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Husband Support Correlates with Maternal Anxiety Levels During Pregnancy in The Third Trimester

Siska Nurul Abidah[1], Fritria Dwi Anggraini[1], Fauziyatun Nisa'[1], Meirda Nuriyana[2], Rahimah Halwa[3]

[1] *Department of midwifery, Universitas Nahdlatul Ulama Surabaya, 60237 Surabaya, East Java, Indonesia*
[2] *Students in Department of Nursing, Universitas Nadlatul Ulama Surabaya, 60237 Surabaya, East Java, Indonesia*
[3] *Students in Department of Midwifery, Universitas Nadlatul Ulama Surabaya, 60237 Surabaya, East Java, Indonesia*

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CORRESPONDENCE

E-mail:siskanurul@unusa.ac.id

A B S T R A C T

Husband support reduces psychosocial stress on pregnant mothers before delivery. However, many people do not comprehend how essential husband support is for psychology in pregnant women. This study investigates the correlation between husband support and maternal anxiety levels during pregnancy in the third trimester. It was a correlational analysis using a cross-sectional approach. The population was pregnant mothers in the third trimester from May to July 2020 at Jagir Public Health Center, Surabaya. Meanwhile, the samples were 40 pregnant mothers in the third trimester with consecutive sampling. In addition. the independent variable was husband support, and the dependent variable was maternal anxiety levels. The instrument to measure husband support was a Likert scale questionnaire, and to assess maternal anxiety levels was Hamilton Anxiety Rating Scale (HARS). The analysis utilized the Rank's Spearman test with a significant $p<0.05$. The results showed a correlation between husband support and maternal anxiety levels with $p=0.000$ ($p<0.05$). In conclusion, husband support significantly reduces maternal anxiety levels during pregnancy in the third trimester.

INTRODUCTION

Data from the Indonesia Health Profile (2012) reported problems with labor in 12,230,142 million mothers, and 30% of them experienced anxiety. Anxiety in pregnant women affects the fetus's condition in the womb and disrupts child development in the next life.

Several previous studies analyzed the correlation between husband support and maternal anxiety levels. Nurpratriwi (2018) revealed a significant association between husband support and maternal anxiety facing childbirth in the third trimester using the t-test analysis. In addition, a study conducted by Isniar et al. (2020) investigated the same variables but with the Spearman rank test. The study showed that family support by husband correlates with anxiety in pregnant women. Furthermore, Silalahi (2011) particularly researching those variables in primigravida using Kendall's tau-b test. The study reported that the two variables were interrelated.

Although the above studies reveal similar results, the correlation has not been well understood. The emotional support from the husband causes inner peace and pleasure in his wife so that she can adapt easier during pregnancy. In addition, she will feel comfortable, safe, strong, enthusiastic, and confident (Fithriany, 2011). Family support is assistance in attention, emotion, information, advice, material, and

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assessment given by family members to the mother. It improves the mother's physical and psychological well-being to face childbirth. Therefore, this paper investigates the correlation between husband support and maternal anxiety levels during pregnancy in the third trimester.

METHOD

Respondents/locations

The population was pregnant mothers in the third trimester from May to July 2020 at Jagir Public Health Center, Surabaya. There were 40 samples by the consecutive sampling technique.

Data collection procedures

In this study, the data collection procedures refer to the previous research conducted by Sari (2018) with slight modifications. In brief, the stages are as follows.

An instrument to measure husband support was a Likert scale questionnaire with statements always (4), often (3), sometimes (2), and never (1). The items consist of seven emotional support items, seven assessment support items, six instrumental support items, and five informational support items. The results use the average value or mean. Husband support is categorized as adequate when the score is more than equal to the mean, while inadequate when the score is less than the mean. There are 25 statements, with the highest value of 100 and the lowest of 25.

Meanwhile, HARS (Hamilton Anxiety Rating Scale) is a questionnaire to evaluate maternal anxiety levels. There are 14 statement items with scoring as follows: 0 is no symptoms at all, 1 is one symptom present, 2 is half symptoms present, 3 is more than half symptoms present, and 4 is all symptoms present. Then, the total value is categorized into score <14: no anxiety, score 14-20: mild anxiety, score 21-27: moderate anxiety, and score 28-41: severe anxiety.

Before filling out the questionnaire, the authors explained the purpose, benefits, title, and confidentiality of the research. Then, we provided informed consent to the mother willing to be a respondent. Furthermore, the filled questionnaire was rechecked for data completeness. We asked respondents whose data were incomplete to fill in again. Finally, we collected the questionnaire and thanked them.

We tested instrument validity and reliability to 40 primigravida in the third trimester. There were 25 valid items of 28 items overall with r count > 0.4438. In addition, the r table is 0.4438 at a significance level of 5% (0.05). Furthermore, 25 items were reliable using Cronbach's alpha with an R-value = 0.931 and an error rate of 5%.

Data analysis

The data analysis used the Spearman rank test to evaluate the correlation between husband support and maternal anxiety levels during pregnancy in the third trimester.

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RESULTS

The results in this paper included characteristics of respondents, husband support, maternal anxiety levels, and statistical analysis.

Table.1 Characteristic of respondents by age, gender, education, and profession

Characteristics of Respondents	Frequency	Percentage (%)
Age		
17-25 years old (late adolescence)	11	27.5
26-35 years old (early adulthood)	22	55.0
36-45 years old (late adulthood)	7	17.5
Education		
Basic (Elementary School - Junior High School)	4	10.0
Secondary (High School)	30	75.0
Tertiary (College)	6	15.0
Profession		
Housewife	27	67.5
Entrepreneur	12	30.0
Lecturer	1	2.5
Husband's age		
17-25 years old (late adolescence)	8	20.0
26-35 years old (early adulthood)	23	57.5
36-45 years old (late adulthood)	7	17.5
46-55 years old (early elderly)	2	5.0
Husband's education		
Basic (Elementary School - Junior High School)	2	5.0
Secondary (High School)	36	90.0
Tertiary (College)	2	5.0
Husband's profession		
Entrepreneur	11	27.5
private sector	29	72.5
Total	40	100

Table 1 shows that most respondents are early adulthood (55%), housewives (67.5%), and have secondary education (75%). In addition, most husbands are early adulthood (57.5%) and work in the private sector (72.5%).

Table 2 Frequency Distribution of Respondents Based on Husband Support at Jagir PHC, Surabaya

Husband Support	Frequency (f)	Percentage (%)
Adequate	19	47.5
Inadequate	21	52.5
Total	40	100.0

Table 2 shows that most respondents have inadequate husband support (52.5%), while almost half of respondents have adequate husband support (47.5%).

Table 3. Frequency Distribution of Respondents Based on Maternal Anxiety Levels at Jagir PHC, Surabaya

Maternal Anxiety Levels	Frequency (f)	Percentage (%)
Mild	12	30.0
Moderate	9	22.5
Severe	19	47.5
Total	40	100.0

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Table 3 describes that 47.5% of mothers have severe anxiety levels. In addition, a small proportion of them has mild (30%) and moderate (22.5%) anxiety levels.

Table 4. Cross Tabulation Between Husband Support and Maternal Anxiety Levels at Jagir PHC, Surabaya

		Maternal Anxiety Levels			Total
		Mild	Moderate	Severe	
Adequate Support	Husband	10 (52.6%)	6 (31.6%)	3 (15.8%)	19 (100%)
Inadequate Support	Husband	2 (9.5%)	3 (14.3%)	16 (76.2%)	21 (100%)
Total		12 (30.0%)	9 (22.5%)	19 (47 ,5%)	40 (100%)

Table 4 reveals that of 19 respondents with adequate husband support, almost half (52.6%) have mild anxiety. Meanwhile, of the 21 respondents with inadequate husband support, most (76.2%) have severe anxiety levels.

DISCUSSION

Pregnancy, childbirth, and pregnancy outcome are affected by the age of the mother. Most respondents in this study were aged 26-35 years. This age is categorized into the reproductive period in women. Mothers are advised to get pregnant at reproductive age to avoid risky childbirth. Age over 35 years results in decreased egg quality in women compared to reproductive age (Sulistya, 2017). Marmi (2011) also stated that age was a predisposing factor in pregnancy. Pregnancy should occur at the reproductive age following the psychological development of women. At reproductive age, women are easy to adapt to the mother's role.

Education affects insight and knowledge in pregnant women. The education level of pregnant women in this paper was secondary education. In addition, the lower the knowledge, the less access to health information. As a result, pregnant women will make decisions ineffectively (Budiman, 2013). Information is obtained in everyday life from observations and accessed through communication. It includes data, image text, sound, code, computer programs, and databases. The more information obtained, the higher the knowledge of pregnant women in the third trimester. As a result, it can reduce maternal anxiety levels to face the delivery process (Alza, 2017). The higher the education level, the more accessible information receiving. Nurlailiyah (2015) emphasizes that individuals with a high level of education can think, hold emotions, and reduce anxiety. Mothers with high education levels tend to pay more attention to their health and their families. The higher the level of education, the greater the seeking medical help behavior. On the other hand, low education causes stress and anxiety caused by lack of information.

Most respondents were housewives, so that the knowledge obtained by them was only from the surrounding environment. They did not have the opportunity to seek information from other sources. The

environment exists around the individual, both physically, biologically, and socially (Budiman, 2013). It affects the process of receiving information because of the reciprocal interaction. The process results knowledge in the individual. Information from the surrounding environment can change the mother's behavior in dealing with pregnancy and childbirth.

Husband support consists of emotional, information, instrumental, and appreciation support from husband. The inadequate husband support include: (1) He does not understand the condition of pregnant women who are not as fit as they used to be; (2) He pays less attention to mother consumption; (3) He rarely accompanies the mother during the examination; and (4) He does not seek information about the pregnancy from magazines, books, or other sources (Dahro, 2018). The low husband participation in pregnancy may be due to the lack of information obtained related to pregnancy problems.

Reading about pregnancy from many sources makes the husband understand and feel his wife's condition. Furthermore, husbands will give more attention, support, assistance. In addition, he will develop good communication with pregnant mothers. The knowledge makes the pregnancy process more attractive to husbands (Kholil, 2010). The attention and support from the closest people, especially the husband, is beneficial to overcome the anxiety experienced by pregnant women due to both physical and psychological changes during pregnancy.

This paper result is in line with a study conducted by Aprianawati et al. (2017). The study showed that husband support improved psychological well-being and self-adjustment ability through feelings of belonging, increased self-confidence, prevented psychological disorders, reduced stress, and provided the resources or assistance needed during pregnancy. In addition, research by Spitz et al. (2013) also reported that the husband's active role in providing support to his pregnant wife influences the mother's concern for her health and her fetus. Pregnant women will feel more confident, happy, and ready for pregnancy, childbirth, and postpartum.

The maternal anxiety levels consist of mild, moderate, and severe. Pregnant women often complain about weakness in limbs and fatigue. They also feel a faster heartbeat without physical exercise stimulation. Primigravida in the third trimester with anxiety and fear during pregnancy will release catecholamine hormones or stress hormones. In high concentrations, the hormones resulting in increased labor pain, prolonged labor, and tension during labor (Janiwarty & Pieter, 2012). Increased gestational age affects both the mother's physical and emotional condition. This change will continue until labor. Lack of husband support causes anxiety in the mother.

In this paper, the result is in line with a study by Palupi et al. (2012). The study reported that increased gestational age influenced attention and thoughts in pregnant women. They began to focus on the labor and postpartum period, resulting in anxiety and fear intensified during the third trimester.

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Husband support is critical in reducing anxiety and fear. In addition, it encourages positive vibes and fosters self-confidence in pregnant women to face childbirth (Handayani, 2012). Physical health and psychological maturity are indispensable elements to reduce pain during labor (Kartono, 2017). Anxiety reduction involves cooperation between patients and health workers by giving health education during pregnancy (Dahro, 2008). The emotional support from the husband causes inner peace in the wife. Eventually, pregnant women become easier to adjust to their pregnancy. There will be the feeling of comfortable, safe, strong, enthusiasm, and confidence in pregnant women (Fithriany, 2011).

Nurpratiwi's research (2018) showed that husband support reduced anxiety levels in pregnant women in the last trimester before delivery. In addition, Isniar et al. (2020) found that maternal anxiety levels decreased when giving birth accompanied by a husband. Furthermore, Silalahi's research (2011) on primigravida stated high maternal anxiety levels before delivery, but the levels decreased when there was support from husband or family.

CONCLUSIONS

Husband support significantly reduces maternal anxiety levels during pregnancy in the third trimester. The husband's active role in providing support to his pregnant wife influences the mother's concern for her health and her fetus. Furthermore, they will feel more confident, happy, and ready for pregnancy, childbirth, and postpartum.

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Consuming Probiotic Foods Copes with Stress in The Pandemic Era

Az-Zafira Syairul F[1], Fauziatul Khusna[1], Sania Rahmatika [1]

[1] *Departement of Chemistry Education, UIN Walisongo, Semarang, Indonesia*

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CORRESPONDENCE

E-mail:
azzafira_1808076060@student.walisongo.ac.id
fauziatulkhusna_1808076058@student.walisongo.ac.id
saniarahmatika_1808076050@student.walisongo.ac.id

A B S T R A C T

One of the problems facing today is the Covid-19 pandemic. This problem has an impact on health, economic, social, religious, and psychological aspects. Psychological issues include anxiety and stress. The authors suggest consuming probiotic foods such as tempeh and yogurt to cope with stress Probiotics contain bacteria in the intestines having an essential role in brain function, stress, and neurodevelopmental disorders. In addition, it has a beneficial effect on physical and psychological health.

INTRODUCTION

As time goes by, human technology increases developing, especially in the era of 5.0 society. Society 5.0 is created through technological developments that minimize inequality in humans and economic problems in the future (Emawati, 2020). The world currently faces the covid-19 virus outbreak. The government's efforts to break the spread of covid are minimizing social activities and social interactions outside the home. The social interactions restriction referred to Regulation of the Minister of Health Number 9 of 2020 concerning Guidelines for Large-Scale Social Restrictions (PSBB) to accelerate breaking the spread of covid-19. All activities outside the home are recommended to be kept to a minimum and follow the health protocols. This situation causes office employees, teachers, students, and various other professions to use digital media (internet) to minimize social interactions.

The Covid-19 pandemic has various impacts on all aspects of life, not only health aspects but also economic, social, religious, and psychological aspects. Adaptations to the Covid-19 pandemic in everyday living are not convenient. The adaptation affects physical and mental health in society. The psychological problems include anxiety and stress. There has been an increase in confirmed cases of COVID-19 every day. This situation created pressure in the community around the world. Excessive anxiety and stress affect

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health by decreasing the body's immune system, making it more susceptible to the virus (Fitria, Neviyarni, Netrawati, & Karneli, 2020).

Stress is an adaptive response influenced by psychological processes in an individual. It is a consequence of external (environmental) actions, situations, or events resulting in mental and physical tension. In addition, External actions, events, and situations are sources of stress (Ivancevich, Konopaske, 2006). Stress causes narrowing of blood vessels and muscle stiffness, impacting increased blood pressure leading to hypertension (Arisjulyanto, 2018).

Anxiety and depression are psychological disorders caused by stress. Both have symptoms of body organs malfunctioning innervated by the autonomic nervous system (Mutawalli, L., Setiawan, S., 2020). Depression is a mental health disorder often experienced by people with some symptoms such as sleep disturbances, decreased appetite, and weakness. When it happens continuously, it will reduce the immune system in the body. Meanwhile, anxiety is an uncertain feeling that contains fear and concern about the future (Fitria, L., Neviyarni, Netrawati, & Karneli, 2020).

There are physical and psychological symptoms in an individual with anxiety. Physical symptoms include cold fingers, accelerated heart rate, cold sweats, dizziness, decreased appetite, lack of sleep, and chest tightness. Meanwhile, psychological symptoms include fear, inability to focus, restlessness, and desire to escape reality (Sundari, 2005). Various efforts have done to overcome mental health in individuals with a psychological disorder. One of them is by consuming probiotics. Probiotics prevent the changes in the immune response related to psychological stress. The bacteria in probiotic foods produce bioactive compounds. The compounds include bacteriocins, metabolic enzymes, amino acids and peptides, short-chain fatty acids, vitamins, antioxidants, anti-inflammatory substances, and immune modulators. In addition, it also contains exopolysaccharides, one of which is the gut microbiota. Gut microbiota has a role in brain function, stress, and neurodevelopmental disorders (Fachri Naufal, Diaru Fauzan Farizy, 2020). Homeostatic disturbances in the gut are related to the central nervous system, causing various diseases such as mood disorders, depression, and anxiety.

METHOD

The method in this research was library research. The authors collected information and data by studying various references and previous research results in books, dissertations, theses, journal articles, and other scientific papers. Then, the data was rereviewed to compare the two or more objects to get valid and objective data.

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RESULTS & DISCUSSION

According to World Health Organization, probiotics are live microorganisms that can benefit consumers (Chugh, B., & Eldin, 2020). Probiotics are good microorganisms in the living body giving benefits to health. They survive for a sufficient amount of time until the intestine obtains the maximum desired effect. Probiotic provides beneficial health effects through mechanisms to prevent adhesion or colonization of pathogens, produce metabolites, and modulate the immune system to produce immunoglobulin antibodies (Chugh, B., & Eldin, 2020). It has the potential to prevent possible changes in the immune response associated with psychological stress. The human body contains many microbiomes related to the central nervous system. Probiotic bacteria produce bioactive compounds. The compounds include bacteriocins, metabolic enzymes, amino acids and peptides, short-chain fatty acids, vitamins, antioxidants, anti-inflammatory and immune-modulating substances (Chugh, B., & Eldin, 2020). Those molecules can improve intestine function and promote health.

The gut microbiota is responsible for a wide range of metabolic activities, including the digestion of food and the production of biologically active substances. Previous studies emphasized that the microbiome had an essential effect on central nervous systems disorders. Psychological disorders - such as depression, anxiety, and stress – are not immune-mediated diseases of the central nervous system (CNS). A recent study showed that the gut microbiota had an essential role in brain function, stress, and neurodevelopmental disorders (Fachri Naufal1, Diaru Fauzan Farizy1, 2020). Disorders of the intestine affect the central nervous system causing various disorders such as mood disorders, depression, and anxiety disorders.

Recent research showed the association between the causes of depression related to a neurotransmitter imbalance and gut microbiota composition. The gut microbiota composition affected the function of the CNS and vice versa. Meanwhile, CNS disorders disrupted the balance of the intestinal microbiota and digestive system. Furthermore, the reciprocal correlation between the brain and intestine was known as the Brain-Gut Axis (Paraprobiotik, 2020). That correlation indicates that depression treatment should not only by stimulating the brain with drugs – such as monoamine-based antidepressants – and psychotherapy. However, probiotic food can be an alternative in the treatment.

Consuming probiotic products plays a good role in health, especially in boosting the immune system and preventing depression. One of the probiotics foods is tempeh. Tempeh is an Indonesian dish made of fermented soybeans. *Rhizopus oligosporus* is the main microbe used in tempeh fermentation. Tempeh fermentation results from various molds, yeasts, lactic acid bacteria (LAB), and gram-negative bacteria, making tempeh very rich in probiotics (Paraprobiotik, 2020). Research by Rüfer CE, Kulling SE (2006) showed that soy isoflavones had an antioxidant effect and reduced oxidative stress. Isoflavones could reduce oxidative stress by increasing antioxidant activity in the body. In addition, Ahmad A, Ramasamy, et

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al. l (2015) compared the isoflavones in soybeans and tempeh. They found that tempeh had greater antioxidant activity. The IC50 values of soybean and tempeh isoflavones against BACE1 were 10.87 and 5.47 mg/ml, respectively. Isoflavones in tempeh had stronger DPPH free radical scavenging activity (IC50 = 2.67 mg/ml) than soybean (IC50 = 10 mg/ml). In conclusion, tempeh is healthy food to reduce oxidative stress through aglycone enrichment.

Tempeh contains vegetable protein with consumption recommendations of about 150-300 grams of cooked ingredients per day on a 1500-2100 calorie diet. The protein in tempeh is 18 mg per 100 grams. Meanwhile, the protein consumption needs in children aged < 1 year are 2-3 g/kg/day and 1-6 years are 1.5 - 2.5 g/kg/day. In addition, Ardiana (2011) used 200 grams/day of tempeh for one month in her study. Tempeh produces protein and isoflavones to reduce stress (Sukini, 2017).

Yogurt generally uses *Lactobacillus* and *Bifidobacterium bacteria*. *Lactobacillus acidophilus* helps lactose digestion, stimulates the immune response, and controls blood cholesterol levels. It is a dairy product obtained from lactic acid fermentation by *Lactobacillus bulgaricus* and *Streptococcus thermophilus* (Prasetyo, 2010). Fermented milk products play a role in maintaining health in the intestine. The development of probiotic products positively affects health in humans. Many research shows that consuming probiotic products plays a good role in health, especially in increasing the immune system (Widiyaningsih, 2011).

Researchers recently discovered that breakfast with yogurt help to treat depression. A study published in the journal Scientific Reports suggested that probiotics support depression treatment. The study was conducted by a team of researchers from the University of Virginia School of Medicine. Study co-author Professor Alban Gaultier said depression treatments had many side effects. So, it was essential to have other effective alternative treatments. In the study, the researchers exposed mice to high levels of stress until showing symptoms of depression. Then they compared the bacteria levels before and after the experiment. They found a significant correlation between gut bacteria levels and mental health. It appears that *Lactobacillus* (gut bacteria) affected a blood metabolism called kynurenine associated with depression. Administering *Lactobacillus* supplements reduced stress in the mice.

Research by Bravo et al. (2011) showed that administration of lactic acid bacteria (LAB) found in yogurt affects the expression of GABA receptors (Gamma-aminobutyric acid) in corticosterone production and depression or anxiety behavior through the vagus nerve. The LAB boosts the immunity system and digestion system in the body. Yogurt contains *Lactobacillus* bacteria having a role in destroying harmful bacteria in the intestines. The bad bacteria can block serotonin and dopamine production, and both hormones affect mood in mental health. The decreased hormones manifest in a bad mood and produce the stress hormone cortisol. Consuming probiotics affects brain-gut interactions (Paraprobiotik, 2020).

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The yogurt consumption recommendation per day is based on age and daily intake, one cup for children aged two to three years and two cups for ages four to eight. The recommendation for ages nine and over is to consume three cups per day (Behrends, 2012). The recommendation can minimize the harmful impact of excessive yogurt consumption.

In addition, palm juice drink contains the bacteria *Lactobacillus casei* and *Lactobacillus Plantarum*. The bacteria produce organic compounds and hydrogen peroxide, which are antibacterial (Khotimah & Kusnadi, 2014). The drink can be an alternative for lactose intolerance – a body cannot digest lactose. Dairy-based products commonly contain lactose (Retnowati & Kusnadi, 2014).

CONCLUSIONS

Consuming probiotic foods copes with stress in the pandemic era. The authors recommend tempeh and yogurt. Probiotics contain bacteria in the intestines having an essential role in brain function, stress, and neurodevelopmental disorders. In addition, it has a beneficial effect on physical and psychological health. We suggest paying attention to daily consumption recommendations to minimize the harmful impact of excessive consumption.

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Innovation of Shallot (*Allium Ascalonicum L)* Essential Oil for Fever Reduction in Infants Post-DTaP Immunization

Setiawandari[1], *Istiqomah*[2], *Marquita Da Silva Ximenes*[3]

[1]*Professional Midwifery Education Study Program Universitas PGRI Adi Buana, Surabaya, Indonesia*

[2] *Independent Midwifery Practice*

[3] *Midwifery Undergraduate Study Program Universitas PGRI Adi Buana, Surabaya, Indonesia*

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CORRESPONDENCE

E-mail: setiawandari@unipasby.ac.id
istiqomahaffandi67@gmail.com

A B S T R A C T

DTaP vaccination causes an increased body temperature or fever in most infants. There are pharmacological or non-pharmacological efforts to reduce fever in infants post-DTaP immunization. In addition, shallots are a family medicinal plant in Indonesia commonly used to reduce fever. There should be innovation in the dosage form of shallots so their use is more effective and efficient. This study analyzes the effect of shallot essential oil on fever reduction in infants post-DTaP vaccination. It was a quasi-experimental research design, with one group pre and post-test design. The population of this research was all infants aged 1-12 months who were enrolled in the infant cohort in 2020 at Independent Midwifery Practice (IMP) Istiqomah from May to August 2020. Meanwhile, there were 20 samples by accidental sampling. The research instruments were shallot extract oil, a digital thermometer, and an observation sheet. The data analysis used the Repeated Measures Anova test. The results showed that the mean body temperature before immunization was 36.57 degrees Celcius, while after the experiment was 36.9 degrees Celcius. The statistical test results value $\rho = 0.000$. There was a significant difference in the mean body temperature from time to time in infants with shallot essential oil administration. This study concludes that shallot essential oil reduces fever in infants post-DTaP immunization. Further research should use a control group, more significant samples, and inclusion criteria limitation.

INTRODUCTION

Shallot (*Allium Ascalonicum L*) is a family medicinal plant in Indonesia that reduces fever in infants. It has complete nutritional content and active chemical compounds beneficial to health, including SAC / Alliin, prostaglandin A-1, adenosine, diphenyl-amine, cycloaliin, methyl-aliine, dihydro-aliin, profenyl-aliin, profile-aliin, kaemferol, floroglusinol, and quercetin. In addition, alliin (SAC), allisin and adenosine have anti-inflammatory effects (Aryanta, 2019; Kuswardhani, 2016).

Vaccination is an effort to increase the immunity system in individuals to against a disease actively. Its purpose is the body already has immunity against exposure, so the individual only experiences mild illness or is not even sick (Permenkes, 2017). DTap (Diphtheria, Pertussis, and Tetanus) vaccination is the essential vaccination given to infants aged two months to one year. It is given simultaneously with the HB (Hepatitis B) and Hib (Haemophilus Influenzae Type B) vaccines, at four-week intervals three

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times. DTaP-HB-Hib vaccination can prevent harmful diseases such as diphtheria, pertussis, tetanus, hepatitis B, and Haemophilus influenza type B (Permenkes, 2017).

There are two types of DPT vaccines: DTaP (acellular) and DwPT (whole cell). The DPT cellular vaccine (DwPT) is a vaccine that contains all the killed pertussis bacteria so that it causes more local reactions and fever. According to Athur C. Guyton (2007), infants respond to DTaP immunization as bacteria. Leukocytes, macrophages, and lymphocytes phagocytize bacteria that enter the tissues or blood vessels. Then, the cells will digest the results of the breakdown of bacteria and release the interleukin-1 (IL-1) substance. IL-1 acts in the central nervous system at the level of the Organum Vasculosum Laminae Terminalis (OVLT). Furthermore, OVLT will synthesize prostaglandins, causing increased body temperature (Aminina, 2014).

The DTaP (Acellular) vaccine contains several essential components in pathogenesis. They trigger the formation of antibodies. The DTaP vaccine has two to four times fewer systemic and local side effects, also does not cause fever (Wahab, Samik, & Julia, 2002). Efforts to reduce fever in infants after DTaP vaccination can be pharmacological and non-pharmacological. The antipyretic is a pharmacological method to stabilize the temperature in the body. It works centrally in the hypothalamus to reduce the temperature by a physiological response. It reduces the heat production by radiation, convection, and evaporation. In addition, it increases blood flow to the skin (Sumarmo & Poorwo, 2010).

Non-pharmacological methods to reduce fever in infants include warm compresses. The warm compresses on feverish infants work with the convection and evaporation method. When the warm skin touches warm water, heat transfer will occur through evaporation to transfer heat energy into gas. Compress the feverish infants with shallot essential oil has the exact mechanism as a warm compress. The water content per 100 grams of shallot bulbs is 80-85%. So it is possible used as a compress in feverish infants. In addition, the essential oil content in shallots can improve blood circulation. Other ingredients that can reduce body temperature are floroguci n, cycloaliine, methialine and kaemferol (Tusilawati & Berliana, 2010). Shallot can be given for treatment by whole, raw, cooked, shallot extract, dry crude extract in powder form, or essential oil.

A study on mice induced by the DPT-Hb vaccine reported that shallot ethanol extract could reduce fever and macrophage counts (Kariyaningtias, Hamid, & Widodo, 2019). In addition, research conducted by Wiryawan also showed that shallot extract could decrease the temperature in mice (Rattus Norvegicus) after being induced by 0,5 ml intraperitoneal DTaP vaccine (Wiryawan, 2014).

Meanwhile, a study on humans was conducted by Harianah Akib and Megawati. The study showed that the shallot compress could normalize body temperature faster than applying warm compresses in feverish infants aged 0-1 post-DTaP immunization ($\rho = 0.232$) (Akib & Megawati, 2019). Other research showed that shallot compresses effectively reduce the temperature in feverish infants post-DTaP

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immunization and hospitalized children at Bougainvillea War, Dr. Hartoyo Hospital Lumajang (Riyady, 2016). In addition, It also had the same effect on feverish children aged 1-5 years old at Public Health Center Gilingan (Hayuni, Widyastuti, & Sarifah, 2019).

Unfortunately, several studies above have not explained its dosage form and the administration method. Mashed shallot is less practical and has an uncomfortable smell. In this paper, shallots have been extracted into an essential oil to be more efficient and effective to use. In addition, shallot essential oil also reduces dependence on pharmacological therapy to normalize the body temperature post-vaccination. This study analyzes the effect of shallot essential oil on fever reduction in infants post-DTaP vaccination.

METHOD

This research was quasi-experimental, using one group design pre and post-test design. The population of this research was all infants aged 1-12 months who were enrolled in the infant cohort in 2020 at Independent Midwifery Practice (IMP) Istiqomah from May to August 2020. There were 20 samples by accidental sampling. The inclusion criteria were healthy infants, body temperature 36.5-37.0 degrees Celsius, no history of febrile seizures, normal body weight according to age. Meanwhile, the exclusion criteria were infants with a history of high fever (more than 39.0 degrees Celsius), allergies, and seizures; infants who had a cold and coughs; and received other vaccines in one-month intervals except OPV (Oral Polio Vaccine).

The shallot essential oil resulted from shallot bulb extract with a mixture of aquades and 70% ethanol. It was made in the pharmacy laboratory of the Science and Health Faculty, Universitas PGRI Adi Buana Surabaya, by a pharmacist with two stages. The first stage was powder making. Shallot bulbs (Allium Ascalonicum L.) washed with clean running water, then dried in the sun for seven days with the top of the simplicia covered with black cloth to not be exposed to direct sunlight. After drying, the simplicia were weighed and then grinded as a powder. The powder was sieved with mesh no. 40 and then weighed. The second step was extracting simplicia using the maceration method, in duplicate using 500 mL (1:10) 70% ethanol solvent. 50 g of simplicia dry powder was added to the macerator, plus 500 mL of 70% ethanol. Shaked for 60 minutes, then let stand for ± 60 minutes, then shacked again for 15 minutes and let stand for 60 minutes. The process was repeated five times, then left for one day. The residue and the filtrate were separated, the residue was remacerated two times with 100 mL of 70% alcohol. The collected filtrate was evaporated with a rotary evaporator to obtain a thick extract. The extract was dried using a vacuum dryer, and the yield was calculated.

Before the data collection, the authors gave the parents informed consent. The midwife performed a physical examination and measured the body temperature and weight in infants. After counseling about DTaP immunization, she gave DTaP vaccine 0.5 ml intramuscular in vastus lateralis muscle. After the

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shot, the parents received 50 ml of shallot essential oil, a thermometer, and an observation sheet. Parents were asked to measure body temperature every three hours and recorded it on an observation sheet. In addition, they measured body temperature every three hours and recorded it on an observation sheet. Shallot essential oil was given to infants every three hours up to 18 hours post-vaccination. Its administration was by applying and light massaging it to the body except for the vaccine injection area, starting from the neck, chest, stomach, back, legs, armpit creases, thighs. The authors monitored the respondents via WhatsApp. When signs of allergies and high body temperature (fever or severe fever > 39.0 degrees Celsius) in infants or parents felt anxious, they were free to leave the research, and infants were administered with antipyretic.

The independent variable was administering shallot essential oil, while the dependent variable was body temperature. The research instruments were shallot essential oil, a digital thermometer, and an observation sheet. Data analysis used the Shapiro Wilk test to determine the standardized residual value and the Repeated Measures ANOVA test to examine the effects of shallot essential oil on the body temperature in feverish infants post-DTaP vaccination.

RESULTS

The results in this study included characteristics of respondents, body temperature pre and post-DTaP immunization, and statistical analysis.

Table 1. Characteristics of respondents

Age (Months)	Frequency	Percentage (%)
2 - 4	12	60
5 - 6	7	35
> 6	1	1
Total	20	100
DTaP immunization		
First	8	40
Second	6	30
Third	6	30
Total	20	100
Gender		
Boy	15	75
Girl	5	25
Total	20	100

Table 1 shows that most respondents are between 2-4 months old (60%) and boys (75%). Almost half of them get the first DTaP immunization already (40%).

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Table 2. Body temperature pre and post-DTaP immunization in infants

Name	Body Temperature PreVaccination (^{0}c)	Body Temperature Post Vaccination (Hour)					Mean
		3	6	9	12	18	
R1	36.9	37.2	37.4	38.2	37.6	37.0	37.5
R2	36.1	37.4	37.5	38.6	38.7	37.0	37.8
R3	36.3	36.8	37.4	38	37.5	37.2	37.4
R4	36.8	37.1	37.5	37.6	37.2	37.0	37.3
R5	36	37.5	37	38.7	37.8	37.5	37.7
R6	36.8	37.8	36.7	37.7	37.3	36.0	37.1
R7	36.5	36.1	37.8	37.7	38.9	37.0	37.5
R8	36.4	37.6	37.6	38.2	37.1	37.0	37.5
R9	36.6	37	38.5	38.2	38.1	37.4	37.8
R10	36.3	37.6	37.8	37.6	37.4	37.0	37.5
R11	36.3	37.1	37.2	37.5	37.9	36.0	37.3
R12	36.5	37.5	37.3	38.6	37.2	36.0	37.3
R13	36.3	37.3	37.2	38.3	37.6	37.0	37.5
R14	36.6	37.3	37.3	37.8	37.6	37.0	37.4
R15	36.9	36.2	37.1	37.7	38	37.2	37.2
R16	36.5	36.9	37.2	38.5	39	37.0	37.7
R17	37.1	37	38.2	37.5	37.1	37.2	37.4
R18	36.8	36.9	37.3	38.4	37.5	37.0	37.4
R19	36.8	37	37.5	37.4	37.5	37.3	37.3
R20	36.9	36.9	37.5	37.2	37.9	37.0	37.3
Mean	36.57	37.2	37.5	38.0	37.7	36.9	37.5
SD	0.299	0.485	0.403	0.456	0.564	0.433	

Table 2 describe that the mean body temperature pre-DTaP immunization is 36.57 degrees Celsius, while post-DTaP immunization is 37.5 degrees Celsius. The temperature reaches peak heat at nine hours post-immunization. Data has a Standard Deviation value less than the mean, so the data has a good representation.

Table 3. Normality Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
First body temperature	.179	20	.093	.955	20	.457
Second body temperature three hours post immunization	.146	20	.200*	.958	20	.511
Third body temperature six hours post immunization	.201	20	.034	.927	20	.136
Fourth body temperature nine hours post immunization	.173	20	.117	.939	20	.235
Fifth body temperature twelve hours post immunization	.201	20	.033	.875	20	.014
Sixth body temperature eighteen hours post immunization	.400	20	.000	.722	20	.000

*. This is a lower bound of the true significance.

Table 3 states that most data have a significance value > 0.05, so the data is a normal distribution.

Table 4. Mauchly's Test of Sphericity

Within Subjects Effect	Mauchly's W	Approx. Chi-Square	df	Sig.	Epsilon[b]		
					Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	.331	18.898	14	.173	.716	.903	.200

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Table 4 indicates that the significance value (p) = 0.173 (> 0.05), so the data is fulfilled the Sphericity assumption.

Table 5. Tests of Within-Subjects Effects

	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Time	Sphericity Assumed	26.954	5	5.391	24.945	.000
	Greenhouse-Geisser	26.954	3.581	7.528	24.945	.000
	Huynh-Feldt	26.954	4.515	5.970	24.945	.000
	Lower-bound	26.954	1.000	26.954	24.945	.000
Error (Time)	Sphericity Assumed	20.530	95	.216		
	Greenhouse-Geisser	20.530	68.033	.302		
	Huynh-Feldt	20.530	85.780	.239		
	Lower-bound	20.530	19.000	1.081		

Table 5 reveals that the Sphericity Assumed value is 0.000 (<0.05), so there is a significant difference in the mean body temperature from time to time. Thus, shallot essential oil reduces fever in infants post-DTaP vaccination.

Table 6. Estimates

Time	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
1	36.570	.067	36.430	36.710
2	37.160	.108	36.933	37.387
3	37.450	.090	37.261	37.639
4	37.970	.102	37.757	38.183
5	37.745	.126	37.481	38.009
6	36.945	.097	36.742	37.148

Table 6 indicates that the standard error values are less than the mean so that the data distribution shows good representative.

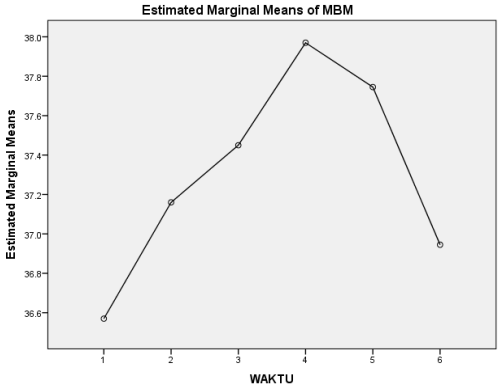

Figure 1. Decrease in body temperature post-vaccination after administering shallot essential oil

Figure 1 shows the peak time in increased body temperature occurs at nine hours post-DTaP immunization. Then, at 12 hours post-DTaP immunization, there is a decreased temperature mean of 37.745. At 18 hours post-DTaP immunization, there is a decline in body temperature mean of 36.945 after administering shallot essential oil.

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DISCUSSION

Most infants had increased body temperature at nine hours post-DTaP immunization. However, a small proportion of them started to have increased their body temperature in the first three hours and six hours. All respondents showed no increase in body temperature at more than 18 hours after vaccination. The vaccine used in this research was the DTaP cellular vaccine. It contains killed pertussis bacteria so that most infants experienced fever as a reaction to the microorganisms in the body.

Inadequate fever management cause discomfort for the infants. They become fussy and can develop into dehydration and seizures. In addition to using pharmacological therapy, midwives can provide non-pharmacological treatment. Research on non-pharmacological methods to reduce fever post-DTaP immunization has been widely carried out, such as warm, aloe, and shallot compresses. The principle of fever management with compresses used the conduction and evaporation method. The conduction method is heat transfer by direct contact due to skin exposure to objects around the body. In a feverish infant, there is vasodilation in the blood vessels. It causes increased blood flow to the peripheral blood vessels. Furthermore, it ends in sweat evaporation. In the compress method, there is heat transfer from the body to the environment through the water. In this research, shallot essential oil gave a warm sensation to the skin. Besides that, it has a non-stinging smell, so the infants feel comfortable.

This paper revealed that shallot (*Allium Ascalonicum L*) essential oil reduced fever in infants post-DTaP immunization. It aligns with Jurike's research that reported the same result (Laoh, 2019). In addition, administering shallot for fever has been tested in vitro. There was decreased body temperature in mice induced with the DTaP immunization (Kariyaningtias et al., 2019). Meanwhile, A study reported a body temperature reduction in feverish children at the Public Health Center of Kembaran I after using shallot compress (Cahyaningrum & Putri, 2017) – however, the study did not explain the shallot compressing method. In addition, previous research also revealed that shallot compress could reduce the body temperature in typhoid fever patients aged adolescents to old adults. Its experiment used three peeled and cut shallot cloves, then crushed and mixed with 300 ccs of warm water. Its administration was once a day for 15 minutes in two days in a row (Harnani, Andri, & Utoyo, 2019).

Shallot bulbs contain essential oil to improve blood circulation. Its essential oil contains dialylsulfide, propantiol-Soxide, Aliin, PGA1, diphenylamine and cycloaliine, methylaliine, dihydroaliine, kaemferol and foroglusinol. In addition, Floroguci n, cycloaliin, metialine and kaemferolcan can reduce body temperature (Tusilawati & Berliana, 2010). Meanwhile, other substances are organic sulfur compounds; one of them is Allylcysteine Sulfoxide (Aliin). Allylcysteine Sulfoxide is released when the shallot bulbs are cut or sliced. It improves blood circulation by destroying blood clots. As a result, heat is easily

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transferred to the peripheral blood vessels and reduces body temperature (Suryono, Sukatmi, & Jayanti, 2012).

Most Indonesian people use shallot (*Allium Ascalonicum L*) to normalize fever in children. Usually, they use shallot for external treatment. Shallot can be sliced, crushed, or grated, mixed with oil (*telon*, eucalyptus, or olive oil), and rubbed on the body. However, Children dislike the crushed or grated shallot because of its smell and rough texture, so they feel uncomfortable. Administering shallot essential oil is a more effective and efficient way. Another advantage is the smell does not sting. It can be used as a compress and massage. How to use shallot essential oil are rub and light massage them all over body regularly during fever. It causes blood vessels vasodilation and increases blood circulation, thereby accelerating the heat transfer from the body to the skin (evaporation).

CONCLUSIONS

This study concludes that shallot (*Allium Ascalonicum L*) essential oil reduces fever in infants post-DTaP immunization. Further research should use a control group to compare experiments and more significant samples to minimize bias. Inclusion criteria could be limited to infants with the first DPT vaccination because they have never been exposed to the immunization before.

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Effectiveness of Gotu Kola Extract Lotion (*Centella Asiatica*) in Reducing Stretch Marks

Indria Nuraini[1], *Asti Rahayu*[1]

[1]*Fakultas Sains dan Kesehatan, Universitas PGRI Adi Buana, Surabaya, Indonesia*

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CORRESPONDENCE

E-mail: indria@unipasby.ac.id
astirahayu@unipasby.ac.id

A B S T R A C T

Stretch marks result from mechanical factors, namely stretching of the skin due to the development of subcutaneous structures (interstitial adipose tissue) or biochemical factors (the presence of excessive glucocorticoids that inhibit fibroblast activity and proliferation). There is no truly effective treatment for removing striae once they have formed. This study evaluates the effectiveness of administering Gotu Kola Extract (Centella asiatica) on the stretch mark. This paper was a Quasi-Experimental study with a pretest-posttest design. This study was conducted at the Independent Practice Midwife (IMP) Zummatul Atika in October-December 2020. The population was postpartum mothers (days 0-6) with stretch marks. Meanwhile, there were 12 respondents by purposive sampling technique. The independent variable was Gotu kola extract lotion, while the dependent variable was stretch marks with ratio data. Collecting data with a structured interview to gather the characteristics of respondents and participant observation to evaluate changes (number of stretch marks, color, moisture, and skin condition) in stretch marks before and after intervention during one month. The Gotu kola extract lotion was made in the pharmacy laboratory of PGRI Adi Buana University Surabaya within several stages. The data analysis used the paired T-test, and the result showed p= 0.000, indicating a significant difference before and after the intervention. This study concludes that administering Gotu Kola Extract (Centella asiatica) lotion effectively reduces skin pigmentation and lines in stretch marks, increases skin moisture, and refines skin texture.

INTRODUCTION

Striae or stretch marks are indented lines in the abdomen, buttocks, thighs, back, breasts, axillae, and groin. Skin changes often occur in pregnancy caused by hormonal imbalances. Approximately 90% of women experience skin changes, such as stretch marks and hyperpigmentation on the skin (Irianti et al., 2014b).

Any extreme stretching of the skin causes stretch marks or striae due to an increased mother's weight. On the other hand, some experts state that the cause is the combination of the estrogen, adrenocortical, and relaxing hormones changing collagen and tissue elasticity (Varney et al., 2007). According to the study by Padilla Castillo, striae is a linear depression of the skin caused by fibrosis dysfunction. It can appear at any stage of life and is associated with a genetic predisposition in some cases. It is also common during adolescence (27%) and pregnancy (60-90%) as a result of a combination of mechanical and hormonal factors (increased steroid hormones) (García Hernández, Madera González, Padilla Castillo, & Figueras Falcõn, 2013). In addition, stretch marks can cause itching and reduced skin moisture causing the mother too often to scratch. Furthermore, it causes scars on the skin and makes less confident in mothers due to

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the wounds. Changes in skin pigmentation caused by pregnancy will decrease after the pregnancy, except for striae (Irianti et al., 2014a).

There are practices or cultures during the puerperium that aims to reduce cellulite and hyperpigmentation on the skin. Skin elasticity is an essential factor, so preventive treatments should maintain and enhance fibroblast stimulators' dermis structure and healing agents by increasing collagen and elastin fibers production (Bylka et al., 2013). Anti-stretch mark cream effectively reduces the severity of striae, striae development and prevents striae during pregnancy (García Hernández et al., 2013). Gotu kola leaves contain triterpenes which function as collagen-forming. Triterpenes can increase lysine, proline, and amino acids metabolism. Gotu kola content also increases tropocollagen and mucopolysaccharides synthesis to restore skin elasticity and firmness (Kristiyani A, Zullies I, 2017). A study conducted in the United States from November 2008 to March 2009 showed the change in the appearance (texture, color, and softness) in striae rubra after giving onion extract, *Centella asiatica*, and hyaluronic acid cream on week 12 (Draelos, Zoe Diana, et al., 2010). Natural ingredients are safe and effective to fade stretch marks. The Gotu kola extract lotion is easy to use and not sticky. Besides, it contains aromatherapy for relaxation. This study analyzes the effectiveness of Gotu Kola extract lotion (*Centella asiatica*) on Stretch Mark.

METHOD

This paper was a Quasi-Experimental study with a pretest-posttest design. It took place at Independent Midwifery Practice (IMP) Zummatul Atika in October – December 2020. In addition, the population was postpartum mothers (days 0-6) with stretch marks. There were 12 respondents by purposive sampling technique. The independent variable was Gotu kola extract lotion, while the dependent variable was stretch marks with ratio data. Before conducting the interview, the authors conducted informed consent to obtain respondents' willingness. Collecting data with a structured interview to gather the characteristics of respondents and participant observation to evaluate changes (number of stretch marks, color, moisture, and skin condition) in stretch marks before and after intervention during one month. The scoring was 1 for change in each stretch marks indicator and 0 for no change. The Gotu kola extract lotion was made in the pharmacy laboratory of PGRI Adi Buana University Surabaya within two months. The stages of making Gotu kola extract lotion through powder making, maceration, and lotion making with 10% emulsifier formula. The results of interviews and observations were processed through editing, coding, scoring, and tabulating. After that, a pre-post analysis was carried out using the paired T-test.

RESULT

The results in this paper included characteristics of respondents, the frequency distribution of stretch marks, and statistical analysis.

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Table 1. Respondent Characteristics by Age, Education, Parity

Characteristics	Frequency	Percentage (%)
Age		
<20 years	0	0
20-35 years	10	83.3
>35 years	2	16.7
Education		
Primary school	0	0
Junior high school	4	33.3
Senior high school	8	66.7
College	0	0
Parity		
Primipara	9	75
Multipara	2	16.7
Grandepara	1	8.3

Table 1 shows that most respondents are 20-35 years old (83.3%) and primipara (75%). Most of them are graduated from senior high school (66.7%).

Table 2. Frequency Distribution of Stretch Marks

	Number of stretch marks				Stretch marks Color			Skin Moisture		Skin Texture	
	No	1-5	5-10	>10	Black/Dark	Pink	White/Clean	Moist	Dry	Rough	Smooth
Pre-test	0	5	4	3	5	7	0	0	12	12	0
Pos-test	0	8	3	1	0	8	4	12	0	0	12

Table 2 describes that the dominant changes before and after administering Gotu kola extract lotion are in skin color, moisture, and skin texture changes. Meanwhile, the number of stretch marks cannot disappear quickly.

Table 3. Paired Samples Statistics

		Mean	N	Std.Deviation	Std Error Mean
Pair 1	Pre-test	5.25	12	1.215	.351
	Post-test	1.83	12	1.267	.366

Table 3. indicates that the mean of the stretch marks obtains a score of 5.25 in the pre-test. Meanwhile, the average value of the stretch marks after being given *Centella asiatica* extract lotion is 1.83. The mean value of post-test < pre-test shows a difference in the average value of the stretch marks before and after the intervention.

Table 4. Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Pre-test & Post-test	12	.856	.000

Table. 4 reports the correlation test results between the pre-test and post-test. The correlation coefficient (Correlation) is 0.856 with a significance value (Sig.) of 0.000, indicating a correlation between the pre-test and post-test.

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Table 5. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Pre-test – Post-test	3.417	.669	.193	2.992	3.841	17.703	11	.000

Table.5 reveals that the Paired Samples Test results obtain p=0.000 (p<0.05). So, it can be concluded that there is a significant difference in stretch marks before and after administering *Centella asiatica* extract lotion in postpartum mothers.

DISCUSSION

In this study, the primiparous group was more dominant in the appearance of stretch marks than the other groups. It is in line with research that reported the average incidence of stretch marks in women was in primigravida (Ramsal et al., 2009). Meanwhile, another study stated that was no correlation between pregnancy history, age at menarche, weight loss, obesity, use of hormonal contraception, and use of corticosteroids on the stretch marks (Ellysa, 2021).

This study found significant changes in the stretch marks before and after applying Gotu kola extract lotion, especially in skin moisture and texture. Lotions are a type of emollient (softener) that contains lots of water and additional ingredients that function as stabilizers (such as thickeners, gels, emulsifiers, and humectants). These ingredients keep the skin moisturized and soft (Erungan et al., 2009). Time to change the color of stretch marks from dark to light then turns to white (alba) and flat was between 6-10 months (Goldman, Rossato, & Prati, 2008). In an in vitro analysis test, the combination of Gotu kola herb extract and olive oil had a high level of sunscreen's ability with a Sun Protection Factor (SPF) 37 (Zainuddin, Saifullah, & W, 2019)

This paper showed that the stretch marks lines did not significantly disappear – there were still lines. Nevertheless, there was a reduction in stretch mark lines from 5-10 (pre-test) to 1-5 (post-test). It is in line with research that reported reducing the number of stretch mark lines after the Curcuma domestica hydrogel provision (Sabatina, 2018). On the other hand, a study stated that cream, lotion, and butter administration did not show significant changes to prevent Striae (Young & Jewell, 1996).

After administering Gotu kola Extract Lotion, the paired T-test results showed a significant difference in stretch marks. A study stated that Gotu kola contains Sodium Lauryl Sulfate (SLS) to clean dirt and glyceryl to moisture skin (Sari & Diana, 2019). Stretch marks treatment increases the collagen and elastin in the skin. Topical therapy on stretch marks helps to improve skin pigmentation and texture (Ud-Din, McGeorge, & Bayat, 2016). A literature review confirmed that *Centella asiatica* and massage using bitter almond oil could prevent and reduce the severity of SG (Striae Gravidarum) (Korgavkar & Wang, 2015).

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In addition, Centellium oral supplementation reduces stretch marks and skin pigmentation. It also increases collagen and moisture in the skin (Hu et al., 2018).

CONCLUSIONS

In conclusion, administering Gotu Kola Extract (*Centella asiatica*) lotion effectively reduces skin pigmentation and lines in stretch marks, increases skin moisture, and refines skin texture.

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Dietary Habits and Physical Activity Affect Random Blood Sugar Levels in Outpatients

Effendi[1], Budhi Setianto[2], Agus Aan Adriansyah[2], Akas Yekti Pulih Asih[2], Difran Nobel Bistara[3]

[1]*Department of Medicine, Faculty of Medicine, Universitas Nahdlatul Ulama Surabaya, 60237, East Java, Indonesia*
[2]*Department of Public Health, Faculty of Health, Universitas Nahdlatul Ulama Surabaya, 60237, East Java, Indonesia*
[3]*Department of Nursing, Faculty of Nursing and Midwifery, Universitas Nahdlatul Ulama Surabaya, 60237, East Java, Indonesia*

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CORRESPONDENCE

E-mail: dr.Effendi@unusa.ac.id
budhisetianto@yahoo.com
aan.naufal87@unusa.ac.id
nobel@unusa.ac.id

A B S T R A C T

Diabetes is caused by several etiology resulting in the body not using glucose into the cells, so glucose accumulates in the blood. The pancreas cannot produce the particular hormone in type 1 diabetes. Meanwhile, type 2 diabetes is caused by the inefficient use or deficiency of certain hormones relative to blood glucose levels. This study analyzes the correlation between dietary regulation and physical activity and blood sugar levels in outpatients. This paper was a cross-sectional analytic study. The population was all outpatients who checked their blood sugar levels at the Internal Medicine Specialist Clinic of Islamic Hospital Surabaya from January to February 2021. Meanwhile, there were 115 respondents with total random sampling. The independent variable was random blood sugar (RBS) levels, while the dependent variables were dietary habits and physical activity. Data collection used medical records at the Internal Medicine Specialist Clinic of Islamic Hospital Surabaya. Then, data analysis utilized Fisher's Exact Test with a significance of 0.05. Most respondents had regular dietary habits (53%) and normal random blood sugar levels (54%). In addition, they had regular physical activity (80%), with frequency once a week (34.8%), and most types of physical activity were gymnastics (34.8%). The Fisher's Exact Test obtained p=0.000 in analyzing between dietary habits and RBG levels. In addition, p=0.000 in evaluating between physical activity and RBG levels. Dietary habits and physical exercise affect random blood sugar levels in outpatients. Further study should evaluate other factors associated with blood sugar levels.

INTRODUCTION

Diabetes is a chronic disease followed by high glucose symptoms. Glucose is the primary energy source for human body cells (Haqiqi Ilham mardiantun 2019). Glucose accumulation in the blood due to inadequate absorption by body cells can cause various organ problems in the human body (Anggraeni and Rachmawati 2018). Uncontrolled diabetes can lead to various life-threatening complications for people with diabetes. It is a severe threat to the body because of its gradual development (Nobel Bistara and Ainiyah 2018). It can lead to dangerous complications. No wonder it is called the silent killer. Its complications include (1) Difficult wound healing, (2) amputation, (3) blindness, (4) dental disease, (5) heart disease and stroke, (6) kidney damage, (7) destruction of nerves, (8) Various types of cancer, such as colon cancer, prostate cancer, breast cancer, and endometrial cancer (Azitha, Aprilia, and Ilhami 2018). Under normal circumstances, the body's cells use glucose as energy. A hormone that helps glucose absorption in the body's cells is insulin. The pancreas produces the hormone insulin. Diabetes can be

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divided into type 1 and type 2 diabetes. Type 1 diabetes is an autoimmune disease. The body's immune system attacks and destroys the pancreatic cells that produce insulin. Furthermore, it causes blood sugar elevation and stimulates damage to the body's organs. Type 2 diabetes is a more common type of diabetes because of the less sensitive body's cells to insulin, so the insulin cannot be used properly (insulin resistance). Almost all people with diabetes in the world have type 2 Diabetes (Nurayati and Adriani 2017).

Diabetes is caused by several body disorders so that the body cannot use blood glucose into cells; as a result, glucose builds up in the blood (Purnama and Sari 2019). The etiology of type 1 diabetes is the pancreas cannot produce certain hormones. Meanwhile, insulin resistance and usually relative insulin deficiency occur in type 2 diabetes. High glucose levels can irritate the small blood vessels in the kidneys, heart, eyes, and nervous system, causing various complications (D. Bistara et al. 2020). Type 1 and type 2 diabetes symptoms include (1) Frequent thirst, (2) Increased urination frequency, especially at night, (3) constant hunger, (4) Weight loss for no apparent reason, (5) tired, (6) blurred vision, (7) long-healing injuries, (8) inflammation of the skin, urinary tract, gums (Amrullah 2020).

Diabetes is diagnosed based on a medical interview, physical, and laboratory examination (blood and urine test) (M Irhas and Kurniawan 2017). A blood sugar test aims to measure the sugar (glucose) levels in the blood. There are several ways to evaluate blood sugar; one of them is using a glucometer (Nurjana and Veridiana 2019). The goal is not only to diagnose diabetes but also to evaluate whether the blood sugar levels in people with diabetes are well controlled. Glucometers could evaluate blood sugar levels at any time (Wijayanti, Wardani, and Bistara 2019). Blood sugar levels with normal conditions are (1) Before eating: 70-130 milligrams/dL (2) Two hours after eating: less than 180 milligrams/dL (3) After fasting for 8 hours: less than 100 milligrams/dL, (4) At bedtime: 100-140 milligrams/dL11. There are several activities to prevent high blood sugar levels, including regular exercise and a diabetic diet. Regular exercise can control blood sugar. Exercising at least 2.5 hours per week can train muscle strength and burn calories. A diabetic diet is limiting carbohydrate (Setyawan and Sono 2015) consumption. Selected sources of carbohydrates are sweet potatoes, whole grain pasta, and brown rice. Other good foods for consumption are nuts such as almonds, salmon, skinless chicken breasts. This study analyzes the correlation between dietary regulation and physical activity on random blood sugar levels in outpatients at the Internal Medicine Specialist Clinic of Islamic Hospital Surabaya.

METHOD

This paper was a cross-sectional analytic study. The population was all outpatients who checked their blood sugar levels at the Internal Medicine Specialist Clinic of Islamic Hospital Surabaya from January to February 2021. Meanwhile, there were 115 respondents with total random sampling. The independent

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variable was random blood sugar (RBS) levels, while the dependent variables were dietary habits and physical activity. Data collection used medical records at the Internal Medicine Specialist Clinic of Islamic Hospital Surabaya. Then, data analysis utilized Fisher's Exact Test with a significance of 0.05 to evaluate the correlation between independent and dependent variables.

RESULT

The results in this paper included characteristics of respondents, dietary habits, physical activity, random blood sugar levels, and statistical analysis.

Table 1. Characteristic of respondents by age and gender

Characteristics of Respondents	Frequency	Percentage (%)
Gender		
Male	45	39.1
Female	70	60.9
Age		
41 - 45 years old	34	29.6
46 - 50 years old	64	55
51 - 55 years old	15	13
55 - 60 years old	2	1.7
Total	115	100

Table 1 describes that most outpatients at the Internal Medicine Specialist Clinic of Islamic Hospital Surabaya are female (60.9%) and from 46 to 50 years old (55%).

Table 2. Frequency Distribution of Respondents Based on Dietary Habits, Physical Activity, and Random Blood Sugar (RBS) Levels

Variables	Frequency	Percentage (%)
Dietary habits		
Regular	61	53
Irregular	54	47
Physical Activity		
Physical inactivity	23	20
Regular physical activity	92	80
Type of physical activity		
Cycling	25	27.2
On Foot Excercise	30	32.6
Running	5	5.4
Gymnastics	32	34.8
Frequency of physical activity (per week)		
Once	32	34.8
Twice	22	23.9
Three Times	12	13.0
More Than 4 Times	26	28.3
Random Blood Sugar Levels		
Normal	62	54
High	53	46
Total	115	100

Table 2 shows that most respondents have regular dietary habits (53%) and normal random blood sugar levels (54%). In addition, most of them have regular physical activity (80%), with frequency once a week (34.8%), and most types of physical activity are gymnastics (34.8%).

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Table 3. Cross-Tabulation between Diet Habits and Random Blood Sugar (RBS) Levels

		RBS Levels		Total
		Normal	High	
Dietary Habits	Irregular	3	51	54
	Regular	59	2	61
Total		62	53	115
Fisher's Exact Test			0.00000	

Table 3 reveals that three respondents with irregular dietary habits have normal RBS levels, and 51 samples have high RBS levels because they have irregular dietary habits. On the contrary, 59 people with regular dietary habits have normal blood sugar levels, and only two individuals with high RBS levels because of irregular dietary habits. The Fisher's Exact Test shows p=0.000 (p<0.05), indicating a significant correlation between dietary habits and random sugar blood levels.

Table 4. Cross-Tabulation between Physical Activity and Random Blood Sugar (RBS) Levels

		RBS Levels		Total
		Normal	High	
Physical Activity	Physical inactivity	0	23	23
	Regular physical activity	62	30	92
Total		62	53	115
Fisher's Exact Test		0.00000		

Table 4 indicates that 92 respondents with regular physical activity, 62 of them have normal RBS levels, and 30 have high RBS levels. Meanwhile, all respondents (23 samples) with physical inactivity have high RBS levels. The Fisher's Exact Test obtains p=0.000 (p<0.05), indicating a significant correlation between physical activity and random sugar blood levels.

DISCUSSION

In this study, most respondents had regular dietary habits. Calories are an essential factor for the body in maintaining energy during activities. Calories can be obtained from daily food; daily calorie needs also need to be considered, not excessive or deficient. Each person's calorie needs are different. Daily calorie needs are based on gender, health status, body weight, and size. The recommended number of calories for diabetes per day is 25-30 calories per kg of body weight; the composition of carbohydrate content: 50-60% of calorie needs or a minimum of 130 grams per day, protein: 10-15% of calorie needs, Fat: 20-25% of calorie requirements, and fiber: 25 grams per day (M Irhas and Kurniawan 2017). Diet regulation in people with diabetes must consider the schedule, amount, and type of food (Kumaladewi Hengky and Haniarti 2018).

In addition, most respondents had regular physical activity once a week, and most types of physical activity were gymnastics. World Health Association (WHO) defines physical activity as any bodily movement produced by skeletal muscles requiring energy expenditure. It also includes activities performed while working, playing, doing household chores, traveling, and engaging in recreational

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activities. The term physical activity should not be confused with exercise. Sport is a subcategory of physical activity that is planned, structured, repetitive, and aims to improve or maintain one or more components of physical fitness. Apart from exercise, any physical activity done during leisure time, for transportation to and from a place, or as part of work, has health benefits (D. N. Bistara 2019). Physical activity has a light, moderate, or vigorous-intensity to improve health status. Lack of physical activity is a risk factor for chronic disease and is estimated to cause death globally (Susanti and Bistara 2021). Regular sports activities play an essential role in stabilizing blood sugar levels in diabetes (Putri 2017). Nevertheless, they must adapt workouts according to age and health status.

Furthermore, most samples in this study had normal random blood sugar levels. The blood sugar level is the amount of glucose content in blood plasma. Blood sugar levels are used to establish the diagnosis of DM. For determination of diagnosis, the recommended examination is an enzymatic examination with venous plasma blood material. Meanwhile, capillary blood sugar examination with a glucometer can monitor the treatment results.

There was a significant correlation between dietary habits and random blood glucose levels (Steyn et al. 2004). Dietary habits are associated with metabolic disorders, such as insulin resistance, obesity, type 2 diabetes, and cardiovascular diseases. A previous study showed that consuming fruits, vegetables, and legumes was correlated with a reduced risk of insulin resistance and type 2 diabetes (Liu et al. 2004). Meanwhile, other research revealed that higher consumption of total meat might lead to insulin resistance and related chronic disease development, such as obesity, diabetes (Panagiotakos et al. 2005), and cardiovascular diseases.

There was a correlation between physical activity and random blood glucose levels. The effect of physical activity or exercise is directly related to an increase in the speed of muscle glucose recovery – how much muscle takes glucose from the bloodstream. During the workout, the body muscles use the glucose stored in the muscles. When the glucosse is depleted, the muscles fill the gaps by taking glucose from the blood. Then, it will decrease blood glucose, thereby increasing blood glucose control. Exercise has significant benefits for people with diabetes, which helps improve insulin sensitivity and keep blood sugar levels under control. When exercising, the body needs extra energy, which causes the muscles to absorb glucose and decrease blood sugar levels. Exercising can also help prevent obesity in people with type 2 diabetes (Prastika, 2020).

CONCLUSIONS

This study concludes that dietary habits and physical exercise affect random blood sugar levels in outpatients. Further study should evaluate other factors associated with blood sugar levels to prevent complications of high blood sugar levels.

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The Correlation Between Human Immunodeficiency Virus (HIV) Infections in Pregnancy and Low Birth Weight Infants

Muhammad Ali Shodikin[1], *Inke Kusumastuti*[1], *Wahidah Nur Indasyah*[1]

[1]*Faculty of Medicine, University of Jember, East Java, Indonesia*

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CORRESPONDENCE

E-mail: alipspd@unej.ac.id

A B S T R A C T

The prevalence of Human Immunodeficiency Virus (HIV) infection in pregnancy increases in developing countries. The disease interferes with nutrient absorption due to the accumulation of inflammatory cells in the placenta, causing infants with low birth weight. This study investigates the correlation between HIV infections in pregnancy and low birth weight infants. This paper was an analytic observational study with a retrospective approach. The population were positive and negative HIV pregnant mothers in the Obstetrics and Gynecology ward and their infants in the Neonatology ward at dr. Soebandi Hospital from August 2014 to July 2017. There were 52 samples of HIV-positive pregnant mothers by total sampling, while 52 samples of HIV-negative pregnant mothers by purposive sampling. The independent variable was the pregnant mother's HIV Status, while the dependent variable was infant birth weight. The data analysis used the Fisher's Exact with a 95% confidence interval and a significance of $p<0.05$. In the HIV-positive pregnant mothers, nine of 52 respondents (17.3%) were LBW infants. Meanwhile, in the HIV-negative pregnant mother group, three of 52 respondents (5.8%) were LBW infants. The data analysis by Fisher's Exact obtained $p=0.06$ ($p>0.05$). This study concludes that there is no significant correlation between HIV infections in pregnancy and low birth weight infants. Although, the incidence of LBW in HIV-positive pregnant mothers is three times more than in HIV-negative pregnant mothers.

INTRODUCTION

Normal birth weight (NBW) is an infant with a birth weight of 2500-4000 grams. Meanwhile, low birth weight (LBW) is an infant with under 2500 grams (World Health Organization, 2011). More than 20 million infants were born with LBW worldwide, and 95.6% were born in developing countries (World Health Organization, 2011). The prevalence of LBW in Indonesia is relatively high at 6.2% (Kemenkes RI 2018). East Java Provincial Department of Health (2019) stated that 24.2% of neonatal deaths were caused by LBW. In addition, Suparmi *et al*. (2016) reported that LBW infants risk death 9.8 times greater than NBW infants.

The number of new Human Immunodeficiency Virus **(**HIV) cases in the housewife group is still increasing. A previous study revealed that HIV-positive pregnant mothers were four times more at risk of amniotic membrane inflammation. The inflammation caused preterm birth, small for gestational age (SGA), and LBW (Ategeka et al. 2019). Term LBW can be caused by several factors, including pregnancy type, maternal age, haemoglobin level, iron, folic acid, and HIV status (Gebregzabiherher et al.

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2017).

Dr. Soebandi Hospital Jember is one of the referral hospitals for pregnant mothers with HIV in East Java-Indonesia. There are still few studies of the correlation between HIV infection in pregnancy and birth outcomes in Indonesia. Therefore, this study investigates the correlation between HIV infection in pregnancy and low birth weight (LBW) infants.

METHOD

Ethical Commission in Faculty of Medicine, University of Jember approved the ethical clearance of this study (No. 1.357/H25.1.11/KE/2020). This paper was an analytic observational study with a retrospective approach. The population were positive and negative HIV pregnant mothers in the Obstetrics and Gynaecology ward and their infants in the Neonatology ward at dr. Soebandi Hospital from August 2014 to July 2017. There were 52 samples of HIV-positive pregnant mothers by total sampling. Meanwhile, the population of the HIV-negative pregnant mother group was 10,372 patients, so the authors selected a sample close to the characteristics of HIV-positive pregnant mothers. Thus, there were 52 samples of HIV-negative pregnant mothers by purposive sampling. The independent variable was the pregnant mother's HIV Status, while the dependent variable was infant birth weight. The data analysis to determine the correlation between independent and dependent variables using the Fisher's Exact with a 95% confidence interval and a significance of $p < 0.05$ because the data did not meet the Chi-Square requirements.

RESULT

In this study, the characteristics of pregnant mothers consisted of maternal age, parity, gestational age, and impaired placental function. Both HIV-positive and HIV-negative pregnant mothers were aged 20-35 years old, had parity status less than equal to three times, and had gestational age at term. In addition, the majority of pregnant women in both groups were without placental dysfunction. The characteristics of pregnant mothers could be seen in Table 1 in detail.

Table 1. The characteristics of pregnant mothers

Characteristics	Pregnant mother's HIV Status	
	HIV positive (n)	HIV negative (n)
Maternal age (years old)		
<20 or >35	7	8
20-35	45	44
Parity status		
>three times	1	3
≤three times	51	49
Gestational Age		
<37 weeks	19	15
≥37 weeks	33	37
Placenta dysfunction		

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Yes	18	15
No	34	37

The correlation of HIV infection in pregnancy and low birth weight infants were shown in Table 2. In the HIV-positive pregnant mothers, nine of 52 respondents (17.3%) were LBW infants. Meanwhile, in the HIV-negative pregnant mother group, three of 52 respondents (5.8%) were LBW infants. The data analysis by Fisher's Exact obtained p=0.06 (p>0.05) with OR=3.42. Statistically, there was no significant correlation between HIV infections in pregnancy and low birth weight infants.

Table 2. Correlation between HIV infection in pregnancy and low birth weight infants

Pregnant mother's HIV Status	Infant birth weight				*p*	*Odds Ratio* (95% CI)
	LBW (<2500 grams)		NBW (≥2500 - 4000 grams)			
	N	%	N	%		
HIV-positive	9	17.3	43	82.7	0.06	3.42
HIV-negative	3	5.8	49	94.2		(0.87-13.4)

DISCUSSION

This paper found that most of the birth outcomes in HIV-positive pregnant mothers had normal birth weight (82.7%). A study by Twabi *et al.* (2020) stated that HIV-positive mothers delivered infants with higher birth weight after intervention with the prevention mother to child transmission (PMTCT) program. On the other hand, other studies contrarily showed that the birth weight in infants was affected by maternal HIV infection status (Xiao et al. 2015); (M. Salihu et al. 2012).

However, this paper found that the incidence of LBW in HIV-positive pregnant mothers was three times (17.3%) more than in HIV-negative pregnant mothers (5.8%). It is in line with a study conducted by (Offspring, Msamila, and Msamila 2018). The study showed that HIV-positive pregnant mothers had a 77% risk of giving birth to LBW infants compared to HIV-negative pregnant mothers. The LBW infants in HIV-positive pregnant mothers can be caused by placenta inflammation due to infection disrupting placental function. Kumar *et al.*, (2011) reported that HIV-1 could replicate in the placenta, and Akoto *et al*. (2021) also revealed that HIV-1 infection could change the profile of cytokines in the placenta. Both can affect placental function during pregnancy and then limit fetal development, thus resulting in LBW.

M. Salihu *et al.*, (2012) also showed that infants born to mothers with HIV infection had an average birth weight lighter (303 grams) than infants born to mothers without HIV infection. This study almost had the same result; HIV-positive pregnant mothers had an average infant birth weight lighter (178 grams) than HIV-negative pregnant mothers. In addition, Kim *et al.*, (2012) reported that women with CD4 cell counts <350 cells/mm^3 were more likely to deliver LBW infants than women with higher CD4 cell counts. Sofeu et al. (2014) also found that maternal HIV infection is significantly associated with small for gestational age (SGA) and gender infants.

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The data analysis using Fisher's Exact showed no significant correlation between HIV infection in pregnancy and low birth weight infant at dr. Soebandi Hospital (p=0.06). Some factors that might affect those results include: the mother's young age; good maternal nutrition status; newly infected by HIV, so they do not have opportunistic infections; successful early antiretroviral treatment; most respondents do not experience dysfunctional placenta; and has parity less than three times

CONCLUSIONS

This study concludes that there is no significant correlation between HIV infections in pregnancy and low birth weight infants. Although, the incidence of LBW in HIV-positive pregnant mothers is three times more than in HIV-negative pregnant mothers.

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Roflumilast: Review of Phosphodiesterase-4 Inhibitor as Asthma Therapy

Rafina Syfridiana[1], *Fauna Herawati*[2]

[1]*Magister Program of Clinical Pharmacy, Faculty of Pharmacy, Surabaya University, Surabaya, Indonesia*
[2]*Department of Clinical and Community Pharmacy, Faculty of Pharmacy, Surabaya University, Surabaya, Indonesia*

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CORRESPONDENCE

E-mail: rafinasd@gmail.com
fauna@staff.ubaya.ac.id

A B S T R A C T

Asthma is a heterogeneous disease characterized by chronic inflammation of the airways induced reversible obstruction resulting in mortality and morbidity. Roflumilast is a second-generation selective inhibitor of phosphodiesterase-4 targeting PDE type 4 isoenzymes, disturbing the breakdown of cyclic AMP (cAMP) and reducing inflammation. However, it has not been recommended for asthma patients because of insufficient evidence from trial results. The search was carried out using the PUBMED online database from 2011 to May 2021. The keywords used in this study were "Asthma" and "Roflumilast" using the Boolean Operator "AND." All articles were published until May 7, 2021. The design of the articles involved in this study was randomized. Selection of research articles was obtained to avoid duplication of articles through title and abstract screening. Next, eligible articles were extracted by reviewing the full text according to the inclusion criteria. Finally, 5 articles were used in this paper. Roflumilast can be given per-oral as a single dose or combine with ICS or montelukast. Roflumilast can increase FEV1 and reduce eosinophils, a pathological cause of asthma that induces inflammation in the airways. The side effects of roflumilast are well tolerated in asthma patients, the most common of which include headache, diarrhea, nausea, weight loss, and insomnia.

INTRODUCTION

Asthma is a heterogeneous disease characterized by chronic inflammation of the airways with symptoms of coughing, wheezing, and difficulty breathing caused by reversible airway narrowing, in response to the airways due to various stimuli – both allergens and non-allergens – such as exercise, weather changes, and viruses causing mortality and morbidity (Global Initiative for Asthma, 2019).

Asthma prevalence from WHO health survey data (World Health Organization) in 2002-2003, in young adults with the age range of 18-45 years there were 177,496 asthmatics in 70 countries. While a study was conducted by the ISAAC (International Study of Asthma and Allergies in Childhood) in the same year in 97 countries reported its prevalence in adolescents aged 13-14 years was 798,685. The result showed the highest prevalence (≥ 20%) in Australia, Europe, North America, and parts of Latin America. Meanwhile, the lowest prevalence (< 5%) was in the Indian subcontinent, Asia-Pacific, Eastern Mediterranean, Northern and Eastern Europe (Global Asthma Network 2018). Meanwhile, In Indonesia, the prevalence of asthma is unknown due to the absence of a national survey. At the same time, asthma is included in the top 10 diseases that cause death in Indonesia. In 1995, the prevalence of asthma in Indonesia was 13 out of 1000 population (Ratnawati, 2011).

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Asthma is an airway obstruction disease characterized by smooth muscle changes, immune cell infiltration, anti-inflammatory cytokines releasing, reversible airflow obstruction, and airway hyperresponsiveness. Two risk factors triggering inflammation in asthma are genetic and environmental. Environmental factors include allergens, food, certain drugs, cigarette smoke, air pollution, exercise, weather, etc. (Russell et al., 2013). Pathological factors involved in inflammation are T-cell-mediated CD4+, eosinophils, IL-4, IL-5, and lL-3 (Bodkhe et al. 2020).

The goal of asthma therapy is to control symptoms properly, maintain normal activities, minimize the risk of exacerbations, restrict airflow and minimize side effects (Global Initiative for Asthma 2019). Asthma therapy can be performed pharmacologically and non-pharmacologically. The principle of pharmacological asthma therapy is divided into 2, namely: acute asthma therapy (during an attack) and long-term asthma therapy. Reliever medication is administered when an acute attack occurs. Meanwhile, long-term asthma therapy aims to control asthma and prevent attacks, using controller drugs used in the long term and continuously (Indonesian Ministry of Health 2008). Various types of asthma drugs can be seen in Table 1.

Table 1. Types of Asthma Drugs

Drug Types	Class	Generic Name	Drug Form/Packaging
Checker (Antiinflammation)	Inhaled Steroids	Fluticasone Propionate	MDI
		Budesonie	MDI, Turbohaler
	Antileukotrienes	Zafirlukast	Oral (tablet)
	Agonist β-2 Long-acting	Formoterol	DPI
		Salmeterol	MDI/DPI
	Combination of steroids and long-acting β-2 agonists	Fluticasone + Salmeterol	MDI
		Budesonie + Formoterol	Turbohaler
Relief (Bronkodilator)	β-2 agonist Short-acting	Salbutamol	Oral, MDI, rotacap solution
		Buttaline	Oral, MDI, Turbohaler, Injection
		Procaterol	Oral (tablet), MDI, Inhaling solution
		Fenoterol	MDI, Solution
	Anticholinergic	Ipratropium Bromide	MDI, Solution
	Methylxanthine	Theophylline	Oral
		Aminophylline	Oral, injection
		Slow Release Theophylline	Oral
	Systemic corticosteroids	Methylprednisolone	Oral, inhaler
		Prednisolone	Oral

MDI: Metered-dose inhalation.

DPI: Dry powder inhaler.

Solution: Solutions for nebulizing use with a nebulizer.

Oral: Can be in the form of syrup, tablets.

Injection: Can be used subcutaneously, im, and iv (Indonesian Ministry of Health 2008).

Roflumilast is administered orally, together with its active metabolite (roflumilast-N-oxide). It is a selective phosphodiesterase-4 inhibitor with anti-inflammatory effects. It consistently improves lung

function. It consistently improves lung function. In addition, it reduces the frequency of exacerbations in patients with chronic obstructive pulmonary disease (COPD) and symptoms of chronic bronchitis. Roflumilast is currently developing its potential as an effective anti-inflammatory treatment for asthma patients (Meltzer 2015). However, Phosphodiesterase-4 inhibitors, including roflumilast, have not been recommended for patients with asthma because of insufficient evidence from experimental results. The research in Indonesia discussing the effectiveness and safety of using roflumilast as a therapy in asthma patients has not been carried out. The purpose of this study is to determine the efficacy and safety of the use of roflumilast as therapy in asthmatic patients.

METHOD

The search was carried out using the PUBMED online database from 2011 to May 2021. The keywords used in this study were "Asthma" and "Roflumilast" using the Boolean Operator "AND." All articles published up to May 7, 2021, meting the research requirements included in this review study. Further, articles must meet the inclusion criteria: 1) The study design of the article was randomized, 2) The research subjects were patients with a diagnosis of asthma, 3) The treatment intervention was oral Roflumilast from the phosphodiesterase-4 inhibitor group, with or without combination with other drug classes, and control therapy was placebo with or without combination with other drug classes. The analysis in this study was carried out in a descriptive narrative. Initially, the research articles were selected to avoid duplication of articles through title and abstract screening. Next, the eligible articles were extracted by reviewing the full text according to the previously defined inclusion criteria. Data extracted from each research article included: 1) Identity of a research article (year of publication, study design, name of the researcher, year of study), 2) disease severity, 3) Population, 4) Demographic characteristics of patients (age, gender, height, and body weight), 5) Details of intervention (name of the drug, dose, frequency of administration, route of administration, duration of treatment, follow-up), 6) Measurement of outcomes, and 7) Study results.

RESULT

The number of articles identified during the search from the electronic database was 45 articles. After screening with inclusion criteria, six randomized articles were obtained. Furthermore, after reviewing the titles and abstracts of the six articles, two articles were identical, so only one of them was used. Thus, there were five articles used in this paper.

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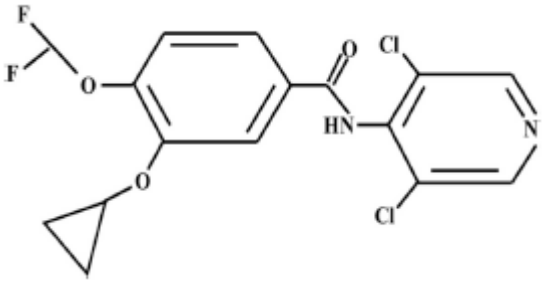
DISCUSSION

Roflumilast



Picture 1. Chemical structure of roflumilast

Roflumilast has the IUPAC (International Union of Pure and Applied Chemistry) nomenclature as 3-(cyclopropylmethoxy) N-(3,5-dihydropyridine-4-yl)-4 (difluoromethoxy) benzamide. Roflumilast has the chemical structure as in Figure 1, the molecular formula C17H14C12F2N2O3, white crystals with a molecular weight of 403.22, melts at 150°C, and has a half-life of 17 hours (Bodkhe et al. 2020).

Roflumilast is available in a once-daily oral dosage form (tablets of 500 µg) with a bioavailability of 80%. The maximum concentration (Cmax) is reached 1 hour (range 0.5 – 2 hours) after a single dose, while the active metabolite reaches Cmax within 8 hours (range 4 – 13 hours). Both are firmly bound to plasma proteins (≥97%), metabolized in the liver by CYP450 enzymes in stage I and conjugation reactions in stage II. Elimination may be impaired in patients with hepatic and renal impairment, but no dose adjustment is required. Roflumilast is not recommended to be given concurrently with potent CYP3A4, CYP3A4 and CYP1A2 enzyme inhibitors. Those inhibitors include erythromycin, ketoconazole, fluvoxamine, enoxacin, cimetidine, and rifampin (Wedzicha, Calverley, and Rabe 2016).

Roflumilast is administered orally with or without food. Its active metabolite (roflumilast-N-oxide) is a selective phosphodiesterase-4 inhibitor with an anti-inflammatory effect. It consistently improves lung function and reduces the frequency of exacerbations in patients with Chronic obstructive pulmonary disease (COPD) and chronic bronchitis, also individuals with a history of exacerbations. Roflumilast is currently developing its potential as an effective anti-inflammatory treatment for asthma patients (Meltzer 2015).

Phosphodiesterase-4 (PDE4) is expressed in smooth muscle cells and inflammatory cells (eosinophils, neutrophils, monocytes, macrophages, T-lymphocytes). Therefore, it can be a potential target for asthma therapy. Selective phosphodiesterase-4 inhibitors are new, second-generation drugs that target the PDE type 4 isoenzyme. Those interfere with the breakdown of cyclic AMP (cAMP) and reduce inflammation (Luo et al. 2018). The improvement of cAMP concentrations also increases smooth muscle relaxation. Finally, roflumilast produces anti-inflammatory effects by inhibiting the production of kappa B (NF-kB),

interleukins (IL-4 and IL-5), and TNF-, and eosinophils. It prevents airway hyperresponsiveness (Bodkhe et al. 2020).

Efficacy And Safety

Meltzer *et al.* (2015) conducted a study to assess the efficacy of roflumilast in nine randomized research. The nine research was placebo-controlled, monotherapy, and combination clinical studies in phases II and III. The study collected research data (1997-2005) in Europe, North and South America, Africa, Australia, and Asia. The efficacy of roflumilast was measured by changes in FEV1 (Forced Expiratory Volume in 1). In detail, 500 µg Roflumilast each day has been approved as a treatment for COPD. The study evaluated the efficacy of roflumilast for asthma between 125 µg and 250 µg monotherapy doses. In addition, roflumilast administration was compared with combination with ICS (inhaled corticosteroid) or placebo monotherapy. ICS consisted of 250 µg fluticasone propionate (FP) and 400 µg and 500 µg beclomethasone dipropionate (BDP).

Roflumilast consistently increased FEV1 compared to placebo in 9 studies. However, in some studies did not show statistically significant differences between roflumilast and placebo. Insignificant differences showed in comparison between phase II monotherapy and placebo. In addition, it also indicated through comparison between BDP combination and placebo combined ICS (study duration 4-6 weeks) conducted when it was unknown whether roflumilast had efficacy for asthma. Further studies in phase III monotherapy versus placebo (study duration 12-24 weeks) showed that doses of 250 µg and 500 µg consistently increased FEV1 over time and showed statistically significant differences. Two follow-up studies in phase III that compared the BDP combination roflumilast with the BDP combination placebo showed a statistically significant increase in FEV1. In addition, FP combination roflumilast and placebo combination FP for 24 weeks showed a statistically significant increase in FEV1(Meltzer et al. 2015).

Roflumilast has shown potential as an anti-inflammatory therapy for asthma. When given in combination with ICS, roflumilast showed improvement in lung function. However, the studies conducted did not have sufficient duration to observe the effects of roflumilast further.

Research by Bateman *et al.*, (2015) was conducted 6-12 weeks in Europe, North America, South Africa, and Australia in 3,802 patients aged 12-70 years. It reviewed seven randomized clinical studies (double-blind) from 1998 to 2005, non-placebo-control, phase II, and III. It evaluated the efficacy of roflumilast at a dose of 100 µg, 250 µg, or 500 µg once a day, compared with BDP 400 µg or 500 µg twice a day, and with montelukast 10 mg once a day on FEV1 changed.

In the phase II study, the group given a single dose of roflumilast 500 µg once daily for six weeks showed a significant increase in FEV1 (measured in the morning), but no significant difference when taken in the morning or evening. In addition, roflumilast administration at a dose of 500 µg had a more significant

increase in FEV1 than 100 µg. Meanwhile, there was no statistical difference between roflumilast administration at a dose of 500µg and 250µg. (E. D. Bateman et al. 2015).

Studies compared roflumilast 500 µg with BDP 400 µg (phase II, for six weeks), and roflumilast 500 µg with BDP 500 µg (phase III, for 12 weeks). Roflumilast showed a significant increase in FEV1 during the treatment period. However, there was no significant difference between roflumilast and BDP. Similarly, the efficacy of roflumilast versus montelukast in phase III. All treatment groups showed the same increase in FEV1 over 12 or 24 weeks (E. D. Bateman et al. 2015).

The above studies provide a basis for considering roflumilast as asthma (controller). Roflumilast at a dose of 500 µg once a day can be taken in the morning or evening (E. D. Bateman et al. 2015).

In 2015 Bardin, P. et al. conducted a study to evaluate roflumilast's therapeutic efficacy and mechanism of action in asthmatic patients, using eight randomized clinical studies (double-blind), placebo-control, cross-over study, and parallel-group, phase I and III. The study was conducted in Europe, North America, and South Africa (1997-2005). Effects of roflumilast 250 µg, 500 µg, 1000 µg, compared with placebo in 197 patients with asthma, ages 18-70 years. The study variables were the change in the number of sputum eosinophils, exhaled nitric oxide, and FEV1. The study reported increased FEV1 and decreased allergens that induce airway inflammation by observing the number of eosinophils and neutrophils in the sputum samples. Eosinophils are a pathological cause of asthma. Therefore, the use of roflumilast had additional advantages for asthmatic patients by significantly reducing inflammation in the airways (Bardin et al. 2015).

In addition, a study reported the effect of combination roflumilast and montelukast. The results showed improved lung function, symptoms, and more controlled asthma in individuals with moderate to severe asthma who required combination therapy. The combination of the two resulted in an increase in FEV1 compared to the placebo combination of montelukast for four weeks (Eric D. Bateman et al. 2016).

The most common side effects of roflumilast based on clinical trials are shown in Table 2. Weight loss is associated with increased cAMP in the lipolysis pathway (Wedzicha, Calverley, and Rabe 2016).

Table 2. Side effects associated with roflumilast from four placebo-controlled trials during 1-year and four trials for 6-month (Wedzicha *et al*., 2016).

Side effect (%) (n)	Roflumilast (n= 4438)	Placebo (n= 4192)
Diarrhea	9.5 (420)	2.7 (113)
Weight loss	7.5 (331)	2.1 (89)
Nauseous	4.7 (209)	1.4 (60)
Back pain	3.2 (142)	2.2 (92)
Influenza	2.8 (124)	2.7 (112)
Insomnia	2.4 (105)	1.0 (41)
Decreased appetite	2.1 (91)	0.4 (15)

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The safety and tolerability of roflumilast for asthma were investigated by Chervinsky *et al.,* (2015). The overall incidence of 10 randomized controlled trials in Phase II and III reported adverse events of roflumilast were headache, diarrhea, nausea, weight loss, and insomnia. It was concluded from the safety analysis that the adverse events were well tolerated by asthma patients with mild to moderate severity. It may be due to the systemic effect of roflumilast and will decrease with continued use of roflumilast. In patients with COPD, diarrhea, nausea, and headache would disappear within three weeks of roflumilast continued use. The side effects are considered proportional to the potential given.

CONCLUSIONS

Roflumilast is a second-generation selective phosphodiesterase-4 inhibitor that targets the PDE type 4 isoenzyme. It interferes with the breakdown of cyclic AMP (cAMP) and reduces inflammation. It can be given as a single dose or combined with ICS or montelukast. Furthermore, roflumilast can increase FEV1 and reduce eosinophils, a pathological cause of asthma that induces inflammation in the airways. The side effects are well tolerated in patients with asthma, the most common being headache, diarrhea, nausea, weight loss, and insomnia.

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Husband Support Affects Self Efficacy in Pregnant Women During the Covid 19 Pandemic

Nanik Handayani[1], *Fritria Dwi Anggraini*[1]

[1]*Department of Midwifery, Faculty of Nursing and Midwifery, Universitas Nahdlatul Ulama Surabaya, 60237, East Java, Indonesia*

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CORRESPONDENCE

E-mail: nanik_handayani@unusa.ac.id
fitria@unusa.ac.id

A B S T R A C T

The period of the Covid 19 pandemic is a difficult time for all people, including pregnant women. In undergoing pregnancy, pregnant women must have self-efficacy, and husband support is needed. This paper determines the correlation between husband support and self-efficacy in pregnant women. This study was an analytical research design with a cross-sectional approach. The population was 52 pregnant women checked at Independent Midwifery Practice (IMP) Nanik Cholid, Sidoarjo, from May to November 2020. Meanwhile, the sample size was 46 respondents by purposive sampling. The independent variable was husband support, and the dependent variable was self-efficacy in pregnant women. The instrument to evaluate husband support was Family Support Questionnaire (FSQ), and to assess self-efficacy was a questionnaire with a Likert scale. Then, data were analyzed with the Spearmen Rank test with a significance (α) of 0.05. The results showed that most respondents had good self-efficacy (91.3%) and received high husband support (65.2%), particularly emotional support (28%). The statistical tests result using the Rank Spearmen test obtained p=0.016 indicating a correlation between husband support and self-efficacy in pregnant women. In conclusion, Husband support increases self-efficacy in pregnant women during the COVID 19 Pandemic. Health workers should educate husbands to provide support to pregnant women during pregnancy.

INTRODUCTION

The COVID-19 pandemic is difficult for all communities, including pregnant women (Röbl-Mathieu et al. 2021). Pregnant women must have self-efficacy to maintain pregnancy conditions to run well, so husband support is needed (Asmuji and Indriyani 2016). Husband support is beneficial in increasing the self-efficacy of pregnant women during their pregnancy during the COVID 19 pandemic, which we know is a difficult time for pregnant women. Good self-efficacy can boost immunity in pregnant women. With good immunity, mothers can be protected from exposure to COVID 19.

Pregnancy and childbirth are physiological and natural processes that every woman will experience. Ensuring the fetus thrives is pregnant women and their husbands (Widarta et al. 2015)**.** Pregnant women fall into the category of being vulnerable to coronavirus infection. One reason is that they have low immunity due to hormonal changes during pregnancy and breastfeeding. Therefore, they need to know how to provide proper protection during this pandemic. Research showed that most pregnant women with husband support did not experience anxiety in facing childbirth. A study showed that the most common form of husband support to pregnant women was emotional support, while the minor was informational support (Dwiwanto, Putri, and Sudiadnyani 2021).

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According to WHO, the current distribution data globally, updated on August 2, 2020, has 216 countries that have confirmed COVID 19, amounting to 17,660,523 people and 680,894 people who died (WHO, 2020). While in Indonesia, it was updated on August 27, 2020, 275,213 people were positive, 203,014 people recovered, and 10,386 people died (Kementerian Kesehatan RI 2020). East Java, updated on August 27, 2020, confirmed 42,890 people, 35,945 people recovered, and 3,118 people died (East Java COVID 19 Task Force. 2020). There are 13.7% of pregnant women without symptoms showing positive results of the COVID-19 PCR examination. Prevention and breaking the chain of transmission to the mother during pregnancy is essential. Pregnant women have changes in the body that can increase the risk of several infectious diseases, including Corona (Röbl-Mathieu et al. 2021)

Husband support that is given is not only when facing childbirth, but more importantly, it is given while undergoing a pregnancy for 40 weeks. Therefore, this research is essential to be carried out to maintain the health of pregnant women during pregnancy. Pregnant women should keep their health by consuming balanced nutritious foods, doing light physical activities such as yoga or pregnancy exercises, and taking blood-boosting tablets according to the dose. In addition, they should wear a mask during the COVID-19 pandemic, maintain personal hygiene by constantly washing their hands with soap in running water, and keep social distancing (Centre Health Protection Surveillance 2020). Individuals with a cough or cold should wear a mask and apply cough etiquette by covering their mouth. If there are danger signs, they should visit the nearest health service facility written in the Maternal and Child Health (MCH) handbook (Kementerian Kesehatan RI 2020).

Husband support is essential because the husband is someone who is closest to the mother. Husband support through direct or indirect assistance to pregnant mother help to avoid Corona infection and motivate her to maintain her health (Abiyoga, Sukirman, and Melida 2019). Husband support is also an effort to give appreciation, motivation and help achieve self-efficacy for pregnant women (Vitasari, Sabrian, and Ernawaty 2018). The husband should motivate pregnant women to do ANC regularly. The pregnant woman has to receive good husband support during her pregnancy, especially during the COVID-19 pandemic. This paper investigates the correlation between husband support and self-efficacy in pregnant women.

METHOD

This study was an analytical research design with a cross-sectional approach. The population was 52 pregnant women checked at Independent Midwifery Practice (IMP) Nanik Cholid, Sidoarjo, from May to November 2020. Meanwhile, the sample size was 46 respondents by purposive sampling. The inclusion criteria were pregnant women with gestational age in the first to third trimesters and lived with her husband. The exclusion criteria were mothers who were unwilling to be respondents, sick, and had

comorbidities. The independent variable was husband support, and the dependent variable was self-efficacy in pregnant women. The instrument to evaluate husband support was Family Support Questionnaire (FSQ). The FSQ consists of 20 items, including emotional, instrumental, informational, and assessment support. The FSQ questionnaire has three categories of scores, namely low=1.00-2.33, medium=2.34-3.66, and high=3.67-5.00. Meanwhile, the instrument to evaluate self-efficacy was a questionnaire with a Likert scale consisting of 15 items. The questionnaire scoring was 1-5 = less, 6-10 = enough, and 11-15 = good. Then, data were analyzed with the Spearmen Rank test with a significance of 0.05.

RESULT

The results in this paper included characteristics of respondents, husband support, self-efficacy in pregnant women, and statistical analysis.

Table 1. Characteristics of respondents and frequency distribution of husband support and self-efficacy in pregnant women

Characteristics of respondents		Frequency	Percentage (%)
Education	Junior high school or equal	2	4.3
	Senior high school or equal	33	71.7
	University	11	23.9
Husband Support	High	30	65.2
	Moderate	14	30.5
	Low	2	4.3
Category of Husband Support	Emotional Support	13	28
	Informational Support	12	26
	Instrumental Support	11	23
	Assesment Support	11	23
Self-efficacy in pregnant women	Good	42	91.3
	Moderate	3	6.5
	Less	1	2.2
Total		46	100

Table 1 describes that most respondents graduated from Senior High School or equal (71.7%). In addition, they had good self-efficacy (91.3%) and received high husband support (65.2%), particularly emotional support (28%).

Table 2. Cross-tabulation between husband support and self-efficacy in pregnant women

Husband Support	Self-efficacy						Total	
	Good		Moderate		Less			
	Frequency	Percentage (%)	Frequency	Percentage (%)	Frequency	Percentage (%)	f	%
High	29	96.7	1	3.3	0	0	30	100
Moderate	13	92.9	1	7.1	0	0	14	100
Low	0	0	1	50	1	50	2	100
Total	42	91.3	3	6.5	1	2.2	46	100
Rank Spearman Test: ρ= 0.016								

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Table 2 shows that of the 30 respondents with high husband support, almost all (96.7%) respondents have good self-efficacy. In addition, of 14 respondents with moderate husband support, 92.9% of them have good self-efficacy. Meanwhile, of two respondents with low husband support, 50.0% have moderate, and 50% have less self-efficacy. Based on the results of statistical tests on the correlation between husband support and self-efficacy in pregnant women through the Spearmen Rank test with a significance value of 0.05, the result obtains p=0.016 (p<0.05). It means that Ho is rejected, indicating a correlation between husband support and self-efficacy in pregnant women.

DISCUSSION

The study results showed that most respondents received high husband support (65.2%). Husband support is a source of support that comes from the family environment. The husband helps and supports the activities carried out by his wife and gives encouragement and praise for what his wife does. The husband's role in supporting the success of pregnancy is giving attention, accompanying the mother when doing Ante Natal Care (ANC) to the doctor/midwife, providing support, praising to pregnant mother, and other things that make the wife feel calm (Waryana 2016). Husband support helps create peace of mind and tries to make the mother not stressed.

In this paper, most husbands provided emotional support to pregnant women (28%). It is in line with a study conducted by Dwiwanto, Putri and Sudiadnyani (2021). The study found that most pregnant women in Rajadesa District received support from their husbands (66.1%), especially emotional support (72.9%). Emotional support interprets the husband as a comfortable, safe, and peaceful person. The form of emotional support is by providing motivation and listening to all the complaints of problems faced by mothers (Khadijah and . 2018). The continuous husband support during pregnancy will motivate pregnant women to carry out ANC regularly and always comply with health protocols during the Covid 19 Pandemic – wearing masks, washing hands, and keeping a distance. Husband support will reduce anxiety levels and increase self-efficacy in pregnant women.

Almost all pregnant women had good have self-efficacy (91.3%) because the mother gets support from her husband. Giving support to pregnant women significantly affects the mother's confidence in undergoing her pregnancy. In the COVID-19 pandemic, visits to health care facilities for antenatal care can cause anxiety in pregnant women. Therefore, husband support is needed to continue visiting health services while complying with health protocols. The limitation of this study was that the research only measures husband support and self-efficacy during pregnancy. It did not evaluate during the delivery process. Future research should investigate the correlation between husband support and self-efficacy in mothers during the delivery process.

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CONCLUSIONS

Husband support increases self-efficacy in pregnant women during the COVID 19 Pandemic. Health workers should educate husbands to provide support to pregnant women during pregnancy.

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Depression in Post Disaster Societies: A Systematic Review

Reza Fithriy Insaniy[1], *Atika Jatimi*[2], *Maulidiyah Junnatul Azizah Heru*[2], *Zainal Munir*[2]

[1] *Student of Professional (Nurse) Program, Faculty of Health, Universitas Nurul Jadid, East Java, Indonesia*
[2] *Faculty of Health, Universitas Nurul Jadid, East Java, Indonesia*

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CORRESPONDENCE

E-mail: riinsaniy@gmail.com
missatikaj@gmail.com
ladyheru67@gmail.com
zanalmunirnj@gmail.com

A B S T R A C T

Disaster increases the risk of depression in individuals one to six years after the event. This paper describes depression in post-disaster societies. This study was a systematic review. Database searches included Google Scholar and Proquest, with the keywords post-traumatic, depression, and disaster. The article's criteria were in English, published in 2016-2020, and used (CES-D) questionnaire. This systematic review was based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). This study used 15 articles meeting the criteria. Analysis of fifteen articles showed that individuals had mental health burdens after a disaster occurs. One of them was depression. There is a depression in post-disaster societies. Future studies should explore the correlation between PTSD and depression after a disaster.

INTRODUCTION

Research showed that psychiatric disorders, including post-traumatic stress disorder (PTSD) and depression, increase after natural disasters. However, most of the disaster survivors suffering from psychiatric symptoms did not receive mental health services, despite the large budget involved in meeting the mental health needs of the victims. Understanding the factors that drive the use of post-disaster mental health services can have important public health implications so that the needs of survivors can be adequately met. The high incidence of mental disorders from year to year can be caused by several factors depending on the mental disorders experienced. The causes consist of biological, psychological, and socio-cultural factors. In addition, the cause can also be in the form of disasters, both natural and non-natural disasters. When someone experiences a disaster, both natural and non-natural, it will have an impact on psychology which can trigger depression (Yunere, Sari, and Tusadiah 2018).

The World Health Organization reported that people with mental disorders in Indonesia were around 236 million people. 6% of them had mild mental illnesses, and 0.17% had severe mental disorders. In addition, 14.3% of them were shackling. Furthermore, 60 million people had bipolar disorder, and 47.5

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million people had dementia. Moreover, more than 350 million people worldwide suffer from depression, and Indonesia was ranked 4th in the world with a relatively high incidence of depression (WHO 2016).

Many studies reported conflicting results on the correlation between the severity of post-traumatic stress disorder (PTSD) and the magnitude of the disaster. An investigation revealed that a village with a higher earthquake-related exposure level had a lower PTSD incidence. Meanwhile, the study found that PTSD was more severe among victims in cities closer to the epicenter (higher exposure) than victims in locations further away from the earthquake (Xu, Wang, and Tang 2019).

Mild depression did not have a statistically significant correlation with the use of mental health services, but moderate or severe depression showed a positive association with Mental Health Service utilization. In addition, findings in the US reported a significant relationship between the severity of mental disorders and healthcare service utilization. On the other hand, studies in physical illness revealed that poor health status was associated with high levels of healthcare service utilization (Zhao et al. 2019). The utilization of Health Services for mental health problems improves psychosocial functioning in individuals. Such underutilization in the long term can cause social dysfunction in the whole family. In addition, it ultimately leads to an increase in national, social, and financial burdens (Choi 2017).

Previous studies reported on the prevalence and factors that predispose depression. Demographic characteristics such as age, gender, and economic level were consistently reported as factors associated with depression. In addition, problems of activity impairment due to acute or chronic health status were correlated with mental health problems, including alcohol drinking, smoking, depression, or stress (Choi 2017). Smoking and stress can cause a decrease in health status in individuals. This paper describes depression in post-disaster societies.

METHOD

This study was a systematic review. Database searches included Google Scholar and Proquest with keywords post-traumatic, depression, and disaster. Next, the Authors selected articles based on criteria published in 5 years until 2020 with full text and English. This systematic review was based on Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)

RESULT

The initial literature search found 30 articles (3 in Google Scholar and 27 in Proquest). Next, 15 journals were matching the criteria required. Then, the data was extracted as relevant topic codes and grouped qualitatively by the researchers to find the main theme.

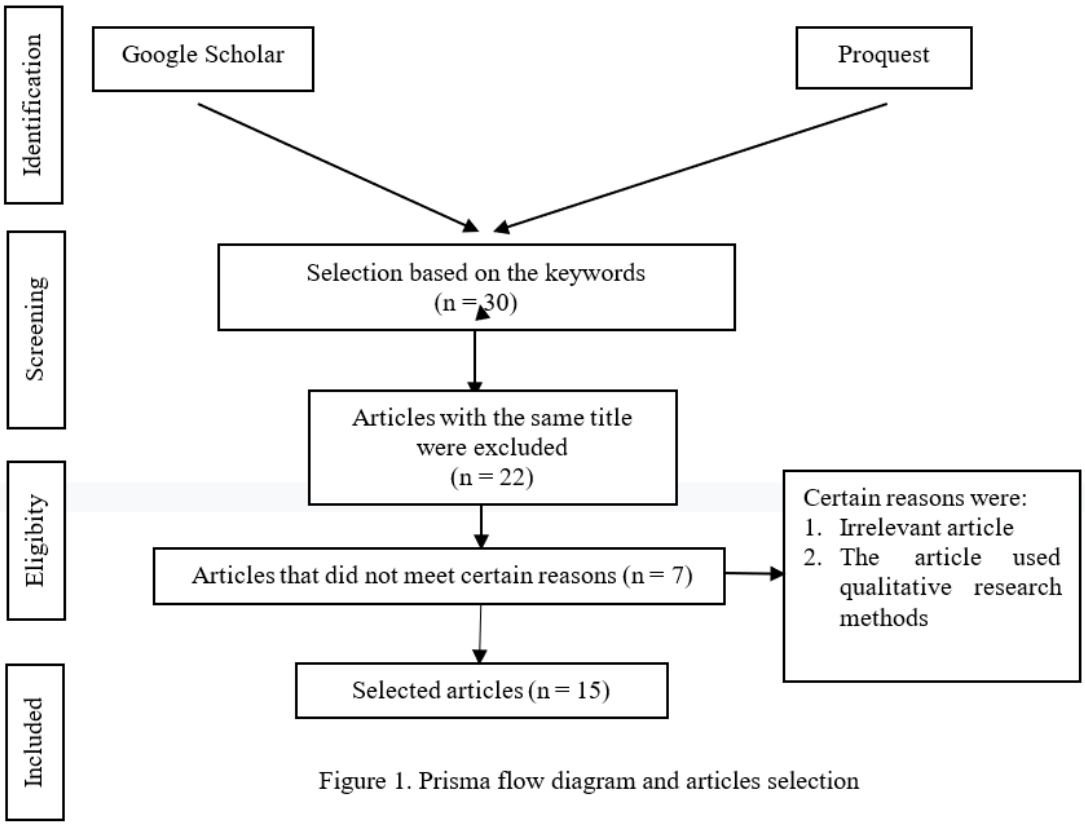

Figure 1. Prisma flow diagram and articles selection

There were 15 articles regarding depression after a disaster. Post-traumatic depression was obtained by analysis using the Center for Epidemiological Study and Depression Scale (CES-D) questionnaire. Research articles as listed in table 1.

Table 1. Descriptive Table of Selected Journals Related to Depression after a Disaster

Number	Author, Year, Title	Results
1	Association between earthquake experience and depression 37 years after the Tangshan earthquake: a cross-sectional study (Gao et al. 2019)	After 37 years of the Tangshan earthquake, most survivors with depression were women and individuals over 18 years old at the time of the quake.
2	Clinical Decision-Making Following Disasters: Efficient Identification of PTSD Risk in Adolescents (Danielson et al. 2017)	This study improved the efficiency of PTSD assessment among young people after natural disasters. Four significant variables were identified in this study, including lifelong depression, history of trauma, social support, and family conflict. High scores on any of these variables increased PTSD incidence were 2-3 times in adolescents. In addition, characteristics of natural disasters were not correlated to PTSD diagnostic status
3	Depression and post-traumatic stress during major social unrest in Hong Kong: a 10-year prospective cohort study (Ni et al. 2020)	There was an increased depression after unrest in Hongkong. In 2019, the prevalence of suspected PTSD was estimated to be 12·8%. The risk factors of mental health burden in the population were heavy social media use (≥2 h per day) in depression and neutrality towards the extradition bill in suspected PTSD. Meanwhile, age, sex, educational levels, or household income were not associated with depression and PTSD. In addition, depression could be decreased with family support. The study estimated additional healthcare needs to overcome these mental health burdens was 12%.

4	Mental Health and Psychosocial Problems of Medical Health Workers during the COVID-19 Epidemic in China (Zhang et al. 2020)	During the COVID-19 pandemic, the prevalence of insomnia, anxiety, depression, somatization, and obsessive-compulsive symptoms was higher in medical health workers than in non-medical. Risk factors for insomnia, anxiety, obsessive-compulsive symptoms, and depression in medical health workers were living in rural areas, being female, and being at risk of contact with COVID-19 patients. Meanwhile, the risk factor for insomnia, depression, and obsessive-compulsive symptoms in non-medical health workers was organic disease.
5	PTSD and Depression Among Museum Workers After the March 18 Bardo Museum Terrorist Attack (Romdhane, Chennoufi, and Cheour 2017)	The research showed that 68.6% of the respondents had PTSD, and 40.6% had severe depression. Gender did not correlate, but social support was associated with both incident
6	Psychological Distress and Health-related Quality of Life in Relocated and Nonrelocated Older Survivors after the 2008 Sichuan Earthquake (Cao et al. 2015)	The elderly in the relocated group was significantly had higher psychological distress than in the non-relocated group. In addition, health-related quality of life (HRQoL) in the relocated group was lower than in the non-relocated group. Its risk factors were relocation from pre-earthquake residence, aging, lower educational level, the loss of family members during the earthquake, chronic illnesses, and the death of a spouse after the quake.
7	Cross-Sectional Data Within 1 Year of the Fukushima Meltdown: Effect-Size of Predictors for Depression (Lebowitz and Lebowitz 2016)	Depression occurred in 23 % of the female and 17% of the male participants. House damage, age, income reduction, home water incursion, and casualty acquaintance were the strongest predictors. Meanwhile, education level, location during the disaster, and workplace damage did not correlate with depression.
8	Reducing depressive symptoms after the Great East Japan Earthquake in older survivors through group exercise participation and regular walking: a prospective observational study (Tsuji et al. 2017)	The study revealed that group exercise participation and regular walking could reduce depressive symptoms in older survivors.
9	Relational Satisfaction from Providing and Receiving Support is Associated with Reduced Post-Disaster Depression: Data From Within One Year of the 2011 Japan Triple Disaster (Lebowitz, A. J. and Lebowitz 2017)	Self-providing support among post-disaster populations suggested a buffering effect in depression. Thus, it could be a positive coping in post-disaster societies.
10	Risk Factors of Post-traumatic Stress and Depressive Disorders in Longmenshan Adolescents After the 2013 Lushan Earthquake (Xu, Wang, and Tang 2019)	The risk factor of PTSD in adolescents after the earthquake was earthquake exposure. Meanwhile, psychosocial stressors following the event were the predictor of depression
11	Overview of the Psychosocial Condition in the Merapi Slope Communities After 6 Years of the Mount Merapi Eruption (Purborini et al. 2016)	The study indicated that the majority of respondents with psychosocial disorders were women and the late elderly category. The Regional Government and related institutions should deal with post-disaster psychosocial problems in the Merapi Slope Communities.
12	A Nationwide Survey of Psychological Distress among Italian People during the COVID-19 Pandemic: Immediate Psychological Responses and Associated Factors (Mazza n.d.)	The research identified persons at greater risk of suffering from psychological distress during the COVID-19 outbreak. The persons were female gender, had a negative effect, and detachment. In addition, they had an acquaintance infected, a history of stressful situations, and medical problems. Moreover, respondents with an infected family member and had to work outside their house showed higher anxiety and stress levels
13	The Impact of COVID-19 Epidemic Declaration on Psychological Consequences: A Study on Active Weibo Users (Li n.d.)	The study found an increase in negative emotions, including anxiety, depression, and anger. In addition, there was a decrease in positive and life satisfaction after the COVID-19 pandemic declaration
14	The Correlation between Coping Mechanisms and the Risk of Depression in Survivors After the Store Fire Disaster at Pasar Atas, Bukit Tinggi, in	The study indicated that post-fire victims had maladaptive coping mechanisms. There was a significant association between coping mechanisms and the risk of depression in

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	2018 (Yunere, Sari, and Tusadiah 2018)	Survivors After the Store Fire Disaster at Pasar Atas, Bukit Tinggi, in 2018.
15	Mental Health Service Need and Use in the Aftermath of Hurricane Sandy: Findings in a Population-Based Sample of New York City Residents (Lowe et al. 2016)	Only 7.8 % of disaster survivors reported post-disaster service needs and service use (4.4 %) since the hurricane, 5.9 % were classified as having unmet needs (i.e., needs without use), and 2.5 % as using services without needs. In addition, independent variables influencing unmet mental health service needs were younger age, male gender, higher education, and exposure to more disaster-related stressors.

DISCUSSION

Individuals had mental health burdens after a disaster occurs. One of them was depression. Disaster-related exposures are a major contributing factor to PTSD and depression. Feelings of dying, getting hurt, or seeing relatives die or be injured in an earthquake are significant factors that contribute to PTSD and depression. Among these factors, feelings of dying contributed the most to the risk of PTSD and depression. Previous research also reported individual experiences and fears to be significant predictors of PTSD and depression severity. Negative events in life can cause stress and depression in individuals.

A study revealed that trauma exposure was the strongest predictor of depression, while life events only correlated with depressive symptoms. However, although depression and PTSD might overlap in many ways, the contributing factors were likely to be different. The study showed that PTSD was highly correlated with earthquake-related exposure (geographic exposure). At the same time, depression was most associated with psychosocial stressors (adverse life events) after a traumatic event (Xu, Wang, and Tang 2019). Mental health services were rare in post-disaster communities. However, research has revealed an efficient and empirically-based clinical decision-making tool (Danielson et al. 2017). A coping mechanism is an individual's way of solving problems, adapting to change, and responding to threatening situations. It responds to concerns threatening the individual, both physically and psychologically (Yunere, Sari, and Tusadiah 2018).

PTSD appears a month or a year after the disaster. Symptoms include fears related to the disaster – such as the fear of being separated from their parents or family – and sleep disturbances – such as nightmares, screaming, and bedwetting. The accumulation of psychosocial trauma can manifest into physical and psychological symptoms, such as nausea, moodiness, withdrawal, nightmares, anxiety, feeling threatened, and loss of life expectancy (Muhafilah and Herawati 2019). It is essential to correctly identify vulnerable groups according to socio-economic changes and develop appropriate, specific, and individual interventions for PTSD (Choi 2017).

Capacity building for health and social services in real-time is needed to cope with the surge in mental health burdens. Health and social workers should recognize possible psychiatric sequelae during and after major social unrest through systematic planning and regular interactions. The high prevalence of depression and suspected PTSD could result in impaired functioning in individuals, as well as substantial

economic costs (M. Y. Ni et al. 2020). The essential role of the family as a support system can reduce depressive symptoms in communities living among families, especially in Asia (Amatullah 2019).

CONCLUSIONS

There is a depression in post-disaster societies. Future studies should explore the correlation between PTSD and depression after a disaster.

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Application of Nightingale's Environmental Theory: The Effect of Heliotherapy on The Clinical Improvements in Individuals with Tuberculosis

Liza Novitasari Wijaya[1], *Sri Nabawiyati Nurul Makiyah*[2]

[1] *Student of Nursing Master, Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Indonesia*
[2] *Faculty of Medicine and Health Sciences, Universitas Muhammadiyah Yogyakarta, Indonesia*

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CORRESPONDENCE

E-mail: lizawijaya94@gmail.com
nurul_mkyk@yahoo.co.id

A B S T R A C T

Tuberculosis is a global health problem. Sunlight can trigger vitamin D production, so it increases the immunity system. This study analyses Nightingale's environmental theory through the effect of heliotherapy on the clinical improvements in individuals with tuberculosis. It was a quantitative study using a quasi-experimental design with a pretest-posttest approach and a control group. In addition, the population was 59 individuals with tuberculosis in Depok Sleman District, Yogyakarta. Meanwhile, there were 24 respondents by purposive sampling method. The intervention group at Depok 3 Public Health Centre (PHC) was 17 respondents with heliotherapy and anti-tuberculosis drugs, while the control group at Depok 2 PHC was 17 respondents with anti-tuberculosis drugs. The independent variable was heliotherapy, while the dependent variable was the clinical improvements consisting of weight, cough, and shortness of breath. Heliotherapy was conducted for four weeks with an intensity of four times a week for 25 minutes a day. Instruments used weigh scale, Borg Scale, and Leicester cough questionnaire. In addition, data analysis used the Wilcoxon Test and paired T-Test with a significance of 0.05. The results showed that there were clinical improvements in the intervention group (p=0.000). In addition, there were increased clinical improvements in weight and cough scores in the control group (p=0.000). However, there was no significant difference in the shortness of breath score in the control group (p=0.06). In conclusion, the application of Nightingale's environmental theory through heliotherapy affects clinical improvements in individuals with tuberculosis.

INTRODUCTION

Tuberculosis (TB) is an infectious disease caused by *Mycobacterium tuberculosis*, attacking various organs, especially the lungs (Kemenkes RI, 2016). For more than a few decades, tuberculosis (TB) becomes a concern in global health problems. It is still a primary health problem in many countries, especially developing countries such as Indonesia. Some of the clinical symptoms caused by tuberculosis are persistent cough, shortness of breath, and weight loss. According to data from the Global Tuberculosis Report in 2015, about 10.4 million new tuberculosis cases occurred worldwide. The six countries with the highest new tuberculosis cases were India, Indonesia, China, Nigeria, Pakistan, and South Africa.

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Indonesia was ranked 2nd globally with the most TB sufferers after India and 45% of global tuberculosis cases (WHO 2016)

Yogyakarta province has 25 health care facilities. The Yogyakarta Provincial Department of Health stated that Sleman Regency is the Regency with the highest number of TB patients in the Yogyakarta province, with 340 patients. Sleman Regency has 212 cases of new pulmonary TB patients, and 67 of them were in the Depok sub-district. Several outpatients said that they did not undergo other supporting treatment other than the treatment given from the Puskesmas. The Indonesian Tuberculosis Eradication Association explains that TB control relies on efforts from the government and community. Therefore, there is a need for a new therapy to improve repair and accelerate healing in TB patients.

Nightingale's theory focuses on the physical environment. Nightingale defines and explains that the concepts of ventilation, warmth, light, diet, cleanliness, and noise play a vital role in healing disease. One of the five components is the concept of light. In particular, Nightingale identifies direct sunlight as a specific need for patients. Nurses should expose patients to sunlight to achieve the beneficial effects of sunlight (Alligood 2017).

Handono's research reported that sun therapy by sunbathing in patients with chronic obstructive pulmonary disease (COPD) decreased shortness of breath and increased comfortable and relaxed feeling. In addition, Sugiarti's study revealed that giving Vitamin D as supplementary support could speed up sputum conversion time and improve high radiological features (100%) compared to the placebo group (76.7%). The study indicated that vitamin D therapy could complement Anti-Tuberculosis Drugs.

Vitamin D is recommended as prophylaxis for tuberculosis patients because it is easy, and the costs required are affordable. Sun therapy or heliotherapy is one practical and efficient way to get vitamin D (Handono, Ashifa, and Kristiawan 2020; Sugiarti and Ramadhian Mr 2018). Therefore, this study analyses Nightingale's environmental theory through the effect of heliotherapy on the clinical improvements in individuals with tuberculosis.

METHOD

This study was a quantitative study using a quasi-experimental design with a pretest-posttest approach and control group. The intervention group was the treatment group with heliotherapy and Anti-Tuberculosis Drugs, while the control group was the treatment group with Anti-Tuberculosis Drugs. In addition, the population was 59 individuals with tuberculosis in Depok Sleman District, Yogyakarta. Meanwhile, there were 24 respondents by purposive sampling method. In addition, the sample size was determined with Sastroasmoro's formula (2014). The treatment group was 17 individuals with tuberculosis at Depok3 Public Health Centre (PHC), and the control group was 17 individuals with tuberculosis at Depok 2 PHC. The inclusion criteria were positive smear pulmonary TB patients aged 18-

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50 years and had no allergies to sun exposure. The independent variable was heliotherapy, while the dependent variable was the clinical improvements consisting of weight, cough, and shortness of breath. Heliotherapy was conducted for four weeks with an intensity of four times a week for 25 minutes a day (Masulili, Zainul, and Junaidi 2017). The authors interacted with respondents by using a video call after respondents signed informed consent. We did a pre-test in intervention and control groups, after four weeks, we carried out a post-test in both groups. Instruments to measure weight used weighing scale, to evaluate shortness of breath utilized the Borg Scale, and to assess cough used a Leicester cough questionnaire. A previous study reported that the Leicester cough questionnaire was valid with a reliability value of 0.686 (Hasanah, Permatasari, and Karota 2016). Data analysis used the Wilcoxon Test for shortness of breath and paired T-Test for weight and cough with a significance of 0.05.

RESULT

In this study, the characteristics of respondents consisted of age, gender, and smoking habit. Both intervention and control groups were mainly aged 19-33 years old (82.5% in the intervention group and 64.8% in the control group), male (58.8% in the intervention group and 70.9% in the control group). In addition, they had smoking habits (52.9% in the intervention group and 58.8% in the control group). The characteristics of individuals with tuberculosis in this paper can be seen in table 1 in detail.

Table 1 Characteristics of respondents in the intervention and control groups by age, gender, and smoking habit

characteristics of respondents	Intervention Group		Control Group	
	frequency	percentage (%)	frequency	percentage (%)
Age (years old)				
19 – 33	14	82.5	11	64.8
34 – 48	3	17.5	6	35.2
Gender				
Male	10	58.8	12	70.9
Female	7	41.2	5	29.4
Smoking Habit				
Smoking	9	52.9	10	58.8
Not Smoking	8	47.1	7	41.2

Table 2 Frequency Distribution of Weight, Cough, Shortness of breath, and Statistics Analysis Results

Variable	Group	Pre-test (Mean±SD)	Post-test (Mean±SD)	*ρ*
Weight	Intervention	49.71±5.0	50.59±5.2	0.00*
	Control	50.00±5.3	50.59±5.2	0.00*
Cough	Intervention	97.24±9.5	114.94±10.5	0.00*
	Control	99.12±9.5	112.00±10.7	0.00*
Shortness of breath	Intervention	1.294±1.1	0.471±0.7	0.00*
	Control	1.353±0.8	1.118±0.6	0.06

*Significant test result

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Table 2 reveals the paired T-test results on weight and cough and the Wilcoxon test results on the shortness of breath. There were significant differences in clinical improvements before and after heliotherapy in the intervention group (p=0.00). In addition, there were significant differences in weight and cough score before and after heliotherapy in the control group (p=0.00). However, there was no significant difference in the shortness of breath score in the control group *(*p=0.06).

DISCUSSION

This study showed clinical improvements in the intervention group. In addition, there were increased clinical improvements in weight and cough scores in the control group. However, there was no significant difference in the shortness of breath score in the control group. Increased clinical improvements in both groups because they were taking Anti Tuberculosis Drugs. However, the intervention group experienced more significant clinical improvements than the control group after heliotherapy application for four weeks. It is in line with Handono's (2016) study analyzing solar irradiation to reduce shortness of breath in COPD patients. The study was conducted for four weeks every morning and evening with a duration of about 15-20 minutes. The study showed that respondents with solar irradiation reported more comfortable feelings and had less shortness of breath (Handono, Ashifa, and Kristiawan 2020).

Heliotherapy is a medical therapy involving sun exposure. Treatment is done by sunbathing under heat or sunlight, which is believed to cure some infectious diseases. This treatment has been carried out long before antibiotics were discovered and used as a treatment for several diseases (Emokpae et al. 2016; Jarrett and Scragg 2017).

Sun exposure is the primary source of vitamin D, and 90% of vitamin D is formed in the skin. Vitamin D function regulates calcium homeostasis and is also involved in regulating cellular functions, including cell growth. Vitamin D affects the formation of immunity and antibodies against pathogens and bacteria (Turnbull and Drobniewski 2015).

Nightingale's theory focuses on the physical environment. The theory explains that ventilation, warmth, light, diet, cleanliness, and noise are vital in healing disease. One of the concepts of the five components is the concept of light. In particular, the theory identified direct sunlight as a specific need for the patient. A previous study using sunlight has been carried out by Masulili (2017). The study revealed that 54.6% of respondents who sunbathed from 08.00 to 09.00 AM in the arm, leg, and face area showed increased vitamin D production by 200 IU/day. The study indicated that sunlight could improve vitamin D levels in most respondents. As a result, there would be an increased immunity system for clinical improvement (Masulili, Zainul, and Junaidi 2017). In addition, sun exposure significantly contributes to most respiratory illnesses such as influenza because sunlight triggers vitamin D production. Furthermore, it can inactivate the influenza virus, improve mood, and release endorphins to increase immunity (Whittemore 2020).

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Recent research by Asyary (2020) evaluated sun exposure to Covid-19 patients. Those research indicated that sunlight increased the immunity system, provided faster clinical recovery, slowing the virus replication in the body, and preventing virus transmission. However, sunlight exposure could not eliminate the virus in the body (Asyary and Veruswati 2020). Symptoms of Covid-19 have similarities with tuberculosis, including shortness of breath, cough, and increased sputum production triggered by decreased immunity system. In addition, reduced immunity system in individuals with tuberculosis also causes anorexia causing weight loss (Mandala 2015). Heliotherapy is proven to increase clinical improvements in tuberculosis patients. However, it does not eliminate bacteria, so it is essential to continue anti-tuberculosis drugs during treatment. From several studies and theories above, the Authors believe that applying Nightingale's theory through heliotherapy is useful for improving tuberculosis patients' clinical conditions. In addition, heliotherapy is recommended non-pharmacological complementary therapy for individuals with tuberculosis (Asyary and Veruswati 2020; Handono, Ashifa, and Kristiawan 2020).

CONCLUSIONS

In conclusion, the application of Nightingale's environmental theory through heliotherapy affects clinical improvements in individuals with tuberculosis. Heliotherapy could be the recommended non-pharmacological complementary therapy for tuberculosis.

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Javanese Culture in Maternal Postpartum Care at Hargomulyo Village, Kedewan District, Bojonegoro Regency

Devi Endah Saraswati[1]

[1] *STIKes Insan Cendekia Husada, Bojonegoro, Jawa Timur, Indonesia*

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CORRESPONDENCE

E-mail: deviendah.stikesicsada@gmail.com

A B S T R A C T

Maternal and child health problems are inseparable from socio-cultural and environmental factors in society. Factors of belief and traditional knowledge positively or negatively impact Maternal and Child Health (MCH). Culture could be a predisposing factor for high maternal mortality. This paper describes Javanese culture in maternal postpartum care at Hargomulyo Village, Kedewan District, Bojonegoro Regency. This study was descriptive research. It took place at Hargomulyo Village, Kedewan District, Bojonegoro Regency, from January to February 2020. The population was mothers who have experienced postpartum both primipara and multipara. There were 48 respondents by total sampling. The instrument used a questionnaire consisting of several questions regarding culture in maternal postpartum care, how to carry out the culture, and its reasons. Thirty respondents did food taboos (62.5%), six respondents limited their drinking water (12.5%), 40 respondents drank herbs (83.3%), 47 respondents wore stagen (97.9%), and five respondents used pilis (10.4%). In addition, 48 respondents performed brokohan and mendem ari ari (100%), 20 respondents were not allowed to take a nap (41.7%), and 18 respondents must be at home for 40 days (37.5%). At the same time, 17 respondents did perineal care after birth with betel leaf (35.4%), 12 respondents walked and sat with feet parallel (25%), and 20 respondents did semi-sitting position (41.7%). Postpartum mothers still practice many Javanese cultures. This culture has both favorable and unfavorable impacts on health. Furthermore, it is necessary to analyze the influence of Javanese culture on the health status of postpartum mothers.

INTRODUCTION

Profile 2013, maternal mortality was divided into direct causes and indirect causes. Direct causes include bleeding (30.3% of maternal mortality), hypertension (27.1%), infection (7.3%), prolonged labor (1.8%). Meanwhile, the indirect cause included social, economic, geographic and cultural conditions in the communities (40.8%). Maternal morbidity and mortality are correlated with social and cultural factors in society (Kementerian Kesehatan RI 2016). Whether we realize it or not, traditional beliefs and knowledge factors – such as the concept of various taboos, causal relationships, the idea of health and illness, and habits – have a positive or negative impact on Maternal and Child Health (MCH) (Masita and Amalia 2018).

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In Indonesia, 4,206,437 of 5,123,768 (80%) postpartum mothers did various taboos, whether food or activity during postpartum. A previous study in postpartum mothers in East Java showed that 18 respondents brought sharp objects (scissors, nail clippers, and pins) when outside their house (51.4%), and 16 did a half-sitting sleep with straight legs for 40 days (45.7%). In addition, the study revealed that 11.4% of respondents had sexual activity during the puerperium, 62.9% drank herbal medicine, and 77.1% consumed meat, fish, and eggs. Furthermore, the study also reported that seven respondents ate spicy food (20.0%), 19 consumed certain foods (54.3%), 25 did food taboos (71.4%). At the same time, 19 respondents received social support (54.3%), and 21 did self-care through body massage (60.0%) (Yuliyanti, Sulastri, and Faizah Betty 2014).

Myths during the postpartum period have positive or negative impacts. The negative impact can cause several complications, such as lacking protein, nutrients, and rest in postpartum women. As a result, it can slow down the wound healing process of perineal sutures (Cunningham 2013).

The Javanese are a tribe which public has a particular way of healing. In addition, they also have a specific perception about health and illness related to the culture adopted (Pratiwi and Arifah 2012). The community at Hargomulyo village still involves cultures in maternal postpartum care. The culture is an ancestral heritage that blends culture with Islam. This paper describes Javanese culture in maternal postpartum care at Hargomulyo Village, Kedewan District, Bojonegoro Regency.

METHOD

This study was descriptive research. It took place at Hargomulyo Village, Kedewan District, Bojonegoro Regency, from January to February 2020. The population was mothers wh have experienced postpartum both primipara and multipara. There were 48 respondents by total sampling. The instrument used a questionnaire that the authors compiled, and it had tested for validity and reliability. It consisted of several questions regarding culture in maternal postpartum care, how to carry out the culture, and its reasons. The authors visited the respondent's house. After respondents signed informed consent, we asked them to fill out a questionnaire according to their culture during the postpartum period. Then, we did the editing, coding, and tabulating of the data.

RESULT

The univariate analysis presented characteristics of respondents by education and age.

Table 1 Characteristic of Respondents by Education

Education	Frequency	
	N	%
Elementary School	15	31.25
Junior High School	18	37.5
Senior High School	15	31.25
Total	48	100

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Table 1 shows that most respondents are graduated from junior high school (37.5%).

Table 2 Characteristic of Respondents by Age

Age	Frequency	
	N	%
<20 years	5	10.4
20-35 years	28	58.3
>35 years	15	31.3
Total	48	100

Table 2 describes that most respondents are 20-35 years old (58.3%).

Table 3 Frequency distribution of culture in maternal postpartum care

Culture	Frequency			
	Yes	%	No	%
Food taboos	30	62.5	18	37.5
Drinking water restriction	6	12.5	42	87.5
Drinking herbs	40	83.3	8	16.7
Wearing *stagen*	47	97.9	1	2.1
Using *pilis*	5	10.4	43	89.6
Bringing sharp objects	31	56.6	17	35.4
Carrying out *Brokohan*	48	100	0	0
Implementing *mendem ari ari*	48	100	0	0
Must be at home for 40 days	18	37.5	30	62.5
No nap	20	41.7	28	58.3
Perineal care after childbirth with betel leaf	17	35.4	31	64.6
Walk and sit with feet parallel	12	25	36	75
Semi-sitting position	20	41.7	28	58.3

Thirty respondents did food taboos (62.5%), six respondents limited their drinking water (12.5%), 40 respondents drank herbs (83.3%), 47 respondents wore *stagen* (97.9%), and five respondents used *pilis* (10.4%). In addition, 48 respondents performed *brokohan* and *mendem ari ari* (100%), 20 respondents were not allowed to take a nap (41.7%), and 18 respondents must be at home for 40 days (37.5%). At the same time, 17 respondents did perineal care after birth with betel leaf (35.4%), 12 respondents walked and sat with feet parallel (25%), and 20 respondents did semi-sitting position (41.7%) (See table.3).

Stagen (n): corset in the form of a long cloth wrapped around the stomach. Stagen has a width of about 15 cm and a length of approximately 5-15 meters.

Pilis (n): a mixture of natural ingredients that are commonly used on the forehead.

Brokohan (n): the traditional Javanese ceremonies to welcome the birth of a baby

Mendem ari ari (n): the burial ritual of the placenta after delivery

DISCUSSION

This study results found that 62.5% of respondents did food taboos. They did food taboos so that birth canal wounds were faster healed, painless, no lousy smelling, not itchy, and no bleeding. In addition, their reasons were that the body did not feel pain and weak, breast milk was smooth, and not smells fishy

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meanwhile, mothers who did not do food taboos because of the ban by the midwives. In food taboos, postpartum women do not consume eggs, chicken, fish, sprouts, cabbage, young jackfruit, catfish, beans, yellow eggs, seafood, eel, meat, gummy vegetables, and ambon bananas spicy and hot food. In addition, daily menus for postpartum mothers are rice, tofu, tempeh, vegetable soup, and spinach.

The nutritional needs of breastfeeding mothers increase compared to those without breastfeeding and pregnancy (Kementerian Kesehatan RI 2016). In the first six months, breastfeeding mothers need an additional 500 calories per day to increase breast milk supply (Dewi, Pujiastuti, and Fajar 2013). The total energy requirement during breastfeeding will increase to 2,400 kcal per day to produce breast milk and carry out activities (Kurniasih 2010). According to the recommended balanced nutrition guidelines, it can be divided into six meals (three main meals and three snacks) (Kementerian Kesehatan RI 2016).

At six months of first breastfeed, carbohydrates need to increase by 65 g per day or equal to one portion of rice. In addition, protein is essential for increasing milk supply. Breastfeeding mothers need additional 17 grams of protein or a similar to 35g of meat and one portion of tempeh (50 gr). Furthermore, fat is a source of energy, playing a role in producing breast milk and a carrier of fat-soluble vitamins in breast milk. In a balanced nutrition chart, the need for oil is four servings or the equivalent of 4 teaspoons of oil (20 g). Breastfeeding mothers need polyunsaturated fats in the form of omega-3 and omega-6 (Kurniasih, 2010).

Nursing mothers need more vitamins and minerals compared to pregnant mothers (Kurniasih, 2010). Vitamins important during lactation are vitamins B1, B6, B2, B12, A, iodine & selenium. In addition, the daily needs of vitamins & minerals are three servings of vegetables and fruits a day. Breastfeeding mothers are prone to malnutrition. Vitamins and minerals supplements (particularly vitamin A and iron) are essential to prevent malnutrition in breastfeeding mothers.

Food taboos are a tradition that is harmful to health in postpartum mothers. Postpartum is the recovery period after giving birth and breastfeeding, so that they need more nutritional intake than daily nutritional consumption and during pregnancy. Postpartum mothers who do food taboos can replace forbidden food with food that has the same nutritional content. However, they only consume rice, tempeh, and tofu every day. As a result, they will undoubtedly lack nutritional intake. Lack of nutritional intake results in a decreased recovery process during the postpartum and increased puerperal infection risk. It also interferes with breast milk production. In addition, an itchy perineal wound after labor does not correlate with the type of food consumed but correlates with personal hygiene. Therefore, the role of health workers is crucial to increase knowledge both to mothers and families through intensive assistance during the postpartum period. The family role is also essential because the traditions adopted are traditions from their ancestors. In addition, mothers do not have the courage not to follow these traditions.

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This paper also revealed that 12.5% of respondents limited their drinking water. They only drank 1 cup to 1 small bottle (600 ml) a day, aiming that the perineum wound healed quickly, feet did not swell, and babies did not have flu.

Breastfeeding mothers need adequate water to produce milk. It is recommended to drink 2-3 liters of water or more than eight glasses of water a day (approximately 12-13 glasses a day), especially in hot weather, sweating, and fever (Sari 2011).

The best drinking time is during or before breastfeeding so that the breastmilk drunk by the baby can be replaced (Sari, 2011). Fluid needs can be obtained from water, milk, fruit juices, and water contained in food (Kemenkes RI, 2011) (Kurniasih 2010).

The culture regarding drinking water restriction in breastfeeding mothers is a culture that is detrimental to health because they are only allowed to drink 1-2 glasses per day. The misunderstanding that drinking water restriction can accelerate the healing of perineum wounds and prevent the baby from colds needs to be corrected. In contrast, drinking water can increase breast milk production, so the baby's nutritional needs are met. As a result, it prevents various diseases in the baby.

Based on the study results, 83.3% of respondents drank herbs. The often consumed herbs were *gepyokan*, *temu ireng*, turmeric tamarind, herbal medicine for childbirth (brand: Nyonya Meneer and Air Mancur), tamarind, katuk (*Sauropus Androgynus*) leaves, guava leaves, turmeric, and lempuyang (*Zingiber aromaticum Valeton*) leaves. They consumed herbs once a day or 2-3 times/day or 3-4 times/day or 4-5 times/day or twice a week every Monday and Thursday or at will. The reasons were to increase breastmilk supply, improve health status, enhance relaxation, adheres to tradition, and breastmilk did not smell fishy.

Herbal medicine is one of the nation and cultural heritage, not only for health. The culture of drinking herbs for pregnant women, during delivery, and postpartum is still maintained in Indonesia, especially in the Javanese community. Traditional herbal medicine can facilitate the release of breast milk because it can stimulate the hormone prolactin. In addition, herbs contain protein, minerals, and vitamins. Protein components in herbal medicine are efficacious to promote increased secretion of milk (Handayani 2007).

It is in line with Handayani's (2007) study. The study revealed that traditional herbal medicine could increase breastmilk production in breastfeeding mothers. The composition of traditional herbal medicine includes aromatic ginger, kencur, turmeric, *Zingiber zerumbet*, *Curcuma heyneana*, *Curcuma xanthorriza*, java ginger (*Curcuma xanthorrhiza*) and katuk leaves. Aromatic ginger (*Kaemferia galanga L.*) is useful as a refresher and body warmer, affecting breastfeeding mothers' health. In addition, turmeric (*Curcuma domestica Val*) contains many curcumine, carbohydrates, protein, vitamin C, potassium, phosphorus, Fe, and fats. It helps to meet the nutritional needs of mothers to support breastmilk production. *Zingiber spp*) is increases appetite, blood circulation, and healing in postpartum women. In

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addition, *Curcuma heyneana* can decrease feelings of restlessness. *Curcuma xanthorriza* and katuk leaves (*Sauropus androgynus Merr*) help increase breastmilk supply.

This paper showed that 47 respondents used *stagen* (97.9%). *Stagen* is used strictly, and the duration of use is six months or seven months or nine months or ten months or one year. They used *stagen* to make tight and slim stomachs; also belly did not get bigger. In addition, *stagen* was believed to make the uterus return to its original shape and not urinate frequently.

Pregnancy makes the skin on the stomach becomes stretchy. After giving birth, the abdomen usually becomes saggy. To get around this, mothers often use *stagen* so that they can shrink the stomach as before. *Stagen* is a traditional tool used to support the stomach or to shrink a woman's belly. The use of *stagen* after childbirth can help the recovery process. In addition, it supports the muscles in the abdomen and waist area to reduce pain and improve posture after delivery. The use of a *stagen* that is too tight can interfere with blood circulation and cause shortness of breath and defecation. In addition, it also causes pressure on the bladder, causing frequent urination.

Pregnancy also makes the body's muscles slack, especially in the pelvic floor and abdominal wall muscles. To overcome this, postpartum mothers should do gymnastics or sports that tighten the abdominal wall muscles, such as jogging and sit up. However, lifting heavy weights is not recommended for them. In addition, Kegel exercises can tighten the pelvic muscles and urinary tract. Postpartum exercise focusing on breathing and abdominal exercises helps restore abdominal firmness after giving birth less painful and healthier.

The culture of using *stagen* can be done by postpartum mothers. However, *stagen* should not be worn too tight and too long duration. In addition, they must consider its cleanliness. The *stagen* functions as a support for the stomach but cannot slim the tummy because when the *stagen* is released, the stomach will sag again. Postpartum exercise can streamline the abdomen after childbirth.

Five of 48 respondents used *pilis* in this study (10.4%). They used *Pilis* on the stomach and forehead for 36 days. The reasons were improving eyesight, preventing eye pain, making the body smell good, and adhering to parental culture.

Postpartum mothers often complain of dizziness and blurred vision. *Pilis* consists of natural ingredients such as *ganthi*, aromatic ginger, turmeric, mint, and ylang-ylang. It is believed to help relieve dizziness and also improve blood circulation. In addition, it can maintain eye health and prevent white blood from rising to the head. How to use *pilis* is to be smeared on the forehead of the mother.

Pilis can give a warm feeling to postpartum mothers because it contains mint and other ingredients. Postpartum mothers without vision problems can use *pilis*. However, postpartum women with visual impairment should visit health workers to get adequate treatment.

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The results showed that 56.6% of respondents brought sharp objects. They brought nail clippers, scissors, safety pins, the Koran, broomsticks, needles, and knives. They explained that the goal was to expel evil spirits and adhere to parental orders and ancestral culture.

Carrying sharp objects can endanger both the mother and baby because of the risk of being stabbed by the thing and causing injury. Postpartum mothers should increase their faith by praying and asking for help from God according to their respective religions and beliefs so that they and their babies are protected from evil spirits. For example, Muslims can do dhikr and listen to the Qur'an.

All respondents in this study did *brokohan*. *Brokohan* is a form of gratitude for the birth of a baby. The timing is after delivery, period of umbilical cord stump to fall in newborn, and five days, 35 days, three months, seven months, one year after delivery. The food menus in the *brokohan* tradition consist of rice, noodles, tempeh, tofu, egg, *iwel iwel*, *nagasari*, grilled chicken, dry tempeh, red porridge, fish, traditional snacks, *tumpeng*, stir-fried peanuts, and *urap*. All respondents held a *brokohan* tradition to be grateful for the birth of a baby and obeyed the culture

Brokohan is one of the traditional Javanese ceremonies to welcome the birth of a baby. *Brokohan* comes from the Arabic language, namely barakah, which means expecting blessings from God. *Brokohan* is a form of gratitude for the safe birth of a child.

All respondents in this paper also did *mendem ari ari*. The implementation of mendem *ari a*ri is washing the placenta, praying for it, and burying it using a *kendil*. Other materials put in the *kendil* are needle, books, and pencils to make the baby smart; comb, powder, mirror for baby girls to make them beautiful. In addition, there are flowers to make the baby becomes fragrant, a paper that says *basmalah* to make a good child in religion, and eggs so that the baby does not cry easily. The place to bury is left of the house door for the girl and the right for the boy. After the *kendil* is buried, it is illuminated with lamps.

The *mendem ari ari* tradition respects the ancestors because the placenta delivers oxygen and nutrients during pregnancy. In addition, Javanese society considers the placenta as the baby's friend and sibling who accompanies the baby in the womb until the delivery process. Therefore, the placenta must be treated well. The implementation of this tradition is a learning platform for the young generations. They will understand more about the practices that must be preserved. In addition, there is a moral and behavioral education regarding the relationship between nature and humans in this implementation. It is essential to keep the harmony between humans and nature. The tradition of *mendem ari ari* is very closely related to the content of education. All the rules and values of life that are mutually sustainable are all contained in its implementation.

Based on the study results, 37.5% of respondents must be at home for 40 days. They did this practice so that babies were not disturbed by evil spirits and adhered to culture or traditions. This culture has positive and negative values. Its positive impact can improve maternal health during the postpartum period by

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increasing rest and reducing activities outside the home. In addition, it decreases the risk of infection in newborns due to an immature immune system. Meanwhile, the negative impact is that mothers cannot visit health facilities to check up.

This study results found that 20 of 48 respondents were forbidden to take a nap (41.7%). They believed nap causes disease, black spots, and obesity. In addition, they did the practice because of the tradition. They also believed that no napping could prevent white blood cells from moving towards their eyes.

Napping is a need for a postpartum mother to restore energy after giving birth or taking care of the baby. The napping for postpartum mothers can increase the immune system, regenerate damaged cells in the body into new cells, restore stamina, protect the body from disease, increase breastmilk supply and stabilize emotions. The recommended duration for a nap is about 1 hour. Napping is done while the child is sleeping. The negative impact of lack of sleep for postpartum mothers is fatigue and affects milk production. So a quality nap is essential to postpartum mothers.

Seventeen of 48 respondents in this study performed perineal care after delivery with betel leaf (35.4%). They used betel leaves by washing the perineum with betel leaf decoction and placing it on the postpartum mother's sanitary napkin. They believed this practice makes the perineum smell good, firm, and clean.

Green betel leaf contains a lot of essential oil 1-4.2% as a fragrant aroma on betel leaves. This essential oil contained betlephenol, sesquiterpenes, starch diastase 0.8-1.8%, sugar, and tanning substances. Tannic substances are chemical compounds used to kill or inhibit the growth of microorganisms on living tissue - such as the surface of the skin - and are anti-inflammatory to eliminate inflammation. In addition, there is also chavicol 7.2-16.7%, which functions as an antiseptic to inhibit the growth of germs (Kurniawan and Puspitasari 2018). A study conducted reported that the average time to perineal wound healing in postpartum women using betel leaf water was faster than the control group who only uses betadine (Masita and Amalia, 2018).

The chemical contents of betel leaf are hydroxy chavicol, chavibetol, estragole, eugenol, metileugenol. Chavicol has five times the bacteria-killing power of ordinary phenol so that it can function as an antiseptic. In addition, it is also a compound with antiseptic properties as an inhibitor of bacterial growth in wounds (Arifin, 2008 and Celly 2010) . Furthermore, betel leaf contains saponins stimulating the formation of collagen. Collagen is a structural protein playing a role in wound healing (Masita and Amalia, 2018).

This paper reported that 25% of respondents walked and sat with their feet parallel, aiming that the seams on the perineum were not torn and the spine was not bent.

Javanese culture in postpartum mothers is sitting with straight legs, meeting, parallel, not overlapping, and not hanging. In addition, postpartum mothers have to sit with their feet propped up on a small chair.

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The culture is believed to reduce varicose veins, swollen legs, and damaged stitches. Marmi (2012) highlights that postpartum exercise can restore health in postpartum mothers. Postpartum exercise can improve blood circulation to prevent clotting (thrombosis) in blood vessels, especially leg vessels. In general, sitting with the legs not hanging or propped up by a small chair reduces discomfort, especially when breastfeeding.

Lastly, this study revealed that 41.7% of the respondents did the culture of semi-sitting position. They did this tradition to make good posture, shrink the stomach, restore muscle strength, make the back not sore, and prevent swelling legs. In addition, they aimed to follow the culture and orders of parents.

Javanese culture requires postpartum mothers to sit all day in bed with pillows arranged at the back of the body to support the body in a semi-sitting position. They think this way can keep the vagina tight so that their walking position is not wrong (straddle). Mochtar (1998) believes that although rest and sleep are necessary for mothers after giving birth, it does not mean that mothers have to lie down or sit continuously for several days during the postpartum period. The literature recommends postpartum mothers sleep on their back for 8 hours postpartum.

Gepyokan (n): herbal medicine made from the leaves of a traditional plant believed to promote breastmilk production.

Temu ireng (n): rhizome plant (*Curcuma aeruginosa Roxb.*) used as a mixture of drugs or herbs.

Ganthi (n): spices in the form of leaves used for *pilis.*

Iwel iwel (n): a traditional cake made of sticky rice, coconut, and brown sugar wrapped in banana leaves. *iwel iwel* is usually made when celebrating the birth of a baby.

Tumpeng (n): Indonesian cone-shaped rice dish with side dishes of vegetables and meat originating from Javanese cuisine of Indonesia.

Urap (n): salad dish of steamed vegetables mixed with spiced grated coconut for dressing.

Nagasari (n): traditional Javanese steamed cake made of rice flour, coconut milk, and sugar, filled with a slice of banana.

Kendil (n): small pot made of clay.

Basmalah (n): Arabic sentence meaning in the name of Allah

CONCLUSIONS

Postpartum mothers still practice many Javanese cultures. This culture has both favorable and unfavorable impacts on health. Furthermore, it is necessary to analyze the influence of Javanese culture on the health status of postpartum mothers.

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Consuming Mung Beans (Phaseolus radiatus L.) Increase Hemoglobin Levels among Pregnant Women with Anemia in The Second Trimester at Klenang Public Health Centre, Probolinggo District

Tutik Hidayati[1], *Roviatun Holila*[1]

[1] *Stikes Hafshawaty Pesantren Zainul Hasan, Probolinggo, Jawa Timur, Indonesia*

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CORRESPONDENCE

E-mail: afithuafda2702@gmail.com

A B S T R A C T

Anemia in pregnancy is a pregnant mother with hemoglobin levels below 11 g/dL in the first and third trimesters or hemoglobin levels less than 10.5 g/dL in the second trimester. This paper investigates the effect of consuming mung beans (Phaseolus radiatus L.) on hemoglobin levels in the Second trimester of pregnant women with anemia. This research used a quasi-experimental design with randomized pretest-Posttest with a control group design. The population was 37 pregnant women in the second trimester who experienced anemia at Klenang PHC. Meanwhile, the sample was 34 respondents by simple random sampling. The independent variable was consuming mung beans, while the dependent variable was the hemoglobin levels. In the control group, the authors observed the consumption of Fe tablets once a day for 20 days in 17 respondents. While in the intervention group, we monitored the consumption of Fe tablets once a day and were given mung bean juice every day for 20 days in 17 respondents. The instrument used an observation sheet and a digital hemoglobin measuring device. Then, data analysis utilized the paired sample t-test with a significance of 0.05. After consuming mung beans and Fe supplements, the average hemoglobin levels in the intervention group were 12.1588g/dL. Meanwhile, in the intervention group, after Fe observation were 10.6412d/dL. There was a significant difference between the control and intervention groups p=0.000 (p<0.05). In conclusion, consuming mung beans increases hemoglobin levels among pregnant women with anemia in the second trimester.

INTRODUCTION

Anemia in pregnant women potentially can harm both mother and child (Vina Aulia et al., 2018). Anemia is a decreased red blood cells (erythrocytes) or hemoglobin (Hb) in the blood circulation, resulting in impaired oxygen transport to all body tissues (Adriani and W, 2012)

Anemia with a prevalence above 5% can be defined as a health problem in a community. However, there is no official data from the Health Office or literature reporting the prevalence of anemia in pregnant women in Probolinggo Regency (Amini et al., 2018). Pregnant women experience an increased blood volume so that the need for iron also increases. The total amount of iron needed during pregnancy is around 800-1000 mg to meet the needs of increased red blood cells. It consists of the need for 300-400 mg of iron until 32 weeks of gestation, 100-200 mg of iron to meet the fetus's needs, and 100-200 mg of

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iron to meet the growth of the placenta. In addition, about 190 mg of iron is lost after delivery (Poltekkes Kemenkes Yogyakarta, 2016).

The prevalence of anemia is still relatively high. In 2015, the Health Organization (WHO) estimated the global prevalence of anemia in pregnancy was 75% in the Gambia and 5.7% in the United States. In addition, the Association of Southeast Asian Nations (ASEAN) also reported that the anemia incidence in pregnant women in developing countries was between 20-89%. The highest incidence of anemia in pregnant women in Indonesia was around 70% (Amalia, 2016)

Based on Basic Health Research in 2018, the prevalence of pregnant women with anemia in Indonesia increased from 37.1% in 2013 to 48.9% in 2019 (Maulina & Sitepu, 2015). In addition, according to the Directorate General of Nutrition, the anemia prevalence in pregnant women in 2015-2019 was 28% (Kemenkes RI, 2015). Furthermore, the East Java Provincial Department of Health stated that in 2013 the number of pregnant women with anemia in East Java was 37.02% (Simbolon, 2018). This figure still does not meet the National target in The Medium-Term National Development Plan (2015-2019) of 28% (Natalia et al., 2017).

In Probolinggo Regency, the prevalence of pregnant women with anemia reached 70% (Sumbono, 2016). Data from the Klenang Public Health Center (PHC) in Banyuanyar District in 2019 showed that anemia incidence in pregnant women was around 23%. A preliminary study was conducted in January 2021 by interviewing four pregnant women with anemia. The study showed that all respondents had received Fe tablets but did not know about foods that could increase hemoglobin levels.

Iron deficiency anemia is anemia associated with the lack of iron (Susiloningtyas, 2012). The causes of anemia during pregnancy – particularly in developing countries – are nutritional deficiencies, especially iron, folate, and vitamin deficiencies. Vitamin A deficiency during pregnancy can cause anemia (Maulina, 2015). In addition, investigations at the Klenang Public Health Center (PHC) reported that the cause of anemia was due to nutritional deficiencies, especially iron deficiency.

Anemia negatively impacts pregnant women and babies, including abortion, lack of energy during childbirth, premature birth, and low birth weight. In addition, the fetus can experience malnutrition and congenital disabilities during pregnancy (Amalia, 2016). Furthermore, anemia can also increase the risk of maternal death, perinatal death, antepartum and postpartum hemorrhage. It is because pregnant women with anemia cannot tolerate blood loss (Natalia et al., 2017).

In addition to giving Fe tablets, consumption of mung beans can be a solution to meet the iron needs in pregnant women. Mung beans are legumes with high iron content, especially in the embryo and seed coat. Its nutritional content is beneficial for pregnant women to produce red blood cells and prevent anemia. Mung beans contain phytochemicals that help the process of hematopoiesis. In addition, other nutrients in mung beans are calcium, phosphorus, iron, sodium, and potassium, which are beneficial for pregnant

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women (Rai & Mayulu, 2016).

Furthermore, mung beans contain vitamin C and zinc, playing a role in treating iron-deficiency anemia. It also has seven mcg of vitamin A in half a cup. Vitamin A deficiency can worsen iron deficiency anemia (Maulina, 2015). This paper investigates the effect of consuming mung beans (*Phaseolus radiatus L.)* on hemoglobin levels among pregnant women with anemia in the second trimester.

METHOD

This research used a quasi-experimental design with randomized pretest-Posttest with a control group design. The population was all pregnant women who experienced anemia at Klenang PHC as many as 37 people. The sample was 34 pregnant women in the second trimester who experienced anemia at the Klenang PHC. Sampling in this study applied simple random sampling. The independent variable was consuming mung beans, while the dependent variable was the hemoglobin levels. In the control group, the authors observed the consumption of Fe tablets once a day for 20 days in 17 respondents. While in the intervention group, we monitored the consumption of Fe tablets once a day and were given mung bean juice every day for 20 days in 17 respondents. The instrument used an observation sheet and a digital hemoglobin measuring device. Data collection included editing, coding, scoring, tabulating, entering, and cleaning. Furthermore, data analysis utilized the paired sample t-test with a significance of 0.05.

RESULT

In this study, the characteristics of respondents consisted of maternal age, education level, and income. Most respondents were 20-35 years old (74.9%) and graduated from Senior High School (70.6%). In addition, their income were mostly IDR 500,000- 1,000,000 per month. The characteristics of respondents could be seen in table.1 in detail.

Table 1. The characteristics of respondents

Characteristics of respondents	Frequency	Percentage (%)
Maternal age (years old)		
< 20	3	8.8
20-35	27	74.9
>35	4	11.7
Education Level		
Elementary School	4	11.7
Junior High School	2	6
Senior High School	24	70.6
College	4	11.7
Income (per month)		
< IDR 500,000	0	0
IDR 500,000- 1,000,000	32	94
>IDR 1,000,000	2	6

Table 2. The average Hemoglobin Levels in Respondents Before Intervention in The Intervention and Control Groups

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Group	Hemoglobin Levels (g/dL)			
	Mean	SD	Min	Max
Intervention	9.3529	0.82167	7.50	10.00
Control	10.0471	0.40792	8.90	10.40

Table 2 shows that the respondents' average hemoglobin levels before intervention are 9.3529 g/dL in the intervention group and 10.0471 g/dL in the control group.

Table 3. The average Hemoglobin Levels in Respondents After Intervention in The Intervention and Control Groups

Group	Hemoglobin Levels (g/dL)			
	Mean	SD	Min	Max
Intervention	12.1588	1.03565	10.70	14.60
Control	10.6412	0.64717	9.40	11.50

Table 3 indicates that the respondents' average hemoglobin levels after intervention are 12.1588 g/dL in the intervention group and 10.6412 g/dL in the control group.

Table 4. The Paired Sample T-Test Result

Variable	**Mean**	**SD**	**N**	***p***
Intervention group	12.1588	0.82167	17	
Control group	10.6412	0.64717	17	0.000

After consuming mung beans and Fe supplements, the average hemoglobin levels in the intervention group were 12.1588g/dL. Meanwhile, in the intervention group, after Fe observation were 10.6412d/dL. The paired sample t-test result obtained p=0.000 (p<0.05). Thus, there was a significant difference between the control and intervention groups (Table 4).

DISCUSSION

Most respondents in this paper were 20-35 years old. Anemia or lack of hemoglobin levels in the blood during pregnancy is caused by several factors, including maternal age and parity. The mother's age is too young (<20 years) not ready for fetal growth (Amini et al., 2018). In addition, pregnant women in the old reproductive age group (over 35 years old) are more likely to experience anemia (Indah et al., 2016).

Most respondents in this study graduated from Senior High School. The low education of pregnant women affects the acceptance of health information, so knowledge about iron (Fe) is limited. As a result, it impacts the incidence of iron deficiency anemia (Adriani, 2012).

Furthermore, respondents' income were mostly IDR 500,000- 1,000,000 per month. Previous research showed that anemia in pregnant women was more common in respondents with low economic status than those with high financial levels. The economic status could affect anemia in pregnancy (Ngurah Rai, I. G. B., Kawengian & Mayulu, 2016). Lack of income can lead to a lack of fulfillment of daily food needs. As a result, it affects the amount and quality of food consumed. Furthermore, it has an impact on the decline in the nutritional status of pregnant women.

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The author concludes that there is a gap between the theory and the results of this study. The theory states that anemia during pregnancy is caused by mothers who are too young (less than 20 years) and too old (over 35 years). Meanwhile, most of the pregnant women with anemia in this study were 20-35 years. Thus, in this study, age was not the cause of anemia in pregnancy.

In addition, there is also a gap between theory and this study results at education levels. According to the theory, a low education affects the acceptance of information, so that it has an impact on the incidence of iron deficiency anemia. Meanwhile, most respondents in this study were high school graduates, so the education level was not low.

Mung bean contains iron, vitamin C, and zinc, helping iron deficiency anemia treatment. In addition, it also has vitamin A of 7 mcg in half a cup. Vitamin A deficiency can worsen iron deficiency anemia (Nora Maulina & Sitepu, 2015).

We deduce that there is no gap between theory and study results. According to theory, iron, vitamin C, and zinc in mung beans help iron deficiency anemia treatment. The research results also showed that consuming mung beans for 20 days increased hemoglobin levels in the intervention group.

Before the intervention, the average hemoglobin levels in the second trimester of pregnant women with anemia in the control group was 10.0471 g/dL, while in the intervention group was 9.3529 g/dL. In addition, the average hemoglobin levels in the control group after the observation of consuming Fe tablets was 10.6412g/dL. Meanwhile, in the treatment group, the hemoglobin level after consuming Fe supplement and mung beans was 12.1588g/dL. Furthermore, mung bean consumption affected increased hemoglobin levels in the second trimester of pregnant women with anemia.

Anemia prevention and management in pregnant women can be done by pharmacological and non-pharmacological. One way to overcome anemia is to identify the cause. The causes of anemia in pregnant women are insufficient iron intake, increased maternal need for iron, increased blood plasma volume that is not matched by an increased red blood cell (Simbolon, 2018). The discrepancy between increased plasma volume and erythrocyte count is most common in the second trimester of pregnancy.

According to the Indonesian Ministry of Health, one of the efforts to overcome anemia is iron supplementation administration (Aulia et al., 2018). In the current government program, every pregnant woman gets 90 tablets of iron supplementation during her pregnancy. The tablet contains 320 mg FeSO4 (60 mg iron) and 0.25 mg folic acid (Susiloningtyas, 2012).

In addition, non-pharmacological methods for anemia prevention and control are nuts consumption, one of which is long beans. Previous research revealed an effect of giving long bean juice to increase hemoglobin levels in anemic pregnant women (Setyaningsih, 2017).

In addition to long beans, beans that contain high iron are mung beans. The iron content in mung beans is 6.7 mg per 100 grams, while in the red beans is 5.0 mg and in the long beans is 6.2 mg per 100 grams

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(Sumbono, 2016). Research stated that mung bean drink increased hemoglobin levels in the midwifery study program (Amalia, 2016). In addition, a study in Wistar white rats (*Ratus norvegicus*) showed that mung beans (*Phaseolus radiatus*) administration increased hemoglobin levels in white male rats. In the study, the dose of mung beans administration was 18 g/kg/BW/day and 36 g/kg/BW/day (Maulina, 2015) Fe content in mung beans is high and superior to red beans and long beans. Thus, it is proven that consuming mung beans increase hemoglobin levels in pregnant women with anemia

CONCLUSIONS

In conclusion, consuming mung beans (*Phaseolus radiatus L.*) increases hemoglobin levels among pregnant women with anemia in the second trimester. Health workers should provide health education to consume mung beans to complement iron supplementation. So that anemia in pregnant women can be prevented and overcome.

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An Overview of Lifestyle in Communities During The Second Wave of Covid-19 Pandemic

Eppy Setiyowati[1], Umi Hanik[1], Nunik Purwanti[1]

[1] *Faculty of Nursing and Midwifery, Universitas Nahdlatul Ulama Surabaya, East Java, Indonesia*

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CORRESPONDENCE

E-mail: eppy@unusa.ac.id

A B S T R A C T

Coronavirus 2019 (COVID-19) is a virus causing high mortality rates in various countries. So, the communities make preventive efforts with healthy lifestyle behaviors. The research aims to study lifestyle behaviors and community health conditions during the Covid 19 pandemic. This paper was a quantitative research design with a cross-sectional approach. In addition, the population was 170 respondents domiciled in Surabaya. Sampling techniques used simple random sampling. Data collection through the dissemination of questionnaires in google form circulated through WhatsApp group. Furthermore, the data were analyzed with a Linear Regression Test with $\alpha = 0.005$. The analysis results gained public knowledge about the COVID-19 pandemic in the Low category (13.94%). In addition, in public behavior variable showed that the community did not comply with health protocols during the COVID-19 pandemic (59.18%). Most respondents were in the category of low-risk cases. Linear statistic regression test results showed lifestyle related to knowledge, healthy behavior, obedient protocol Health and health condition in individuals (α= 0007). Public Health Condition is an indicator of the successful assessment of the disconnection of the covid 19 spread chain. Future research should analyze awareness, compliance, and the willingness of the community to carry out health protocols.

INTRODUCTION

The COVID-19 pandemic (Coronavirus Disease-2019) caused by the SARS-CoV-2 virus (Severe Acute Respiratory Syndrome Coronavirus-2) is an event that threatens public health in general (Goni et al. 2019). On January 30, 2020, WHO (World Health Organization) has designated the COVID 19 pandemic as a public health emergency of international concern (Khader et al. 2020). There are impacts of pandemics on social and food fields in individuals' and communities' lives (Whitty et al. 2015). Problem-solving, especially on social impact, should involve the smallest element of the community. Every family must strive to overcome these problems, especially in lifestyle change (Goni et al. 2019).

Lifestyle is a daily habits pattern in individuals reflected in their activities, interests, and opinions (Dvorak et al. 2021). In addition, lifestyle reflects how a person interacts with the environment (Whitty et al. 2015). Performing a healthy lifestyle is a choice in an individual (Modjarrad et al. 2016). Healthy lifestyles recommended during the covid-19 pandemic include: (1) daily consumption of high protein foods; (2) daily consumption of fresh fruits and vegetables; (3) drink water not less than 1500 mL daily; (4) implement a balanced and diverse diet from different types and sources (5) Consumption of adequate

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nutrient intake; (6) supplements consumption for an individual with malnutrition ; (7) regular rest for a minimum of 7 hours each day; (8) regular exercise (Kumar et al. 2021).

Behavior is an individual response to a stimulant or an action that can be observed and has a specific frequency, duration, and purpose-based (Alabi, Omoleke, and Abdulwahab 2021). Educational purposes develop or improve the three behavioral domains: the cognitive, the psychomotor, and the affective (Daniele Giansanti and Velcro 2021). Behavioral domains measurements include knowledge, attitude, and practice. Knowledge is the result of knowing after a person has sensed a particular object (Y. Zhou et al. 2018). It is also a basis for making decisions and determining the problems faced (Nogueira et al. 2019). In addition, attitude is a reaction or response that is still closed from a person to a stimulus or object (Pietrobelli et al. 2020). Furthermore, practice is an attitude that has materialized in action (overt behavior) (ALdowyan, Abdallah, and El-Gharabawy 2017).

It is necessary to have facilities and capabilities to realize attitude becomes practice. In addition, preventive behavior is to take action first before the event (Goni et al. 2019). Facing non-natural disasters of the Covid-19 outbreak in Indonesia, the government conducted various policies to prevent the Covid-19 virus transmission by implementing Large-Scale Social Restrictions (LSSR) (Ha 2020). This policy includes maintaining a distance of at least 2 meters, reducing direct contact with others, and using masks to mitigate and even break the chain of Covid-19 infection (Hennein and Lowe 2020). Fear and vigilance against Covid-19 impact attitudes and lifestyles in individuals. The community more performs healthy lifestyles such as not smoking, frequent exercise at home, and consumption of healthy foods (Kaur et al. 2020).

There are impacts of pandemics on social and food fields in individuals' and communities' lives (J. Zhou et al. 2021). Solving covid-19 problems, especially social impact, will involve the smallest element of the community, that is, every family that must strive to overcome difficulties, especially lifestyle (Cremasco et al. 2021). Solving this covid-19 problem, especially on social impact, will involve the smallest element of the community, that is, every family that must strive to overcome issues, especially lifestyle (Laghi, Saad, and Shaikh 2021); (Basray et al. 2021).

The government takes several steps to resolve the covid-19 pandemic by socializing the social distancing that reduces and breaks the chain of covid-19 infection (Shi et al. 2021). One must maintain at least 2 meters of safe distance with others, not make direct contact, and avoid mass gatherings (Riley et al. 2020). Unfortunately, the policies have not been well adhered to by the community. Government policies on an online learning system for students and work at home for workers were abused by communities. They use this condition to travel with their family (Haddad et al. 2021); (Zhong et al. 2020). In addition, although the pandemic condition in Indonesia is in a state of emergency, they still do activities that involve many people in one place. As a result, it can be a mediator for the spread of Covid-19 to a larger

scale (Modjarrad et al. 2016); (AlJohani and AlQahtani 2016). This condition causes government policies in handling the spread of Covid-19 to be less effective. It is because the public does not become aware of the dangers of Covid-19 (Sharma et al. 2019). The attitude of people who have not paid more attention to the pandemic that occurred in Indonesia triggered researchers to describe people's attitudes and lifestyles during the Covid-19 pandemic (Perkins et al. 2021); (Hsu et al. 2021). Therefore, this study describes attitudes and lifestyles in the community during the Covid-19 pandemic (Yao Huang et al. 2021).

METHOD

Desain and Population

This paper was quantitative research with a descriptive-analytical design. The respondents were 170 people residing in Surabaya, Sidoarjo, Gresik, and Mojokerto. The samples were selected by purposive sampling. The inclusion criteria were the communities and students who can be reached through WhatsApp chat via groups and personal, people who can read, people who can access google form, and people who are willing to participate in this research by signing informed consent (Dvorak et al. 2021); (Daniele Giansanti and Velcro 2021).

Time and Location of Research

Research started from September to December 2020 because of the covid-19 pandemic. It did in the community in the group WhatsApp in Surabaya, Gresik, Sidoarjo, and Mojokerto.

Research Preparation

The first step of this study was to contact prospective respondents via WhatsApp to be included in the group of prospective respondents. After the respondent was in the WhatsApp group of prospective respondents, a discussion related to the research plan and the respondents' willingness through informed consent was sent online (Daniele Giansanti and Velcro 2021). The first step of this study was to contact prospective respondents via WhatsApp to be included in the group of prospective respondents. After the respondent was in the WhatsApp group of prospective respondents, a discussion related to the research plan and the respondents' willingness through informed consent was sent online (D. Giansanti and Velcro 2021). Then, ten people were unwilling to continue the research, so they were expelled from the WhatsApp group. Furthermore, the authors provide a questionnaire in Google Forms (Daniele Giansanti and Velcro 2021);(Kumar et al. 2021).

Research Implementation

The authors established good communication through WhatsApp groups to facilitate the research process. We created a questionnaire sheet in Google Forms to make it easier for respondents to fill out questionnaires whenever and wherever they were. Then, respondents filled out a questionnaire based on

questions that the researchers asked. Respondents fill a questionnaire based on their understanding and habits during the Covid-19 pandemic (Daniele Giansanti and Velcro 2021).

The variables in this study were knowledge of the COVID-19 pandemic and behavior during the COVID-19 pandemic (Hanik, Setiyowati, and Juliasih 2020). The instrument to assess both variables was an online questionnaire. The knowledge questionnaire consisted of 10 questions with a choice of right and wrong answers. We gave a score of 1 for the correct answer and 0 for the incorrect. The behavioral questionnaire consisted of seven statement items with answer options using the Likert scale (Setiyowati, Eppy. Juliasih 2020). The behavioral questionnaire scores for positive statements were: a score of 4 for Strongly Agree, 3 for Agree, 2 for disagree, and 1 for Strongly Disagree score. Meanwhile, the negative statements scored otherwise. The questionnaire tested for validity with a calculated p-value of 0.187 (r-table= 0.1409) and its reliability with Alpha Cronbach of 0.770.

The data were analyzed univariately to describe knowledge of the Covid-19 pandemic and behavior during the Covid-19 pandemic in individuals. In addition, data presentation utilized a categorical scale.

RESULT

This study was conducted wherever the respondents were, of course, with enough signals to fill out the google form or questionnaires that we made. However, this research cannot be done offline but online. There were 170 respondents in this study. The general data of this study was characteristic of respondents.

Table 1. The Characteristics of Respondents by Gender, Age, and Occupation

Characteristics of Respondents	Frequency	Percentage (%)
Gender:		
Female	23	13.94
Male	147	86.06
Total	170	100
Age:		
15-20 years old	143	84.76
21-25 years old	17	10
>26 years old	10	5.24
Total	170	100
Occupation:		
Students	120	70.82
Students	50	29.18
Total	170	100

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Table 2. Frequency Distribution of knowledge of Covid-19 in Respondents

Items	Correct	Percentage (%)	Incorrect	Percentage (%)
COVID-19 is a harmless disease and the same as the common cold	23	13.94	147	86.06
Coronavirus can survive several hours outside the human body	112	65.24	58	34.76
Coronavirus does not contagious when talking	16	9.18	154	90.82
Only people with symptoms can transmit COVID-19	48	28.53	122	71.47
Healthy people don't need to wear masks when out of the house	8	4.59	162	95.41
Symptoms of COVID-19 in old age are generally more dangerous than a young age	151	30	19	11.65
People with chronic illnesses have a higher risk of dying from COVID-19	152	89.18	18	10.82
Children are not included in the risk group because they are rarely infected with Covid-19	25	14.59	145	85.41
New normal means a return to its original habit before the corona outbreak	77	45.41	93	54.59
People who are infected but have no symptoms do not need to be quarantined	47	27.71	123	72.29

Table 3. Frequency Distribution of people's behavior during the COVID-19 pandemic

Items	Never	Percentage (%)	Rarely	Percentage (%)	Often	Percentage (%)	Always	Percentage (%)
I wash my hands or use hand sanitizer after handling objects in public	1	0.58	12	7.88	50	29.18	101	59.18
I take a shower and change clothes after going out of the house	1	0.58	20	11.47	50	29.18	99	58.53
I wear a mask when in public places (markets, terminals, places of worship)	0	0	1	0.58	11	6.06	158	92.12
I keep a minimum distance of 1 meter from other people when outdoors	3	1.47	34	20	65	38.53	68	40
I keep my distance from older people	5	2.12	47	27.71	53	31.65	68	40
I attend an event that gathered a lot of people	26	15.41	100	58.35	20	11.47	23	13.94
I use public facilities or go to public places (public transportation, malls, markets, tourist attractions)	42	24.59	89	52.29	18	10.82	21	12.29

Table 4. Cross tabulation and linear regression test result

Lifestyle	Community Conditions				Total %	
	Good		Bad			
	Frequency	%	Frequency	%		
Activity	65	60	4	40	10	100
Interest	29	47.3	10	52.7	19	100
Opinion	78	78.2	5	21.8	23	100
Total	170	68.3	19	31.7	170	100
Linear Regression Test						$\rho = 0.005$

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DISCUSSION

The results showed that the characteristics of respondents were people who had a low risk of exposure to the SARS-CoV-2 virus. Several factors increase the risk of coronavirus disease, including direct contact or being in the same room/environment with persons with confirmed COVID-19, the history of chronic diseases, fever (temperature above 38 degrees celsius), and symptoms of respiratory disorders (Fathian-dastgerdi, Tavakoli, and Jaleh 2021). Direct contact is a process when healthy people directly touch people infected with the SARS-CoV2 virus or hold objects that have been contaminated with the virus (Sultan and Afzal 2020). In general, objects contaminated by large droplets contain the SARS-CoV-2 virus from COVID-19 patients, and the virus can remain stable for a certain period (Faronbi et al. 2017). Direct contact causes the transmission of the SARS-CoV-2 virus into healthy individuals, and the infection will continue (Wei et al. 2020).

In addition, the transmission of the SARS-CoV-2 virus is also through the airway. The virus is in particles spreading in the air. This process is possible because COVID-19 confirmed individual removes droplets during sneezing or coughing. The liquid content in droplets will evaporate and form tiny particles so that their transport by airflow is more accessible and frees from gravitation forces (Alhamlan et al. 2017). These tiny particles are elementary to spread by sneezing or coughing and within a radius of tens of meters from COVID-19 confirmed people or in the same room (Yubei Huang et al. 2020).

Therefore, the need for preventive efforts to maximize the ventilation, avoid the potential for air recirculation and minimize the number of people in a particular room or who share the same environment (Alhamlan et al. 2017). the potential for particle buildup suspected to contain the SARS-CoV-2 virus is very high in public facilities with a relatively large population density. In addition, the closed room is considered to have increased stability of the SARS-CoV-2 virus so that the process of transmission of the virus to healthy people can occur very quickly (Li, Cao, and Zhu 2019).

Various studies reported that people suffering from chronic illnesses had a higher risk of being infected with the SARS-CoV-2 virus and increased mortality (Cunningham 2021). In addition, high blood sugar levels in individuals with diabetes could damage the immune system. The weaker the immune system, the lower the ability to fight infections, such as COVID-19. Thus, the virus can cause more damage to the body (Dvorak et al. 2021). Furthermore, the increased risk of death in people with diabetes and hypertension is caused by the increased expression of ACE2(Angiotensin-Converting Enzyme 2). Improved expression of ACE2 makes it easier for the SARS-CoV-2 virus to bind to the surface of epithelial cells and enter the host cell (Mcewan and Shang 2021).

Furthermore, history of cardiovascular diseases, such as heart disease and stroke, are highly susceptible to make clinical representation worse. Chinese Center for Disease Control and Prevention investigated clinical studies of 44,672 confirmed cases of COVID-19. The research showed that case fatality rate

(CFR) in cohort studies yielded scores of 6% for COVID-19 patients with a history of hypertension. In addition, 7% of CFR in history of diabetes, and 10.5% of CFR in history of cardiovascular disease (Gagliardi et al. 2021). Acute cardiac injury is the main sign of cardiovascular disease that showed increased severity of clinical representation in COVID-19 patients. It is a strong marker of negative prognostics in COVID-19 patients. In patients with acute heart injury, cardiac troponin levels are several times higher, thus exacerbating the patient's condition. In addition, COVID-19 patients also have the risk of viral myocarditis and an increased risk of death. The SARS-CoV-2 virus can cause myocardial injury marked by high viral ribonucleic acid (Haddad et al. 2021).

Elderly or individuals over 60 years old increased the risk of death in COVID-19 confirmed people (Vicenzi et al. 2020). A study showed that the main clinical manifestations in individuals with COVID-19 were fever (90% or more), cough (about 75%), and dyspnea (up to 50%) (Tahir Ul Qamar et al. 2019). Fever is a common early symptom in patients infected with the SARS-CoV-2 virus. However, fever is also a common symptom in many cases of infection. In addition, there are respiratory problems in COVID-19 patients manifesting coughing and dyspnea. Therefore, the public should be aware of the various signs and symptoms caused or avoid direct contact with COVID-19 positive people to prevent transmission (Cunningham 2021).

Based on this study results, it can be concluded that respondents were categorized as having less knowledge related to the COVID-19 pandemic. It was indicated by the majority of incorrect answers to question items given associated with the COVID-19 pandemic. Knowledge is one of the essential things to handling COVID-19 cases, especially in preventing the transmission of the SARS-CoV-2 virus spread. It is beneficial in suppressing the transmission of the virus (Sharma et al. 2019). Good knowledge increase the ability to determine and make decisions, including in maintaining a lifestyle and health conditions in a new era of coexistence with covid-19 (J. Zhou et al. 2021).

CONCLUSIONS

Lifestyle is related to community conditions during the second wave of the covid-19 pandemic. Further research should conduct a more in-depth study on the correlation between a lifestyle change and willingness to change health behavior.

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