was the application of Gemas and the dependent variable which was knowledge, attitude towards preventing stunting in breastfeeding mothers. The instrument used was a questionnaire to measure stunting preventionknowledge and attitudes. The results of the validity and reliability test of the knowledge questionnaire with the Cronbach's alpha test. Making the "Gemas" application on Smartphones and making research ethics 0500/EA/KEPK/2022. The research was carried out

directly door to door, beginning with giving informed consent to the respondents. The intervention and control groups were given a knowledge and attitude questionnaire as a pretest. The intervention group wasgiven the Gemas application on a smartphone to study and read and an observation sheet for 7 days. The observation sheet contains the day and time the breastfeeding mother reads and understands the contents of the application. Day 8 given a knowledge questionnaire for the post test. The control group after the posttest was given the Gemas application. Bivariate analysis wasconducted to examine the relationship between the independent variables and the dependent variable. The normality test used is the Kolmogorov Smirnov to find out whether the research datais normally distributed or not. The statistical test used was the Paired-samples t test with the aim of knowing the difference in results between the pre-test post-test in the intervention group and the pre-test post-test in the control group. Meanwhile, the Independent-samples t test was used to identify differences in post-test knowledge in both the intervention and control groups (Dahlan, 2013).

4. Results and discussions

a. Results

1). The description of age, education, income, occupation and sex of the baby

Table 1. The frequency distribution of the description of age, education, income, occupation and sex of infants of breastfeeding mothers in the working area ofPuskesmas 2 Sokaraja, Banyumas Regency.

Variable	Control Group		Intervention Group	
	Frekuency(f)	Percentage (%)	Frekuency (f)	Percentage (%)
Age				
< 21 & > 35 tahun	4	20,0	3	15,0
21 - 35 tahun	16	80,0	17	85,0
Education				
Elementary	1	5,0	5	25,0
Yunior High School	5	25,0	6	30,0
Senior High School	11	55,0	7	35,0
University	3	15,0	2	10,0
Income				
< 2 Millions (Rupiah)	9	45,0	14	70,0
≥ 2 Millions (Rupiah)	11	55,0	6	30,0
Job				
Housewife	10	50,0	11	55,0
Employer	10	50,0	9	45,0
Gender of baby				
Male	9	45,0	9	45,0
Female	11	55,0	11	55,0

Based on table 1, it is known that in terms of age, most of the control group were breastfeeding mothers in the age category 21-35 years (80.0%), as well as in the intervention group, most were mothers in the age category 21-35 years (85 ,0%). Mother's education showed that most of the control group were breastfeeding mothers with a high school educational background (55.0%), as well as in the intervention group, most of them were mothers with a high school educational background (35.0%). Income showed that most of the control group were breastfeeding mothers with income ≥ 2 million (55.0%), while in the intervention group most were mothers with income < 2 million (70.0%). Occupation showed that in the control group 50.0% were housewives, while in the intervention group 55.0% were housewives. The sex of the baby showed that in both the control and intervention groups the majority (55.0% each) had babies with female sex.

Univariate analysis aims to describe the description of each variable studied in the form of a frequency distribution. The description of univariate analysis in this study can be seen on table 2.

Table 2. The descriptions of mothers' knowledge before and after being given the Gemas application.

| Variable | Groups | | | |
| | Control | | Intervention | |
	n	%	n	%
Pretest Knowledge				
Good	0	0	0	0
Enough	18	90,0	17	85,0
Not Enough	2	10,0	3	15,0
Posttest Knowledge				
Good	14	70,0	19	95,0
Enough	6	30,0	1	5,0
Not Enough	0	0	0	0

Based on table 2, it is known that when viewed from the mother's knowledge, in the control group and the intervention group were almost the same, most of them had a good level of knowledge, namely (90.0%) and (85%). The level of knowledge after the intervention of giving the Gemas application, the intervention group was more than the control group, namely 95.0% and 70%.

Bivariate analysis is an analysis conducted on two variables that are suspected to be related or correlated. Prior to analysis, the data was first tested for normality using the Kolmogorov Smirnov method. The results of the data normality test for the knowledge variable both before and after giving the Gemas application can be seen in table 3 below:

Table 3. Normality test results

Variable	Kolmogorov-Smirnov Z	Asymp. Sig. (2-tailed)
Knowledge (Pretest)	1,279	0,076
Knowledge (Posttest)	1,145	0,145

Based on the results of the data normality test above, it can be seen that all research variables, both data before and after giving the Gemas application in both groups, have a significance value > the established significant level ($\alpha = 0.05$), from this it can be concluded that all data in each each research variable is normally distributed.

2). Differences in knowledge before and after being given the Gemas application

Comparison of knowledge about stunting prevention before and after the intervention in the control group in this analysis was carried out using the paired sample t test, which is to determine whether there is a difference in the value of knowledge before and after the intervention in the control group.

Table 4. Knowledge of stunting prevention before and after the intervention in the control group

Category	Knowledge of stunting prevention Control Group			
	Pretest		Posttest	
	f	%	f	%
Good	-	-	14	70,0
Enough	18	90,0	6	30,0
Not Enough	2	10,0	-	-
Total	20	100,0	20	100,0

Based on table 4, it is known that in the control group, before the intervention most of the respondents had sufficient knowledge (90.0%), while after the intervention most of the respondents have good knowledge (70.0%).

Table 5. Results of the paired sample t test of knowledge about stunting prevention before and after intervention in the control group

Knowledge	Average	Deviation Standard	Average difference (pre – post)	Sig.
Pretest	13,3	1,1	2,95	0,000
Posttest	16,2	1,4		

The results of the calculation of the paired sample t test obtained the difference in the average value of knowledge before and after the intervention in the control group of 2.95. Beforethe intervention, the average value of the control group's knowledge was 13.3, the value increasedto 16.2, with a significance of 0.000 (significance <α (0.05)), so that it can be interpreted that statistically there is a difference in the value of knowledge before and after the intervention in thecontrol group.

The results of calculating the comparison of knowledge about stunting prevention before and after the intervention in the intervention group can be seen in the following table:

Table 6. Knowledge of stunting prevention before and after

intervention in theintervention group

Category	Knowledge of stunting prevent Intervention Group			
	Pretest		Posttest	
	f	%	f	%
Good	-	-	19	95,0
Enough	17	85,0	1	5,0
Not Enough	3	15,0	-	-
Total	20	100,0	20	100,0

Based on table 8 it is known that in the intervention group, before the intervention was given most of the respondents had sufficient knowledge (85.0%), while after the intervention mostof the respondents had good knowledge (95.0%).

Table 7. Results of the paired sample t test of knowledge about stunting

prevention before and after the intervention in the intervention

group

Knowledge	Average	Deviation Standard	Average difference (pre – post)	Sig.
Pretest	13,1	1,4	4,35	0,000
Posttest	17,4	1,2		

The results of the calculation of the paired sample t test obtained the difference in the average value of knowledge before and after the intervention in the intervention group of 4.35. Before the intervention, the average knowledge value of the intervention group was 13.1, the valueincreased to 17.4, with a significance of 0.000 (significance <α (0.05)), so that it can be interpretedthat statistically there is a difference in the value of knowledge before and after the intervention inthe intervention group.

3). The effectiveness of the Gemas application for increasing knowledge.

To find out the effectiveness of the Gemas application in increasing knowledge about stunting prevention, an independent sample t test was carried out.

Table 8. The effectiveness of the Gemas application for increasing knowledge.

Knowledge	Average	Average difference	P value
Control Group	2,9	1,4	0,003
Intervention Group	4,3		

The results of the calculation of the independent sample t test obtained the difference in the average value of increasing the knowledge of the control group and the intervention group of 1.4. The average increase in knowledge in the control group was 2.9, which was smaller than the average increase in knowledge in the intervention group of 4.3.

The calculation results also obtained a significance value of 0.003 <α (0.05), so that it canbe interpreted that statistically there is a difference in the increase in the value of knowledge aboutstunting prevention in respondents who were given health education using the Gemas applicationand respondents who were not given education using the Gemas application. Where the respondents who were given health education using the Gemas application had a better increase in knowledge. So the hypothesis which states that there is a significant effect of the Gemas application on stunting prevention on the knowledge of breastfeeding mothers, is accepted.

b. Discussions

The characteristics of respondents who were breastfeeding mothers based on the age of the control group and the intervention group were almost the same for the most part in the 21-

35 yearage category, namely 80.0% and 85.0%. The results of this study are in line with previous research, that the characteristics of the mother's age in the study were found to be the majority of respondents, namely ages 21-30 years (Fitriami & Galaresa 2021). The research conducted entitled the relationship between maternal factors and the incidence of stunting shows that the maternal age factor does not have a significant relationship with stunting in toddlers. This is evidenced by the results of statistical tests in this study, the value of e was 0.419 (p > 0.05) (Kholia et al. 2020). The results of another study found that most of the respondents (56.2%) were aged 20 to 25 years and a small portion of the respondents (6.2%) were less than 19 years old (Andriani, Rezal & Nurzalmariah 2020). The age of pregnant women involved in this study was 20-30 years. With the majority aged 20-25 years (68.4%) (Waisnawa, Damayanti & Arimurti 2021).

Basic education (elementary and junior high) of breastfeeding mothers was found to be more in the intervention group than the control group, namely 55% and 30%. The results of this study are similar to research entitled risk factors for stunting in under-fives, in which 24 respondents (20.5%) have low-educated parents who have low education (Setianingsih, Kurniasari& Suyani 2022). In contrast to research on the relationship between maternal factors and the incidence of stunting, it was found that mothers with a higher education level were more likely tobe in the stunting case group, namely 14 people (53.84%) compared to mothers with low educationin both the case group and the control group of 4 people (15.38%) (Kholia et al. 2020). Mothers with high education usually work outside the home, so most of the children are with household assistants or are entrusted to grandmothers or other relatives. Parents or mothers should have the most role in forming children's eating habits, because it is the mother who prepares food, starts setting the menu, shopping, cooking, preparing food, and distributing food. This causes the motherto not be able to carry out her role optimally.

Respondents' income < 2 million was more in the intervention group than the control group,namely 70% and 45%. Stunted toddlers are more common in parents who have low incomes in 33 respondents (28.2%) with an odds ratio of 3.908 meaning that parents with low incomes are at riskof 3.908 times their child is stunted (Setianingsih, Kurniasari & Suyani, 2022).

The characteristics of work as housewives were almost the same between the control groupand the intervention group, namely 50.0% and 55.0%. The results of this study are different from previous research, that all of the respondents were mothers with jobs as housewives (IRT), namely32 mothers (100%) (Andriani, Rezal & Nurzalmariah, 2020).

Knowledge in the control group, before the intervention most of the respondents had sufficient knowledge (90.0%), and after the intervention most of the respondents had good knowledge (70.0%). respondents had sufficient knowledge (85.0%), and after the intervention most of the respondents had good knowledge (95.0%).

The results of the calculation of the independent sample t test obtained the difference in the average value of increasing the knowledge of the control group and the intervention group of 1.4. The average increase in knowledge in the control group was 2.9, which was smaller than the average increase in knowledge in the intervention group of 4.3. The calculation results also obtained a significance value of $0.003<\alpha(0.05)$, so that it can be interpreted that statistically thereis a difference in the increase in the value of knowledge about stunting prevention for respondentswho were given health education using the Gemas application and respondents who were not giveneducation using the Gemas application.

The results of the calculation of the paired sample t test obtained the difference in the average value of knowledge before and after the intervention in the intervention group of 4.35. Before the intervention, the average knowledge value of the intervention group was 13.1, the valueincreased to 17.4, with a significance of 0.000 (significance $<\alpha$ (0.05)), so that it can be interpretedthat statistically there is a difference in the value of knowledge before and after the intervention inthe intervention group.

The results of this study are similar to the results of research where there are significant differences in knowledge before and after being given the Mother Smart Grounding (MSG) program to mothers in preventing stunting in the Work Area of the Puuwatu Health Center, Kendari City (Andriani, Rezal & Nurzalmariah 2020). The results of research conducted on cadresalso found that the median % increase in knowledge of cadres about stunting before and after beinggiven the ABS (Stunting-Free Children) application

was 25.1% and there was a significant difference between knowledge before and after giving stunting-free children to the application. cadres (p value <0.001) (Handayani et al., 2019). The results of other studies also found that education using Whats App media showed an increase in knowledge of 84.6% and was greater than education using other methods such as lectures and booklets19 (Melati et al., 2021). The results of a similar study on knowledge and attitudes in mothers and toddlers found that there wasa significant average difference between pre-test knowledge data and post-test knowledge data inresearch respondents with the result p = 0.001 (p <0.05) (Waisnawa et al., 2021).

5. Conclusion

The Gemas application about stunting prevention has a significant effect for increasing theknowledge of breastfeeding mothers.

Limitation and study forward

Samples of study were only taken from one area of Public Health Centre. It could be better if the samples of study were taken from some areas of Public Health Centre

Acknowledgement

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OPTIMIZATION OF THE HARDNESS OF CLEAN WATER SOURCES WITH VARIOUS TREATMENT PRINCIPLES TO OBTAIN SOFT-CATEGORY DRINKING WATER IN KUPANG CITY IN 2022

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Abstract

Purpose: The aim of this study are to identify the physical quality and hardness level of clean water in one of the water sources used by the people of Kupang City and also to analyze the level of hardness of borehole water before and after processing through the methods of filtration, coagulation, and the addition of quicklime.

Methodology: The research was conducted using experimental methods, and the research outputs were intellectual property rights, journal publications and simple modeling of water treatment methods in reducing hardness.

Findings: The results of the examination of the average hardness content of the raw water source from the Oenesu Spring were 365.33 mg/L. After being given treatment using Tohor Lime, Alum, Activated Charcoal, Silica Sand, Quartz Sand, and Zeolite media, the highest average decrease in hardness was obtained for Quartz Sand media with a reduction effectiveness of 53.41% and the lowest for Activated Charcoal media with a reduction effectiveness 0,79%.

Contribution: This research can contribute to the development of science, especially in the field of environmental health in improving the quality of clean water, especially the level of water hardness.

Keywords: Hardness; Processing; Kupang City

1. Introduction

The purpose of health development is to improve public health fairly and equitably, one of which is the program for providing drinking water for residents. Water used for consumption should meet several requirements including colorless, normal temperature, tasteless, odorless, clear or not cloudy, and not contain solids (1). Good water is water that meets the physical, microbiological and chemical requirements. Physical requirements that must be met are odorless, colorless, and tasteless. Water that meets microbiological requirements is that it does not contain Escherichia coli and coliform bacteria. Chemically, the water must meet the requirements that there are no chemicals in the form of arsenic (As), iron (Fe), chloride (Cl-), and hardness in the form of $CaCO_3$ (2).

The problem that is often faced in groundwater management is hardness. This can happen because in the process of taking it from the soil it passes through various layers of soil including

limestone soil containing Ca and Mg so that the water becomes hard. Hard water is often found in areas with thick topsoil and limestone formation (3).

The city of Kupang has a limestone topography so that during the rainy season, rainwater contacts through the calcareous soil layer so that the raw water becomes hard and even very hard. Various efforts have been made by residents or drinking water providers to reduce total hardness or calcareous water, among others, by heating water, processing refillable water depots, and processing various drinking water products.   According to Sanropie, drinking water consumed by the body is categorized as soft, which has a total hardness range of 60-120 mg/lt (4).

Hard impact or lime content of drinking water above 60-120 mg/lt can cause health problems in the form of kidney stones and below 60-120, mg/lt causes mineral and calcium deficiency in the body

2. Literature review and hypotheses development

A. *The Role of Water*

Clean water in Indonesia is used for drinking water raw materials, and other purposes such as washing clothes, cooking, bathing, and other sanitation hygiene needs. All living things need water because water is a basic need for life. For humans, water is a very absolute necessity because the substances that make up the human body consist mostly of water, amounting to about 73% of body parts without fat tissue. The use of water for the human body, among others, for the process of digestion, metabolism, lifting of food substances in the body, regulating body temperature balance, and keeping the body from drying out. The water needed by humans for a healthy life must meet the quality requirements and quantity (amount) is also met. Water needs cover many things and are very broad, for example, water needs for irrigation (plants), livestock and fisheries, industry, and water needs for households (6).

B. *Water Resources*

Clean water data was obtained from various water sources. Sources of raw water data come from surface water and subsurface water. In Indonesia, the use of raw water sources from rivers, lakes, or other sources has been widely practiced. The choice of each region depends on the availability of water sources. Water from the sea or swamp is currently an option that, although still relatively expensive, can be processed into drinking water. Here are some examples of raw water sources that can be used as drinking water (6):

1) Rainwater. This type of rainwater source is widely used with simple direct storage. Rainwater is generally harvested or stored and used in areas where water is scarce during the dry season. The direct use of rainwater for household needs is not significant. Rainwater storage for reserves in meeting water needs during the dry season can be placed on the ground or in the ground.
2) Water springs. These water sources generally qualify as drinking water or close to drinking water. Springs are usually available in mountainous areas. This is because

the elevation of the water table in the soil, both as a compressed aquiver and a free aquiver, is still higher than the area below it. Thus, spring water occurs, which is when water comes out of the ground.

3) River water. There are quite a lot of river water sources in Indonesia. The quality of river water varies greatly depending on the location, the load of sediment and pollutants it carries, and so on. River water can be raised in elevation using damming. With bending, river water can be flowed to a higher place to be treated, then flowed to the community by gravity or using a pump.

4) Reservoir or Artificial Lake. Raw water extraction from the reservoir can be carried out using a pump or using a siphon pipe that was previously planned at the time of the reservoir construction.

5) Shallow well. The use of this water source has been widely used. The quality of shallow well water is better than that of surface water sources. The ability of shallow wells to guarantee the family's water volume needs is generally more than adequate.

6) Deep well. Deep wells penetrate groundwater and look for aquifer areas that have better quality and capacity in both dry and rainy seasons.

C. Water Treatment Principles

Water treatment is defined as a technical operation carried out on raw water so that it becomes clean water which becomes clean water that meets the quality requirements of clean water or drinking water by combining several processing processes. Water treatment aims to reduce the concentration of each pollutant in the water so that it is safe to use (7), (8). The operating units and process units used in clean water treatment are as follows:

1) Physical Processing

There are several physical processing processes, namely:

a) Pre-sedimentation is a simple gravity deposition process without the addition of any chemical coagulant. Its use is to protect moving mechanical equipment, one of which is aeration. Multiple tray aerator is a reactor that is commonly used as one of the aeration processes because it does not cost much and has a simple design so that people can operate it.

b) Sedimentation, this process uses the principle of specific gravity, which aims to precipitate colloidal particles that have been destabilized by the previous process, namely flocculation. At present, the processes of coagulation, flocculation, and sedimentation in a Water Treatment Plant (WTP) are combined into a process called an accelerator.

c) Filtration, the filtration process aims to filter out the suspensions in the water. The filtration process can be carried out with membrane technology, besides that it can also use other media such as sand, gravel, and others (9). In membrane technology, this filtration process uses several types, namely Multi Media Filter, UF (Ultrafiltration) System, NF (Nanofiltration) System, MF (Microfiltration) System, and RO (Reverse Osmosis) System.

2) Chemical processing

a) Coagulation is the process of changing a liquid or solution into soft lumps, either in whole or in part. Because basically, the water source is usually in the form of a colloid

with various contents contained therein. The purpose of this process is to separate water from dissolved impurities. This destabilization process can be done physically with rapid missing, hydraulically, or mechanically.

b) Flocculation, is a collection of small particles and colloids that form like the filtrate on a filter that passes (floc). Flocculations begin to form immediately after destabilization in the mixing zone or aftershocks. Aims to enlarge the floc and do slow stirring also the water conditions must be calm.

c) Disinfection carried out after the coagulation and flocculation process, there are still impurities that remain, possibly bacteria and germs. So it is necessary to add chemical compounds to kill these germs. Chlor, ozonation, UV, heating, and others are commonly used for addition before entering the reservoir

D. Hardness Reduction Principles

The principle of decreasing the temporary hardness can be reduced by heating the water. The reaction is as follows $Ca(HCO_3)_2$ $CaCO_3 + H_2CO_3$. The precipitated $CaCO_3$ is separated by filtering. Temporary hardness can also be reduced by adding quicklime, namely $CH(OH_2x)$, while the permanent hardness can be reduced by adding quicklime, namely $Ca(OH_2x,)$ and adding soda, namely Na_2CO_3, then the precipitate that occurs is filtered. Using an ion exchanger and the chemicals used are Ziolite or Resin chemicals that can bind calcium and magnesium hardness ions.

3. Research methodology

This type of research is an actual experiment where the purpose of this research is to investigate the relationship of an effect by exposing an experimental group or more to one or more conditions and comparing the results with a control group or more that did not receive treatment (11). The variable of this study are the spatial is one of the water sources used by the community in Kupang City; filtration using activated charcoal media, silica sand, quartz sand, and zeolite; Coagulation using alum with various doses of 0.1 mg/L, 0.5 mg/L, 1 mg/L, 1.5 mg/L and 2 mg/L; Affixing with quicklime with various doses of 0.2 mg/L, 0.5 mg/L, 1 mg/L, 1.5 mg/L and 2 mg/L; and total hardness level before and after treatment.

4. Results and discussions

A. Overview of Oenesu Clean Water Source

The source of clean water used by the community in Kupang City generally comes from springs, drilled wells, or dug wells One of the water sources used by the community in

Kupang City is the one sourced from Oenesu Spring which is managed by Perusahaan Daerah Air Minum Kupang Regency. This water source is located in Oenesu Village, West Kupang District, Kupang Regency with an altitude from sea level ranging from $\pm$ 288 meters above sea level (BPS Kabupaten Kupang, 2020). The location of the water source in question is seen in the following figure.
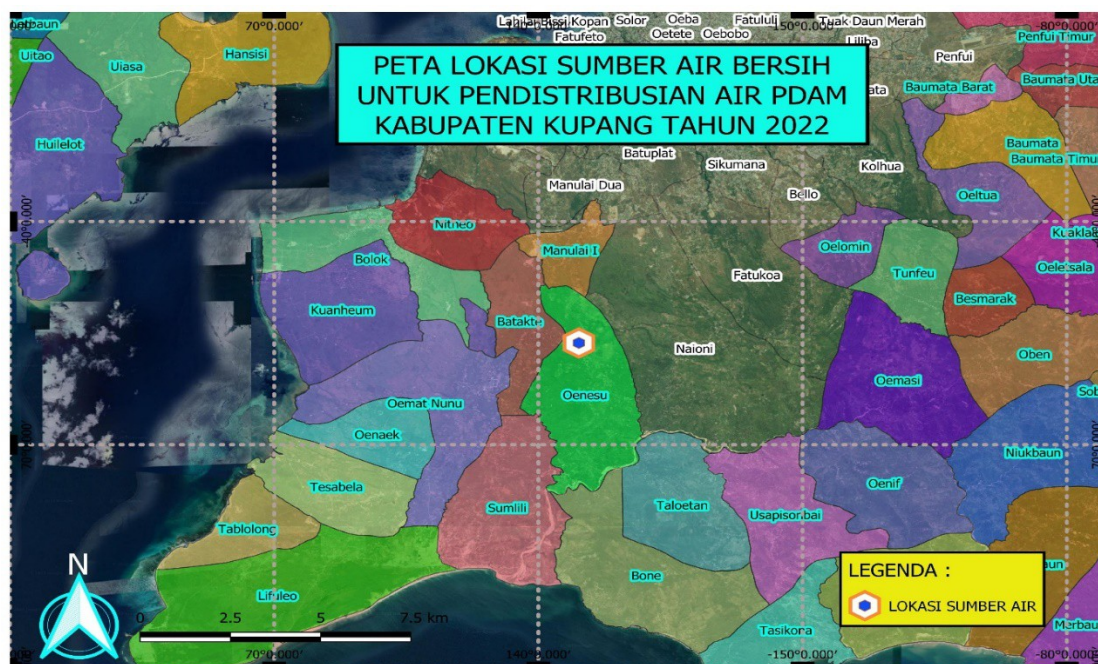
Figure 1. Water Source Location Map

Kupang City has a limestone soil topography, so that conditions during the rainy season, rainwater contacts through the calcareous soil layer so that the raw water will become hard and even very hard. The results of a study conducted by Theodolfi (2014), showed that water resources that are commonly used for the need for clean water services for the needs of Kupang City are taken from springs that come out in several areas, flowed at a certain height, and then distributed by gravity. Another source that is still potential and is used as one of the main sources of water needs for Kupang City is to use drilled wells (13). The quality of clean water consumed by the people of Kupang City has generally not been polluted by heavy metals or other chemical contamination. Research conducted by Arnawa (2021) shows that one of the surface water sources in Kupang City is still found to contain E Colli bacteria in addition to the type of contamination others (14).

Various efforts have been made by the community or drinking water providers to reduce the rate of total hardness or calcareous water, including heating water and treatment at refill drinking water depots. People generally heat the water before consumption as one of the efforts made to reduce hardness (15). According to Sanropie, drinking water consumed for the soft category body has a total hardness rate range of 60-120 mg / lt.

Hardness in principle is contaminated with water with cation elements such as Na, Ca, and Mg. the most common hardness is seawater. In surface fresh water, the content of

Ca and Mg is generally high in high levels (>200 ppm) of CaCO3. So that the water flowing in the limestone area will have a high level of hardness. High hardness and starting to accumulate in household appliances if the amount is above 100 ml / L. A hardness above 300 mg / L in the long term will affect humans with weak kidneys so they experience kidney disorders (16).

The results of the examination of the average hardness content in the Oenesu raw water source were 365.33 mg / L. The level of hardness in the Oenesu water source in this study was still high when compared to The level of hardness in the water source used by PDAM Wainitu Ambon City ranges from 84.07 - 98.09 mg / L at several different sampling locations (17).

B. Reduction of Hardness Level using the Filtration Process

The results of the examination of the level of hardness in water sourced from Oenesu Springs before and after processing using filtration media are shown in the following table.

Table 1

Average Results of Examination of Hardness Level Before and After the Filtration Process Using Various Filtration Media

No	Filtration Media	Hardness Level (Mg/L)		
		Before Treatment	After Treatment	Decreased Effectiveness (%)
1	Activated Charcoal Media	365,33	362,85	0,79
2	Silica Sand Media		236,53	35,50
3	Quartz Sand Media		239,01	53,41
4	Zeolite Media		296,59	28,76

Source: Processed Primary Data, 2022

From the table above, it can be seen that quartz sand media is more effective in reducing the level of hardness of raw water with a decreased effectiveness of 53.41% and the lowest is activated charcoal media, which is 0.79%.

The use of filtration media such as activated charcoal, sand, and zeolite in reducing hardness has been tested to be effective. For this reason, it is necessary to analyze further related to the mixing of the filtration media (*mixed media*) with a longer residence time to increase the effectiveness of reducing the level of hardness in raw water. The longer the contact in the filtration and adsorption process, the more effective it will be in reducing the level of well water hardness (7).

C. Decreased Hardness Levels using the Coagulation Process

1. Use of Alum

   Alum is a coagulant material that is generally used in binding dissolved particles present in water. The results of the examination of the use of alum in reducing hardness with various doses are shown in table 2 below.

Table 2

Average Results of Examination of Hardness Levels Before and After Coagulation Process Using Alum with Dose Variations

No	Alum Dosage Variations	Hardness Level (Mg/L)		
		Before Treatment	After Treatment	Decreased Effectiveness (%)
1	0.2 mg/L	365,33	326,93	11,88
2	0.5 mg/l		324,45	12,50

No	Alum Dosage Variations	Hardness Level (Mg/L)		
		Before Treatment	After Treatment	Decreased Effectiveness (%)
3	1 mg/l		321,98	13,36
4	1.5 mg/L		325,69	12,31
5	2 mg/L		313,31	15,97

Source: Processed Primary Data, 2022

From the table above, it can be seen that beware with d osis 2 mg / L is more effective in reducing the level of hardness of raw water with a decreased effectiveness of 15.97% and the lowest is at a dose of 0.2 mg / L which is 11.88%.

This research is inversely proportional to research conducted by Trimaly, et al (2017) which shows that the use of alum in water in peatlands tends to increase hardness levels ($CaCO_3$) (Trimaily et al., 2017). In terms of physique, the treated water with this treatment does not feel slippery and is effective with the use of soap. As it is known that a high level of hardness will cause the water to feel slippery and the soap work does not become effective (does not cause foam).

2. Use of Quicklime

   Quicklime, also known as calcium oxide (CaO), is the result of burning raw lime (calcium carbonate or $CaCO_3$) at a temperature of approximately 90 degrees Celsius. If it is doused with water, then quicklime will generate heat and turn into extinguished lime (calcium hydroxide, CaOH).

   The results of the examination of the use of the Kapur tour in reducing hardness with

   various doses are shown in table 3 below.

Table 3

Average Results of Examination of Hardness Levels Before and After Coagulation Process Using Quicklime with Dose Variations

No	Variations in the dosage of quicklime	Hardness Level (Mg/L)		
		Before Treatment	After Treatment	Decreased Effectiveness (%)
1	0.2 mg/L		346,75	5,09
2	0.5 mg/l		331,89	9,64
3	1 mg/l	365,33	333,13	9,70
4	1.5 mg/L		326,93	11,53
5	2 mg/L		323,22	12,88

Sumber: Processed Primary Data, 2022

From the table above, it can be seen that lime with a dose of 2 mg / L is more effective in reducing the level of hardness from raw water with a decreased effectiveness of 12.88% and the lowest is at a dose of 0.2 Mg / L which is 5.09%.

Research conducted by Jannah (2015) showed an increase in the pH value of water from 3.07 to an average pH of 7.14 in a span of 40 minutes (19).

The high CaO content in quicklime is what is said to be able to bind hardness particles to make the level of hardness drop or lower in raw water.

5. Conclusion

From the results of the study, some can be concluded several things as follows:

a. The level of raw water hardness sourced from Oenesu clean water source is 365.33 mg / L;

b. The level of hardness of treated water in the filtration process using quartz sand media is more effective in reducing the hardness level of raw water with a decreased effectiveness of 53.41% and the lowest is activated charcoal media, which is 0.79%;

c. The level of hardness of treated water in the coagulation process using alum at a dose of 2 Mg / L is more effective in reducing the level of hardness of raw water with a decreased effectiveness of 15.97% and the lowest is at a dose of 0.2 Mg / L which is 11.88%;

d. The level of hardness of treated water in the coagulation process using quicklime with a dose of 2 Mg / L is more effective in reducing the level of hardness from raw water with a decreased effectiveness of 12.88% and the lowest is at a dose of 0.2 Mg / L which is 5.09%.

Limitation and study forward

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Acknowledgement

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ANTI-INFLAMATORY ACTIVITY, ANTI-OXIDANT AND IMMUNOSTIMULATION EFFECT OF MUNTINGIA CALABURA L. FOR PREVENTION AND COMPLEMENTARY THERAPY AGAINST COVID-19: REVIEW AND PRESPECTIVE

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Abstract

Purpose: *Muntingia calabura L.* a Neutropic plant, is one of the many therapeutic plants found in Indonesia. This herbal medicine contains secondary metabolites such as flavonoids, terpenoids, alkaloids, tanins, saponins, polyphenols, and other compounds found in the plant's flower, fruit, leaves, stems, and bark. The purpose of this study is to review in order to know the extent of research on the pharmacological effects of the *Muntingia calabura L.* plant so that it can be used as an herbal medicine to prevent and complamentary therapy against Covid-19.

Methodology: The authors process review and perspective, by searched and collected data related Covid-19, *Muntingia calabura L*, Anti-Inflammatoty, Anti-oxidant and Immunnostimulation. The main search tools is Google Scholar, PubMed, Research Gate, Library Genesis and Science Direct.

Findings: Various studies mantion from molecular research, phytochemical tests, preclinical trials and scientific literature and other review literature stated that the chemical components of Muntingia calabura L have a potential as anti-inflammatory, anti-oxidant, and immunostimulant agents to prevent and treat pneumonia by the SARS-CoV-2 Coronavirus (Covid-19). *Muntingia calabura L.* could be prevent and compelementary therapy against Covid-19.

Limitation: The limitation of this study is that It is hoped that in the future *Muntingia calabura L.* research for preclinical trials and clinical trials will be carried out more so that this plant can be used as a category of traditional medicine

Contribution: This review research examines local plants that can be useful as traditional medicine with early stage studies through pharmacognostic, botanical and biochemical studies.

Keywords: Covid-19, Muntingia calabura L, Anti-Inflamatory, Anti-Oxidant,Immunostimulation

1. Introduction

The current pandemic condition is due to Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2) that started when a cluster of cases of pneumonia has been reported for the first time in Wuhan Hubei China at 31 December 2019 and still spreed throughtout the world at this time (Chen, 2005).

The common signs can be felt by patients who have exposed to coronavirus from mild to severe signs. The mild symptoms are fatigue, muscle pain, sneezing, sore throat, dry cough, high

fever, respiratory problems, etc. with some severe cases having pneumonia, serious respiratory syndrome, kidney failure even death (Huang et al., 2020).

Natural products and herbal medicines as prophylactic will be a vigorous approach to stop or at least slow down SARS-CoV-2 transmission. Tannic acid is one of compound of natural products that inhibited virus SARS-CoV with drug targets and the mechanism of action 3CLPro Inhibition of 3CLPro, IC50: 3 µM (Chen et al. 2005).

Based on recent in silico results, an array of natural products has been found highly potent in blocking enzyme function and membrane receptors of human coronavirus. Moderate dosing of such bioactive compounds may prevent or at least slow down SARS-CoV-2 infection process. In addition, the progression of COVID-19 is featured with uncontrolled inflammation, like cytokine release syndrome, so anti-inflammatory herbs will be a potential tool to suppress such fatal symptom. The stability of natural products and herbal medicines in human gastrointestinal tract is barely an issue. The low pH in gastric environment, digestive enzymes, and gut microbiome have less impact on the bioavailability of natural products and herbs compared to antibody and other prophylactics (Junqing Huang, 2020). One of the plants that has recently gained a medicinal plant status is *Muntingia calabura L.*

Cherry contains flavonoids, tannins, triterpenes, saponins, polyphenols showing presence of antioxidative activity. Beside that cherry leaves have indicated phytochemical compounds antioxidative and antimicrobial activity. Various types of flavonoids: flavones, flavonones, flavans, and biflavanes (Dyah Titin Laswati, 2018).

Part of *Muntingia calabura L*, from the flower, fruit, leaves, stems and bark has compound chemical substances that can be useful for prevention and complementhary therapy against Covid-19. The purpose of this study is to review in order to know the extent of research on the pharmacological effects of the *Muntingia calabura L* plant so that it can be used as an herbal medicine to prevent and complamentary therapy against Covid-19

2. Literature review and hypotheses development

Reported about 2.2 million people have been infected in 210 countries and territories than with more than 0.15 million deaths globally. Despite great efforts, there is no treatment of this disease. However, prevention and management are the best options (Imran Ali, 2020).

The Food and Drugs Administration (FDA) in 2020 issued an Emergenzy Use authorization (EUA) to help strengthen the nation's public health protection against Coronavirus disease, there is use of vaccines, drug, biological therapeutice products even the medical device for Covid-19. FDA approved natural product and their derivative more than one-third of all (Patridge, 2016).

Muntingia calabura L is kind of natural product as Neotropic plants that can live well in tropical climate such as Indonesia. This plant often used as a shade tree on the side of the road due to the arrangement of the leaves shady. The use of kersen as a medicinal and food ingredient is still minimal (Shady & suryady, 2018).

Muntingia calabura L. which is known as cherry plant or series. In some Kersen country is known by several names: datiles, aratiles, manzanitas (Philippines), khoom somz, takhob (Laos), krakhop barang (Cambodia), kerup siam (Malaysia), capulin blanco, cacaniqua, niqua, iguito (Spanish), jamaican cherry, panama berry, singapore cherry (English) and japanese kers (Netherlands) (Kosasih et al, 2013).

Several studies previously showed that the *Muntingia calabura L* contains several bioactive compounds such as saponins, flavonoids, and tannins (Surjowardojo, Sarwiyono, Thohari, & Ridhowi, 2014). specific for the fruit compounds are squalene, triglycerides, a mixture of linoleic acid, palmitic acid, and α linoleic acid and a mixture of β sitosterol and stigmasterol (Ragasa, Tan, Chiong, & Shen, 2015).

The substance of Muntingia calabura L which can be as an antimicrobial, antifungal, antibacterial and can reduce free radicals (antioxidant) (Surjowardojo, Sarwiyono, Thohari, & Ridhowi, 2014).

Preclinical test result from Sarimanah, J. et.al (2015) show that extract fruit and leave of that plant has anti-inflammatory effect. The β sitosterol from fruit and bark of *Muntingia calabura L* have activities for immune boosting and reduce free radicals (antioxidant), and this study has confirmed by research molecular docking of that substance (Khan & Siddiqui, 2020).

3. Research methodology

The authors process review and perspective, by searched and collected data related Covid-19-19, *Muntingia Calabura L*, Anti-Inflammatoty, Anti-oxidant and Immunnostimulation. The main search tools is Google Scholar, PubMed, Research Gate, Library Genesis and Science Direct.

The search terms used included: History begin coronavirus spread; signs; symptoms; approved FDA issued Emergenzy Use authorization (EUA) for infected coronavirus; synthetic drugs; FDA approved natural product; *Muntingia calabura L* as neutropic plant; pharmacology effect of this plant; activity and effect Anti-Inflammatoty, Anti-oxidant, Immunnostimulation of *Muntingia calabura L* herb against coronavirus labeled as SARS-CoV-2 (Covid-19-19).

The chosen articles were reviewed and interpreted by the authors. The perspective is an opinion of the authors regarding the pharmacology effect that is effect Anti- Inflammatoty, Anti-oxidant, Immunnostimulation of *Muntingia calabura L* to prevention and complementary therapy against COVID-19.

4. Results and discussions

Muntingia calabura L. (Elaeocarpaceae) has a long history of medicinal usage in many countries. Because it has shaded leaves and is easy to cultivate in Indonesia, this plant is frequently utilized as a shade plant (Zahara & Suryady, 2018). The plant components had cytotoxic, antiproliferative, insecticidal, hypotensive, antinociceptive, cardioprotective, antipyretic, antiplatelet aggregation, anti-oxidant, anti-inflammatory, anti-diabetic, antiulcer, and antibacterial properties (Salleh et al., 2014). This review is particularly focused on the three functions of this plant that prevent and supplement COVID-19 therapy.

The Taxonmy of *Muntingia calabura L*: (Sari et al, 2012)

Kingdom   : Plantae

Division   : Spermatophyta

Sub Division : Angiospermae

Class   : Dicotyledoneae

Sub Class   : Dialypetalae

Family   : Malvales/Columniferae

Ordo   : Elaeocarpaceae

Genus   : Muntingia

Spesies   : *Muntingia calabura L.*

a**.** Anti Inflammatory Activity

The lungs of COVID-19 patients show elevated levels of inflammatory cytokines (IL-1, TNF-α). This correlates with increased activity of HAS2 and the subsequent lung pathology induced by the SARS-CoV-2 infection. Therefore, the above clinical and research findings suggest that COVID-19 pathogenesis involves two phases: Phase 1, suppression of innate immune response, increases in oxidative stress and phase 2 acute inflammation-driven damaging phase (M. Mrityunjaya, 2020)

Quercetin is a well-known antioxidant with anti-inflammatory and antiviral bioactive. It inhibits TNF-α production in LPS induced macrophages (Geraets L, 2007). In the context of SARS virus infection, supercomputer SUMMIT drug-docking screen and gene set enrichment analyses (GSEA) finds that quercetin, VD, and estradiol interferes the functioning of 85, 70 and 61% of the SARS-CoV-2 viral proteins in human cells, respectively. Based on these observations the study also predicts tripartite combination (quercetin/VD/estradiol) compared to bipartite (VD/quercetin) of may affect 73% human genes encoding SARS-CoV-2 targets implicating a robust mitigating agents against the COVID-19 (Glinsky GV, et.al. 2020)

According to preclinical studies, the leaves, unripe, and ripe fruit of *Muntingia calabura L* were effective. They provided an anti-inflammatory effect at 50 mg/kg bw and 100 mg/kg bw doses when compared to Natrium diclophenac, respectively (Sarimanah et al., 2015).

b. Anti-Oxidant Activity

The lifespan of Drosophila melanogaster can last longer when consuming ethanol extract of Muntingia calabura leaves (EMCL) before starvation. Lifespan extension can be affected by several factors, including the increased expression of endogenous antioxidants. that the expression of sod2 was increased in response to starvation. On the contrary, reduced expression of sod1 was

observed in the starvation-treated group. Treatment of flies with EMCL at 1% and 5% increased the mRNA level of sod1, but did not affect the mRNA level of sod2. Taken together, our results demonstrated the potential effect of Muntingia calabura leaves in the modulation of Drosophila sod1 and sod2 gene expression in Drosophila (Shartian Liling, 2021).

Thin Layer Chromatography (TLC) analysis revealed that ethanol extracted from leaves and steamed *Muntingia calabura L.* had shown anti-oxidant activity in the in vivo tests. The presence of different secondary metabolites was established by this test, which was followed by the DPPH free radical scavenging assay, which was used to approximate the antioxidant activity of that section of the plant (Buhian et al., 2017). Using the DPPH method, ethanol extract of Muntingia calabura L leaves had an even stronger antioxidant than ethanol extracts of *Syzygium cumini, Ocimum basilicum,* and *Eleutherine bulbosa* (Haerani et al., 2019)

c. Immunostimulation Effect

Immunosuppressant, such as anti-rheumatoid drugs, could be considered as a potential approach for the treatment of cytokine storm in severe cases of COVID-19 (Figure 1). One possible limitation of immunosuppressants therapy is their inhibitory efects on host anti-viral immune response. So, the appropriate timing of immunosuppressants administration should be carefully considered (Zahra Bahari, 2021)
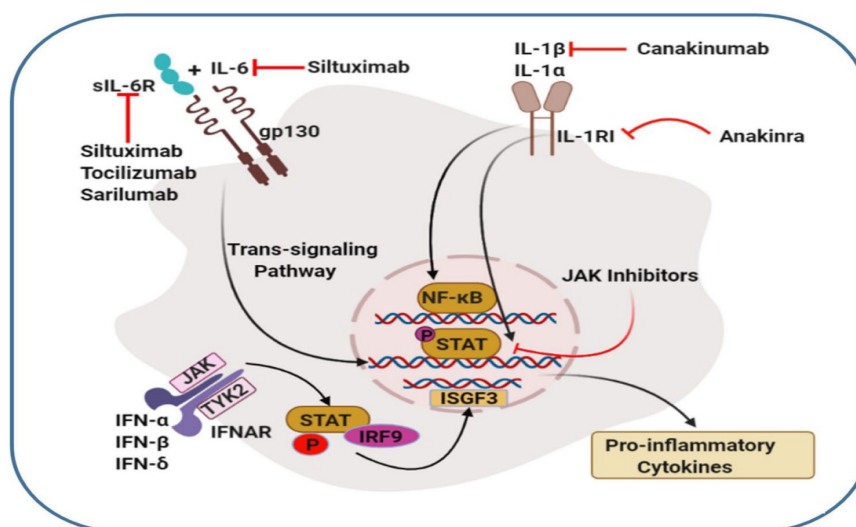
Figure 1. The targets of anti-rheumatoid agents in the host infammatory pathway in COVID-19 infection.

The IL-1, IL-6, and IFNs bind to their own receptors (IL-1RI, sIL-6R, IFNAR, respectively) and trigger specifc signaling cascades to activate the generation of multiple cytokines. IL-1 inhibitors, IL-6 inhibitors, and JAK inhibitors (ruxolitinib, tofacitinib, baricitinib, pefcitinib, fedratinib, and upadacitinib) can limit cytokine storm and hyper infammation by suppressing these signaling cascades. IL interleukin, IFN interferones, IFNAR type I IFNs receptor, ISGF IFN-stimulated gene factor, R receptor, sIL-6R soluble interleukin receptor, JAK Janus kinase, STAT signal transducer and activator of transcription, NF-κB nuclear factor κB. Figure created using BioRender software (Zahra Bahari, 2021).

Research from cheng, et al (2020) concluded that dietary β-sitosterol supplementation could regulate serum cholesterol level, promote immune function, and improve intestinal oxidative status and morphology in broilers. Bouic and Lamprecht reported in a review of their immune-modulating that this phytosterol complex seems to target specific T-helper lymphocytes, the Th1 and Th2 cells, helping normalize their functioning and resulting in improved T-lymphocyte and natural killer cell activity. The re-establishment of these immune parameters may be of help in numerous disease processes relating to chronic immune-mediated abnormalities, including chronic viral infections, tuberculosis, rheumatoid arthritis, allergies, cancer, and autoimmune diseases.

Bouic et al. concluded that phytosterols could be used to prevent the subtle immunosuppression associated with excessive physical stress. There are many studies which have reported the immunostimulant activity of the phytosterols. Immunomodulatory therapies have the potential to inhibit cytokines, but the role of elevated cytokines with lung pathology is unclear. The overall lack of evidence and recommendations has forced practitioners to use their own judgment regarding use of immunomodulatory therapy (Daniel B. Chastain, 2020).

d. *Muntingia calabura L* effective in Covid Management

Following WHO and regional health authorities' safety standards is one approach to stay safe from new coronavirus illnesses because prevention is better than cure. Pharmacological treatments for coronavirus disease have been indicated for antiviral action with single or combination usage, anti-malaria, anti-inflammatory and immunomodulatory activity, adjunct treatment, ihibit sintesis RNA virus, and plasma therapy (Riyaz Beg et al., 2020)

Approximately 75% of plant-based therapeutic medications are utilized globally, and it is remarkable to realize that 70% of current therapeutic pharmaceuticals are derived from natural resources. They are either utilized directly after separation and purification in their original form, or a variety of synthetic equivalents have been produced from architype phytoconstituents acquired from plant sources. (S. Sen et al, 2016).

This emphasized the importance of natural products as a COVID-19 therapy option since they are both safe and effective, and they have several therapeutic features such as powerful antiviral, immunomodulatory, anti-inflammatory, and antioxidant activity (JS, Mani et al. 2020).

Table 1. **Preliminary qualitative phytochemical screening on extract of *Muntingia calabura* bark** (Chaundari et al., 2020)

No	Phytochemical	Result n-Hexane Extract	Test Name
1	Terpenoids	+++	Salkowski test
2	steroids	+++	Salkowski test , Liebermann–Burchard
3	Flavanoids	+++	Lead acetate test, Sodium hydroxide test, Shinoda test
		++	Ferric chloride test
4	Carbohydrates	++	Molisch's test, Fehlings test, Benedict test
5	Glycosides	+	Keller–Kiliani test, Legal's test
6	Alkaloids	-	Mayers test, Wagner test, Hager's test, Dragendorff 's test
7	Saponins	-	Foam test, Hemolystic test
8	Tannins	-	Ferric chloride test, Lead acetate test, Potassium dichromate test, Dilute KMno4

Where; +++: Very positive, ++: Strong positive, +: Fair positive, –: Absent

In the current study, preliminary phytochemical screening revealed the presence of terpenoid, steroid, flavonoid, carbohydrate, and glycosides. An isocratic elution technique was used to collect 115 fractions from column chromatography utilizing benzene as a solvent. At 366 nm, HPTLC fingerprinting revealed the presence of ß-sitosterol. ß-Sitosterol is well known for its numerous biological effects and is separated for phytochemical analysis from an n-hexane extract of the bark of M. calabura.The same fraction was FTIR characterized, yielding absorption peaks

that resemble the ß-sitosterol structure. The presence of ß-sitosterol was detected by ß-sitosterol fingerprinting at 366 nm. The same fraction was FTIR characterized, yielding absorption peaks that resemble the ß-sitosterol structure (Chaundari et al., 2020).
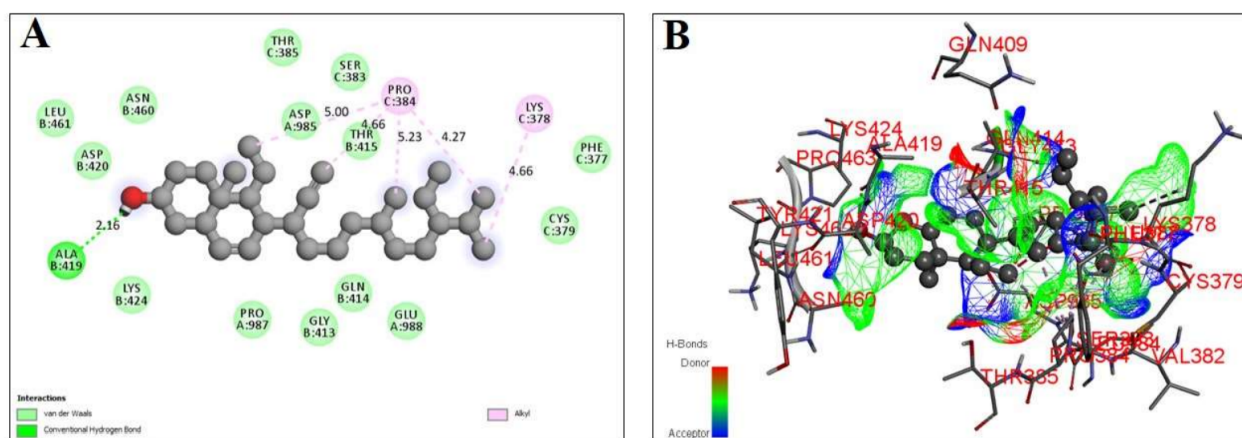
Figure 2. Docking poses of the β-sitosterol (A) 2D-Docking Pose (B) 3D-Docking Pose with Receptor Binding Domain (RBD) of SARS-CoV-2 Spike Glycoprotein (Khan & Siddiqui, 2020)

Table 2. The Interacting Residues, Bond Length, and Binding Affinity of β-sitosterol

Binding Affinity (kcal/mol)	Types of Bond	Active Amino Residues with Bond Length (A^0)
-7.8	Hydrogen Bond	Ala-B:419 ($2.16A^0$)
	Alkyl Bond	Pro-C:384 ($5.0A^0$, $4.66A^0$, $5.23A^0$, $4.27A^0$), Lys-C:378 ($4.66A^0$)
	Van Der Waals	Thr-C:385, Ser-C:383, Asp-A:985, Thr-B:415, Phe-C:377, Cys-C:379, Glu-A:988, Gln-B:414, Gly-B:413, Pro-A:987, Lys-B:424, Asp-B:420, Leu-B:461, Asn-B:460

source: (Khan & Siddiqui, 2020)

Receptor Binding Domain (RBD) comprises of amino acid residues from chain A, chain B, and chain C as well, therefore, the most potent inhibitor will be the one which interacts with amino acid residues from all the chains. β-sitosterol has showed a binding affinity of 7.8 kcal/mol with 0 RMSD lower and upper bound. The 2D- and 3D-Docking poses of the β-sitosterol represented in figure 2A & 1B respectively. As β-sitosterol is interacting with amino acids from

every chain (A, B, C), it indicates that it is a potent inhibitor of RBD of SARS-CoV-2 spike glycoprotein. The interacting residues, bond length, and binding affinity are represented in table 2 (Khan & Siddiqui, 2020).

According to the findings of the study, this method can be considered a standard method for isolating ß-sitosterol from M. calabura bark. Favipiravir has a lower binding affinity, 5.7 kcal/mol, than ß-sitosterol, which has a binding affinity of 6.9 kcal/mol. Favipiravir forms four hydrogen bonds, as opposed to ß-sitosterol, which forms just one with SARS-CoV-2 Mpro (Chaundari et al., 2020).

Mpro (molecular weight: 34 kDa), also known as the 3C-like protease (3CLpro), is the major CoV protease that regulates virus proliferation and host cell response. The COVID-19 virus genome is 30,000 nucleotides in length, and its replicase gene encodes the overlapping polyproteins pp1a and pp1ab required for viral replication and transcription. As a result, Mpro is an appealing target for developing antiviral therapeutics against coronavirus (N, Rasool et al. 2020).

5. Conclusion

Various studies mantion from molecular research, phytochemical tests, preclinical trials and scientific literature and other review literature stated that the chemical components of Muntingia calabura L have a potential as anti-inflammatory, anti-oxidant, and immunostimulant agents to prevent and treat pneumonia by the SARS-CoV-2 Coronavirus (Covid-19). *Muntingia calabura L.* could be prevent and compelementary therapy against Covid-19.

Limitation and study forward

As for the limitations of the review, It is hoped that in the future *Muntingia calabura L.* research for preclinical trials and clinical trials will be carried out more so that this plant can be used as a category of traditional medicine

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THE INFLUENCE OF THE NUTRITION PARTNERS NETWORKING MODEL TO KNOWLEDGE AND SKILLS IN IMPLEMENTATION OF 4 PILLAR NUTRITIONAL BALANCED AND EFFECT ON UPPER ARM CIRCUMFERENCE AND ABDOMINAL CIRCUMFERENCE IN YOUNG GIRLS

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Purpose: This study aims to increase the knowledge and skills of young women in implementing the 4 pillars of balanced nutrition so that it is expected to have an impact on the size of the upper arm circumference (LILA) and abdominal circumference (LIPE).

Methodology: The sample in this study amounted to 151 people with details of 111 people in the intervention group consisting of young women with an average age of 15-17 years, class X SMAN 3 Palangka Raya and 40 people in the control group (SMAN 4 Palangka Raya). The research design was one group pre and post test with control group design.

Findings: Based on the results of the study, it was found that the number of nutrition partner networks increased by 71 people consisting of 15 people in GS^1, 24 people in GS^2, 17 people in GS^3 and 15 people in GS^4. Non-parametric analysis of knowledge and skills data showed that there was a significant difference in the increase in knowledge and skills in the intervention group compared to the control group. This increase still had no impact on the results of measurements of upper arm circumference (LILA) and abdominal circumference of young women (LIPE). The effectiveness of the nutrition partner network model was tested with N-Gain with quite effective results reaching 39.6%.

Limitation: Limitation of this study is controlling activity for leader of the research group that how they make motivation for nutrition partners could invite more the others and join to group.

Contribution: SMAN 3 Palangkaraya and SMAN 4 Palangkaraya have more contribution for this research and thank you.

Keywords: Nutrition partners, 4 pillars balanced nutrition, teneeger.

1. Introduction

Regulation of the Minister of Health Number 25 of 2014 states that the age range of adolescents ranges from 10-18 years. (Ministry of Health, 2015). Adolescence is the age range during the transition from childhood to adulthood. Many changes occurred during this time, such as physical, emotional and psychological changes (Ramauli and Vindari, 2011 in Rofi'ah, 2017).

Adolescence is referred to as a period of dramatic change, rapid growth accompanied by hormonal, cognitive and emotional changes so that at this time special nutrients are needed (Istiany, 2013). Referring to various recent data on the problems being faced by adolescents, especially nutritional problems such as iron deficiency anemia and chronic energy deficiency (KEK) and the incidence of central obesity. The epidemiology of nutritional problems for young women is illustrated by the rate of iron deficiency anemia in adolescents reaching 22.7% (Riskesdas, 2013), women of childbearing age 15-19 years with CED reaching 36.3%. Meanwhile, the central obesity rate in adolescents (age > 15 years) reaches 31% (Riskesdas, 2018) almost double when compared to the central obesity rate in 2007 (18.8%). Several studies state that the incidence of central obesity is more common in female adolescents than male adolescents (Kusteviani, 2015). Likewise, the prevalence of adolescents who experience anemia and chronic lack of energy is more common in female adolescents.

Diverse diet patterns, lack of physical activity and exercise, unhealthy lifestyles that are not maintained are factors that are often mentioned as the cause of nutritional problems in adolescents, especially central obesity (Putri, et al, 2017). In addition, there is a lack of information related to nutritional problems in adolescents and a change in mindset from 4 healthy 5 perfect to a nutritional mindset which until now is still poorly understood by the public, especially teenagers.

Prevention of nutritional problems in adolescents can be done by disseminating information related to factors related to these events. The more women who know and care about this information, the incidence of central obesity, chronic energy deficiency and nutritional anemia in young women can be prevented and their prevalence reduced. So that it is very necessary to understand and apply the 4 pillars of balanced nutrition among young women, especially including consuming a variety of foods, doing physical activity and exercising regularly, having a healthy lifestyle and always monitoring body weight.

This study aims to provide a solution for disseminating information and understanding the application of the 4 pillars of balanced nutrition packaged in a nutrition partner network model. Young women as agents of change will serve as nutritional partners. The utilization of young women in this research activity is based on the results of research on the effectiveness of peer groups in increasing knowledge and changing adolescent behavior. Knowledge can be increased by the process of learning in groups with peers (peer groups). Education conducted by peer groups (peer education) is a process of communicating, informing and providing education (IEC) by and for groups/peers by emphasizing behavior change (Rofi 'ah, et al, 2017). With the hope that there will be interaction within the group. A person will feel similarities with others, so that they can develop a social sense in accordance with personality development. This method will be applied in this study, but with a different model. The difference lies on the delivery model that refers to communication in groups with whatsapp media. Information on the application of the 4 pillars of balanced nutrition will be packaged in a simple form with the help of the WhatsApp application media so that it is easy to understand and apply among young women.

2. Literature Reviews And Hypotheses Development

Adolescence is the age range during the transition from childhood to adulthood. Many changes occurred during this time, such as physical, emotional and psychological changes (Ramauli and Vindari, 2011 in Rofi'ah, 2017). Adolescence is referred to as a period of dramatic change, rapid growth accompanied by hormonal, cognitive and emotional changes so that at this time special nutrients are needed (Istiany, 2013).

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3. Research Metodology

This research is a quasi-experimental study with a one group pre post test design. The research location was in SMAN 3 Palangka Raya City, with a total sample of 111 people. At the beginning of the study, 40 students in grade X were given nutrition education with the theme of implementing the 4 pillars of balanced nutrition in adolescents, then they were divided into 4 (GS) groups, 10 people each group and consisting of leaders, admins and members. The research lasted for approximately 1 month (21 working days to be exact from October to November 2019). Every day in each group, the leader creates and conveys nutritional messages through WhatsApp media so that the members respond directly. Admin plays a role in managing the group and increasing the number of members. Over the course of the study, the number of members in the balanced nutrition group grew. The development of the number of group members can be seen in Figure 1.
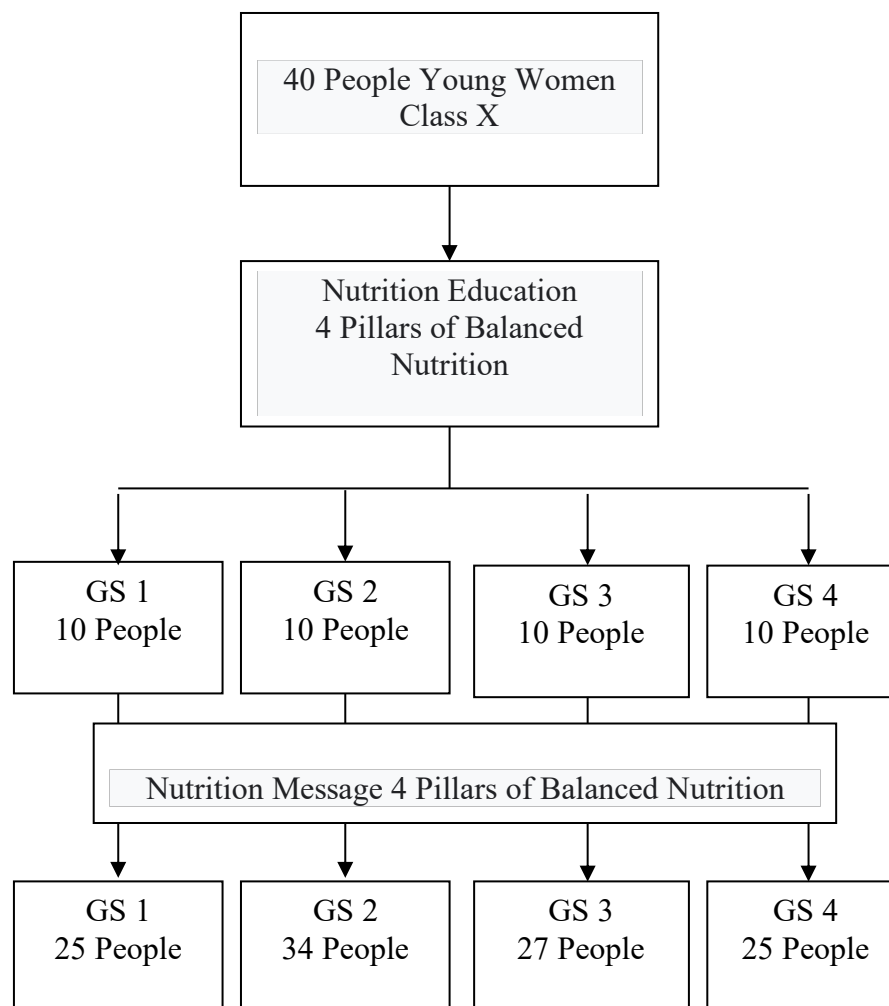
Figure 1. Nutrition Partners Research Flow and the development of the Number of Members

The tools in this study were a knowledge questionnaire and a skills questionnaire which contained issues relating to the application of the 4 pillars of balanced nutrition. Based on the results of the validity test and the reliability test of the questionnaire, the corrected item-total correlation value was 0.996 (> r table 0.514) and Cronbach's alpha was 0.851. Other tools are LILA tape with an accuracy of 0.1 cm and a cloth meter with an accuracy of 0.1 cm.

Analysis of the normality of the data was carried out using the Kolmogorov-Smirnov one sample test so that it is known that the Upper Arm Circumference data (LILA) and Abdominal

Circumference data (LIPE) are normally distributed with a significance of 0.200 and 0.200 respectively (p value > 0.05). While the knowledge score data and skill scores obtained a significance of 0.019 and 0.000 respectively (p value <0.05) so it was concluded that the data were not normally distributed. The categorization of knowledge data refers to the average knowledge score – 1 Standard Deviation, namely 50 (cut off: M-1SD) while the categorization of skills data is based on the percentage of skill scores (cut off 70% of the total score).

The analysis was carried out using univariate and bivariate research variables. To find out the effect of education and delivery of information on knowledge and skills, a paired t test was carried out in each Balanced Nutrition group. Meanwhile, the effect of the nutrition partner network model on knowledge and skills was tested using the Chi-Square test (non-parametric test), while the LILA and LIPE data were tested with an analysis of variance (one way ANOVA) in the SPSS program

4. Results and Discussion

This research began by advocating for several schools in order to determine the location of the research. The selection of SMAN 3 Palangka Raya as the research location was based on distance traveled, the school's hospitality, as well as the results of observations of overweight students. The researcher met directly with the deputy head of the school in the field of curriculum because it was related to setting a research schedule. Determination of the sample was carried out by the school with inclusion criteria: Class X students, have an Android cellphone, have the WA application, are willing to be respondents. The distribution of nutrition partner networks can be seen in Table 1.

Table 1. Nutrition Partner Network Distribution Based on School of Origin

Asal Sekolah	GS4	GS3	GS2	GS1
SMAN 3	20	24	34	21
SMK 3	1			2
MA Darul Ulum	1	3		
SMAN 1	1			
SMK 2	2			
SMAN 4				2
Total	**25**	**27**	**34**	**25**

Nutrition education is provided in the school hall with a capacity of 150 people. The media used is LCD and the material is packaged in the form of Power Point. Providing nutrition education is an effort to equalize the initial conditions of the research. Before the activity started, a pretest was carried out on 40 class X students who were willing to become samples

and measurements were taken for upper arm circumference (LILA) and abdominal circumference (LIPE). Each student is part of the WhatsApp group for balanced nutrition (GS), and every day the students receive additional information in the form of nutritional messages created and delivered by each leader. Recruitment of additional members is carried out after the GS group is started. Post test and re-measurement were carried out after 21 days of running the nutrition partner network. The frequency distribution of pre and post data can be seen in Table 2.

Table 2. Analisis Pair T Test

Pair	N	95% confidence interval		Sig. (two tail)
Knowledge initial score and knowledge final score	40	-19.976	-12.224	0.000
Knowledge initial score and knowledge final score	40	-4.656	-2.744	0.000
Initial arm circumference final arm circumference	40	-0.194	0.404	0.482
LIPE beginning-LIPE end	40	-1.314	0.064	0.074

Based on the results of the paired t test analysis, it is known that there is a significant difference between the initial score of knowledge and the final score of knowledge with a significance of 0.000. Likewise, there is a significant difference between the initial score of skills and the final score of skills (p value <0.05). According to Thasim, et al (2013), nutrition education can increase respondents' nutritional knowledge before and after education.

The frequency distribution of research variables after undergoing communication in the Balanced Nutrition group can be seen in the following Pie Diagram.
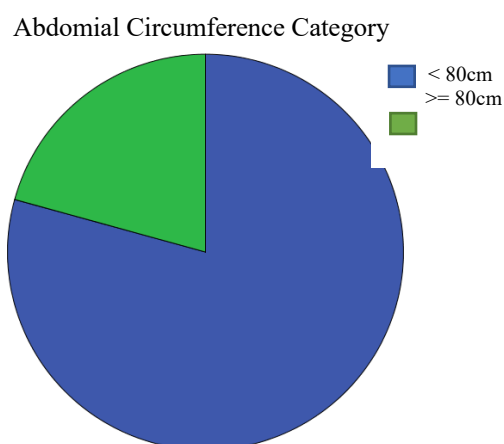

Figure 2. Lipe Category Frequency Distribution

More than 70% of young women still have very good belly circumference. This shows that young women are still very active and diligent in exercising. Abdominal circumference is closely related to body image and can increase the self-confidence of young women (Ifdil, et al, 2017). However, the figure of 20.7% of young girls with abdominal circumference > 80 should be watched out for and needs attention from the school. This is because this condition carries a risk of contracting non-communicable diseases such as diabetes mellitus (DM), hypertension, heart disease, gout, high cholesterol, and others.
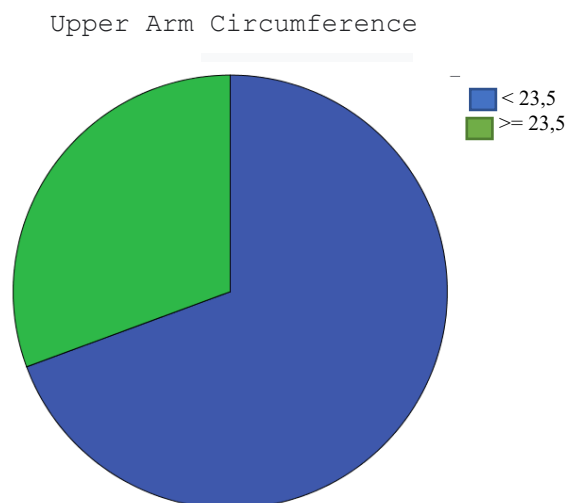
Upper Arm Circumference

Figure 3. LILA Category Frequency Distribution

Upper arm circumference or abbreviated LILA is an indicator of chronic energy deficiency (CED). The relatively high number of young women who have LILA above > 23.5, which is around 69.4%, will correlate with the incidence of adolescent overweight and obesity (Kumesan, et al, 2016).
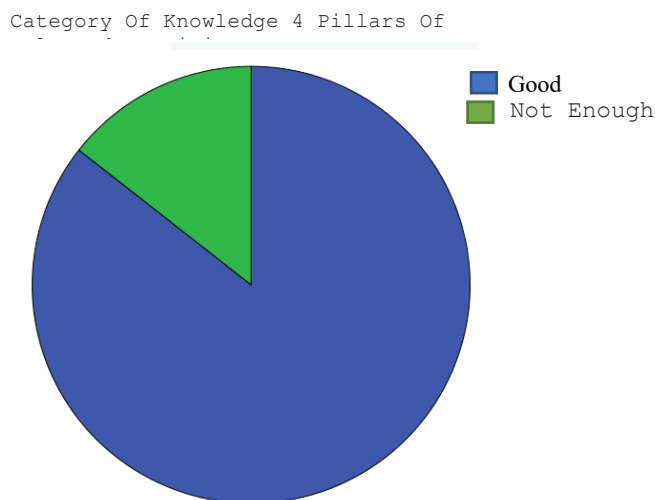
Category Of Knowledge 4 Pillars Of

Skill Category 4 Pillars Of Balanced
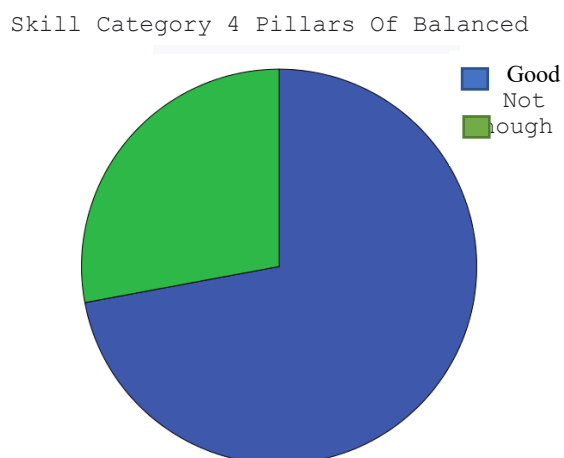

Good
Not
hough

Figure 5. Frequency Distribution of Skill Categories

The results of the bivariate analysis that tested whether there was an influence of the nutrition partner network model on knowledge, skills, upper arm circumference and abdominal circumference can be seen in Table 3 and Table 4 below.

Table 3. Chi-Square Analysis of Knowledge and Skill Data

	Balanced Nutrition Knowledge	Skills related to the application of the 4 pillars of balanced nutrition
Chi-Square	131.550[a]	65.757[b]
df	18	19
Asymp. Sig.	0.000	0.000

Table 4. Analysis of Variance Data LILA and LIPE

Variabel	df	F	Sig.
LILA	3	1.095	0.354
LIPE	3	0.392	0.759

Empowering young women as a network of nutrition partners is an effort that can be made to disseminate information and increase understanding in implementing the 4 pillars of

balanced nutrition in their daily lives. The average increase in knowledge of young women who are exposed to nutrition partner networks is 16.1 points. The biggest knowledge change reached 50 points in the GS3 group. While the change towards increasing skills reached 10 points, namely in the GS1 group. This is related to the nutritional message conveyed by the leader and discussions between peers in the WhatsApp group. Sukrillah, et al (2017) explained that apart from functioning to convey information, the WhatsApp Group also functions as a media for discussion and education, as entertainment media, as well as a medium to exert influence. The role of the nutrition partner network can be seen in Table 1. The more SMA/SMK/MA that join the wa group, the wider the information dissemination will be.

This nutrition partner network model can increase the knowledge and skills of young women in implementing the 4 pillars of balanced nutrition. Table 3 proves that there are significant differences in the categories of knowledge and skills categories after participating in communication, information and education in the balanced nutrition group media.

Based on the results of the analysis of the answers to each knowledge question posed in the questionnaire, it is known that almost all of them know the paradigm shift from 4 healthy 5 perfect to Balanced Nutrition (97.5%). Eighty (80%) are familiar with healthy eating guidelines through the "Fill My Plate" method. But I still don't know the portion of food on my plate. Likewise with the upper arm circumference measurement function, the average does not know (< 50%).

Intense communication within the group and the existence of nutritional messages that are shared every day serve as a reminder for peers as well as an educational medium to increase knowledge. The increase in skills shown by young women in this study is inseparable from theories of behavior change such as the S-O-R theory. The existence of a stimulus in the form of a nutrition message delivered accompanied by other media which is shared in the group can be a trigger for a change in attitude which in turn increases individual skills in implementing the 4 pillars of balanced nutrition.

However, this does not necessarily have the same effect on the results of measurements of the upper arm circumference and abdominal circumference of young women.

5. Conclusion

Based on the results of the research that has been done several conclusions can be drawn, 1) there is an influence of the nutrition partner network model on nutritional knowledge of young women; 2) there is an influence of the nutrition partner network model on the skills of young women; 3) there is no effect of the nutrition partner network model on female adolescent upper arm circumference; and 4) there is no effect of the nutrition partner network model on female adolescent abdominal circumference.

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