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The Effectiveness of Emotion Validation Pop-Up Books on the Emotional Development of Preschool Children as a Control for Children's Mental Health Emergencies

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Abstract

One of the psychological problems experienced by children is emotional mental problems which can result in unhealthy emotional and mental disorders. The incidence of this disorder is around 3-10%, in the United States it is around 3-7% while in Germany, Canada and New Zealand it is around 5-10%. In Indonesia, there are still no definite figures regarding the incidence, even though this disorder occurs quite often. The Emotion Validation Pop-Up Book Research contributes to Preschool Children increasing their understanding of felt emotions through an attractive display. This research uses a quasi-experimental design. The number of samples used in the treatment group and control group was 30 students at Kindergarten N Pembina Kab. Kendal uses a simple random sampling technique. Statistical analysis uses independent T test and paired T test. The results showed that the research showed an independent T test ($0.000<\alpha$) and paired T test ($0.000<\alpha$). This study concluded that there were differences in the emotional development of preschool children between the control and treatment groups and there were differences before and after in the treatment group in the use of the Preschool Children's Emotion Validation Pop-Up Book.

Keywords

emotion validation; pop up books; preschoolers

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Introduction

The current health care paradigm is patient-centered and aimed at safe and comprehensive services. Nursing/midwifery as an integral part of the health team has a major contribution in providing nursing/midwifery services 24 hours a day, so nursing/midwifery services must be professional. Professional services can only be provided by professional staff, including the nursing/midwifery profession. The nursing/midwifery profession is the figure closest to the patient in patient nursing/midwifery services. Professional nursing/midwifery services cover a wide range of ages from newborns to the elderly. A child is someone under eighteen years of age, in the period of growth and development with special needs, including physical, psychological, social and spiritual needs (Hayati, 2016).

One of the emotional mental disorders is Emotional Disorders which are often found in behavioral disorders in children. In recent years, mental and emotional disorders have become a major focus and concern in medical circles and the general public. The incidence of this disorder is around 3-10%, in the United States it is around 3-7% while in Germany, Canada and New Zealand it is around 5-10%. In Indonesia there are still no definite figures for the incidence, even though this disorder occurs quite often, sometimes a child is simply considered 'naughty' or 'stubborn' so that it is often not handled properly, such as violence perpetrated by parents and teachers. Due to a lack of understanding and awareness of Mental Emotional Problems, there is a tendency for them to occur more frequently in boys than in girls. However, as time goes by, the incidence increases in preschool and school-aged children (Solichah & Mariana, 2018).

Based on the background above, the author is interested in conducting research on "The Effectiveness of Emotion Validation Pop-Up Books on the Emotional Development of Preschool Children as Controlling Children's Mental Emergency".

This research aims to analyze the effectiveness of Emotion Validation Pop-Up Books on the Emotional Development of Preschool Children.

Method

Research methods consist of methods and approaches, research location, research time, population and sampling, data collection techniques, and data analysis methods. Other sections can be added along with the relevance of the research.

The effectiveness of Emotional Validation Pop-Up Books on the Emotional Development of Preschool Children is Quasi-Experimental research. The research location is the Kendal Regency Pembina Kindergarten. The population of this study were all kindergarten students at the Pembina Kindergarten, Kendal Regency. The number of samples obtained was 30 people in each group. Primary data sources were collected directly from preschool children who were willing to become participants. Research subjects were invited by the researcher and then the research subjects were divided into treatment groups and control groups. The next stage is a pre-test to get an emotional development score. The final stage is a post test to obtain an emotional development score using the Emotion Validation Pop-Up Book. Analysis of differences in Pop-Up Book media pre-test and post-test scores in the control and treatment groups. Validation of Emotions on the Emotional Development of Preschool Children using independent tests and paired t tests.

Results and Discussion

Based on Table 1, it is known that the majority of the treatment group before being given the Emotion Validation Pop-Up Book treatment on the Emotional Development of Preschool Children was good, 14 people (46.7%) while after being given

the Pop Up Book Validation treatment on the Emotional Development of Preschool Children it was found to be good. as many as 22 people (73.3%). This means that there is an increase in the effectiveness of the Emotion Validation Pop-Up Book on the Emotional Development of Preschool Children before and after being given treatment. The results of the analysis in table 2 above show that the control group has a p-value of 0.432 > 0.05, meaning there is no pre-test difference between the control group and the treatment group. Validation of Emotional Pop-Up Books on the Emotional Development of Preschool Children. After the intervention was carried out, the results of the difference test showed that there was a post-test difference between the control group and the treatment group (p = 0.000 < 0.05). The p-value obtained in the test using the paired T test in the control group was 0.363 > p (0.05), so it was concluded that there was no difference before and after in the control group, while there was no difference in the treatment group. It is known that the p-value is 0.000 < p (0.05), so it can be concluded that there are differences before and after in the treatment group for the Pop Up Book Emotion Validation analysis of the emotional development of preschool children.

Previous research results show that the use of thematic-based pop-up books can increase verbal-linguistic intelligence. In essence, all intelligence is present in the human brain from birth, including in early childhood. Intelligence is an important asset for children in navigating life. The Multiple Intelligence Theory states that there are nine types of intelligence possessed by humans, including verbal-linguistic intelligence, mathematical logic intelligence, visual-spatial intelligence, musical intelligence, kinesthetic intelligence, interpersonal intelligence, intrapersonal intelligence, naturalistic intelligence, and existential intelligence.

Verbal-linguistic intelligence or langu-

Table 1. Frequency Distribution Based on Validation of the Emotion Pop Up Book on the Emotional Development of Preschool Children

Emotional Development of Preschool Children	Group			
	Control		Treatment	
	no= 30	%	no= 30	%
Pre Test				
Normal	7	23.3	14	46.7
Abnormal	23	76.7	16	53.3
Post test				
Normal	9	30.0	22	73.3
Abnormal	21	70.0	8	26.7

Table 2. Analysis of the Effectiveness of Emotional Validation Pop Up Books on the Emotional Development of Preschool Children

Validation of the Emotional Pop Up Book on the Emotional Development of Preschool Children	Group		p-value*
	Control	Treatment	
Pre Test			0.432a
Mean ± SD	38.8±8,357	47.8±3,252	
Post Test			0.000a
Mean ± SD	44.3±8,360	77.78 ± 3,931	
p value*	0.363b	0,000b	

age intelligence is one type of intelligence possessed by children. Verbal-linguistic intelligence is the ability to use words effectively, both spoken and written. This intelligence includes sensitivity to the meaning of words, word order, sound, rhythm and intonation of spoken words. Including the ability to understand the power of words in changing states of mind and conveying information. Children who are intelligent in linguistics may have mastered the ability to read and write.

Verbal-linguistic intelligence is a type of multiple intelligence that is related to the ability to use the language system to communicate effectively through words, or the ability to think in terms of words and use language to express and appreciate complex meanings. Verbal-linguistic intelligence in children can show the extent of their logical thinking abilities. So, a child who is intelligent in linguistics has the ability to speak well and effectively (Hanifah, 2014).

Certain social environments can support strong mental health, resulting in positive mental health, but other aspects of social life can also be stressors that can disrupt mental health. Human interaction with the environment is related to health. Healthy environmental conditions will support human health, and conversely unhealthy environmental conditions can disrupt health, including in the context of mental health.

The results of this research are in accordance with previous research conducted by Aini (2013), regarding the relationship between parenting patterns and emotional mental deviations in children aged 36-72 months at Gabuga Tanon Terpadu PG-TK Sragen, it was found that out of 30 respondents parents with patterns caring parents, Democrats, the majority of children do not experience mental emotional deviations 20 (66.7%) (normal). This is because parents who apply a democratic parenting style are parents who are realistic about their children's abilities, give their children the freedom to choose and take action and have a warm approach such as offering discussions with their children and helping children solve their problems. If a child commits a violation, parents ask the reason and give sanctions according to their actions. This is in accordance with the theory which states that democratic parenting is related to good emotional mental health, in contrast to authoritarian parenting which shows low emotional mental health. Interestingly, it turns out that high or good mental health appears to be balanced in teenagers who were raised with a controlling and flexible parenting style compared to teenagers whose parenting patterns were inconsistent. Preschool children who come from democratic parents tend to be more confident, have self-control, are able to get along well with their peers, are independent, successful in learning, and are socially responsible. Authoritative parenting for children makes parents able to achieve children's growth and development according to their time and children have good mental and emotional development. A parenting style that is authoritative or democratic, warm and full of affection will encourage children to express the emotions they feel more easily. The ability to express emotions well will have a positive impact on children's physical and mental health (Dwiawati, et al., 2017).

Based on the results of the analysis, children with deviant psychosocial development experience changes in eating patterns such as loss of appetite, are unable to regulate their emotions well because they often appear angry for no reason and show confused behavior so they experience difficulties in communicating. and make a decision. In psychosocial development, emotions are feelings or affection that arise when someone is in a situation that is considered important by that individual. Emotions are represented by behavior that expresses comfort or discomfort with the situation or interaction experienced. Emotions can be happiness, fear, anger, and so on. Emotions have a very important role in children's development, both at preschool age and at later stages of development, because they have an influence on children's behavior (Santrock, 2011).

Children who experience uncomfortable emotions need to receive assistance from both parents and caregivers at daycare. To be able to go through psychosocial development well, there needs to be stimulation so that children are able to become confident individuals and are able to make good decisions in the future. The forms of emotion that children often experience at this stage of psychosocial development are crying, anxiety, jealousy, anger, smiling, laughing and attacking. In children aged 3-4 years, children can become physically and verbally aggressive towards other people, but gradually this physical aggression will begin to decrease (Soetjiningsih, 2012). Preschool children are expected to be able to express emotions and relate well without harming others. Developing children's social emotions can be done by carrying out joint activities in the form of games, developing children's social interactions with peers, parents or caregivers so that they can introduce good emotions to children, express emotions with good words, and train communication skills (Setyaningsih & Suharno, 2020).

Emotional validation can instill confidence in children to work productively through their own emotions and move away from unhealthy or dangerous situations. Through these coping skills, children can build self-esteem and an emotionally balanced experience of reality, as well as the coping skills needed to face difficult things. This can help them grow bigger – which can reduce the risk of developing depression and anxiety (Anyan & Hjemdal, 2016).

A 2018 study summarizes that mindful parenting can increase parental satisfaction and child-parent communication while reducing: stress, aggression, anxiety, and depression. Mindful parenting is a parenting practice that helps learn to understand moments with children better, rather than worrying about the past or future.

This approach can help parents become more curious, kind, intelligent, and accepting of their child's emotions and actions because parents will be more in tune with them. Attentive parenting can also help parents learn to be more empathetic and listen actively to their children (Corthorn, 2018).

Much research has focused on the predictive function of resilience for mental health indicators. Correspondingly, most intervention studies pay attention to the effect of resistance training on improving mental health status. Resilience-focused interventions are more effective than control interventions in reducing symptoms of depression and anxiety in children and adolescents, especially when cognitive-behavioral therapy-based approaches are used. Waugh and Koster (2015) revealed that there is evidence that positive training interventions aimed at increasing well-being, positive emotions, and resilience have beneficial effects on depression (Wu, et al., 2020).

Teaching young children emotions is an important factor in preventing the development of behavioral problems. Emotion regulation is an ability that is directly related to children's behavior. The research results show that the "My Feelings" module contains emotional knowledge presented using repeated interactive read aloud and role play methods that can be used to improve emotional regulation in children aged 5-6 years (Ridwan, 2017).

Characteristics of Children's Emotions Early childhood emotions are deep, but changeable, open, and occur frequently. For example, when a child is angry he will cry and scream, but if his wish is granted then his crying will stop and he will immediately laugh. The emotional character of early childhood is very strong at the ages of 2.5 to 3.5 years and 5.5 to 6.5 years. Some characteristics of emotional reactions in children include: 1) Children's emotional reactions are very strong, children will respond to an event with the same emotional level; 2) Emotional reactions often emerge to each event in the desired way; 3) Children's emotional reactions easily change from one condition to another; 4) Individual in nature, meaning that even though the event that triggers the emotion is the same, the emotional reaction

can be different; 5) The child's emotional state can be recognized through the behavioral patterns displayed. Types of Emotions Emotions are divided into two categories, namely positive emotions that arise from favorable conditions and negative emotions that arise from threatening relationships or painful conditions. Positive emotional reactions consist of happiness, joy, pride, love, hope, and feelings of compassion or pity. Negative emotional reactions include anger, anxiety, shame or guilt, sadness, jealousy, and disgust. The Important Role of Emotions The roles and functions of emotions for children include: 1) As a form of communication so that children are able to express all their needs and feelings to other people; 2) Influences the child's personality and adjustment to his social environment. Pleasant or unpleasant emotions can influence children's social interactions through reactions displayed by their environment. Positive circumstances experienced by children, for example children are interested and feel involved in what they are learning, can develop more optimal competence. Apart from that, the emotional bonds that are built can create enjoyment in learning, build relationships, and eliminate threats in the learning atmosphere, thereby increasing students' active role in learning (Palintan & Ashar, 2021).

The importance of adding material regarding emotional regulation is in accordance with research results which show that it is important for mothers of preschool children to have good emotional management skills because caring for preschool children often drains both physical and psychological energy which causes parents to feel irritable and angry. difficult to control. Having the ability to manage emotions well will make parents able to think rationally, able to access the knowledge they have so that parents are able to provide appropriate care (Retnaningsih & Setiyawati, 2019).

A study revealed that the development of instruments for measuring children's social emotional development based on home-based childcare refers to the results of needs analysis, namely the aspects of self-awareness ability, responsibility for oneself and others, as well as prosocial behavior (Solihah, 2020).

Smart Roulette media is a learning media used by educators to improve social emotional skills. The development model used is Borg and Gall which consists of six stages. The research results show that Smart Roulette is suitable for developing the social emotional aspects of children aged 5-6 years (Fitriani, et al., 2021).

The role-playing module "Aku Sayang Kawan" to increase knowledge about prosocial behavior in early childhood based on research is able to increase knowledge about prosocial behavior in early childhood. Role-playing is a group problem solving method that allows children to explore humanitarian problems, respond spontaneously, and continue with guided discussions. Role playing consists of an event or problem situation involving two or more people in which several decisions must be made to solve the problem. In role-playing there is a "problem story" where the human situation in the story is in a dilemma and no solution is offered. Role playing involves interaction between children and the surrounding environment in the learning process. The interaction of interpersonal factors, cultural tools, and individual factors as keys to individual (social) development and learning, cultural tools, and individual factors as keys to individual development and learning (Alfiyah & Martani, 2015).

The research application of the TANZPRO-Biodanza module is emotional training that allows participants to feel the importance of emotions, especially feelings, and the use of emotions to manage themselves. This research uses Borg and Gall educational research and design which shows that most of the sessions can be applied to Indonesian child subjects. However, there are still sessions that need to be adapted to Indonesian culture (Sari, et al., 2021).

A study of emotional flash cards that are visualized using digital illustration techni-

ques and illustrated simply so that children can easily understand them. After being tested on four preschool age children, overall it is suitable to be used because the visualization matches the material so it is easy to understand. Flash cards are a learning medium for preschool aged children to recognize the types of emotions, so they can help preschool aged children identify, communicate and learn to regulate the emotions they feel (Aliyasari & Martadi, 2021).

Emotions are a type of body language that involves many aspects such as behavior, actions, thoughts and feelings. Emotions have many forms. Emotions can also be used as a medium for conveying messages implicitly. Emotions can also be used as a medium for conveying messages implicitly. However, sometimes people cannot define the meaning of these emotions, especially children. Often parents feel confused due to emotional changes in their children, so they are confused about how to deal with their children's emotions. There are many ways to find out children's emotions. One way is to group emotions based on facial expressions and body movements. The Naive Bayes algorithm uses a dataset whose emotional class is known based on attributes and sample data from the training data. This data uses a dataset from EmoReact which contains child expression data which includes several expressions such as happy, sad, afraid, angry and neutral. The result of this research is that it can classify emotions in children based on their facial expressions from the classification of these emotions. The Naïve Bayes algorithm can classify emotional expressions in children with an accuracy rate of 65% (Fadli, etal., 2023).

The development of children's affection begins with introducing good emotional aspects to children. Developing emotional aspects requires appropriate activities and game tools so that stimulation can run well. APE Kid's Bag is a game tool in the form of an innovative tote bag as a complement to socio-drama activities to support the stimulation of emotional development. The research results show that the APE Children's Bag can be said to be feasible (Gayatr & Putra, 2023).

Multimedia "M-PIPED" was developed and its feasibility was investigated. "M-PIPED" is an abbreviation for Multimedia Interactive Learning, Self-Emotional Knowledge. M-PIPED is in the form of an interactive CD so its use requires the assistance of a computer or laptop. Computers are fun tools for children and children aged 5 years can already operate them. Behavioristic learning theory appears in the overall tutorial material as a stimulus to develop children's emotional knowledge and there are rewards as positive reinforcement when children guess emotions and put together emotional puzzles correctly. Cognitive learning theory is seen in the continuous presentation of material and the presentation is supported by interesting pictures, videos and visualizations, according to the iconic stages. Meanwhile, constructivist learning theory appears in children's initial abilities before learning about self-emotional knowledge, whereas before learning about self-emotional knowledge, children must already know and have experienced events related to emotions such as happiness, sadness, fear and anger. This initial ability will construct children to receive new knowledge, namely knowledge about self-emotions. Media in constructivist learning theory includes facilities provided by educators to help construct emotional self-knowledge in children (Sari, 2017).

Character education has an important role in the current era in building good morals in every individual. Especially for Muslims, morals are very important for survival. The importance of character education is also a bridge for developing children's emotional intelligence to control and manage children's emotions. Research shows that there is an influence between character education and emotions in children. The results of the data information show that including character education in the school curriculum can help children understand and manage their emotions. In Islam, every Muslim is taught that being able to control emotions and manage

emotions well will produce good morals. For this reason, character education is important in developing children's emotional intelligence (Leo, et al., 2022).

Conclusion

After the Emotion Validation Pop-Up Book intervention was carried out, the results of the different tests showed that there was a post test difference in emotional development between the control group and the treatment group (p=0.000). Testing uses a paired T test in groups. Testing uses a paired T test in groups.

Institutions should develop innovative Emotion Validation models to enhance emotional development to control children's mental health. The results of the Pop Up Book Emotion Validation research on the emotional development of Preschool Children become a reinforcement in practical learning.

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The Effect of Yoga Exercises on Reducing Stress Levels in Premenopouse Women

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Abstract

Premenopausal syndrome causes symptom physical and psychological. Disturbance psychology in general occurs in women transition is worry. One of possible efforts done that is do yoga exercises. Know the influence of yoga exercise on decline stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency. Research design pre-experimental, with design one-group pre-posttest design. Samples required as many as 33 people with random sampling technique. Data collection using pre and post intervention questionnaires. Data analysis used the paired t test. The average stress level before yoga exercise was 17.97 with standard deviation 1.36. The minimum score is 15, meanwhile score maximum namely 21. The average stress level after yoga exercise is 10.72 with standard deviation 1.97. The minimum score is 7, meanwhile score maximum namely 15. Paired sample t-test obtained a p value of 0.000 (< 0.05), meaning There is the influence of yoga exercise on stress levels in women pre menopause. The influence of yoga exercise on stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency.

Keywords

stress; pre-menopausal women; yoga exercise

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Introduction

Pre menopause is phase that occurs in women 40 years old and the start phase climacterium (Ponde et al., 2019). this phase arise be marked with cycle menstruation become No regular, bleeding menstruation lengthwise, amount blood menstruation become a lot and there is pain moment menstruation (Muchsin & Yulvania, 2023).

Women who have knowledge not enough have 3 times risky opportunity experience worry in face premenopausal phase, compared with women who have knowledge Good (Ghaffarilaleh et al., 2019). Additionally, support family is matter important thing to do There is For Mother in face premenopausal phase (Ariani, 2023).

WHO estimates amount menopausal women in 2025 in Asia will experience enhancement from figure 107 million soul will to 373 million souls (Chaturvedi et al., 2020). The Indonesian Ministry of Health estimates Indonesia 's population in 2020 will reach figure 262.6 million soul with amount living woman in the age of menopause is around 30.3 million soul with an average age of 49 years experiencing menopause (Susanti & Indrajati, 2022).

Premenopausal syndrome causes symptom physical and psychological. Disturbance psychology in general occurs in women transition is anxiety, fear, haste anger, memory downhill, difficult concentrating, nervous, feeling No useful, easy offended, stressed, even depression (Giri & PravatiTripathy, 2020).

At the Community Health Center Toroh II himself Already running the Innovation program Lasegar, where is this program is receptacle for the elderly who are still Healthy fit and happy For do physical and mental exercise positive so that still want to work and get involved active in Society. The aim of the lasegar program Alone is for increase degrees health carry on age For reach a powerful old age To use in life family and community in accordance with its existence.

Suitable sport For Pre- menopause is one of them is yoga exercise, yoga being one form service complementary uses skills (Nendhi Wahyunia Utami & Dewi Zolekhah, 2021). Yoga regularly general is exercise very beneficial for body and mind for freshness and fitness body (Fara et al., 2019). For the elderly, yoga is provided A little different with yoga in general because of elderly yoga will customized with condition elderly (Augoulea et al., 2021). Yoga is effective non - pharmacological therapy with non- pharmacological therapy other For reduce complaints during the pre- menopausal period (Laksmi et al., 2022).

Research conducted by Hanafi & Utamayasa, (2021) can concluded that There is effect significant differences in levels worry woman pre menopause before and after given yoga exercises. Based on Another research conducted by Supratmanto & Kushartanti (2018), data analysis used the t-paired sample test and Anova test. Research result show that aerobic exercise does not effective for reducing RLPP (Ratio Circumference Waist Pelvis) and level depression in women pre menopause ($\rho>0.05$). Yoga doesn't effective decreases RLPP ($\rho >0.05$) but effective lower depression ($\rho<0.005$).

A preliminary study conducted on November 3 2023, there were 1,654 residents aged 40-49 years in the Keja Puskesmas area Toroh II. Public health center Toroh II is one of them Community Health Center in the District area Toroh Grobogan Regency. In the Village Kengeng is a work area public health center Toroh II has 298 women aged 40-49 years. After done observation form interview obtained results that 5 mothers experiencing stress, 4 mothers experience menstruation No regular, 3 mothers experience burst invading heat face and neck, 3 mothers experience dry at night day, 5 mother experience heart pounding, and 5 mothers experience decreases libido. Women's way pre menopause for dealing with stress is with method work, gather with family, and chat with neighbor. Researcher do as-

sessment about use of yoga in women pre menopause, get it everyone interviewed Not yet Once try or using Yoga.

Phenomenon on make researcher interested For do study with title " The Effect of Yoga Exercise on Reducing Stress Levels in women pre menopause in the Village Potatoes Anxiety Toroh Grobogan Regency ".

Method

Study This using a research design p ra -experimental, with design One-group pre- post test design. Population from study This is all women aged 40-49 years as many as 298 people were there in the Village Potatoes Subdistrict Toroh Grobogan Regency. Sample used is woman aged 40-49 years who experienced menopausal symptoms in the Village Potatoes Subdistrict Toroh Grobogan Regency numbered 33 people with technique random sampling. On research This be measured use tool measure DASS-42 consisting of 42 statement items. DAS-42 consists of the 3 scales designed for measure 3 types circumstances emotional that is depression, anxiety, and stress. Test used paired sample t-test.

Result and Discussion

Stress levels in women pre menopause before doing yoga exercises in the village Potatoes Subdistrict Toroh Grobogan Regency

Table 1. Stress levels in women pre menopause before doing yoga exercises in the village Potatoes Subdistrict Toroh Grobogan Regency

Stress level	n	Mean ± SD	Min-Max
Pre	33	17.97 ± 1.36	15-21

Based on results study show that the average stress level before yoga exercise was 17.97 with standard deviation 1.36 The minimum score is 15, meanwhile score maximum namely 21.

Stress levels in women pre menopause after doing yoga exercises in the village Potatoes Subdistrict Toroh Grobogan Regency

Table 2. Stress levels in women pre menopause after doing yoga exercises in the village Potatoes Subdistrict Toroh Grobogan Regency.

Stress level	n	Mean ± SD	Min-Max
Prost	33	10.73 ± 1.97	7-15

Based on results study show that the average stress level after yoga exercise is 10.72 with standard deviation 1.97. The minimum score is 7, meanwhile score maximum namely 15.

The effect of yoga exercise on stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency

Table 3. Effect of yoga exercise on stress levels in woman pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency.

Stress level	n	Mean ± SD	Min-Max
Pre	33	17.97 ± 1.36	15-21
Prost	33	10.73 ± 1.97	7-15

Based on result study show that paired t test obtained p value of 0.000 (< 0.05), meaning There is the influence of yoga exercise on stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency. The influence Yoga exercises can also be provided proven from exists decline the average score from pre was 17.97 then experience decline to 10.73.

Stress levels in women pre menopause

before doing yoga exercises in the village Potatoes Subdistrict Toroh Grobogan Regency

The average stress level score before yoga exercise was 17.97 that stress level in respondents in category level light. Condition This There is possibility because respondents the can divert disorders caused by pre - menopausal syndrome with do more activities beneficial like look after House stairs and do hobby in accordance the fun. However, from results analysis also found a number of respondents who experienced moderate stress level. Medium stress level This because they not enough do fun activities, where in part big respondents in study This is Mother House ladder. Condition This for they too monotonous No There is something different so that they feel bored**.**

Apreviadizy & Puspitacandri (2014) in his research explain that stress triggers in mothers who do not Work usually happen Because limited and routine activities at home so that they feel bored. Apart from factors work Pre- menopausal mothers experience stress which is also triggered Because the presence of stressors. Stressors are factors in life humans who cause it happen response stress. Stressors can originate from various source, good from condition physical, psychological, or social, and also arise in situations work, at home, inside life social, and environmental outside other (Ainiyah, 2022)

Apart from that, the level of stress experienced Premenopausal mothers are also affected by levels education. Education of respondents in research This dominated by mother educated intermediate. Level of education Mother own role important in make it easier and more accessible knowledge knowledge. Mother owns knowledge not enough about menopauses tend feel worried and lacking Ready about the process he is going through at menopause so Mother experiencing stress. Wulan (2020) in his research explain that knowledge Mother pre menopause with readiness Facing menopause is known that the more Good mother 's knowledge so the more readiness is also high Mother in facing menopause and beyond low knowledge Mother so the more low readiness Mother in facing menopause

Mellynia et al, (2022) explain that decline rate Estrogen can too affects neurotransmitters in the brain form the hormones dopamine, serotonin and endorphins that influence feeling.

Decline hormones the can result symptom decline Power remember, susasana easy heart change, up to feeling easy offended. Condition the can become originator happen depression or stress.

Stress levels in women pre menopause after doing yoga exercises in the village Potatoes Subdistrict Toroh Grobogan Regency

The average score of respondents' post - yoga stress level was 10.72 experiencing stress. Condition the describe that respondents Already accept condition pre menopause. Besides that from results the explain that happen decline stress levels in premenopausal women. However from results analysis is still ongoing found respondents at a mild stress level. This matter explain that There is possibility at the moment given intervention Mother not enough so focus in do yoga movements .

In the treatment, yoga exercises are carried out for 35 minutes once a week. Aini et al. (2016) Yoga exercises to do in a way whole for 40 minutes effective in lower stress level. Do yoga exercises in a way orderly and calm capable give positive effect_to feeling happy, reduced depressed thoughts and feelings_worried.

The effect of yoga exercise on stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency

Based on results study show that paired t test obtained p value of 0.000 (< 0.05), meaning There is the influence of yoga exercise on stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency. The influence Yoga exer-

cises can also be provided proven from exists decline The average score from pre was 17.97 then experience decline to 10.73. That matter explain that Providing yoga exercises is capable lower stress levels in premenopausal mothers.

Research result This in line with study Rosyada et al. (2023) that effective yoga exercises to decline level stress in pre- menopausal women aged 40-49 years. These results were also supported study Permana et al. (2020) that there is relationship of yoga exercise to decline stress levels in the elderly. Study Jorge et al., (2016)show that yoga practice for 12 weeks lower menopausal symptoms, level stress, and depression. Yoga practice also improves quality live and prevent enhancement cortisol in women post menopause. By general, effect regular yoga practice significant more stand out compared to with sport. Yoga can do it too push change psychophysiological positive in women postmenopausal and contribute For increase quality life woman in a way whole. Yoga has a number of style However objective from every style is bring body in circumstances conscious and relaxed through a certain series of poses. More movement in yoga emphasis on breathing deep and slow during every pose and line permanent body. Yoga can be exercised increase hormone happy (Hormones dopamine , serotonin, oxytocin, and endorphin). Yoga in menopausal women can influence mental, emotional, intellectual and physical balance (Kumara, n.d.).

Conclusion

Conclusion on research This that is mother's stress level pre menopause pre yoga exercise was 17.97. Mother's stress level pre menopause post yoga exercise was 10.72. There is an influence of yoga exercise on stress levels in women pre menopause in the Village Potatoes Subdistrict Toroh Grobogan Regency with a p value of 0.000 (< 0.05).

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The Influence of Learning Motivation on Students Anxiety in Preparing Their Final Assignments

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Abstract

This study aims to determine the effect of learning motivation on anxiety in students who compose the final project. In this study, the population for this study were students of the Midwifery Program at Muhammadiyah University of Semarang with a total of 80 subjects using the census sampling technique. Methods of data collection using a psychological scale. The psychological scale used as a measuring tool in this study consisted of two scales, namely the scale and the scale of learning motivation. Data analysis used simple regression analysis. The value of Cronbach's alpha on the value variable is 0.828, while the Cronbach's alpha value on the motivation variable is 0.905. The results of the regression correlation test (β) are -0.075, with a significance of 0.00 (<0.05) so that the proposed hypothesis is accepted. This shows that the higher the learning motivation, the lower the level of anxiety. On the other hand, the lower the motivation, the higher the motivation.

Keywords

anxiety; learning motivation; midwifery students

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Introduction

Education is a process that is very identical to the teaching and learning process. The learning process is an adaptation step in which there is individual involvement in order to understand the whole of a science. As a student, to test whether you are eligible or not, you need to be tested by making a final assignment, which is an activity to train you to create a written work that requires accountability as one of the formalities of eligibility to complete your education at college. (Astuti & Hartati, 2013). During the learning period, a person will try to adapt to changes that arise quickly and in a structured manner. This change is rapid and not accompanied by the ability to adapt well, so it can give rise to fear of failure to achieve what is expected, such as feelings of fear of failure to feelings of fear because of the possibility of not graduating, and is therefore called anxiety.(Suardana & Simarmata, 2013). On the other hand, emotional and mental conditions generally have a negative influence on a person's motivation, namely a mental condition that is directly unstable, such as fear, stress, anxiety, nervousness, trembling, and so on.(Sardiman, 2011).

According to(Kristanto, 2014)Anxiety that occurs in a person is usually due to conflict originating from within an individual and a mismatch between the desire for something to be achieved and the reality that is being faced. Anxiety is a disturbance related to feelings which are characterized by feelings of loss, fear, very deep worries, the emergence of behavior that can change but this is still within normal limits, not facing disturbances in assessing reality.(Hawari, 2011). The emergence of an individual's prolonged feelings of worry and fear without any reason, unpleasant or unusual feelings can result in symptoms such as a faster heart beat, body shaking, excessive sweating, feelings of confusion, lack of concentration, excessive panic, and so on (Taylor, 2010).

The feeling of anxiety that arises when facing a final assignment is characterized as a feeling of anxiety as an inability to face problems or a feeling of insecurity as well as a general reaction. The prolonged feelings experienced by an individual begin with worry and fear for no apparent reason, the emergence of unpleasant feelings, and so on (Taylor, 2010). Anxiety is a result obtained through physiological and psychological processes in the human body so that it can be felt as a reaction to the emergence of danger which is likely to give rise to excessive stress, especially if there is stress related to feelings or excessive stress on the soul and the person is unable to control the current situation. experienced(Hawari, 2007). Anxiety is a condition associated with negative emotions characterized by the appearance of premonitions and somatic psychological signs of tension such as sweating, difficulty breathing, fast heartbeat.(Schwartz, 2000).

Anxiety is a feeling of neurotic helplessness, immaturity, insecurity, and a tendency to be less capable when facing demands that come from the environment, feeling difficult and very stressed in living daily life.(Syamsu, 2009). Another opinion was expressed byCartono (2005)that anxiety is a form of excessive fear and lack of courage combined with feelings of worry about things that are not clear. Anxiety is an emotional condition characterized by physiological characteristics, a feeling of excessive and unpleasant tension, and a comprehensive feeling that something bad will happen.(Nevid, 2005). In line with the previous opinion,Stuart (2006) Anxiety is a feeling of worry that is unclear and widespread, and is related to feelings of helplessness and uncertainty.

(Atkinson, 2010)explains that the feeling of anxiety that arises is a mood state characterized by the emergence of negative feelings and symptoms of physical tension where a person anticipates various possibilities that will come, such as feelings of danger or misfortune in the future. Anxiety that arises can involve various bodily and physical situations that can involve behavior, feelings, as well as physiological feelings, therefore

Gazalbha (2009) explains that anxiety is a sign of an emotional reaction that originates from within a person so that it can be manifested from several processes. emotions that will mix when someone experiences strong feelings of pressure and conflict which arise due to situations that endanger humans as social creatures.Husdarta (2010)says that anxiety is a form of feeling about something, which in this case is characterized by excessive worry. This feeling of anxiety is a sign from the ego so that it can warn the individual regarding the possibility of a danger so that he can prepare an appropriate adaptive reaction. Anxiety also functions as a form of mechanism to protect the ego, which is caused by excessive anxiety giving a signal to someone that a problem or danger is coming and if they do not take appropriate action, the threat will increase until the ego is defeated.(Jiwo, 2012)states anxiety as a condition related to mental health which requires treatment.Supriyono (2016)adding that feelings of anxiety are a reaction to a form of fear towards a situation so that anxiety is considered as a feeling of excessive pressure or stress which can influence behavior.

Herdiani (2012) stated that the obstacles faced when preparing the final assignment could hinder the process of compiling the final assignment, this could be caused by the impact of anxiety, changes in behavior, stress, and even depression. The emergence of anxiety experienced by students is caused by various trigger factors, namely learning motivation. One of the factors revealed by Suardana and Simarmata (2013) regarding the causes of anxiety is a lack of motivation to learn. By having motivation to learn, a person will have a driving force that comes from within the individual to carry out learning activities in order to increase knowledge, skills and experience.(Iskandar, 2009). This is because motivation to learn grows because there is a desire to know and understand something and encourages and directs interest in learning and is motivated to achieve achievement. According to Yanti (2013), this feeling of anxiety is closely related to the motivation to learn so that it can reduce anxiety. Furthermore, this anxiety can be suppressed through internal motivation, either intrinsic motivation or extrinsic motivation(Sardiman, 2011).

Hamalik (2011)explains learning motivation as a process of changing a person's behavior which is characterized by a reaction to achieve a goal. Learning motivation is a change in energy within a person's personality which is characterized by the emergence of affective (feelings) and reactions to achieve goals(Kompri, 2016).Iskandar (2009) states that learning motivation is the driving force within an individual to carry out learning activities to increase knowledge, skills and experience, where this motivation grows because there is a desire to know and understand something and encourage and direct students' interest in learning so that they are serious about learning and motivated to achieve achievement. Further,(Koeswara, 2001)Learning motivation is a concept used to explain the forces that exist and work within the organism or individual which is the driving force and direction of behavior.

There are many factors that can influence anxiety, but researchers focus on learning motivation as a variable that will be tested further to prove that there is an influence on anxiety in students who are preparing their final assignments. This is proven by several previous studies which show that these two variables have a significant relationship.(Vivin et al., 2019)With the motivation to learn you can reduce anxiety. This is supported by Asyiqi (2021) who states that a person will experience anxiety if they do not have the motivation to learn.

The importance of learning motivation in reducing anxiety needs to be tested further so that it can be proven scientifically considering the impact that can be obtained over a long period of time. Therefore, the hypothesis proposed in this research is that there is an influence of learning motivation on anxiety in final students who are preparing their final assignments. This research was conducted to find out whether learning

motivation can influence anxiety.

Methods

The subjects involved in this research were 80 Final Semester Students of the Midwifery Study Program, Muhammadiyah University, Semarang. The sampling technique used is census sampling. Census is a sampling technique that uses a population as a sample because the population is relatively small. To obtain data that is objectively relevant and can be used as a basis for the analysis process, it is necessary to collect data using the questionnaire method. There are two measuring instruments used in this research. The first measuring tool is a social support scale which is based on aspects of social support consisting of emotional support, equipment support, information support, and assessment support with a total of 32 items. The second measuring tool is an anxiety scale which is based on these aspects. anxiety which consists of physical aspects and physiological aspects with a total of 20 items.

Data collection was carried out in January 2022 starting from January 10 to January 21 2022. The distribution of the scale was given to subjects via a scale booklet. Data analysis using regression testing.

Results and Discussion

Before the analysis test is carried out, the assumptions are first tested on the two variables. In the validity test of the learning motivation variable on 30 items, validity values ranging from 0.309 to 0.744 were obtained, with a Cronbach's alpha value of 0.905. In the anxiety variable for 20 items, validity values were obtained ranging from 0.301-0.707 with a Cronbach's alpha value of 0.828

After testing the assumptions on the validity and reliability values, another assumption test is then carried out, namely the normality test. The normality test was carried out using the Kolmograph-Smirnov (KS).

Table 1. Normality test

KS-Z	Sig	P	Note
1,141	0.148	>0.05	Normal

The results of the normality test obtained a KS-Z value of = 1.141 with a significance level of 0.148 (p>0.05), which means the distribution of the research variables is normal.

Table 2. Regression Test

Hypothesis	Regression Coefficient (β)	Coefficient Determination (r2)	Sig
Learning motivation and final semester student anxiety.	-0.075	0.113	0,000

The results of the regression analysis test show that the data has a significance level of p<0.000, with a coefficient of determination (R2) of 0.113, which means that learning motivation has an influence on final semester student anxiety of 11.3%. The regression coefficient (β) value of -0.175 indicates that there is a negative influence of learning motivation on anxiety.

Based on the results of research conducted on 80 subjects of Final Semester Students who were preparing their Final Assignments at Muhammadiyah University Semarang. The beta significance value (β) for learning motivation was obtained at -0.175. Apart from that, looking at the significance value, the results show that learning motivation has a negative influence on anxiety of 0.000 (p<0.05) with a contribution of 11.3%. The results show that the hypothesis proposed in this research is accepted. This shows that the higher the learning motivation obtained, the lower the anxiety. Likewise, the

lower the motivation to learn, the higher the level of anxiety.

Afriani (2018) found that learning motivation has a negative relationship with anxiety, which means that learning motivation reduces anxiety levels. In line with previous research, Aufa (2021) stated that there is a relationship between learning motivation and anxiety. In line with previous research, Halmuniati (2020) conducted research related to learning motivation and anxiety, obtaining results that there was a relationship between learning motivation and anxiety. Hikmawati (2017) added that there is a relationship between learning motivation and anxiety. Novitarium (2018) revealed that there is a negative relationship between learning motivation and anxiety.

Kaplan and Sadock (2010) state that anxiety will lead a person to take the necessary steps to prevent threats or mitigate their consequences and can disrupt the implementation of the learning process. Rahman (2020) also explains that anxiety that is too high will ultimately disrupt the learning process. Santrock (2007) explains that individuals who have high learning motivation are individuals who are able to respond well to situations themselves and are able to overcome anxiety.

Conclusion

Based on the research that has been carried out and analysis tests, the results show that the hypothesis in this study is accepted, namely that there is a negative influence of learning motivation on anxiety in students who are preparing their final assignments. The higher the learning motivation obtained, the lower the anxiety, and vice versa, the lower the learning motivation obtained, the higher the anxiety. This research also shows that the influence of learning motivation on anxiety is 11.3% with a regression coefficient of -0.075.

The implication of this research is that final semester students can have high learning motivation so that they can reduce anxiety when preparing their final assignment. It is hoped that future researchers will have more theoretical references in conducting research and also explore in more depth other factors that influence anxiety such as self-confidence, modeling, past experiences, generalizations, etc. Apart from that, it is hoped to expand the scope of research subjects that will be studied further, such as for midwifery students to all health students.

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The Relationship between Parity and Anxiety Levels of Pregnant Women in the Third Trimester

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Abstract

Anxiety during pregnancy can lead to an increased risk for pregnancy outcomes such as uterine inertia, prolonged labor, and post-labor hemorrhage. Many studies highlighted the factors associated with anxiety including maternal age, maternal education level, and parity. This study explores the relationship between parity and maternal anxiety during pregnancy during the third trimester in the Primary Health Care Center of Jetis, Yogyakarta. Methods cross-sectional approach has been used in this study. The independent variable was parity, while the dependent variable was the anxiety level. The population was mothers in the third trimester who visited the Jets Health Center to have routine antenatal care. Out of 77 samples were drawn from about 344 pregnant women who met the inclusion criteria as this sampling using a purposive sampling technique. Chi-square was applied to analyze the data using SPSS. Result for the p-value was .009 < .05 showing a significant relationship between parity and maternal anxiety in the late stage of pregnancy. Conclusion there is a significant relationship between two variables which are maternal anxiety and parity among expectant mothers at the Jetis Health Center of Yogyakarta. Therefore, We provided some suggestions on an individual basis.

Keywords

anxiety; pregnancy; parity

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Introduction

Anxiety is a natural emotional disorder (affective) which is characterized by feelings of fear or worry that are deep and continuous, do not experience disturbances in assessing reality (Reality Testing Ability/RTA, still good), personality is still intact (does not experience personality cracks/splitting of personality), behavior may be disturbed but still within normal limits(Hawari, 2011).

Anxiety in pregnancy is an emotional state that is similar to anxiety in general, but this occurs in pregnant women which is related to the welfare of the baby, the birth process and experiences in caring for the pregnancy and changes in the role of being a parent. (Dunkel, 2011).

Anxiety can trigger bodily responses, both physical and psychological, in pregnant women. The physical response to anxiety causes an increase in the sympathetic nervous system (Budi Setyawan, 2017). The endocrine system, which consists of glands such as the adrenal glands, thyroid and pituitary glands (the control center for the glands), releases their respective hormones into the bloodstream.(Setiawati et al., 2022). As a result, the autonomic nervous system activates the adrenal glands, which function to provide energy to the mother and prepare her physically and psychologically (Horhoruw et al., 2018). The presence of adrenaline and non-adrenaline hormones causes dysregulation of the body's biochemistry, resulting in physical tension in pregnant women(Siregar et al., 2021). The impact of this process will arise psychological changes in pregnant women, namely becoming anxious, irritable, unable to concentrate, doubtful, and even the desire to run away from the realities of life.(Yuliani & Aini, 2020). Ultimately, this condition causes further anxiety and tension, forming a feedback cycle that can increase overall emotional intensity(Siregar et al., 2021).

High stress and disturbed mood during pregnancy can result in babies with LBW (low birth weight), preterm birth, chromosomal birth, spontaneous abortion, low APGAR score, neuro endocrine dysregulation. (Notoatmodjo, 2018). Meanwhile, the impact on the mother can occur hyperemesis gravidarum, heart problems, hypertension, pre-eclampsia and eclampsia (Hasdianah Hasan Rohan, 2013). Other impacts on the mother include prolonged labor, uterine inertia, postpartum hemorrhage, in babies there can be death at birth, hyperactivity, mental decline (Wikjnsastro, 2006). Apart from that, an unsupportive psychological atmosphere can make childbirth difficult. Mothers who are in a state of excessive anxiety, worry and fear for no reason, which ultimately leads to stress (Yona Desni Sagita, 2018). This stressful condition causes the muscles to tighten, especially the muscles in the birth canal which also become stiff and hard, making it difficult to expand. Besides that, unstable emotions will only make the mother feel more severe pain (Laili, 2010).

Methods

This research is a quantitative research with a cross-sectional time approach. Data analysis used the Chi Square statistical test with computerized SPSS. The population was third trimester pregnant women who underwent Antenatal care (ANC) at the Jetis Health Center, Yogyakarta City in 2015, with a total of 344 people with a sample size of 77 respondents. The sampling technique used in this research was purposive sampling.

Results and Discussion

The characteristics of respondents observed in this study were based on their level of anxiety. The results of research on the level of maternal anxiety in facing childbirth in third trimester pregnant women at the Jetis Health Center, Yogyakarta City showed that 42 respondents experienced mild anxiety (54.5%), 31 respondents experienced moderate anxiety (40.3%) and There were 4

respondents who experienced severe anxiety (5.2%). The number of respondents who experienced moderate and severe anxiety generally occurred among primigravida respondents. This was caused by the respondent's experience of a first pregnancy that had never been experienced before, so that the respondents became anxious because they did not know what to prepare for.

According to(Bobak, 2007)Generally, during pregnancy, mothers experience psychological changes consisting of 3 phases(Herlina et al., 2022). The first phase, namely at the beginning of pregnancy, the center of the mother's mind focuses on herself and the reality of pregnancy, most mothers think that the fetus is not real during the early period of pregnancy. In the second phase the mother accepts the growing fetus as something separate from herself and as a person who needs to be cared for. In the third phase the mother begins to prepare herself to give birth and raise her child. Feelings of anxiety often occur during pregnancy, especially in mentally unstable mothers who will reach their climax during childbirth. Anxiety can arise due to concerns about a safe birth process for herself and her baby as well as pain during the birth process. Several studies have proven that women who experience anxiety during pregnancy are more likely to experience abnormal labor(Kasmiati, 2023).

There are 2 ways a person's psychological response in dealing with anxiety, namely coping mechanisms and adaptation. According to experts, coping is the process an individual goes through in resolving a stressful situation. Coping is an individual's response to situations that threaten him, both physically and psychologically. Every time there is a stressor that causes an individual to experience anxiety, efforts automatically appear to overcome it with various coping mechanisms. Meanwhile, adaptation is adjusting to new needs or demands; namely a way to find balance to return to a normal state (Rasmun, 2006).

In pregnant women, the third trimester is often called a period of vigilant waiting. A number of fears arise in the third trimester. Women may feel anxious about the baby's life and their own life, such as: whether the baby will be born abnormally, related to labor and birth (pain, loss of control, and other unknowns), whether she will realize that she is in labor, or her baby. unable to get out, or whether his vital organs would be injured(Isnaini et al., 2020).

According to Sari (2006), in her research, factors that can cause anxiety in the first pregnancy include fear of her own thoughts or the pregnant woman's feelings about pregnancy and herself during pregnancy, personality type, environment and education. (Oktapianti & Triyanti, 2021).

The results of this study are supported by research (Zamriati et al., 2013)which shows that pregnant mothers generally experience anxiety, where 26% of mothers experience mild anxiety, 62% moderate anxiety and 12% severe anxiety.(Litsmanasari & Warsiti, 2013).

The results of this study showed that 31 respondents (40.3%) had characteristics of multigravida parity, who experienced mild anxiety, 13 respondents (16.9%) who experienced moderate anxiety, and 1 respondent (1.3%) who experienced severe anxiety. . Furthermore, among respondents of primigravida parity, there were 11 respondents (14.3%) who experienced mild anxiety, 18 respondents (23.4%) who experienced moderate anxiety and there were 3 respondents (3.9%) who experienced severe anxiety. The results of the cross tabulation in table 1, the majority of pregnant women experienced mild anxiety in the multigravida group, 31 people or 40.3%, while 18 people experienced moderate anxiety, 23.4% in the primigravida group. Only one person was detected as experiencing severe anxiety in this study, namely a respondent in the multigravida group, and as many as 3 people or 3.9% in the primigravida group. The results of this research are supported by research conducted by(Shodiqoh & Syahrul, 2014)which shows a significant level of difference between the anxiety faced by pregnant women in primigravidas

Table 1. Cross Tabulation of the Relationship between Maternal Anxiety Levels in Facing Childbirth in Pregnant Women

Mother's Anxiety							
	Mild Anxiety		Moderate Anxiety		Severe Anxiety		P value
Parity	n	%	n	%	n	%	
Multigravida	31	(40.3%)	13	(16.9%)	1	(1.3%)	0.009
Primigravida	11	(14.3%)	18	(23.4%)	3	(3.9%)	
Amount	42	(54.5%)	31	(40.3%)	4	(5.2%)	

and multigravidas(Permatasari, 2020). Other studies also show the same results, there are differences in anxiety levels between primigravuda and multigravida mothers(Güler et al., 2019). In this study, the researchers invited 60 primigravida pregnant women and 65 multigravida pregnant women. Maternal anxiety was measured using the State and Trait Anxiety questionnaire which was distributed to pregnant women with a gestational age of more than 37 weeks.

Based on table 2, it can be seen that the chi square test results produce a significant value (p) of 0.349. A p value of less than 0.05 identifies that there is a significant relationship between the two variables.

The research results show that the chi square correlation test results produce a significant value (p) of 0.009. A p value of less than 0.05 identifies that there is a significant relationship between parity and the level of maternal anxiety in facing childbirth in third trimester pregnant women at the Jetis Health Center, Yogyakarta City. This is indicated by the p-value = 0.009.

Table 2. Relationship between Parity and anxiety of pregnant women

Value	Significance	Information
0.009	0.349	There is a Relationship

Conclusion

Based on the results of the research and discussion previously presented, it can be concluded that the majority of respondents experienced moderate anxiety and only one person was detected as experiencing severe anxiety. There is a very close relationship between maternal parity or number of births and anxiety levels. Therefore, researchers provide suggestions to several parties. Jetis health center midwives, to be able to carry out initial screening regarding the mother's mental well-being, especially regarding anxiety in the third trimester of pregnancy and collaborate with a psychologist if necessary. To policy makers at the Jatis II community health center to implement a fixed protocol for ANC examinations so that routine screening can be carried out on pregnant women in the third trimester regarding anxiety levels. For future researchers, they should explore more deeply other factors that contribute to anxiety and conduct experiments to reduce anxiety levels in pregnant women in the third trimester. Apart from that, it is necessary to develop experiments or interventions to overcome or reduce the level of anxiety in third trimester pregnant women. For Aisyiyah University, Yogyakarta, it can be used as an additional reference.

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The Potential of PMT Made from Anchovies to Increase the Growth of Toddlers who Experience Stunting

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Abstract

Stunting is a condition that a person's height is shorter than the height of other people in general. Adverse effects that can be caused by short-term stunting such as impaired brain development, intelligence, impaired physical growth and metabolic disorders in the body. This type of research is a quasi-experimental design with a nonequivalent control group design. The population is all stunting toddlers in Bandengan Village. A sample of 79 children under the age of 5 years 39 children as the case group and 40 children as the control group were given PMT 4 times a week for 1 month, the results of the study There were differences in height in the treatment group before and after treatment with ap value of 0.001, and there was a difference in height in the control group before and after treatment with ap value of 0.0001. However, in the different test between the two groups there was no difference in growth with ap value of 0.258. It is recommended that further research monitor other factors that affect stunting.

Keywords

anchovies; stunting; supplementary feeding

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Introduction

Children are every family's dream. Apart from that, every family also hopes that their children will grow optimally (physically, mentally/cognitively and socially healthy), to be proud of and to be useful for their religion, homeland and nation. (TELAUMBANUA, 2019). As national assets, children must receive attention from the time they are in the womb until they become adults(Soetjiningsih, 2013).

Future Indonesian children must be healthy, intelligent, creative and productive. If children are born healthy, grow well and are supported by quality education, they will become the generation that will support the success of nation building. (Tobing et al., 2021).

Indonesia is still facing nutritional problems which have a serious impact on the quality of Human Resources (HR). (Bima, 2019). One of the nutritional problems that is currently a major concern is the prevalence of stunting in children under five.(Ramadhan et al., 2019). The results of the 2017 Nutritional Status Assessment (PSG) by looking at the nutritional status of toddlers based on the Height/Age Index (TB/U) showed that toddlers aged 0-59 months were very short at 9.8%, short at 19.8(Rahmadhita, 2020). This figure has increased compared to the PSG results in 2016 with the percentage of very short toddlers at 8.6% and short at 19.0%. Meanwhile, among toddlers aged 0 - 23 months, the percentage of very short is 6.9% and short is 13.2%. The percentage of stunting/shortness (very short and short) in the toddler group (29.6%) was higher than in the toddler group (20.1%). The incidence rate in Central Java Province in toddlers aged 0 - 59 months is very short, 11.2% and stunting 20.1%. Meanwhile, in toddlers aged 0 - 23 months, the incidence of very shortness was 13.9% and shortness of 19.4%. (Kemenkes RI, 2018).

Methods

The type of research is quasi experimental designwith a nonequivalent control group design. The population in this study were all stunted toddlers in Bandengan Village. The sampling technique was total sampling, so the entire population was a sample of 79 children under 5 years of age, 39 children as the treatment group and 40 children as the control group. This research is a supplementation, in its implementation intervention was given in the form of PMT 4 times a week for 1 month in both groups.

Results and Discussion

Respondent Characteristics

Based on table 1, most of the respondents were aged between 24 - 36 months in both the treatment and control groups. The research results also showed that the majority of respondents were male for each group, namely 56.4% and 55%. Regarding family income characteristics, the distribution of the two groups is different. In the control group, the largest percentage of family income was below the UMR, namely 70%, while in the treatment group the largest percentage in the family income group was at the level equivalent to the UMR, 61.5%.

Height growth will increase during infancy, then slow down and increase again during puberty until it stops at around 18 – 20 years of age.(Alifariki, 2020).

In this study, the majority of respondents were male. In the treatment group and control group, the percentage of men was 56.4% and 55% respectively. From the results of this research, it shows that the majority of children who experience stunting are male. The gender of the child is related to the achievement of growth and development due to differences in growth spurts in girls and boys(Sulistyawati, 2018). The growth and development of girls progresses more significantly than boys, namely during the period from birth until puberty ends(Santri et al., 2014).

Based on the research results, the ave-

Table 1. Characteristics of Respondents

Respondent Characteristics	Kel Intervention (Anchovy Meatballs)		Kel Control (Catfish Meatballs)	
	n	%	n	%
Toddler Age				
< 24 months	11	28.2	9	22.5
24 – 36 months	28	71.8	31	77.5
Gender				
Man	22	56.4	22	55
Woman	17	43.6	18	45
Family Income				
Below UMR	13	33.3	28	70
Minimum wage	24	61.5	11	27.5
Above the UMR	2	5.1	1	2.5

Table 2. Difference Test in Control Group and Treatment Group

Independent Variable	Wilcoxon	Mann Whitney	α = 0.05	Conclusion
Treatment Group Growth (Pre and Post)	0.001	-	p < 0.05	There is a difference
Control Group Growth (Pre and Post)	0.0001	-	p < 0.05	There is a difference
Difference in Growth of Control and Treatment Groups	-	0.258	p > 0.05	No difference

rage family income in both groups is in the UMR and below UMR categories. Family income has an important role in the family's socio-economic life structure. Children who grow up in economically poor families are prone to malnutrition compared to other family members(Nadiyah et al., 2014).

Growth of Stunting Toddlers

Table 2 explains that there are differences in the treatment groups, before and after being given the intervention, namely anchovy meatballs. The results of the different tests in the control group also showed that there were differences before and after being given the intervention in the form of catfish meatballs. This means adding additional food in the form of anchovies and catfish as an important source of protein toddler growth (Riestamala et al., 2021). Providing protein-based foods is related to a child's growth, a lack of protein intake over a long period of time can cause the growth process to stop (Rahmawati et al., 2017). Toddlers' nutritional intake is important to support their growth according to their growth charts to prevent growth failure which causes stunting(Kemenkes RI, 2018). Research by Solihin et al (2013) shows that there is a significant positive relationship between the level of protein adequacy and nutritional status in children under five (Solihin et al., 2013). This statement is different from research by(Hanum et al., 2014)that there is a negative relationship between the level of protein adequacy and the nutritional status of children under five(Hanum et al., 2014).

The results of the difference test in the two groups showed that there was no difference between the treatment group given anchovy meatballs and the control group given catfish meatballs. Both animal

protein foods both contribute good protein for the growth of toddlers, but each has advantages and disadvantages (Anggun, 2018). Rusyantia's research showed that there was no significant relationship between the frequency of fish consumption and the incidence of stunting. The statement is not significant because the frequency variable can only measure the frequency of frequently consuming fish, but does not measure the amount of protein consumed, especially from fish(Rusyantia, 2018).

Conclusion

The results of this study showed that there was no significant difference between the control group given catfish meatballs and the treatment group given anchovy meatballs. Further research is needed to determine the factors that influence growth in toddlers, as well as assessing the increase in growth in stunted toddlers over a longer period of time.

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Number of Glia Cells in the Cerebrum and Cerebellum of Newborn Rats After Administration of Mackerel Fish Oil During Pregnancy

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Abstract

Omega 3 intake during pregnancy can support fetal brain growth and development. Omega 3 plays an important role in making neuron cell membranes and glia and protecting nerve cells. Mackerel is a source of omega 3 which is abundant and easily accessible to the people of Indonesia. The purpose of this study was to analyze the effect of mackerel oil intake on the number of glial cells (astrocytes, oligodendrocytes, and microglia) of the cerebrum and cerebellum of newborn rats. This research was a true experimental design with a post-test only control group. A total of 30 pregnant rats were randomized into 3 groups, namely the control group (K1), mackerel oil (K2), and omega 3 supplements (K3). Each group was given treatment on days 1-17 of pregnancy. On the 18th day, the termination was carried out. 3 newborn rats were taken from each parent and made preparations from brain tissue. Hematoxylin-Eosin test to assess the number of glial cells. The results showed the highest mean±SD number of glial cells (astrocytes, oligodendrocytes, and microglia) in the cerebrum and cerebellum was the highest in the mackerel oil group (174,460±33,777; 21,080±6,937; 11,300±2,090), and (156,280 ±34,980; 22,260±4,302; 11,060±2,383). ANOVA test showed a significant difference in the number of glial cells in the cerebrum and cerebellum between groups with a p-value <0.05. The results of this study can be concluded that the administration of mackerel oil during pregnancy can increase the number of glial cells (astrocytes, oligodendrocytes, and microglia) in the cerebrum and cerebellum of newborn rats.

Keywords

mackerel oil; omega 3; glial cells; newborn rat

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Introduction

Brain development begins when the baby is in the womb(Simarmata et al., 2012). Several factors that have a major effect on early brain development are the reduction of toxic stress and inflammation, the presence of strong social support and secure attachments, and the provision of optimal nutrition from the womb.(Cusick & Georgieff, 2016). However, in fact there are still pregnant women who experience nutritional problems. Riskesdas in 2018 recorded that the proportion of risk of chronic energy deficiency in pregnant women in Indonesia was 17.3%. This figure has decreased from 24.2% in 2013. Meanwhile the proportion in East Java was 29.8% in 2013 and 19.59% in 2018(Kemenkes, 2018).

Nutrition around the time of fertilization is important for gamete function and placental development. Starting 2-3 weeks after fertilization, the embryo undergoes a process of neuronal proliferation and migration, synapse formation, myelination and apoptosis to develop the fetal brain. One nutrient identified as having an important role in prenatal nerve development is polyunsaturated fatty acid (PUFA).(Li et al., 2019).

Omega 3 intake can be obtained by consuming sea fish. One of the marine products that is quite abundant in Indonesia is mackerel (Setyo Mahanani Nugroho et al., 2022). Mackerel is available in traditional markets and supermarkets at low prices so that it is affordable for the public(Indaryanto et al., 2014). The omega 3 fatty acid content in mackerel is DHA 10.62%, EPA 4.85% and AA 3.17%(Muhamad & Mohamad, 2012).

The peak of glial cell production occurs in the second half of pregnancy. Part of the glial cells undergo axonal myelination in the second trimester of pregnancy and the end of the first postnatal year(Hadders-Algra, 2010).Providing omega 3 fatty acids during pregnancy is an effort to optimize the growth and development of the fetal brain by increasing the number of nerve cells and glial cells by reducing apoptosis and increasing the glia-neuron ratio and increasing synaptogenesis.(Fauzi & Joewono, 2018). Docosahexaenoic acid has a significant effect on neuronal membrane dynamics, including transporter, receptor and neurotransmitter function.(Bernardi et al., 2012). Additionally, the presence of DHA in neonatal brain matter aids several brain development processes, including neurogenesis, synaptogenesis, brain plasticity, inflammatory signaling, neuroprotection, etc.(Basak et al., 2020).

This study aims to determine the effect of administering mackerel fish oil on the number of glial cells (astrocytes, oligodendrocytes and microglia) in the cerebrum and cerebellum of newborn Rattus norvegicus by using mackerel fish found in Indonesian waters.

Methods

This research is a pure experiment with a post-test only control group design which aims to analyze differences in the number of glial cells (astrocytes, oligodendrocytes and microglia) in the cerebrum and cerebellum of newborn Rattus norvegicus in the control group, mackerel oil and omega 3 supplements. This research carried out after obtaining ethical eligibility with ethical number 2.KE.056.04.2020.

The mackerel oil used is extracted directly from fresh mackerel fish. Soxhlet extraction was carried out using petroleum ether solvent. To determine the levels of fatty acids in mackerel oil, a GCMS test was carried out. In the GC-MS test, the results showed that mackerel oil contains many amino acid compounds, such as DHA, EPA, linoleic acid and arachidonic acid.

Acclimatization of Rattus norvegigus aged 2-3 months is carried out for 1 week. Next, superovulation is carried out with 10 IU of the hormone Pregnant More Serum Gonadhotropin (PMSG). After 48 hours, 10 IU Human Chorionic Gonadhotropin (hCG) was injected intraperitoneally and then Rat-

tus norvegicus were mated by monomating. 30 pregnant Rattus norvegicus were randomized into 3 groups, then given treatment on days 1-17 of pregnancy. The control group (K1) was given ad libitum standard feed, the mackerel oil treatment group (K2) was given ad libitum standard feed plus 3.24 mg mackerel oil/ 120 gr BW/ day, the omega 3 supplement treatment group (K3) was given standard feed ad libitum plus omega 3 supplement 3.24 mg/ 120 gr BW/ day.

Surgery is performed on the 18th day of pregnancy. Three children were selected from each mother with the criteria of heaviest, medium and lightest weight to be sacrificed and brain tissue prepared. Hematoxylin-Eosin staining was carried out to count the number of glial cells under a microscope with 400x magnification in 5 fields of view. Data calculations used the ANOVA statistical test and to see the differences between each group, the BNT test was carried out.

Results and Discussion

The results showed that the mean number of glial cells (astrocytes, oligodendrocytes and microglia) in the cerebrum of newborn mice in the mackerel oil group was higher (174,460 ± 33.77; 21,080 ± 6,937; 11,300 ± 2,090) than the negative control and omega 3 supplement groups (Table 1). Then a normality test was carried out using the Shapiro-Wilk test and the results showed that the cerebral astrocyte cells of newborn mice in the control group had an abnormal

Table 1. Average ±SD and Further Testing of the Number of Glial Cells in the Cerebrum of Newborn Rats

Group	Number of Glial Cells		
	Mean ± Standard Deviation		
	Astrocytes	Oligodendrocytes	Microglia
Control	90,580 ± 23,994 a	9,100 ± 3,193 a	6,520 ± 2,134 a
Mackerel Oil	174,460 ± 33,777 c	21,080 ± 6,937 c	11,300 ± 2,090 c
Omega 3 Supplements	120,160 ± 34,358 b	15,780 ± 5,688 b	8,360 ± 1,066 b

Table 2. Results of Analysis of Differential Tests for the Number of Glia Cells in the Cerebrum of Newborn Rats

Variable	p value	Difference Test Analysis
Astrocytes	0,000*	Kruskal-Wallis
Oligodendrocytes	0,000*	ANOVA
Microglia	0,000*	ANOVA

Table 3. Average ±SD and Further Testing of the Number of Glial Cells in the Cerebellum of Newborn Rats

Group	Number of Glial Cells		
	Mean ± Standard Deviation		
	Astrocytes	Oligodendrocytes	Microglia
Control	95,480 ± 19,085 a	7,880 ± 2,925 a	6,460 ± 1,687 a
Mackerel Oil	156,280 ± 34,980 c	22,260 ± 4,302 c	11,060 ± 2,383 c
Omega 3 Supplements	124,860 ± 33,233 b	13,240 ± 1,733 b	8,540 ± 2,273 b

Table 4. Results of Analysis of Differential Tests for the Number of Glia Cells in the Cerebellum of Newborn Rats

Variable	p value	Difference Test Analysis
Astrocytes	0,000*	ANOVA
Oligodendrocytes	0,000*	ANOVA
Microglia	0,000*	ANOVA

distribution, whereas in the mackerel fish oil and omega 3 groups the distribution was normal, so the different test used was the Kruskal-Wallis nonparametric test. Tests for normality of the number of oligodendrocyte cells and cerebral microglia of newborn Rattus norvegicus in the three groups were all normally distributed, so to see the differences in each group the parametric Anova test was used.

Test *Kruskal-Wallis*on the number of astrocyte cells and the ANOVA test on the number of oligodendrocyte cells and microglia cells in the cerebrum of newborn mice, the results showed significant differences between groups with a value of p=0.000 (p<0.05) (Table 2). The results of the Mann-Whitney advanced test for astrocyte cells and the BNT advanced test for oligodendrocyte and microglia cells (Table 1) show that different superscripts in the same column are significantly different (p<0.05).

Based on table 3, it is known that the mean number of glial cells (Astrocytes, Oligodendrocytes and Microglia) in the cerebrum of newborn mice in the mackerel oil group was higher (174,460 ± 33.77; 21,080 ± 6,937; 11,300 ± 2,090) than the control and omega 3 supplement groups Testing the normality of the number of cerebellar glial cells in newborn mice using the Shapiro-Wilk test showed that the astrocytes, oligodendrocytes and microglia cells in all groups were normally distributed, so to see the differences in each group the ANOVA parametric test was used.

The ANOVA test showed significant differences between groups in the number of astrocytes, oligodendrocytes and microglia in the cerebellum of newborn Rattus norvegicus with a value of p=0.000 (p<0.05) (Table 4). The results of further BNT tests on the number of astrocytes, oligodendrocytes and microglia cells in the cerebellum of newborn mice showed that different superscripts in the same column were significantly different (p<0.05) (Table 3).

The results of this study showed significant differences in the number of glia cells in the cerebrum and cerebellum of newborn mice between the control group, mackerel oil and omega 3 supplements. The number of glia cells in the cerebrum and cerebellum of newborn mice given mackerel oil was shown to be higher than the control group and omega supplements. 3.

The content of DHA and EPA as a source of omega 3 in mackerel oil in this study given to pregnant Rattus norvegicus mothers is believed to be able to increase the number of glial cells in the brain of newborn Rattus norvegicus. Mice lacking endogenous DHA show changes in microglial architecture and cytokine factors without involving astrocytes. DHA replenishment restores the physiological expression of neuroinflammatory and neuroplasticity factors in the cerebral cortex. This suggests that DHA plays an important role in neuroimmune communication in brain function and synaptic plasticity(Basak et al., 2020).

A number of studies report that maternal DHA consumption contributes to the health and development of the baby (Sarih, 2020). In the early trimester of pregnancy, DHA plays a role in the initial process of placentation and is important for further placental development (Asifa & Rodiani, 2021). Docosahexaeonic acid rapidly accumulates during the third trimester of pregnancy and the first year after birth. DHA supplementation in the third trimester of pregnancy is

very important because at this time the fetal brain is growing and requires DHA during this period, thus contributing to cognitive development and providing immune protective effects on the baby.(Zhang et al., 2018);(Basak et al., 2020).

Several observational and clinical tests have shown a risk of lower language development and visual acuity in babies if the mother does not consume enough DHA during pregnancy(Zhang et al., 2018). Inadequate DHA and EPA intake during pregnancy will disrupt optimal feto-placental growth and cause inflammatory disorders, behavioral changes and mental stress later in life.(Basak et al., 2020). Research conducted(Coti Bertrand et al., 2006)stated that the lack of omega 3 fatty acids in mouse mothers showed changes in the structure of the telencephalon of embryonic mice(Basak et al., 2020).

*Docosahexaeonic Acid*early in life is very important regarding the process of neurogenesis during perinatal and gliogenesis which continues until after birth. Gliogenesis is the formation of astrocytes, ologodendrodites and microglia. Astrocytes are important for neurotransmitter transduction, oligodendrocytes function to secrete myelin which insulates axons allowing signal transduction and microglia function to help remove cellular debris. In the process of gliogenesis DHA is very important, because it stimulates neurite growth (the growth of dendrites and axons of neurons) (Yunanto & Dwi Sanyoto, 2016). Additionally, the formation of synapses allowing one neuron to transmit signals to another neuron also depends on optimal DHA levels. Consuming foods rich in DHA is effective in increasing DHA levels in glial cells. Glial cells are described as the “glue of the nervous system” because they help form myelin and provide nutrients to neurons(DiNicolantonio & O’Keefe, 2020).

Mackerel oil contains omega 6 fatty acids (2.20% arachidonic acid and 1.86% linoleic acid) and omega 9 fatty acids (7.89% oleic acid). The content of omega 6 and omega 3 has an important role in normal brain formation and nerve myelination during nerve development(Cohen Kadosh et al., 2021). Oleic acid is the only fatty acid that can be synthesized by astrocytes. The single double bond of oleic acid can increase membrane fluid which is very important for neurons. In addition, oleic acid is preferentially incorporated into neurite bases, indicating that increased fluid is required at the growth sites of axons and dendrites.(Medina & Tabernero, 2002).

Several essential fatty acid contents other than omega 3 (DHA and EPA) are thought to be able to support the growth and development of the fetal brain and increase the number of glial cells more than the group that only received omega 3 supplements. Thus, fatty acid intake during pregnancy needs special attention. as an effort to prepare future generations. This fatty acid intake can be obtained from mackerel fish which is abundantly available in Indonesia.

Conclusion

Mackerel oil contains multiple components besides EPA and DHA, so that administration of mackerel oil during pregnancy can increase the number of glial cells (asrtocytes, oligodendrocytes and microglia) in the cerebrum and cerebellum of newborn mice.

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Effectiveness of Counseling on Long-Term Contraceptive Methods through Leaflets during the Covid-19 Pandemic

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Abstract

The Covid-19 pandemic in Indonesia is currently entering a new normal period or the implementation of the New Habit Adaptation protocol. This condition has reduced the number of family planning participation so that it is feared that it could cause a baby boom or an increase in the number of pregnancies and births. For this reason, serious efforts need to be made in order to increase the number of family planning participation again. During this Covid-19 pandemic, as much as possible should avoid crowds so that cases of Covid-19 transmission do not occur. One of the efforts that can be done is through counseling with leaflet media. This study aims to determine the effectiveness of health education using media leaflets about long-term contraceptive methods during the new normal for women of childbearing age. The study was conducted in Leran Village with a total population of 1, 506 then obtained the number of samples as many as 316 respondents. Sampling technique using probability sampling with proportional random sampling technique. This type of research is a quasi-experimental with pretest-posttest one group design. Data analysisused the Wilcoxon test to see the effectiveness anddetermine the difference before and after giving counseling.The result of this research is that there is an effect after it is donecounseling with leaflet media on women of childbearing age knowledge in Leran Village. It is hoped that the role of health workers and health cadres will always carry out promotions and education about the benefits of family planning, especially during the Covid-19 pandemic.

Keywords

counseling; leaflets; women of childbearing age; contraception; Covid-19

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Introduction

The occurrence of the pandemic due to the corona virus in Indonesia and throughout the world has had a huge impact on human life, starting from the health, economic, social, educational, and even related to worship/religious aspects.(Anhusadar, 2021).On February 11 2020, the World Health Organization (WHO) named the new virus Severa acute respiratory syndrome coronavirus-2 (SARS-CoV-2) and the name of the disease as Coronavirus disease 2019 (COVID-19). It has been confirmed that this pneumonia transmission can be transmitted from human to human. On March 11 2020, WHO announced that COVID-19 had become a pandemic in the world(Jaji, 2020).

The number of global cases as of January 18 2021 reached more than 95 million, while domestic cases in Indonesia were confirmed cases of more than 897 thousand, recovered cases were more than 727 thousand, and deaths were more than 25 thousand. Data in East Java alone has a total of almost 100 thousand cases.

Covid-19 is a serious problem because the number of cases is high throughout the world. The Covid-19 virus can attack anyone regardless of age or gender. So preventive measures are very important to implement. Preventive steps that can be taken are to implement the 5Ms, namely wearing a mask, washing hands with soap and running water, maintaining distance, staying away from crowds, and limiting mobilization and interaction (Aldilawati & Hidayat, 2021).

The high number of Covid-19 cases has caused the government to impose a lockdown, Large-Scale Social Restrictions (PSBB), and the Implementation of Community Activity Restrictions (PPKM) (Aria Nata Kusuma et al., 2022). As a result of this policy, the participation rate of family planning acceptors actually decreased. If this is not treated immediately it can cause a baby boom because it increases the pregnancy rate. So health education regarding long-term contraception used during the new normal is very important to provide (Zahra et al., 2021).

The outreach media that can be used in health education is through the distribution of leaflets containing information about long-term contraception during the new normal (Aprilina et al., 2020). This media prioritizes visual messages which usually consist of a number of words, pictures or photos in color. The effectiveness of using outreach media is largely determined by the number of senses of reception involved. The more senses are used, the easier it is to understand the delivery of the extension message(Prabandari, 2018).

Based on the above background, researchers are interested in conducting research on the effectiveness of health education using leaflets regarding long-term contraceptive methods during the new normal in women of childbearing age in Leran Village, Gresik Regency.Researchers are interested in examining whether there is an influence of education using leaflet media on the knowledge of women of childbearing age in the new normal period. The reason for choosing leaflet media is because it is simple but interesting and easy to share so it doesn't cause crowds.This research can also provide benefits for health promotion regarding long-term contraception for women of childbearing age during the Covid-19 pandemic.

Method

This research is a quasi-experimental research using a pre test post test one group design. The population in this study was 1,506 women of childbearing age in Leran Village, Manyar District, Gresik Regency. The sample size was determined using the Slovin formula to obtain a sample size of 316 female respondents of childbearing age. The sampling method used is purposive sampling.

The instrument used in this research is a questionnaire sheet, the measuring tool used for the independent variable in this

case is health education through leaflets.

The statistical test used is a different test to evaluate treatment on the same sample in two different observation periods. In this study, the Wilcoxon test (signed rank test) was used to determine whether there were differences before and after giving counseling using leaflets to WUS in Leran Village.

Results and Discussion

The characteristics of WUS in this study include age, number of living children, education, and employment. The following is a frequency distribution table of the characteristics of respondents to this study.

Based on table 1, it can be seen that the majority of WUS in Leran Village are aged between 30-40 years, namely 57.59% of WUS. Based on the number of living children, 55.38% of WUS have children≤ 2. Based on education level, 49.05% are high school graduates and the majority of WUS in Leran Village or 84.81% are housewives.

Based on table 2, it can be seen that there are differences in the results of the WUS knowledge assessment between before and after being given counseling. A total of 150 WUS (47.47%) had good knowledge

Table 1. Respondent Characteristics

WUS characteristics		F	%
Age	< 30	119	37.66
	30-40	182	57.59
	> 40	15	4.75
Total		316	100.00
Number of living children	≤2	175	55.38
	>2	141	44.62
Total		316	100.00
Education	Elementary School	49	15.51
	Junior High School	66	20.89
	Senior High School	155	49.05
	PT	46	14.56
Total		316	100.00
Work	Civil servants	7	2.22
	Self-employed	24	7.59
	Laborer	17	5.38
	IRT	268	84.81
Total		316	100.00

Table 2. Frequency distribution of WUS knowledge about long-term contraceptive methods during the new normal before and after counseling

WUS Knowledge	Before counseling		After counseling	
	f	%	*f*	%
Good	150	47.47	179	56.65
Enough	129	40.82	120	37.97
Not enough	37	11.71	17	5.38
Amount	316	100.00	316	100.00

and 37 WUS (11.71%) had poor knowledge before being given counseling using leaflet media. After being given counseling through leaflet media, the number of WUS with good knowledge increased to 179 WUS (56.65%) and those with less knowledge became fewer, namely 17 WUS (5.38%).

Table 3. Differences in WUS knowledge before and after being given counseling about long-term contraceptive methods during the new normal

WUS Knowledge	elementary school	Mean	p-value
Before counseling	17.13	75.49	0,000
After counseling	15.09	79.19	

From table 3 it is known that there is a difference in the average knowledge of WUS before and after the intervention. The average knowledge of WUS before counseling was 75.49 with a standard deviation of 17.13 and after counseling the average knowledge was 79.19 with a standard deviation of 15.09.

Based on the results of the Wilcoxon Signed Ranks Test analysis, it was obtained that the value of $p < \alpha$ or $0.000 < 0.05$ means that H0 was rejected and H1 was accepted, which means that counseling about long-term contraceptive methods in the new normal period using leaflet media had an effect on WUS knowledge in Leran Village, Manyar District.

WUS' knowledge about long-term contraceptive methods before being given counseling can be seen in table 5.2 where the results are that almost half of the total WUS have good knowledge, but WUS with sufficient knowledge are still relatively large, with more than 10% having poor knowledge. After being given counseling, the results showed that the majority of WUS knowledge scores (56.65%) had good knowledge and those with less knowledge were only 5.38%.

The results of this research were then analyzed with an error value (α) of 0.05, and significant results were obtained (p=0.000), which means p value <0.005, so it can be concluded that there is a difference in knowledge values before and after being given counseling about long-term contraceptive methods during the new normal. at WUS in Leran Village, Manyar District, Gresik Regency. The results of this research are in line with the results of other research where counseling provided through leaflets or other printed media can improve a person's knowledge and attitudes.(Haryani et al., 2016),(*(No Title)*, n.d.).

Knowledge about long-term contraceptive methods is very important for the public, especially women of childbearing age, to know, especially in the current situation and conditions of the Covid-19 pandemic (NURHAYATI et al., 2021). Knowledge about the types of long-term contraceptive methods, starting from the advantages and disadvantages of the method, method of administration, and the right time to start as well as the minimum control or re-visit time is something that needs to be highlighted because it is very suitable for the new normal conditions where direct contact with health workers can be minimized(Ferreira-Filho et al., 2020).

A person's knowledge of certain information can be influenced by various factors, including the education they have previously received, social environmental factors, and even local cultural factors that are trusted and trusted (Praditaningrum et al., 2012). However, organismal stimulus theory explains that a person can change his knowledge and behavior if given continuous stimulation(Kurniawati, 2014).

The Covid-19 pandemic has impacted all aspects of life, one of which is the implementation of the national family planning program (Widiastuti & Arini, 2021). BKKBN stated that the number of family planning programs decreased drastically during the Covid-19 pandemic, where in March 2020 there were 36 million active family planning participants, while in April 2020 it decreased

to 26 million family planning participants (Widaryanti et al., 2021). If this continues for a long time, it can be estimated that 25% of women of childbearing age have the potential to become pregnant. Apart from that, as a result of the decline in active family planning acceptors this will increase the number of unplanned pregnancies (unmet need) which of course has a negative impact on health, social and psychological, and has the potential to increase maternal and newborn mortality rates.(Kemenkes RI, 2019).

Pregnancy during the Covid-19 pandemic has several risks because access to health services is very limited. So public education needs to be improved (Ahadi Pradana, 2020). Due to limited health services, the option of long-term contraceptive methods is highly recommended (Widyarni & Dhewi, 2018). Long-term contraceptive methods such as IUDs and implants make it possible for family planning acceptors not to routinely access health services unless they experience complaints. So it is ensured that direct contact between health workers and family planning acceptors can be minimized as an effort to prevent Covid-19 (Ulandari, 2020).

Conclusion

The results of this study show that there is an influence on the level of knowledge after health education was carried out using leaflets about long-term contraceptive methods during the new normal in WUS in Leran Village.

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Risk Factors Associated with the Incidence of Ovarian Cancer

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Abstract

Ovarian cancer is the biggest malignancy problem in female reproduction today. Dr. Hospital H. Abdul Moeloek as a referral center hospital in Lampung province has data that ovarian cancer is the most gynecological cancer with cases that have continued to increase over the past 3 years. The purpose of this study was to determine the risk factors associated with the incidence of ovarian cancer in RSUD Dr. H. Abdul Moeloek Lampung Province. This type of research is quantitative with a case-control design. The population was all patients treated in the gynecology room with 70 case samples taken using total sampling and 70 control samples using simple random sampling. The results showed that the factors related to the incidence of ovarian cancer in RSUD Dr. H. Abdul Moeloek included age (p-value = 0.001 and OR = 13.5 with 95% CI = 6.01-30.31), history of breastfeeding (p-value = 0.009 and OR = 2.684 with 95% CI = 1.326 -5.432), and a history of contraception (p-value = 0.001 and OR = 3.882 with 95% CI = 1.855-8.126). While the age of menarche and parity has no relationship with the incidence of ovarian cancer. From the research results expected, the high incidence of ovarian cancer in Lampung province can be socialized properly in society, so that people understand and can prevent ovarian cancer early.

Keywords

age; breastfeeding; contraception

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Introduction

Cancer is currently the leading cause of death in the world and is the most common obstacle to achieving desired life expectancy in most countries(Momenimovahed et al., 2019). Ovarian cancer is a group of cells that grow abnormally in the ovarian cells and damage the surrounding tissue(Canadian Cancer Society, 2019)and is the biggest malignancy problem in the female reproductive organs. The National Comprehensive Cancer Network (NCCN) states that in one day there are more than 28 women in the world who are diagnosed with ovarian cancer, so it can be accumulated that every year more than 200,000 new diagnoses are found.(Gajjar et al., 2012)the predictive value of symptoms remains very low. The aim of this paper is to obtain the views of general practitioners (GPs. The number of new cases of ovarian cancer in 2018 ranks 18th based on general gender and age classification and 8th on the specific classification of cancer that occurs most often in women in the world. The incidence rate was 295,414 cases with a death rate of around 184,799 cases (62.56%). Based on the order of countries with the highest incidence rates, Indonesia is in fifth place with a total incidence of 13,310 cases. In Indonesia alone, ovarian cancer is in third place after breast cancer and cervical cancer(Globocan, 2019), but survival is three times worse than other cancers(Momenimovahed et al., 2019).

The term "ovarian cancer" is not a single diagnostic description, but rather a general term for various types of cancer that affect the ovaries, fallopian tubes, and the main cavity of the peritoneum. It is estimated that more than 30 different types of ovarian cancer have been discovered(Bhatla & Jones., 2018)However, the etiology is still unclear until now. Several hypothetical theories have been widely published, including the incessant ovulation hypothesis (non-stop ovulation theory) (Busmar, 2010), gonadotropin stimulation hypothesis(Sumanasekera, 2018)endometrioid, mucinous and clear cell; in each subtype, low and high grade. The large majority of ovarian cancers are diagnosed as high-grade serous ovarian cancers (HGS-OvCas, androgen stimulation hypothesis(Busmar, 2010), progesterone hypothesis, and estrogen hypothesis(Sumanasekera, 2018)endometrioid, mucinous and clear cell; in each subtype, low and high grade. The large majority of ovarian cancers are diagnosed as high-grade serous ovarian cancers (HGS-OvCas. According to the World American Cancer Institute, ovarian cancer occurs due to repeated damage and repair to ovarian cells during the ovulatory cycle. This triggers cells to continue to proliferate (grow and develop) thereby increasing the potential for spontaneous mutations.

Risk factors related to the incidence of ovarian cancer can be divided into two groups, namely predisposing (triggers) and protective (protectors). Age is an important factor in the incidence of ovarian cancer. The risk of ovarian cancer increases with age, supporting the theory of the incessant ovulation hypothesis, which states that as women get older, the number of ovulations that have occurred also increases. The risk of ovarian cancer increases at the age of 45-54 years(Widayati et al., 2011)but the peak is at the age of 50 years(Zheng et al., 2018). Meri Yanti's research at Zainoel Abidin Hospital, Aceh (2017) illustrates that maternal age is related to the incidence of ovarian cancer with p value=0.046 and an odds ratio (OR) of 2.250 with 95% CI=1.105-5.639(Yanti, 2018).

Menarche age <12 years (early menarche) also appears to support the incessant ovulation hypothesis theory because it increases the number of ovulatory cycles(Montes et al., 2012). Several epidemiological studies show that the odds ratio (OR) of early menarche on the incidence of ovarian cancer is 1.1-1.5(Montes et al., 2012)and the results of research by Rian Pasaoran et al stated that the highest incidence of ovarian cancer was in the menarche age group of 11 years(Simamora et al.,

2018). Meri Yanti's research at Zainoel Abidin Hospital, Aceh (2017) shows that there is a relationship between early menarche and the incidence of ovarian cancer, proven by p value = 0.016 and OR = 2.700 with 95% CI = 1.194-6.103(Yanti, 2018).

Parity is associated as a protective factor for ovarian cancer because nulliparous women tend to have more ovulatory cycles than multiparous women. Pregnancy causes anovulation and suppresses pituitary gonadotropin secretion thereby confirming the incessant ovulation hypothesis and the gonadotropin hypothesis. Parous women have a 30%-60% lower risk than nulliparous women(Reid et al., 2017). Full ovulation every year indicates an increased risk of ovarian cancer by 6%. These findings are particularly relevant in the 20 to 29 year age group, where there is a 20% increase in risk. Women with last birth after age 30 to 35 years had a 58% lower risk of ovarian cancer compared with nulliparous women(Montes et al., 2012).

Apart from parity, a history of breastfeeding and the use of hormonal contraception are also considered protective factors for ovarian cancer because they can suppress ovulation in women. The relationship between breastfeeding and a reduced risk of ovarian cancer is related to the contraceptive mechanism of the lactational amenorrhea method (MAL). Research by Adisasmita et al (2016) shows that there is an 83% reduction in the risk of ovarian cancer in women who have a history of breastfeeding (OR=0.17 with 95%CI=0.08-0.39)(Adisasmita et al., 2016).

Overall, use of any type of hormonal contraception has a protective effect against ovarian cancer compared to never using hormonal contraception with relative risk (RR)=0.66 with 95%CI=0.58-0.76. The results of a reanalysis of 45 epidemiological studies indicate that oral contraceptive use provides long-term protection against ovarian cancer by preventing approximately 200,000 ovarian cancers and 100,000 ovarian cancer-related deaths, in both carriers and non-carriers of the BRCA 1 mutation(Montes et al., 2012).

Dr. Hospital H. Abdul Moeloek is the highest referral hospital in Lampung province. Pre-survey results show that ovarian cancer is the most common gynecological cancer with the number of cases continuing to increase over the last 3 years, followed by cervical cancer and endometrial cancer. In 2016, the number of patients diagnosed with ovarian cancer was 43, cervical cancer was 80, and endometrial cancer was 25. In 2017 the number of ovarian cancer patients was 105 patients, 102 patients with cervical cancer, and 28 endometrial cancer patients. In 2018 the number of ovarian cancer patients increased to 146 patients, 124 patients with cervical cancer and 21 endometrial cancer patients. As of September 2019, the number of new cases of ovarian cancer registered in the gynecology room at Dr. H. Abdul Moeloek has added 70 cases. Based on the problems above, further research was carried out regarding the risk factors associated with the incidence of ovarian cancer at RSUD Dr. H. Abdul Moeloek Lampung Province.

Methods

This type of research is quantitative research with a case control design that is hospital based analytical in nature.The population of this study were all patients treated in the gynecology room at Dr. H. Abdul Moeloek Lampung Province registered 358 patients from January to September 2019, then divided into two groupsincluding a group of ovarian cancer sufferers as cases of 70 patients and a group of non-ovarian cancer sufferers as controls of 288 patients. Researchers used a 1:1 ratio in determining the sample size so that in the case group a total sampling technique was used and in the control group a simple random sampling technique was used via the Random Sample Generator mobile application after the samples were filtered using predetermined inclusion and exclusion criteria.

This research uses secondary data

sourced from patient medical records. The resulting univariate analysis is a percentage frequency distribution and the bivariate analysis uses the chi square statistical test. Researchers also assessed the strength of the risk relationship between variables by calculating the odds ratio (OR). Data collection was carried out in March-April 2020 at RSUD Dr. H. Abdul Moeloek, Lampung Province and has passed the ethical feasibility test issued by the Health Research Ethics Committee, Faculty of Medicine, Diponegoro University with number 23/EC/KEPK/FK-UNDIP/II/2020.

Results and Discussion

Table 1 on the age variable shows that the age category has a higher risk in the case group (ovarian cancer), namely 56 respondents (80%) from the control group (no ovarian cancer), namely 16 respondents (22.9%), whereas for the no age category at risk, the case group was lower (20%) than the control group (77.1%). The variable age at menarche shows that both groups (cases and controls) are mostly not at risk (menarche≥12 years). The number of respondents in the case group at risk was 13 respondents (18.6%) while in the control group the number of respondents at risk was 10 respondents (14.3%) and in the control group the number respondents who were not at risk were 57 respondents (81.4%) while the case group was 60 respondents (85.7%). The parity variable shows that the results in the two groups have differences that are not very significant. The number of parities at risk (parity < 2) was more common in the case group than in the control group. The number of parities at risk in the case group was 38 respondents (54.3%) while in the control group there were 33 respondents (47.1%) and the number of parities not at risk (parity ≥ 2) in the case group was 32 respondents (45.7%) while the control group was 37 respondents (52.9%). Respondents in the breastfeeding history variable who were at risk because they did not provide exclusive breastfeeding were more in the case group, namely 51 respondents (72.9%) while in the control group there were 35 respondents (50%) and

Table 1. Frequency Distribution of Variable Characteristics and Factors Associated with the Occurrence of Ovarian Cancer at RSUD Dr. H. Abdul Moeloek Lampung Province

Risk Factors	Case (Ovarian Cancer)		Control (Not Ovarian Cancer)	
	n	%	n	%
Age				
At risk (age ≥ 40 years)	56	80	16	22.9
No Risk (age < 40 years)	14	20	54	77.1
Menarche Age				
At risk (<12 years)	13	18.6	10	14.3
No Risk (≥ 12 years)	57	81.4	60	85.7
Parity				
At risk (parity < 2)	38	54.3	33	47.1
No Risk (parity ≥ 2)	32	45.7	37	52.9
Breastfeeding History				
Risky (not giving exclusive breast milk)	51	72.9	35	50
No Risk (exclusive breastfeeding)	19	27.1	35	50
Contraception History	55	78.6	34	48.6
Risky (not using hormonal contraception)				
No risk (using hormonal contraception)	15	21.4	36	51.4

those who were not at risk (giving exclusive breastfeeding) in the case group were only as many as 19 respondents (27.1%) and the control group were 35 respondents (50%). There were more respondents who had a history of risky contraception (not using hormonal contraception) in the case group, namely 55 respondents (78.6%) compared to the control group, 34 respondents (48.6%) and respondents who had a history of not using hormonal contraception (using hormonal contraception).) in the case group were fewer, namely 15 respondents (21.4%) compared to the control group, namely 36 respondents (51.4%).

Table 2 shows that for the education category more than half of the respondents in the case group had elementary school education (55.7%) while in the control group the highest level of education was high school (41.4%) and for the employment category, both case and case group respondents The control group was mostly housewives (IRT).

Table 3 shows that respondents who were at risk (age ≥ 40 years) in the case group were higher (80%) than in the control group (22.9%), while respondents who were not at risk (age < 40 years) were in the cases was lower (20%) compared to the control group (77.1%). The chi square test results obtained p value=0.001 and OR of 13.5 with 95%CI=6.01-30.31. These data show that there is a relationship between age and the incidence of ovarian cancer at Dr. H. Abdul Moeloek and respondents aged ≥ 40 years were 13.5 times more at risk of developing ovarian cancer than respondents aged < 40 years.

The relationship between age and the incidence of ovarian cancer is related to the incessant ovulation hypothesis (the theory of non-stop ovulation) which states that as women get older, the number of ovulations that occur in women also increases.(Widayati et al., 2011)and the gonadotropin hypothesis which states that many ovarian cancer sufferers are diagnosed during menopause and post menopause because at that time circulating gonadotropin hormones (FSH and LH) are at their highest levels due to the lack of

Table 2. Frequency Distribution of Respondent Characteristics at RSUD Dr. H. Abdul Moeloek Lampung Province based on Education and Employment

Respondent Characteristics	Case (Ovarian Cancer)		Control (Not Ovarian Cancer)	
	n	%	n	%
Education				
TS (No School)	2	2.9	0	0
elementary school	39	55.7	13	18.6
JUNIOR HIGH SCHOOL	14	20.0	19	27.1
SENIOR HIGH SCHOOL	12	17.1	29	41.4
PT (College)	3	4.3	9	12.9
Total	70	100	70	100
Work				
IRT	45	64.3	53	75.7
Farmer	17	24.3	3	4.3
Laborer	6	8.6	1	1.4
Employee	2	2.9	8	11.4
ART	0	0	2	2.9
Seamstress	0	0	1	1.4
Trader	0	0	1	1.4
Self-employed	0	0	1	1.4
Total	70	100	70	100

Table 3. The Relationship Between Age, Age of Menarche, Parity, Breastfeeding History, and Contraception History with the Occurrence of Ovarian Cancer at RSUD Dr. H. Abdul Moeloek Lampung Province

Variable	Case (Ovarian Cancer)		Control (Not Ovarian Cancer)		P value	OR (95%CI)
	n	%	n	%		
Age						
At risk (age ≥ 40 years)	56	80	16	22.9	0.001	13.5 (6.01-30.31)
No Risk (age < 40 years)	14	20	54	77.1		
Menarche Age						
At risk (<12 years)	13	18.6	10	14.3	0.648	-
No Risk (≥ 12 years)	57	81.4	60	85.7		
Parity						
At risk (parity < 2)	38	54.3	33	47.1	0.499	-
No Risk (parity ≥ 2)	32	45.7	37	52.9		
Breastfeeding History						
Risky (not giving exclusive breast milk)	51	72.9	35	50	0.009	2,684 (1,326-5,432)
No Risk (exclusive breastfeeding)	19	27.1	35	50		
Contraception History						
Risky (not using hormonal contraception)	55	78.6	34	48.6	0.001	3,882 (1,855-8,126)
No risk (using hormonal contraception)	15	21.4	36	51.4		

negative feedback by ovarian steroids (estrogens). High gonadotropins are involved in inhibiting cellular apoptosis (death) and aberrant expression of the p53 gene (suppressor gene) thereby triggering malignancy which causes a worsening of the prognosis of ovarian cancer(Sumanasekera, 2018)endometrioid, mucinous and clear cell; in each subtype, low and high grade. The large majority of ovarian cancers are diagnosed as high-grade serous ovarian cancers (HGS-OvCas.

However, researchers believe that the cause of the high incidence of ovarian cancer in RSUD Dr. H. Abdul Moeloek is very complex. The results of the analysis of the characteristics of respondents in the case group showed that the median age of ovarian cancer sufferers at RSUD Dr. H. Abdul Moeloek is 49 years old, more than half of the respondents have elementary school education (55.7%) and work as housewives (64.3%). Meanwhile, the results of the analysis of the characteristics of respondents in the control group showed that the median age of the control group was 30 years, the highest level of education was high school (41.4%), and the highest profession was housewife (75.7%).

The median age of ovarian cancer sufferers at Dr. H. Abdul Moeloek differs from the results of research conducted by Zheng et al (2018) through the Swedish Family-Cancer Database which shows that the median age of ovarian cancer sufferers shifted from 63 years to 65 years.(Zheng et al., 2018). The low median age of ovarian cancer sufferers at RSUD Dr. H. Abdul Moeloek estimated that this was due to the low quality of a healthy lifestyle and was influenced by the socio-economic status of the community.

Socioeconomic status is a predictor of the incidence and survival of ovarian cancer patients(Momenimovahed et al., 2019). The results of the study show that there is a positive correlation between life expectancy and income and the incidence of ovarian cancer, but there is a negative correlation between education level and the incidence of ovarian

cancer.(Razi et al., 2016).

The observed relationship between education level and income on the incidence of ovarian cancer is explained by the complex interaction between several underlying factors such as access to quality health examinations, lifestyle factors, diet, comorbidities (comorbidities) and a person's awareness of the symptoms that arise.(Præstegaard et al., 2016). A low quality healthy lifestyle causes an increase in the body's oxidative stress and premature aging of cells. If the intensity of the cell oxidation process is higher, more DNA damage will be caused.(Arthur et al., 2019).

The results of the findings in the field showed that 20% of respondents from the case group had a history of ovarian cysts, 8.6% of respondents had a history of colon cancer, cervical cancer, peritoneal cancer and uterine tumors and 5.7% of respondents had a family history of cancer (breast, leukemia, and bone cancer). Meanwhile, in the control group, information regarding family history and previous medical history was not found in the respondents' medical records. Supporting this, the gonadotropin hypothesis states that high concentrations of the gonadotropin hormone cause ovarian epithelial cells to become trapped in the surrounding connective tissue, causing the formation of inclusion cysts in the ovaries.(Su et al., 2013), due to environmental factors and continuous exposure to hormones, cells continue to grow and change towards malignancy, causing the cyst wall to thin and cancer cells to migrate to the peritoneal cavity, therefore ovarian cancer usually metastasizes to several organ sites. intraperitoneal, and vice versa(Furuya, 2012).

Other findings also show a picture of the time interval from the onset of symptoms to the first treatment for ovarian cancer sufferers at RSUD Dr. H. Abdul Moeloek 40% < 6 months since symptoms appeared, 17.1% 6 months to 1 year, and 42.8% > 1 year. Symptoms that arise mostly include abdominal pain, difficulty defecating, getting tired easily, bleeding, shortness of breath, and swelling of the stomach. The results of this research support the theory that poor awareness and interpretation of symptoms that occur in people with low socioeconomic status causes a tendency to ignore and deny the symptoms that arise so that they escalate into malignancy.(Præstegaard et al., 2016).

The results of research on the age of menarche variable showed that in both groups (cases and controls) the number of respondents who experienced menarche <12 years was less than respondents who experienced menarche ≥12 years. The chi square test results obtained p value = 0.648, which means there is no relationship between menarche age with the incidence of ovarian cancer at RSUD Dr. H. Abdul Moeloek.

Although there are many hypotheses regarding ovarian cancer, the etiology is still unclear at this time(Sumanasekera, 2018) endometrioid, mucinous and clear cell; in each subtype, low and high grade. The large majority of ovarian cancers are diagnosed as high-grade serous ovarian cancers (HGS-OvCas. Menarche is defined as the first menstrual period in a woman's life which indicates the maturity of ovarian and other endocrine functions related to reproductive ability. Over the past few decades, the age of menarche has shifted downward as a result of socioeconomic increases and chemical exposure(Lee et al., 2019). The relationship between menarche age less than 12 years (early menarche) and ovarian cancer appears to support the theory of incessant ovulation because ovulatory cycles that occur earlier cause a greater number of periods, although several studies have shown inconsistent results.(Gong et al., 2014).

Other findings showed that 50% of respondents in the case group had a history of menstrual disorders which included dysmenorrhea and irregular menstrual cycles. Meanwhile, in the control group, 27% of respondents had a history of menstrual disorders, most of which were dysmenorrhea. However, the data from the two groups was

not explained in detail regarding how long menstruation lasts and the distance between menstrual cycles.

Several epidemiological research results explain that women who experience irregular menstrual cycles and chronic anovulation can increase the risk of ovarian cancer, this explains the effect of shorter, longer and irregular cycles as an expression of symptoms of hyperandogenism or polycystic ovary syndrome (PCOS) with risk marker for more malignant ovarian cancer. This contradicts the incessant ovulation hypothesis which postulates that infrequent ovulatory cycles can reduce the risk of ovarian cancer. (Cirillo et al., 2017)but supports the androgen stimulation hypothesis which states that women with high androgen levels are more at risk of developing ovarian cancer(Busmar, 2010).

Androgens are a collection of hormones produced in the ovaries, adrenal glands, and through peripheral conversion of androgen precursors which will later be used to produce estrogen by the aromatase enzyme. Androgens can directly influence ovarian carcinogenesis through androgen receptors in the ovarian epithelium or through estrogen precursors resulting from the conversion of testosterone by the aromatase enzyme which results in a higher ratio of estrogen in the body compared to progesterone.(Ose et al., 2018). The results of in vitro research explain that androgens and estrogens act as mitogens (chemical compounds that stimulate cell division) which increase proliferation in ovarian epithelial cells.(Eric R. Craig et al., 2016).

The results of research on the parity variable show that the number of parities at risk (parity < 2) in the case group is higher (54.3%) than the control group (47.1%), while the number of parities not at risk (parity ≥ 2) in the case group is higher. lower (45.7%) than the control group (52.9%). The results of the chi square test obtained p value = 0.499, which means there is no relationship between parity and the incidence of ovarian cancer at RSUD Dr. H. Abdul Moeloek.

There are several hypotheses linking parity to ovarian cancer, but the etiology is still unclear. A large number of parities is considered to be a protective factor against ovarian cancer because during pregnancy the ovulation process does not occur, causing no damage to the ovarian epithelial cells and reducing the exposure of the ovaries to possible gene mutations due to continuous repair of epithelial cells after ovulation every month. Pregnancy causes inhibition of the ovulation process and an increase in the hormone progesterone which is thought to have protective properties against ovarian cancer because it is a suppressor gene.(Sumanasekera, 2018)endometrioid, mucinous and clear cell; in each subtype, low and high grade. The large majority of ovarian cancers are diagnosed as high-grade serous ovarian cancers (HGS-OvCas.

The results of the analysis of the characteristics of respondents in the case group illustrate that of the 70 respondents, 38 respondents had parity<2 with the classification of 21 respondents as nullipara and 17 respondents as primipara, the remaining 32 respondents had parity ≥2, while in the control group of 70 respondents, as many as 14 respondents were nulliparous. , 19 primiparous respondents, and 37 multiparous respondents. This supports research conducted by Montes et al that nulliparous women tend to have more ovulatory cycles than multiparous women, full ovulation every year shows an increased risk of ovarian cancer by 6%(Montes et al., 2012). The incidence of ovarian cancer is also higher in women with ovulation disorders, endometriosis and infertility. This relationship is strengthened with age, the higher the age, the greater the risk of occurrence(Lundberg et al., 2019).

The breastfeeding history variable shows that the number of respondents who did not provide exclusive breastfeeding was higher in the case group (72.9%) than the control group (50%) while the number of respondents who provided exclusive breastfeeding in the case group (ovarian cancer) was lower (27.1%) than the control group (50%).

The results of the chi square test obtained p value=0.009 and an OR of 2.684 with 95% CI=1.326-5.432, which means that there is a relationship between a history of breastfeeding and the incidence of ovarian cancer at RSUD Dr. H. Abdul Moeloek and respondents who did not give exclusive breastfeeding had a 2.684 times higher risk of developing ovarian cancer than respondents who gave exclusive breast milk, so it can be concluded that exclusive breastfeeding is a protective factor against ovarian cancer.

This is in line with the results of hospital-based research by Adisasmita et al (2016) at the Gynecology Polyclinic at Dharmais Cancer Hospital which shows that there is a relationship between exclusive breastfeeding and a reduced risk of ovarian cancer by 83% compared to women who have never breastfed in their lives (OR= 0.17 with 95% CI=0.08-0.39). However, analysis of menopausal ovarian cancer status versus breastfeeding showed that there was no significant difference between the effect of breastfeeding and the incidence of ovarian cancer diagnosed during pre-menopause or post-menopause.(Adisasmita et al., 2016).

Exclusive breastfeeding is giving only breast milk without additional food to babies aged zero to 6 months. The reduced risk of ovarian cancer due to exclusive breastfeeding is associated with delayed ovulation and prolonged periods of amenorrhea due to the contraceptive process of the lactational amenorrhea method (MAL). This causes a reduction in the number of ovulatory cycles in women. Lactation suppresses ovulation by increasing the concentration of prolactin, which inhibits the secretion of gonadotropins (FSL and LH) so that proliferation of ovarian epithelial cells does not occur due to repeated repair of the results of the ovulation process.(Su et al., 2013).

It is possible that the high failure rate of exclusive breastfeeding in the case group is due to the low level of knowledge of respondents regarding the importance of exclusive breastfeeding so that parents provide food other than breast milk to their babies early.

The contraceptive history variable shows that respondents with a history of contraception are at risk (not using hormonal contraception) in the case group is higher (78.6%) compared to the control group (48.6%) while respondents with a history of contraception are not at risk (using hormonal contraception). in the case group it was lower (21.4%) than in the control group (51.4%). The results of the chi square test obtained p value=0.001 and OR of 3.882 with 95% CI=1.855-8.126, which means that there is a relationship between history of contraception and the incidence of ovarian cancer at RSUD Dr. H. Abdul Moeloek and respondents who did not use hormonal contraception had a 3,882 times greater risk of developing ovarian cancer than respondents who used hormonal contraception. The low use of hormonal contraceptives in the case group was associated with the large number of respondents who were classified as nullipara (30%) and primipara (24.3%) who were older. The results of the chi square test obtained p value=0.001 and OR=3.882 (95% CI=1.855-8.126) which means there is a relationship between history of contraception and the incidence of ovarian cancer at RSUD Dr. H. Abdul Moeloek and respondents who did not use hormonal contraceptives had a risk of developing ovarian cancer 3,882 times that of respondents who used hormonal contraceptives.

Overall, the use of any type of hormonal contraception has a protective effect against ovarian cancer, especially epithelial, endometrioid, mucous and serous cancer compared to those who have never used hormonal contraception with a relative risk (RR) = 0.66 (95%CI = 0, 58-0.76). However, recent research shows that the reduction in risk of ovarian cancer with single progesterone contraceptive products is lower than using combined hormonal contraceptives, and the protective factor is stronger with increasing duration of contraceptive use. (Iversen et al., 2018). The mechanism of hormonal contraception, namely the continuo-

us use of estrogen and progestin, will inhibit the secretion of GnRH and gonadotropins in such a way that no follicular development occurs and ovulation does not occur. The function of estrogen is to inhibit (inhibit) the release of FSH and progesterone to inhibit the release of LH so that the maturation of follicles in the ovaries can be prevented. The use of hormonal contraception will cause estrogen and progesterone levels in the blood to remain high, so that the feed back mechanism will work (inhibition of FSH and LH release)(Cooper & Mahdy, 2019).

Although many studies show that hormonal contraception can reduce the risk of ovarian cancer, there are still pros and cons to using it. Other research shows that there is a significant relationship between the use of hormonal contraception and an increased risk of breast cancer because the estrogen contained in it causes hypertrophy and continuous abnormal proliferation of breast cancer stem cells directly in the ducts of the breast glands. Estrogen can also increase fat deposits in the body. Excessive fat storage causes estrogen synthesis to increase so that exposure to more estrogen and increases breast cell proliferation, besides that estrogen content can also interfere with gene expression in enzymes that regulate splicing (removal) of mRNA which results in loss of control over cell proliferation and regulation of apoptosis so that cells continues to proliferate without any death limit(Nissa et al., 2017).

Referring to this, further study is needed on the use of hormonal contraception, especially in women at high risk (>40 years) of developing ovarian and breast cancer. If the side effects caused are greater than the benefits of using hormonal contraception, the researcher's suggestion is that we need to succeed in a government program policy that directs the use of MKJP contraception based on the consideration that MKJP is more effective (lower level of side effects, complications and failure), efficient (availability of budget and provision of equipment), and saving costs by not visiting health workers too often to get contraceptive services.

Conclusion

The description of each variable (age, age at menarche, parity, history of breastfeeding, and history of contraception) in both groups showed varying results, in the case group most of the respondents were in the risk group, namely aged ≥ 40 years, parity <2, had a history of not giving birth. Exclusive breastfeeding and not using hormonal contraception. Meanwhile, in the control group, most of them were aged <40 years, had a menarche age of ≥12 years and parity ≥2, the number of respondents for the breastfeeding history variable had the same ratio, and more than half of the respondents had a history of using hormonal contraception. Of the five variables studied, three variables were found that had a relationship with the incidence of ovarian cancer at Dr. H. Abdul Moeloek Lampung Province so that this variable can also be assessed for the magnitude of the association with risk exposure. These variables include age (p value=0.001 and OR=13.5 with 95%CI=6.01-30.31), breastfeeding history (p value=0.009 and OR=2.684 with 95%CI=1.326-5.432) and history of contraception (p value=0.001 and OR=3.882 with 95%CI=1.855-8.126). The variables age at menarche and parity have no relationship with the incidence of ovarian cancer so the odds ratio value cannot be determined.

Based on these conclusions, the Lampung Provincial Health Service and related health agencies (community health centers and referral hospitals) are expected to work together to carry out outreach and education (risk factors for ovarian cancer, especially age, breastfeeding history and contraceptive history so that the public knows the importance of exclusive breastfeeding and can determining appropriate and safe contraceptive methods) as well as symptom-based screening of the community regarding the high incidence of ovarian cancer in Lampung Province through routine posyandu

programs, both infant and toddler posyandu and elderly posyandu. Further research is also needed regarding other risk factors that are closely related to the incidence of ovarian cancer.

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Effect of Red Betel Leaf (*Piper crocatum*) on Leucorrhea

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Abstract

Women have many problems in the area vagina. Most cases that occur are vaginal discharge. Leucorrhoea or in medical language called flour albus is the exit excessive fluid from the vagina. This study to determine the effect of red betel on vaginal discharge. Systematic review using the database: Google Scholar. The search results that meet the criteria are then analyzed for articles. The result shows that water red betel leaf stew can overcome vaginal discharge experienced by women.

Keywords

red betel leaf; vaginal discharge

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Introduction

Women have many problems in the area vagina. Most cases that occur are vaginal discharge. Leucorrhoea or in medical language called flour albus is the exit excessive fluid from the vagina that is not blood menstruation. (Firmanila, Dewi, & Kristiani, 2016). Causes of vaginal discharge according to WHO (2008), based on its prevalence, namely 25% -50%. candidiasis, 20% -40% bacterial vaginosis and 5% -15% trichomoniasis. In Europe only 25% women who experience vaginal discharge caused by weather factors, while women in Indonesia more prone to experience vaginal discharge because it is triggered by humid weather so it is easy to get infected with fungi Candida albicans. Apart from fungi, bacteria and parasites, increased vaginal discharge too caused by the behavior of women in guarding genital hygiene (Firmanila et al., 2016).

Moreover, an unhealthy environment also plays a role against one's health, as indicated by water that is dirty with the characteristics of colored, smelly water and taste, when used for necessity everyday can disturb health like diarrhea, vomiting, skin disease and vaginal discharge. The dirty one is suspected to contain mold, bacteria and parasites so that it can trigger vaginal discharge, especially when used for cleaning genitalia. To overcome vaginal discharge can be done with non-pharmacological therapy such as washing the organs intimate with a useful antiseptic liquid clean the intimate organs after urinating large (BAB), urinate (BAK) and after have sex. (Firmanila et al., 2016).

There are many kinds of betel plants (Piper sp.), based on the color of the leaves. There are betel plants that are green, red, black, yellow and some are even colored silver (Anggraini & Masfufatun, 2017; Pratiwi & Suswati, 2012; Rahmawati & Kurniawati, 2016). There are five types of betel known in Indonesia, namely Dutch betel (large leaves, dark green taste and strong and spicy smell), betel cloves (small, yellow leaves, clove-like taste), Javanese betel (softer, less sharp, grass green leaves), yellow betel, black betel and others. However, only 2 types of betel are often found in Indonesia, namely green betel leaf (Piper betle, Linn) and red betel (Piper crocatum) (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

The diversity of betel plants in Indonesia is very diverse. Betel can be distinguished by leaf color into several types, namely red betel wulug and green betel, golden betel, and black betel. Betel wulung is often referred to as sirih ungu because it emits a purple light when illuminated from below at night. This plant is also called sirih keraton because sirih wulung is said to only be found around the Yogyakarta palace area. Green betel is usually used for various traditional activities as well as for medicine. Betel golden or betel jalu which has batik or pale yellow spots, and black betel which is often associated with the mystical world (Rahmawati & Kurniawati, 2016).

Red betel is native to Peru then spread to several regions of the world, including Indonesia. Red betel is found in the island area Sulawesi from 2001 to 2010 reported evidence of red betel collection. Red betel is a shrub with branches and branches, with the distance of the books is between 5-10 cm, and with each book growing will be root. Leaves stemmed, elliptical, acuminatus, sub acutus at basalt with a tapered top, flat edge, glossy or hairless. 9-12 cm long and wide 4-5 cm. Pinnatus leaf veins from the lower half, veins leaves 4-5 x 2, bullulatus-lacunosa. Petiolus, 10 mm long, spike 90-110 mm long, 5 mm thick (Lister, 2016).

The red betel plant has round colored stems purplish green and non-flowering. The leaves are stemmed forming a heart with a tapered top with a flat edge and glossy and lint-free surface. Leaf length can reach 15-20 cm. Green upper leaf color grayish white patterned. The underside of the leaves is a bright red heart. The leaves are slimy, bitter in taste, and has a distinctive aroma of betel. The trunk is grooved and segmented with a

book spacing of 5−10 cm in each root ovary The surface of the red betel leaf is silvery red and shiny when the light hit (Sudewo, 2005).

Red Betel Leaf (Piper Crocatum) is often planted as an ornamental plant, but red betel is also effective for curing various diseases including to cure hemorrhoids, diabetes mellitus, hepatitis, kidney stones, vaginal discharge, shed fart, stop coughing, reduce inflammation, lower cholesterol, prevent stroke, gout, cancer, hypertension, inflammation of the liver, inflammation of the prostate, inflammation of the eyes, vaginal discharge, ulcers, fatigue, joint pain and smoothing the skin, relieving itching and eliminating bad breath (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015; Gunawan, Eriawati, & Zuraidah, 2018; Lister, 2016; Utami, 2017; Wulan, 2019). In general, if we use red betel correctly, according to the rules, it will not cause negative effects to the female reproductive organs (Bambang, 2012; Pratiwi & Suswati, 2012).

The use of 2: 1 betel stew extract can be useful as medicine and is safe for consumption. Betel leaf contains essential oils which contain chemical compounds such as phenols and their derivative compounds, including allipyrocatechol, carorene, nicotinic acid, kavikol, kavibetol, eugenol, carvacol, riboflavin, thiamine, vitamin C, sugar, tannins, patin and amino acids (Anggraini & Masfufatun, 2017; Fitria, Shahib, & Sastramihardja, 2020). This plant also has the potential as an antidiabetic, active compounds alkaloids and flavonoids that can reduce blood glucose levels.. (Bambang, 2012; Wulan, 2019).

The essential oil from betel leaf contains flying oil (betlephenol), sesquiterpenes, starch, diatase, sugar and tanning substances and chavicol which have the power to kill germs, anti-oxidation and fungicides, anti-fungal so that empirically reduces secretions in the vaginal canal and acute vaginal discharge. Red betel leaf extract can kill the fungus Candida albicans which causes acute vaginal discharge and itching of the genitals. The addition of avocado ethanol extract was able to increase the ability of betel leaf ethanol extract to inhibit the growth of Candida albicans. The combination of red betel leaf extract and avocado seed extract has an inhibitory power that is more effective in inhibiting the growth of Candida albicans than fluconazole. (Anggraini & Masfufatun, 2017; Kurnia, Kedokteran, & Lampung, 2020).

Red betel contains alkaloids which green betel does not have as an antimicrobial and red betel leaf has antiseptic power twice as high as green betel leaf. Not only has antimicrobial properties and the antiseptic power is higher than green betel, water red betel stew also contains carvacrol which is disinfectant and anti-fungal so can be used as an antiseptic for maintain oral health, heal vaginal discharge and bad odor (Firmanila et al., 2016).

This study aims to determine the effect of red betel on vaginal discharge.

Method

Inclusion Criteria and Exclusion Criteria

The article inclusion criteria used: 1) An article that describes the effects of Priper crocatum on flour albus. 2) Published articles have complete sections. 3) Published in 2016-2020. The exclusion criteria for articles included: Incomplete article composition.

Search Flow

The search was conducted using the Google Scholar database using the keyword: “sirih merah, keputihan”. The articles that appear are then sorted so that no articles with the same title are found. Then the articles were sorted based on the inclusion and exclusion criteria that had been determined. Articles that include abstracts only will be eliminated. So that we get the articles to be analyzed.

Extraction of articles

The articles that have been obtained are then extracted. Extraction of articles is based on the author of the article, the year the article was published, the number of

samples used, the measuring instrument used, the results of the research conducted, and the article database.

Result and Discussion

Search results using the keyword "sirih merah, keputihan" used the electronic Google Scholar database. The search results using these three keywords resulted in 421 articles. Then filtering the articles with inclusion and exclusion criteria obtained 38 articles. Selection of the next article by eliminating article duplication with the result of 9 articles. Subsequently, article elimination was carried out based on a complete arrangement of 4 article.

The content of red betel

Vitamin C

The content of vitamin C in betel drink extracted at a temperature of 70oC (0.08 - 0.11 mg ascorbic acid / ml) is higher than a temperature of 80oC (0.06 - 0.07 mg ascor-

Table 1. Extraction Result

Researcher	Year	Sample	Result
Fera Firmanila, Yulia Irvani Dewi, Dara Kristiani	2016	30	The results showed that red betel leaf boiled water had a deep effect reduce vaginal discharge in women with p value = 0.001 (<α 0.05). From the results of this study is expected women who experience vaginal discharge can apply boiled water of red betel leaf as a non-medication pharmacological and make the red betel plant as a family medicinal plant
Sulistiyowati, Amirul Amalia	2016	30 on the treatment of betel leaves and 28 on the treatment of garlic	The results showed that the betel leaf and garlic are effective in lowering fluoride albus with p value <0.05. While the results obtained from the Mann Whitney p value = 0.067 H0 and H1 rejected, which means there is no significant difference giving betel leaf and garlic in lowering Fluor Albus. The results of this study are expected to provide a positive contribution to science, especially in obstetrics in terms of reproductive health.
Lia Fitria, M. Nurhalim Shahib, Herri S. Sastramihardja	2020	20	The results showed a significant reduction in the number of colonies with p = 0.001 (p <0.05). The conclusions of this study do not include differences in the number of Candida albicans colonies between administering boiled manjakani seeds and red betel leaves to women of childbearing age (wus) who succeed in recovering vaginal discharge.
Sri Wulan	2019	46 people in which 23 were in the intervention group and 23 were in the control group.	The increase in the incidence of leucorrhoea from 2 female students who experienced mild vaginal discharge to moderate vaginal discharge in the control group showed that red betel leaf decoction water was able to overcome pathological vaginal discharge compared to normal water. Based on the results of the Wilcoxon test means that there is an effect of giving red betel leaf stew to pathological vaginal discharge in young women in Merbau 1 High School.

bic acid / ml), it means that there were differences for the vitamin C content at different extract temperatures. The content of vitamin C in red betel with the addition of sugar results in a higher content of vitamin C than added sugar. The higher the extraction temperature, the lower the vitamin C content in the betel drink, as well as the increase in sugar concentration. Vitamin C is easily oxidized so that during the process the vitamin C content can decrease. the addition of gelugor acid can increase the content of vitamin C. Processes that involve heating and storage will reduce product quality due to enzymatic reactions and factors such as oxygen, temperature, light and storage containers (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Antioxidants

Antioxidants are substances that can prevent and slow down the oxidation process. Antioxidants are also compounds that can protect cells from the effects of reactive oxygen free radicals that come from the body's metabolism and other external factors. Free radicals are unstable because they have unpaired electrons and look for electron pairs in biological macromolecules. Analysis of the antioxidant content was carried out using the DPPH method which uses ascorbic acid as a standard to calculate its stability based on time and the wavelength used is 515 nm (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

The antioxidant content in the betel drink sample ranged from 72.89 to 98.78 ppm vitamin C. The highest antioxidant content was in the MA1 sample (red betel + acid gelugur (1: 1) with antioxidants of 98.78 ± 0.23 ppm vitamin C followed by samples MA2 (93.57 ± 0.28 ppm vitamin C) and MA0 (72.89 ± 0.36 ppm vitamin C). antioxidants in the betel drink sample increased with the addition of gelugor acid. The addition of gelugur acid to red betel drink can increase the antioxidant content of 20.68 - 25.89 ppm. Gelugor acid contains antioxidants and is proven to be effective in losing weight and contains HCA (hydroxytric acid) which is proven to reduce appetite and can break down fat in the body. In addition, gelugor acid can also have an impact on the growth of Plasmodium berghei which causes malaria. So that the addition of gelugor acid in betel drink will add to the phytochemical value in betel drink (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Phenolic

Total phenolics were analyzed using UV-Vis Spectrophotometer. The phenolic content in the red betel sample is 160.56 ppm gallic acid / ml - 244.63 ppm gallic acid / ml. Phenol content in red betel extract (1.66%) is higher than green betel (1.17%). In betel extract contains a lot of antimicrobial and antioxidant compounds so that it has the potential to become a drink containing phytochemicals. Samples with a mixture of green and red betel contain higher phenolics than green betel (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

The addition of gelugur acid to the red betel sample, the addition of gelugur acid could increase the phenolic by 84.07 ppm gallic acid / ml. The nutritional content of gelugur acid is proven to increase the phenolic content in the betel drink sample. So, the addition of gelugur acid to this betel drink can create beverage products that are high in phytochemicals (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Flavonoids

Flavonoids are classified as antioxidants that can reduce the risk of various diseases such as heart disease and stroke. Betel leaf contains flavonoids, polyphenolates, tannins and essential oils. Flavonoid analysis was performed using a UV-Vis Spectrophotometer. The flavonoid content in betel drink is 54.71 - 109.58 ppm catechin / ml. the decrease in flavonoid content is influenced by the extraction temperature. Choosing the right extraction temperature can increase the flavonoid content. flavonoids will increase as the extraction temperature increa-

ses between 50 oC - 80 oC. The addition of gelugur acid to betel drink was proven to increase the flavonoid content by 54.87 ppm catechin / ml. Gelugur acid contains flavonoids which can have an effect on bacteria. The addition of gelugur acid can increase the phytochemical content in the betel drink (Abdullah Yeni; Sari, Ruri Aditya; Supriyanto, Supriyanto, 2015).

Red betel for vaginal discharge

A decrease in the value of vaginal discharge (post-test) in the experimental group due to that water red betel leaf stew can overcome vaginal discharge. This is because red betel contains ingredients alkaloids which green betel lacks as antimicrobial and red betel leaves have antiseptic power twice higher than betel leaf green. All groups experiment which amounted to 15 respondents experienced decreased vaginal discharge (Firmanila et al., 2016).

Statistical results show there is a decrease in the amount of fluid that comes out, fluid color, viscosity, and taste itching and odor caused by p = 0.001 (< α 0.05), it can be concluded that giving boiled water of red betel leaves has a deep effect overcome pathological vaginal discharge. A decrease in symptoms of vaginal discharge has been felt respondents on day 2 of the intervention red betel leaf boiled water. Respondents who experiencing symptoms of itching and a fishy smell say the symptoms have diminished even the fishy smell is gone There was a decrease against the symptoms of pathological vaginal discharge on women, because of the red betel content has been clinically tested to treat vaginal discharge. Ectic is twice as high as betel leaf green. Water red betel stew contains the carvacrol is disinfectant and anti-fungal so it can used as an antiseptic to guard against oral health, cure disease vaginal discharge and bad smell. (Firmanila et al., 2016).

There is a cure on most of the fertile age women (WUS) after being given boiled water of red betel leaf due to the presence of eugenol in the betel leaf red fungus that can kill fungus Candida albicans due to red betel leaves widely used to treat various kinds of diseases, including for lowering vaginal pH and treatments vaginal discharge (Fitria et al., 2020)tanin, saponin, triterpenoid dan kuinon yang diyakini sebagai antibakteri dan antijamur. Penelitian ini merupakan studi Kuasi Eksperimen dengan non equivalent (pretest dan posttest. The leaves contain eugenol which is able to eradicate Candida fungi Albikan, and is analgesic (relieves pain). There is also a tannin content in the leaves are useful to reduce secretion fluid in the vagina

Water red betel leaf stew can overcome vaginal discharge experienced by women and very good to look after female organs, this is due to the womb active compounds possessed by red betel leaves such as flavonoids, alkaloids, polyphenolic compounds, tannins, and essential oils that are disinfectants, anti-fungal, anti-inflammatory, anti-bacterial and antiseptic which makes the red betel plant different from green betel (Sulistyowati & Amalia, 2016; Wulan, 2019).

In general, vaginal discharge can caused by several factors, namely, lack of attention to cleanliness female organs, washing organs femininity in the wrong direction, physical activity which is very tiring, not immediately changing sanitary napkins during menstruation, patterns of unhealthy life, mental conditions who is under severe stress, use cleansing soap for clean the female organs excessively, especially weather conditions that humid, often changing partners when having sexual intercourse, hormone imbalance conditions, scratching the female organs often and wearing tight underwear made of synthetic materials (Sulistyowati & Amalia, 2016).

After it was done use of boiled water betel leaf, juvenile bur felt happy because of the Fluor Albus experienced began to decrease Adolescents too said after pouring the boiled water red betel leaf, no longer complaining about the taste itching and discomfort in the area femininity, this is due to the leaves Red betel contains capable eugenol

eradicating the fungus Candida albicans, and analgesic relieves pain). There is also the tannin content in the leaves beneficial to reduce secretion (Sulistyowati & Amalia, 2016).

Conclusion

Water red betel leaf stew can overcome vaginal discharge experienced by women.

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Effect of Administration of Mackerel Oil During Pregnancy on the Expression of Brain Derived Neurotrophic Factor (BDNF) in the Cerebrum of Newborn Mice

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Abstract

Omega 3 contained in mackerel oil extract is an important constituent of neuron cell walls and the raw material for building fetal brain cells. DHA and EPA in omega 3 regulate BDNF synthesis through a p38-MAPK dependent mechanism. BDNF has a role in regulating cell survival and programming cell death (apoptosis) in the brain. This study aims to determine the effect of giving mackerel oil during pregnancy on BDNF expression in the cerebrum of newborn rats. Posttest research design only control group with true experimental type. A sample of 30 rats with 10 each per group. The first group was the control group (K), the second group was mackerel oil (P1), and the third group was omega 3 supplements (P2). BDNF expression examination methods with immunohistochemistry. The data were analyzed analytically with ANOVA and continued with post hoc LSD. There was a significant difference in the expression of BDNF cerebral newborn rats between groups with a value of p = 0.000 (2.780 ± 0.52 in the control group, 3.670 ± 0.36 in the mackerel oil group, and 3.670 ± 0.45 in the omega 3 supplement group) . The conclusion of this study was that the group given mackerel oil extract had a higher BDNF cerebral expression than the other groups.

Keywords

BDNF; cerebrum; mackerel oil; omega 3; pregnant rats

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Introduction

Addressing nutritional and health problems to improve the quality of human resources is best during the pregnancy period. Pregnant women are a critical group and are vulnerable to malnutrition(Muniz et al., 2023). The good nutritional status of pregnant women will ensure healthy growth of the fetus and birth of the baby, postnatal nutritional reserves for the mother, as well as sufficient breast milk production to meet the baby's needs at the start of life.(WHO, 2012).

Fish is a source of nutrient-rich aquatic food for the human body that contains many nutrients. Mackerel contains omega 3 which is a long chain polyunsaturated fatty acid which is an important nutrient for the development of body cells. Nutrients play a vital role in the process of growth and development of neuron cells in the brain to provide the baby with intelligence. Omega 3 is an important element that makes up neuron cell walls. Apart from that, omega 3 is also a raw material for making fetal brain cells(Herlina & Nurjanah, 2017).

Brain growth and development begins in the womb where the processes of proliferation, migration, differentiation, synaptogenesis, apoptosis and myelination occur. (Rice & Barone Jr, 2000). The brain growth and development process is supported by Brain-Derived Neurotrophic Factor (BDNF) (Chen et al., 2013). Through the Tropomycin receptor kinase B (TrkB) receptor, BDNF can maintain the survival of neurons and regulate synaptic plasticity by increasing the number of dendritic spines and synapse formation.(Cunha et al., 2010). This molecular mechanism underlies that cognitive function is influenced by BDNF regulation(Lu et al., 2014). StudyCirulli et al., (2004)also proved that the group of mice injected with exogenous BDNF showed improved cognitive function than the control group of mice. Cognitive function was measured using the Morris Water Maze method.

This research is a series of studies to educate babies from the womb which aims to determine the effect of administering mackerel oil during pregnancy on BDNF expression in the cerebrum of newborn mice.

Methods

The white mice used in this research were the Sprague Dawley strain, aged 2-3 months. The treatment group was given mackerel oil and omega 3 on days 1 to 17 of pregnancy at a dose of 3.24 mg/day. Treatment is given orally using a sonde. On the 18th day, a caesarean section was performed. The mother rat was anesthetized with ketamine and acepromazine-xylazine, then sacrificed by cervical dislocation. Rat pups were born by caesarean section (SC), weighed, and 3 rats were selected from each mother with the heaviest, medium and lightest weights. The mother was sacrificed by decapitation and then preparations were made for histopathological examination. Immunohistochemistry was performed to examine BDNF expression. The child's brain tissue was observed under a microscope at a 5x field of view with a microscope magnification of 400x. The data was tested for probability using the ANOVA test and continued with Least Significant Difference (LSD) to see the differences in each group using SPSS software tools. Ethics have been obtained from the ethics committee of the Faculty of Veterinary Medicine, Airlangga University with the ethics number 2.KE.033.04.2020.

Results and Discussion

In this study, no mothers died when given treatment and no offspring died or experienced premature birth. This research used mothers who had an initial weight of 120-130 grams and a mother's body weight of around 231-240 grams when pregnant.

Based on table 1, it shows that the highest final body weight of the rat mother was 253.70 ± 94.49 in the mackerel oil group.

Table 1. Mean and standard deviation of final BW of rat mothers for each group

Group	Final Mean BB (grams)±SD
No Treatment	231.60 ± 45.87
Mackerel oil	253.70±94.49
Omega 3 supplement	240.00 ± 52.01

Based on table 2, it shows the highest average value of BDNF expression in the group given mackerel oil when compared to other groups, namely 3.670 ± 0.36. To see whether there were differences between groups, the Anova test was carried out and continued with the LSD test.

Table 2. Mean and standard deviation of BDNF expression in the cerebrum of rat pups for each group

Group	Mean±SD
No treatment	2,780 ± 0.52
Mackerel oil	3,670 ± 0.36
Omega 3 supplement	3,190 ± 0.38

From table 3, the results of the Anova test show a p value = 0.000, which means there is a significant difference in the expression of BDNF in the cerebrum of newborn mice. Then the LSD test analysis was carried out and the results showed that in all comparisons for each group there were significant differences (p<0.05).

Table 3. Results of Anova test and LSD test of BDNF expression in children's cerebrum Rattus norvegicus

Group	Test LSD		Anova test
	Mackerel oil	Omega 3 supplement	
No treatment	0,000	0.043	0,000
Mackerel oil		0.019	

A comparison of the BDNF expression of the fetal brain in groups (K, P.1, P.2) can be seen in Figure 1. The red arrow indicates BDNF expression in the cerebrum which is indicated by the brown color of the chromogen. Based on this research, it was found that the expression of BDNF given mackerel fish oil was higher than that given no treatment. This is in accordance with research fromLim & Kwak (2019)which explains that DHA and EPA in fish oil can increase the stimulation of BDNF production thereby increasing synapse development, synapse plasticity and cognitive function.

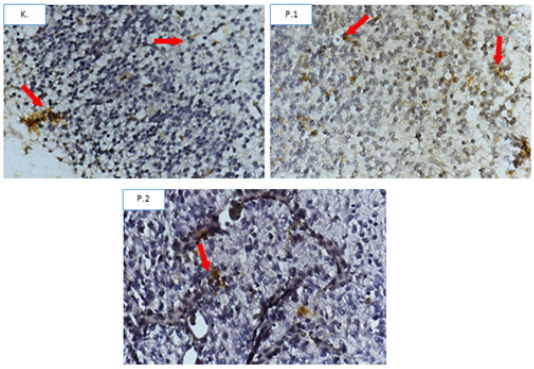

Figure 1. Comparison of images of fetal brain BDNF expression in groups (K, P.1, P.2).

The use of mackerel fish is widely used by the wider community because mackerel fish contains a lot of omega which is good for brain intelligence. Omega 3 is included in essential polyunsaturated fatty acids which are useful for increasing brain intelligence(Irmawan, 2009). The use of omega-3 fatty acids can be obtained from consuming mackerel (Rastrelliger kanagurta) fish oil, so mackerel has the potential to produce fish oil which is rich in omega-3 fatty acids.

Fish oil contains about 25% saturated fatty acids and 75% unsaturated weak acids(Widiyanto et al., 2015). Natural fatty acids including omega-3 are eicosapentaenoic acid (EPA) and docosahexaethanoic acid (DHA). The main function of the fatty acids DHA, ARA and EPA is to help the process of brain growth and development (intelligence), fetal development and nerve development.(Nadeak, 2013).

Omega-3 fatty acids in brain cells play

a role in preventing neuronal apoptosis by increasing phosphatidylserine in cell membranes which will activate the phosphorylation of Akt/PI3 kinase, this process will inhibit caspase 3. Apart from that, DHA also regulates BDNF synthesis through a p38- MAPK dependent mechanism. . The neurotrophin BDNF plays a role in synapse development, synapse plasticity, and cognitive function. During brain development, BDNF plays a role in regulating cell survival and programmed cell death (apoptosis). Omega 3 consumption increases BDNF resistance so that the ability of apoptosis decreases and makes neuron cells become better or the rate of decline in cognitive function will be slower even if exposed to external factors such as stress (Hermawan, 2010;Gultom et al., 2008).

Omega-3 fatty acids in the form of EPA and DHA can stimulate transcription factors in the hippocampus which will regulate the level of snaptic plasticity of brain neurons, Peroxisome Proliferator-Activated Receptors (PPARs).(Kuratko et al., 2013). Adequate n-3 PUFA status can support the maintenance of optimal nerve integrity and function. DHA influences neural plasticity and cognition. Consumption of omega 3 supplementation has been found to increase hippocampal BDNF levels and improve cognitive function in rodent models of brain trauma(Gomez-Pinilla et al., 2008).

DHA is thought to improve cognitive capacity by accelerating synaptic plasticity and modifying synaptic membrane fluidity. DHA is also thought to be directly linked to improving brain health in the central nervous system through a number of potential mechanisms. In addition, DHA moderates the expression of genes that regulate various biological functions that are potentially important for learning/memory(Sydenham et al., 2012)

Conclusion

There was a difference in BDNF expression in the cerebrum of rat offspring between those who were not treated and those who were given mackerel fish oil extract and omega 3 supplements. The group given mackerel fish oil extract had higher BDNF expression in the cerebrum than the other groups.

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