

# PROCEEDING OF International Conference Social Technology Education and Health Science



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LPPM UMPRI

## **The Effect Of The Use of The Birth Ball Method on Reducing Labor Pain : Literature Review**

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### **Abstract**

Childbirth is a natural process. Discomfort, fear and pain are problems for mothers in the labor process. Pain in the first stage of active labor is severe pain with a longer time, therefore it is necessary to pay attention to handling pain in the first stage of labor. This review article aims to determine the decrease in pain scale in the first stage of labor using the Birth Ball method. The method used is a review article which is done by searching using Google Scholar. The keywords used are "Birth Ball", "Pain", "Labor". Matched Google Scholar search \_ with say key on 2017-2022 as much as 374 article . The inclusion criteria in this review article are journals or proceedings , at a minimum for bachelor, maternity spontaneous , full text . While the exclusion criteria are literature review, foreign language articles other than English and Indonesian . After criteria determined , there are 10 0 article . The results of this study all reviewed articles stated that there was a significant effect using the Birth Ball method on reducing pain in the first stage of labor. The use of the Birth Ball method was effective in reducing labor pain in the first stage.

Keywords: Birth ball, Pain, labor

### **INTRODUCTION**

Labor is something natural process . Physiologically, during labor, there will be contractions that cause thinning and opening of the cervix. In normal delivery there is pain that comes and goes. Attacks of pain begin when the contractions reach their peak and disappear after the uterus relaxes. Labor pain is physiological in the labor process with different pain intensity in each individual (Cunningham, F. Gary 2012)

Pain associated with childbirth has been described as one of the most intense pain one can experience (Irawati et al., 2019). Effective pain management is very important in the labor process. To reduce pain, pharmacological approaches, such as injection of the analgesic pethidine, are usually used. Intramuscular pethidine significantly increases sedation scores, dizziness, and nausea and vomiting and other side effects (Leung et al., 2013).

Modern midwifery care also tends to reduce the use of pharmacological approaches and suggest appropriate changes such as birth ball exercises which are successful in reducing pain during childbirth and limiting the use of drugs (Sulistianingsih et al., 2022). These exercises have been shown to increase pelvic rotation and increase pelvic mobility in pregnant women. During these exercises, women are required to sit in an

upright position, which in turn will speed up the labor process and help relax and reduce the pain felt (Farrag, 2018).

Pharmacological treatment cannot be done directly at the Midwife Independent Practice (PMB). Things that can be done by doing non-pharmacological treatment. Most non-pharmacological methods for labor pain management are simple and non-invasive, and are often cheaper and safer than pharmacological interventions (Jones, 2015).

In Sulistianingsih's research (2020) explaining the positive effects of using a birth ball to reduce pain in the first stage of labor, this finding also shows that the assistance of a birth ball can reduce pain. Similar to the research conducted by Sahara (2022) there was a decrease in labor pain in women who gave birth using a birth ball compared to those who did not use birthing aids.

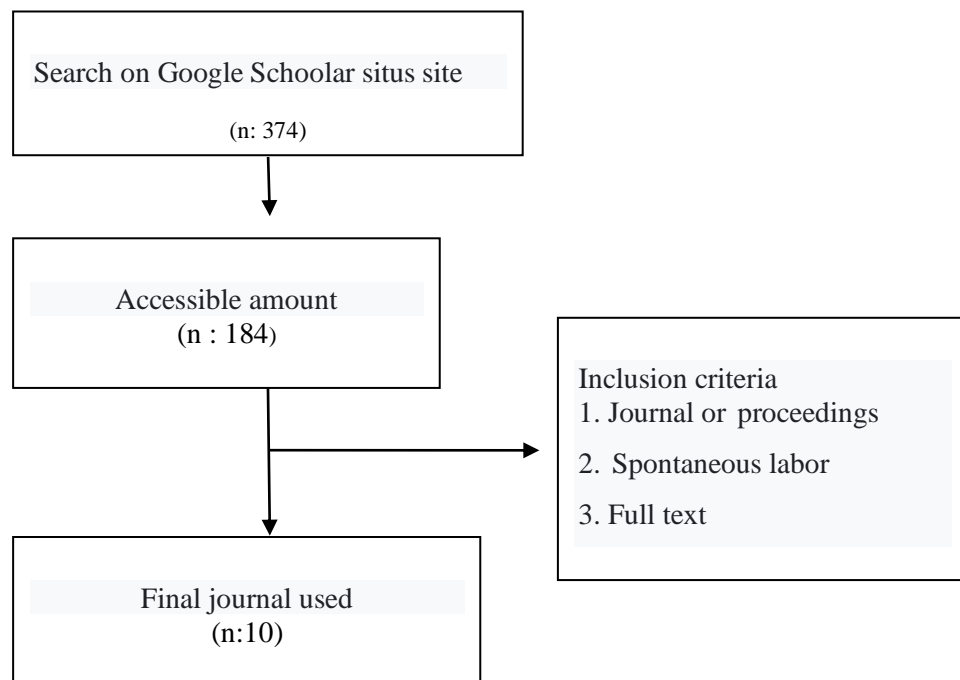
According to Sulistianingsih et al., (2022), the effect of different positions of the birth ball and breathing exercises during labor on labor pain shows supporting evidence. It is recommended that women be encouraged to take the most comfortable position with the use of a birth ball while controlling breathing during the first stage showing a distinct reduction in pain (Berta et al., 2019; Mutoharoh et al., 2020). Based on this, the mother in labor can use the birth ball position and support the mother to breathe effectively. Although birth balls have been used in various studies to aid in labor they are believed to be a simple, effective, and safe method of increasing labor progress and relieving pain.

During the birth ball practice, respondents were invited to sit comfortably on the ball with their feet 61 cm apart. On this occasion the extension worker helps the mother or family. Make sure the mother has a posture with an upright position. Mother performs circular movements with a figure eight pattern for 2-3 minutes. Mother performs forward and backward movements and then returns to the original position for 2-3 minutes. Mother is asked to do the bouncing up and down for 2-3 minutes. The mother was asked to rest in every movement or when she felt a contraction. Perform an evaluation (Irawati et al., 2019; Marwiyah & Pusporini, 2017).

## **METHOD**

The research method used is a literature review. The variable of this research is the effect of the birth ball method on reducing labor pain in the first stage. The population and samples in this study are national and international journals that discuss the use of the birth ball method to reduce labor pain in the first stage by searching on Google Scholar by understanding the keywords " birth ball", "pain", "delivery" and set the inclusion and exclusion criteria as follows: inclusion criteria : journal or proceedings minimum for bachelor, maternity spontaneous , full text . The exclusion criteria were literature review, articles in foreign languages other than English and Indonesian.

Data analysis is carried out with identify will To do search article from google scholar with the keyword "birth ball pain " childbirth" obtained results from google scholar is available 374 article . After the data is collected, screening is carried out according to the sampling technique with inclusion and exclusion criteria with the journal 5 years back. After further screening with inclusion and exclusion criteria for a feasibility test, 10 journals were obtained.



## RESULTS AND DISCUSSION

Table  
Research result  
The Effect of Using the Birth Ball Method on Reducing Labor Pain

Researcher	Method	Results
1	2	3
April Sulistianingsih Yossy wijayanti	quasy experiment : pre-post test non equivalent control group	Before intervention: mean pain score 7.65±0.80; 7.42±0.73 After intervention : 6.92±0.85;7.80±0.69 Results : p value = 0.000 which means the Effect of Birth Ball Combination and breathing exercises with a decrease in first stage labor pain
Ferinawati Rita Zahara	case control	p value ( 0.041) < a (0.05) so Ho is rejected and Ha is accepted, which means there is an effect of using Birthing Ball on decreasing pain levels in maternity mothers
Lilis Suryani Mufida Dian Hardika	quasi-experimental control group design	with use of Birth Ball with labor pain intensity (OR = 7.57; CI = 95%; 1.53 to 37.3; p = 0.013) and statistically significant. The use of birthballs has been shown to

			be effective in shortening the 1st and stage reduce pain intensity.
Melicha Simanjuntak	Kristine	quasy experiment with one group pretest-posttest design.	Pre : 6.03 ( 1.14) Posts : 5.52 ( 0.72) Result: p-value is 0.002, which means that there is an effect of using a birthing ball on reducing pain in maternity
Nurhidayati Erni Hidayati Siti Saleha		Quasi experiment with Noneequivalent control group design.	before Birthing Ball is 0.002, after Birthing Ball is 0.000. Result: p value (0.000) it can be concluded that there is an effect of using a birthing ball on the intensity of labor pain in the first stage
Rica Sahara Febry Mutiariami Cholisah Suralaga	Dahlan	quasi-experiment	Before average 7.46 After an average of 6.80 Results: p value 0.000 means that the use of birth balls is effectively used to reduce labor pain in the first stage
Rika Hairunnisah Ekadewi Retnosar		Quasy experiment with pre post test design with control group.	Before intervention 6.5 (1.56) After intervention 4.1 (1,3) Results: P value = 0.000 which means that there is an effect of the Birth ball method on the intensity of labor pain
Ayu irawati Susanti Iranita Haryono		experimental with pretest-posttest control group design	Pre : 6,30±1,490 Posts : 4.80±1.005 Value : p value is < 0.001. It can be concluded that there is an effect of using a birthing ball on reducing pain levels in mothers in labor
Sutriningsih Yuhelva Destri Andiani Shaqinatunissa		Experimental with pretest-posttest control group design	Pretest : 0.809 Posttest : 0.626 Result: p value <0.001. Conclusion that there is an effect of using ball delivery on pain reduction in the first stage of labor
Ade Kurniawati Djaswadi Dasuki Farida Kartini		quasi -experimental research design post-test-only non equivalent control group	No treatment : 6.3 With treatment : 4.9 Result: p-value is 0.002 (p<0.05). This means that there is an Effect of Birth Ball Exercise on the Intensity of Labor Pain

The results of the research obtained by the researchers carried out the identification stage, there were 8 journals that had conformity, namely discussing the effect of using the birth ball method with reducing labor pain in the first stage of labor. Pain in labor is a physiological condition in the mother during childbirth. Birth Ball is a physical therapy or simple exercise using a ball. The word birth ball can be interpreted when the exercise using the ball is applied to pregnant women, mothers give birth to and mother m post giving birth ( Oktika , et al . 2012).

In a study conducted by Dyah (2022), the most effective and efficient birthing ball position as well as safe and easy for maternity mothers was sitting on the ball by shaking the hips. These results are in accordance with the theory presented by Afrila (2011) which reveals that the movements conveyed can help smooth the delivery process. In general, this birth ball exercise is carried out with the movements mentioned, it takes 15-20 minutes and can be done before delivery every 1 hour until the delivery process arrives.

The same result was also expressed by Melicha (2022) who revealed that a mother in labor who experienced labor pain before the intervention had a value of 6.03 (1.14) and after the intervention had a value of 5.52 (0.72) so that it could be seen that there was a decrease in the number of reductions in labor pain. This journal provides treatment with the use of birthing balls for respondents for 30-60 minutes and then the pain intensity will be reassessed after 30 minutes of using the birthing ball.

Other similar results were revealed by the results of the research by Irawati (2022) and Sutriningsih (2019) where the study was conducted with two groups, namely treatment and control, this was done to assess and compare the effectiveness of the interventions given. With the results of p value <0.001 obtained, it is stated that there is a difference in pain scores in the control and treatment groups, which means that there is an effect of using a birthing ball on reducing pain levels in pregnant women during the first active phase.

Birth ball exercises can reduce and control labor pain, especially in the first stage. The movement is in a kneeling position and chest leaning forward like leaning and hugging a ball and then shaking the hips in a clockwise direction. This action will make labor pain reduced and comfortable and help in the progress of labor and also increase the release of endorphins, this is because the elasticity and curvature of the ball stimulate the receptors in the pelvis which are responsible for secreting endorphins (Kuniawati, 2017). Based on the results of these eight journals, it was conveyed that there was indeed an effect of giving birth ball exercises on labor pain in the first stage of labor in women. Each journal has a different training time, but in theory presented by (Oktifa, 2012) that this exercise has an effective time of 20-30 minutes with 5 minutes of sitting on the ball, sitting on the ball leaning forward 5 minutes, standing up .

In the Sulistianingsih study (2020) In the control group, the practice midwife will carry out standard delivery care such as touch, and teach the right delivery position in an upright position, provide encouragement and counseling. The outcome assessor will measure and rate the intervention and control groups at the same time point. The assessment was carried out on pre-test data, 1 hour after the first intervention, and 1 hour after the second intervention. Both groups will be equipped with the same additional equipment in the form of a birth ball. This effort is intended to minimize bias



during outcome assessment. This is in accordance with the theory of Yeung et al (2019). Midwives were present in the delivery room both in the intervention group and in the control group. For the intervention group, primigravida in labor will receive intervention (birthball method and breathing exercises).

## CONCLUSION

Based on the results of the search for journals through the stages of identification, screening, eligibility, including, eight were obtained which explained the effect of birth balls on labor pain in the first stage of labor in women. The use of the birth ball is done by sitting on the ball, rocking the hips to the left, right and in a circle and hugging the ball. This is done during contractions between the cervical opening 4-10 cm with a time of 20-30 minutes. The results of all journals state that there is an effect of birth balls on labor pain in the first stage of labor in women giving birth. This is because the birth ball can reduce pain and help in the progress of labor and also increase the release of endorphins, this is because the elasticity and curvature of the ball stimulate the receptors in the pelvis which are responsible for secreting endorphins.

## ACKNOWLEDGMENT

The author would like to thank Muhammadiyah University of Pringsewu Lampung which has facilitated the 1st International conference on Social Technology Education and Health Science.

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## The Effect of Breastfeeding on Children's Intelligence

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### Abstract

We conducted a critical review to see from the many studies that breastfeeding has an effect on children's intelligence. Breast milk is a complete and ideal nutrition for babies because it contains vitamins, proteins, fats, and antibodies. This study is a literature review on the effect of breastfeeding on intelligence. Sources for conducting this literature review include a systematic search of computerized databases (Cochrane Library, Google scholar, EbscoHost, Lancet, BMC, and Pubmed) in the form of 18 research journals, 16 journals using quantitative methods, and 2 journals using qualitative methods. Two independent searches were performed using Medline, LILACS, SCIELO and Web of Science. Fixed and random effects models were used to pool the effect estimates, and a random-effects regression was used to assess potential sources of heterogeneity. We included of 18 studies stated that infants who were breastfed for approximately 12 months had higher intelligence test results than those who were not breastfed. In addition, longer breastfeeding duration and periods were associated with higher intelligence scores. In a randomized study, it was shown that subjects who were breastfed for approximately 12 months had a higher IQ of 4.6- 6.0 points than those who were not breastfed with ( $p = 0.06$ ), 95% confidence interval. So that children who are breastfed are 1 to 6 months more advanced in cognitive development than children who have never been breastfed. We found no bias in publications. Breast milk has an effect on children's intelligence and is seen significantly after 3-5 years of age through intelligence tests. Breastfeeding is recommended for at least 12 months to increase children's intelligence.

**Keywords:** Breastfeeding, Intelligence test, cognitive, literature review.

### INTRODUCTION

Nowadays, Mother's Milk (ASI) is something special for children's future. Breastfeeding is the preferred and promoted mode of feeding during the first weeks of life and has been associated with better cognitive development in children. Breast milk contains all the nutrients and immunological components that babies need (Ju et al., 2007). The World Health Organization and the American Academy of Pediatrics, which recommend exclusive breastfeeding for about 6 months, followed by continued breastfeeding when complementary foods are introduced, and continued breastfeeding for 1 year. Breastfeeding has long-term consequences, it has been reported that subjects who have been breastfed will perform better on intelligence tests (Horta et al., 2018). Breastfeeding can be beneficial for children's cognitive development. This is due to several studies that conclude that breastfeeding scores significantly higher for cognitive

development than formula-fed children (Review, n.d.). The effect of breastfeeding on infant health and development has been the subject of scientific research for decades. While several observational studies have reported a positive association of breastfeeding with later intelligence, breastfeeding is strongly associated with determinants of child intelligence, such as maternal intelligence, and the developmental stimulation received by the child; residual confounding by shared determinants (Belfort et al., 2013). A child's cognitive development is determined by various factors including heredity, psychosocial and interactions, stimulation and nutrition (Lee et al., 2016). Breastfeeding is also associated with significantly improved cognitive development from infancy to adolescence.

The purpose of this review is to explore the effect of breastfeeding on children's intelligence. This literature review included comparing the intelligence of exclusively fed children, >12 months and children not fed formula. This happens with the duration of breastfeeding as well as the cognitive aspects that will be obtained for their future.

## METHODS

A literature reviews on breastfeeding and its effect on child intelligence was carried out using Medline, LILACS, SCIELO and Web of Science. The search strategy focused on the following keywords: Breastfeeding, Intelligence test, cognitive, Fixed and random effects models were used to pool the effect estimates, and a random-effects regression was used to assess potential sources of heterogeneity.

Systematic reviews and individual study both were considered. Literature published before the last 20 years, those not in English, and those not in a peer reviewed journal were excluded.

## RESULTS AND DISCUSSION

Name of Publisher/ Journal , Year	Research Title	Population, Sampel	Method	Results
N K Angelsen, T Vik, G Jacobsen, L S Backstein, Arch Dis Child 2001;85:183–188	Breast feeding and cognitive development at age 1 and 5 years	345 Scandinavian children,	In 345 Scandinavia n children, data on breast feeding were prospectively recorded during the ®rst year of life, and neuromotor development was assessed at 1 and 5 years of age. Main outcome	Children breast fed for less than 3 months had an increased risk, compared to children breast fed for at least 6 months, of a test score below the median value of MDI at 13 months and of WPPSI-R at 5 years. Maternal age, maternal intelligence (Raven score), maternal education, and

			measures were Bayley's Scales of Infant Development and cognitive development is not statistically significant after adjustment for such confounders.	smoking in pregnancy were significant confounders, but the increased risk of lower MDI and total IQ scores persisted after adjustment for each of these factors.
Hyung in Lee, 1,et al J Korean Med Sci 2016; 31: 579-584	Effect of Breastfeeding Duration on Cognitive Development in Infants: 3-Year Follow-up Study	A total of 697 infants were tested at age 12, 24, and 36 months using the Korean version of the Bayley Scales of Infant Development II (K-BSIDII	The present investigation is a component of the MOCEH study, a multi-center prospective birth cohort study. Infants were followed-up 12, 24, and 36 months after recruitment. The 36-month follow-up was completed in December 2010. Prior to enrolment, all study participants (mothers)	After adjusting for covariates, infants who were breastfed for $\geq 9$ months had significantly better cognitive development than those. The relationship between breastfeeding and the mental development index (MDI) score was a duration

			provided written informed consent.	
Saria Tasnim, South East Asia Journal of Public Health ISSN: 2220-9476 ISSN: 2313-531X Pr	Effect of breast feeding on child development : At birth and beyond		A literature review on breast feeding and early child development was undertaken using Medline. The search strategy focused on the following key words: 'early child development' , 'duration of breast feeding', 'exclusive breast feeding', 'cognitive development' , 'intelligent quotient', 'composition of breast milk', 'psychologica l influence', and 'parenting.	the effect of breastfeeding patterns and duration on different components of child development during infancy and beyond
Cathal McCrory* , Richard Layte, Social Science & Medicine 72 (2011) 1515e1521	The effect of breastfeedin g on children's educational test scores at nine years of age: Results of an Irish cohort	The final sample comprised 8226 nine- year-old school children participating in the first wave of the	. Hierarchical linear regression analysis with robust standard errors to control for clustering at	children who were breastfed scored 8.67 percentage points higher on reading and 7.42 percentage points higher on mathematics compared to those who

	study	Growing Up in Ireland study. The children were selected through the Irish national school system using a 2-stage sampling method and were representative of the nine-year population. In the first stage, 1105 primary schools from the national total of 3200 were randomly selected using a probability proportionate to size (PPS) sampling method	the school level was used to quantify the effect of breastfeeding on children's test scores	were never breastfed
Mandy B. Belfort, MD, JAMA Pediatric. doi:10.1001/jamapediatrics.2013.455 Published online July 29, 2013.	Infant Feeding and Childhood Cognition at Ages 3 and 7 Years Effects of Breastfeeding Duration and Exclusivity	a US prebirth cohort that enrolled mothers from April 22, 1999, to July 31, 2002, and followed up children to age 7 years, including 1312 Project Viva mothers and children. MAIN EXPOSURE Duration of	Prospective cohort study,	Adjusting for sociodemographic, maternal intelligence, and home environment in linear regression, longer breastfeeding duration was associated with higher Peabody Picture Vocabulary Test score at age 3 years (0.21; 95% CI, 0.03-0.38

		any breastfeeding to age 12 months.		points per month breastfed) and with higher intelligence on the Kaufman Brief Intelligence Test at age 7 years (0.35; 0.16-0.53 verbal points per month breastfed; and 0.29; 0.05-0.54 nonverbal points per month breastfed
Jonathan Y. Bernard, PhD, the journal of pediatrics	Breastfeeding, Polyunsaturated Fatty Acid Levels in Colostrum and Child Intelligence Quotient at Age 5-6 Years	At age 5-6 years, the IQs of 1080 children	The EDEN study is a French mother-child cohort which started in 2003 and aimed at examining the role of pre- and postnatal determinants of child development and health.	Full scale IQ of ever breastfed children was 4.5 (95% CI: 2.7, 6.2) higher than never breastfed children
Cristina Borra	The effect of breastfeeding on children's cognitive and noncognitive development	For our analysis, we consider a sample of children in the "core sample" of ALSPAC. This sample consists of 14,541 pregnancies that resulted in 14,676 known fetuses of which 14,062 were	score matching methods to investigate	It may be that the contents of breast milk are a determinant of cognitive ability, whereas contact with the mother may be more important for developing the noncognitive skills measured here



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		live births and 13,988 were alive at one year.		
Ana L. M. Fonseca, J Pediatric (Rio J). 2013;89:346-53.	Impact of breastfeeding on the intelligence quotient of eight-year-old children	At age 8 years, 560 children	A prospective cohort study was performed including all infants born in the hospitals of a medium-size city, and a random sample of these newborns was monitored at 30, 90, and 180 days of life, and at age 8 years	Matrices test. The average score was 22.56 points, with a standard deviation of 5.93. The difference in the averages found between the breastfed and non-breastfed groups at six months of age was 1.33 (p = 0.008)
Christina M. Gibson-Davis, www.pediatrics.org/cgi/doi/10.1542/peds.2006-0072 doi:10.1542/peds.2006-0072	Breastfeeding and Verbal Ability of 3-Year-Olds in a Multicity Sample	With data on 1645 American-born mothers participating in a longitudinal birth cohort study, we used linear regression to determine the influence of breastfeeding for at least 1 month on the Peabody Picture Vocabulary Test-Third Edition scores of 3-year-old children	linear regression	In unadjusted mean comparisons, breastfed children had Peabody Picture Vocabulary Test scores that were 6.6 points higher than children who were not breastfed.

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A. Holmes, care, health and development	The effects of breastfeeding on cognitive and neurological development of children at 9 years	total 1853 women and children,	Methods Secondary analysis from a 9-year follow-up study of children of 982 smokers recruited to a randomized controlled trial of anti-smoking education in pregnancy in a maternity hospital between November 1981 and October 1982; and all ex-smokers and a random 25% sample of non-smokers during the same period (total 1853 women).	A total of 1218 (66%) children were followed up. In total, 61.6% of children were breastfed, median duration being 12 weeks. Before adjustment, breastfeeding was significantly associated with higher total, verbal and visual IQ scores in children, and increasing duration was significantly correlated with IQ scores. Total IQ was 5.49 points higher in breastfed children (P 0.001).
Bernardo L. Horta, 2018, Wolters Kluwer Health,	Breastfeeding and neurodevelopmental outcomes		A meta-analysis published in 2015 reported that intelligence quotient (IQ) was 3.44 points (95% confidence interval: 2.30; 4.58) higher among subjects who had been	A meta-analysis published in 2015 reported that intelligence quotient (IQ) was 3.44 points (95% confidence interval: 2.30; 4.58) higher among subjects who had been breastfed, and this association was observed even among those studies that controlled for

		breastfed, and this association was observed even among those studies that controlled for maternal IQ. In the present review, we identified two studies that reported that duration of breastfeeding was positively associated with IQ in childhood, whereas another study reported that cognitive score at 67.9 years of age was higher among those subjects who had been breastfed for at least 6 months.	maternal IQ.
Berthold Koletzko, J. Perinat. Med. 36 (2008)	The roles of long-chain polyunsaturated fatty acids in pregnancy, lactation and infancy:	Cohort	dietary supply of LC-PUFA might be beneficial for continued optimal neurological function in childhood

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	review of current knowledge and consensus recommendations*			
Michael S. Kramer, Arch Gen Psychiatry. 2008;65(5):578-584	Breastfeeding and Child Cognitive Development	A total of 17 046 healthy breastfeeding infants were enrolled, of whom 13 889 (81.5%) were followed up at age 6.5 years.	Cluster- randomized trial,	The experimental intervention led to a large increase in exclusive breastfeeding at age 3 months (43.3% for the experimental group vs 6.4% for the control group; P<.001) and a significantly higher prevalence of any breastfeeding at all ages up to and including 12 months. The experimental group had higher means on all of the Wechsler Abbreviated Scales of Intelligence measures, with cluster- adjusted mean differences (95% confidence intervals) of 7.5 (0.8 to 14.3) for verbal IQ, 2.9 (-3.3 to 9.1) for performance IQ, and 5.9 (-1.0 to 12.8) for full- scale IQ. Teachers' academic ratings were significantly

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				higher in the experimental group for both reading and writing.
Joan L. Luby, J Am Acad Child Adolesc Psychiatry 2016;55(5):367–375.	Breastfeeding and Childhood IQ: The Mediating Role of Gray Matter Volume	A total of 148 individuals had breastfeeding data at baseline and complete data on all variables of interest, including IQ	ate were derived from the Preschool Depression Study (PDS), a prospective longitudinal study in which children and caregivers were assessed annually for 8 waves over 11 years	Breastfed children had significantly higher IQ scores and larger whole brain, total gray matter, total cortical gray matter, and subcortical gray matter volumes compared with the no breastfed group in models that covaried for key variables. Subcortical gray matter volume, cortical, and white matter volumes. To date, few studies have related these measures of brain structure to IQ in breastfed versus no breastfed children in a longitudinal sample. Breastfed children significantly mediated the association between breastfeeding and children's IQ scores.
Andrew J. O. Whitehouse, Paediatric and Perinatal Epidemiology, 25, 44–52.	Duration of breast feeding and language ability in middle childhood	2868 liveborn children recruited	longitudinal study, Cohort	Analysis of variance revealed a strong positive association between the duration of predominant

				breast feeding and PPVT-R at age 10 years. A multivariable linear regression analysis adjusted for covariates and found that children who were predominantly breast-fed for >6 months had a mean PPVT-R score that was 4.04 points higher than children who were never breast-fed. This compared with an increase of 3.56 points at age 5 year.
Cesar G Victora, Bernardo Lessa Horta, <a href="http://www.thelancet.com/lancetgh">www.thelancet.com/lancetgh</a> Vol 3 April 2015	Association between breastfeeding and intelligence, educational attainment, and income at 30 years of age: a prospective birth cohort study from Brazil	3493 participants	A prospective, population-based birth cohort study of neonates was launched in 1982 in Pelotas, Brazil. Information about breastfeeding was recorded in early childhood	We identified dose-response associations with breastfeeding duration for IQ and educational attainment. In the confounder-adjusted analysis, participants who were breastfed for 12 months or more had higher IQ scores (difference of 3.76 points, 95% CI 2.20–5.33), more years of education (0.91 years, 0.42–1.40), and higher monthly incomes (341.0 Brazilian reals, 93.8–588.3) than did those who were breastfed for less



			than 1 month. The results of our mediation analysis suggested that IQ was responsible for 72% of the eff etc. on income.
Bernardo L Horta), Christian Loret de Mola, Cesar G Victora, Acta Pediatric 2015	Breastfeeding and intelligence: a systematic review and meta-analysis	Two independent searches were carried out using Medline, LILACS, SCIELO and Web of Science. Studies restricted to infants and those where estimates were not adjusted for stimulation or interaction at home were excluded	We included 17 studies with 18 estimates of the relationship between breastfeeding and performance in intelligence tests. In a random-effects model, breastfed subjects achieved a higher IQ [mean difference: 3.44 points (95% confidence interval: 2.30; 4.58)]. We found no evidence of publication bias. Studies that controlled for maternal IQ showed a smaller benefit from breastfeeding [mean difference 2.62 points (95% confidence interval: 1.25; 3.98)]. In the meta-regression, none of the study characteristics explained the heterogeneity among the studies.

R. F. Slykerman, <i>Acta Pædiatrica</i> , 2005; 94: 832–837	Breastfeeding and intelligence of preschool children	Five hundred and fifty European children enrolled at birth in the Auckland Birthweight Collaborative Study were assessed at 3.5 y of age	Regression analysis was used to calculate estimates of difference in intelligence scores between breastfeeding groups for the total sample and the group of SGA children.	Breastfeeding was not significantly related to intelligence scores in the total sample despite a trend for longer periods of breastfeeding to be associated with higher intelligence scores. However, in the SGA group, breastfeeding was significantly related to IQ at 3.5 y. Small for gestational age children who were breastfed for longer than 12 mo had adjusted scores 6.0 points higher than those who were not breastfed ( $p=0.06$ ).
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Concerning the long-term consequences, a meta-analysis including 17 studies reported a higher intelligence quotient (IQ) among subjects who had been breastfed [mean difference: 3.44 points (95% confidence interval (CI): 2.30; 4.58)]. In addition, an association of breastfeeding with IQ was observed, even among those studies that controlled for maternal IQ [mean difference: 2.62 points (95% CI: 1.23; 3.98) (Belfort et al., 2013; Bernard et al., 2017; Borra et al., 2012; Figueiredo, 2013; Gibson-davis & Brooks-gunn, 2014; Holme et al., 2010; Horta et al., 2018; McCrory & Layte, 2011). Breastfeeding is associated with improved performance in intelligence tests. Most observational studies report that breastfeeding is associated with higher intelligence quotient (IQ) scores in children, some finding a dose–response relationship with respect to duration, and greater benefits in low birthweight infants (Holme et al., 2010). Yousafzai et al. observed that children who had been randomly allocated to receive a responsive stimulation intervention had improved cognition, language and motor skills at 4 years of age. Similar findings have been reported by other studies. From his research, according to Lee, 2016, states that.

The results of Dunnett's post-hoc test at each follow-up time showed that infants who were breastfed for 9–11 months or  $\geq 12$  months had higher MDI (a mental development index) scores than those who received formula only. MDI score of 93.7, those breastfed  $\geq 12$  months had a mean score of 95.8, and those who received formula exclusively had a mean score of 87.5. The positive correlation between breastfeeding and

cognitive development may be because breast milk provides the nutrients required for development of the immature brain. . In conclusion, literature review from Lee, results indicate that breastfeeding for longer than 9 months improved cognitive development of Korean infants. In particular, human breast milk may support development of the newborn brain because it has long-chain polyunsaturated fatty acids (LCPUFAs), such as docosahexaenoic acid (DHA) and arachidonic acid (AA)(Lee et al., 2016). Early studies in primates and human infants showed that breast-fed infants score higher on visual acuity tests than that of formula-fed infants, and that this performance is correlated with DHA erythrocyte concentration. The study findings are limited by the relatively small there has been broad speculation and some evidence for the sample sizes, lack of prospective and detailed duration data role of long-chain polyunsaturated fatty acids present in human breast milk in enhancing neurodevelopment(Luby et al., 2016). In breastfed infants, DHA status at two months of age correlated with language production and comprehension at 14 and 18 months of age (Koletzko et al., 2008) . Mental Development Index during the study. In a double blind randomized trial, maternal supplementation during pregnancy and lactation with cod liver oil providing about 1.2 g DHA and 0.8 g EPA led to a 4% point advantage in children's scores on the Kaufmann ABC test (a standardized intelligence test) in the subgroup of children tested at the age of four year . Furthermore, the intimate relationship and physical contact between the mother and infant during breastfeeding can indirectly influence cognitive development of the infant. For example, Stack and Muir reported that increased physical contact between the mother and infant, increase visual attention of the infant. More physical contact occurs when the mother breast- feeds, but not necessarily during formula feeding. Furthermore, the infant experiences more cognitive assimilation and control during breastfeeding than during bottle-feeding. In some studies it is stated that the advantages associated with a 6.5- to 8.3-point higher cognitive function score are significant. Besides that breastfeeding may protect against cognitive impairment in children of vulnerable social groups or with biological impairment (Lee et al., 2016).

In this meta-analysis, we observed that breastfeeding is positively associated with performance in intelligence tests in childhood and adolescence; subjects who had been breastfed had an average gain of 3.44 points(*Acta Paediatrica - 2015 - Horta - Breastfeeding and Intelligence a Systematic Review and Meta-analysis.Pdf*, n.d.). Boucher et al observed that IQ at 5 years of age was 3.65 points (95% CI: 3.18; 4.12) higher among those children who breastfed for more than 12 months in relation to those who breastfed for 2 or less months. Duration of predominant and exclusive breastfeeding was positively associated with performance in intelligence tests. Breast feeding infants have higher intelligence quotient (IQ) than non-breast fed. The amount of mutual touch, tactile stimulation and mother's gaze to the infant are significantly elevated during breastfeeding and this has a positive influence on the child's psychological development. The impact of breast feeding on cognitive development, behavior, social adaptation and understanding of the infant needs to be emphasized during the promotion of breast feeding and early child development programs (Tasnim, 2014).

The effect of breast feeding on cognitive development can be explained by two factors. One is the presence of essential long-chain polyunsaturated fatty acids and Docosahexaenoic acid (DHA), which are essential for brain development. Evidence is emerging that DHA is important in neural and visual development of preterm and, possibly, term infants. Breast milk also contains growth factors and hormones which influence brain biochemistry and functional development, and are not found in formula

milk. The physical or social interaction associated with breastfeeding may stimulate cognitive development. Another potential mechanism is that formula feeding is associated with infantile infections and chronic illness, which can cause delayed developmental milestones and, in turn, later cognitive development (Tasnim, 2014). The duration of breast feeding is also important for child development. Children who had been breastfed predominantly for less than four months had higher language scores than children who were never breastfed. Children who were breastfed predominantly for more than 6 months were better than children breastfed predominantly for between 4 to 6 months. Predominant breastfeeding for six months or longer was a significant predictor for improved academic scores in mathematics, reading spelling and writing.

The new evidences that we presented above are in agreement with the previous meta-analysis, which reported that IQ was 3.44 points (95% CI: 2.30; 4.58) higher among those subjects who had been breastfed, and an association was observed even after controlling for maternal IQ [mean difference: 2.62 points (95% CI: 1.23; 3.98)]. Boucher et al. also adjusted for maternal IQ and its estimate on the effect of breastfeeding was higher than the pooled estimate for studies controlling for maternal IQ. This finding could be due to the fact that the association between duration of breastfeeding and performance in intelligence tests tends to be linear (Horta et al., 2018). breastfed children showed higher activation in the right frontal and temporal lobes for perception tasks, whereas for language task, the activation was higher in the left temporal lobe. As brain activation is positively correlated with task performance, these findings reinforce the evidence that breastfeeding is associated with performance in intelligence tests. Those subjects who had been breastfed for 12 months or more had an IQ 3.76 points (95% CI: 2.20; 5.33) higher than those who were breastfed for less than 1 month,

Oddy et al. found a 3.56 point higher IQ score at six and ten years of age among children fully breastfed for more than six months than children never breastfed. Breastfeeding and not formula-feeding at birth are associated with increased probabilities of being in excellent health at 9 months. Breastfeeding for 6 months or more increases motor scores at 9 months. A meta-analysis shows that children who were breast fed were associated with 2.7 more IQ points in children of normal birth weight and 5.2 more points in children with low birth weight. Breastfeeding for less than four months was associated with lower developmental scores in the first three years of life. On average, breastfed children have an IQ that is approximately 5 points higher than children who are not breastfed.

A multivariable linear regression analysis adjusted for covariates and found that children who were predominantly breast-fed for >6 months had a mean PPVT-R score that was 4.04 points higher than children who were never breast-fed. This compared with an increase of 3.56 points at age 5 years. Breast feeding for longer periods in early life has a positive and statistically-independent effect on language development in middle childhood. Children who were predominantly breast-fed for >6 months had mean verbal IQ scores [(indexed by the Peabody Picture Vocabulary Test – Revised (PPVT-R)] 6.44 points higher than children who were never breast-fed. The current study demonstrates a positive effect of increased breast-feeding duration on language ability in children at 10 years of age. Simple comparisons demonstrated progressively higher language scores for children who were predominantly breast fed for longer during infancy. This effect remained after adjustment for a range of potential covariates, including maternal education and the quality of the family and language-learning environment, suggesting that Mothers who breast feed tend to have higher levels of education and more positive home environments (Whitehouse et al., 2010).

Breastfeeding has a larger effect on cognitive development in premature infants than term infants.<sup>13,14</sup> In a study to examine the association between duration of breastfeeding and cognitive ability at 7-8 years in a birth cohort of very low birth weight infants, a longer period of breast feeding was associated with significant increases in both cognitive IQ ( $p < 0.001$ ) and South East Asia Journal of Public Health 2014;4(1):4-8 performance ( $p < 0.05$ ). Quigley et al.<sup>10</sup> from the United Kingdom Millennium Cohort Study used the British Ability Scales tests at the age of 5 years (naming vocabulary, pattern construction, and picture similarities subscales) and showed the mean scores for all subscales is higher among children who were breastfed compared to children who were never breastfed.<sup>16</sup> In term children, a two-point increase in score for picture similarities (when breastfed  $>4$  months) and naming vocabulary (when breastfed  $>6$  months); whereas in preterm children, there was a 4-point increase for naming vocabulary (when breastfed  $>4$  months) and picture similarities (when breastfed  $>2$  months) and a 6-point increase for pattern construction (when breastfed  $>2$  months) was observed. It is suggested that breastfed children are 1 to 6 months ahead of children who were never breastfed. Prolonged breast feeding has a strong protective effect against nocturnal enuresis which may be attributed to accelerated neurodevelopmental maturation. Infants who were exclusively breastfed for 6 months crawled sooner and are more likely to be walking by 12 months than infants who started solid foods at 4 months. Infants breastfed for four months or longer had significantly higher mean scores for fine motor skills at one, two and three years. Prolonging breastfeeding during the weaning process may result in a better developmental performance at 12 months, possibly due to the supply of fats affecting brain composition. Infants (4 to 6 months old) looked at a mobile significantly longer when tested after breastfeeding. This finding suggests that breastfeeding has a substantial effect on infants' attentiveness to and interaction with their environment. However, there was no evidence of risks or benefits of prolonged and exclusive breastfeeding for child and maternal behavior. Breast feeding is the best start to an infants' life. It ensures proper nutrition for the baby and contributes to both cognitive and non-cognitive development of the child. Breast feeding infants show higher scores on IQ and on motor skills The conclusion of this research are Effect of breast feeding on parenting Breastfeeding may influence parenting by facilitating mother-child bonding, interaction and, indirectly, cognitive growth. (Tasnim, 2014).

The intervention led to substantially higher rates of breastfeeding among the experimental group at 3, 6, 9 and 12 months of age. When children's cognitive performance was assessed at 6.5 years of age, those in the experimental group had significantly higher scores on the verbal (7.5 points) and full-scale IQ measure (5.9 points), but not on the performance IQ measure (2.9 points). the breastfeeding-IQ relationship remained robust controls for SES and the parental cognitive stimulation a child chive, it disappeared entirely after adjustment for parental IQ. Two her recent population-based studies have also concluded that the effect of breastfeeding on children's IQ is negligible when one clues adequate controls for confounding variables. The results of the present study indicate that breastfeeding during infancy was associated with significantly higher scores on standardized tests of reading and mathematics almost nine years after initial exposure, even after adjustment for a range of child, maternal, socio-economic and socio-environmental characteristics.

Children who were ever breastfed had a significant test score advantage of 3.24 ( $p < 0.001$ ) percentage points on reading and 2.23 ( $p < 0.001$ ) percentage points on mathematics compared to those who were never breastfed. though other studies have

shown higher mean IQ benefits accruing to low-birth-weight infants who were breastfed (5.2 points) compared with normal weight infants. The breastfeeding advantage has been postulated to derive from the operation of long chain polyunsaturated fatty acids (LCPUFA's), specifically docosahexaenoic acid (DHA) and arachidonic acid (ARA). conclusion that the test score advantage of breastfed children is a robust one (McCrary & Layte, 2011). One proposal is that breast milk contains several nutrients not found formula milk that are essential for optimum brain growth, such as long-chain polyunsaturated fatty acids (LCPUFA).

LCPUFAs are necessary structural elements of cell membranes and are therefore essential in the formation of new tissue, including neurons. LCPUFAs are necessary structural elements of cell membranes and are therefore essential in the formation of new tissue, including neurons.

Animal studies have found that LCPUFA may also play a neuroprotective role in early development, eliminating the buildup of certain molecules to neurotoxic levels (e.g. calcium ions) and inhibiting glutamatergic synaptic transmission. important to note that the PPVT-R is highly correlated with other widely used indices of language ability, (Whitehouse et al., 2010). Mandy B (2013) found that longer duration of breastfeeding and greater exclusivity of breastfeeding were associated with better receptive language at age 3 years and with higher verbal and nonverbal IQ at age 7 years. At age 7 years, the effect size of 0.35 verbal IQ points per month of any breastfeeding translates to 4.2 points, or almost one-third of an SD during 12 months, whereas the effect size of 0.80 verbal IQ points per month of exclusive breastfeeding translates to almost 5 points over 6 months. Mandy B (2013) find to consistent with a large cluster randomized trial Tas cohort), and the large randomized trial 25 of breastfeeding promotion in which verbal IQ at age 6.5 years was 7.5 points (one-half of an SD) higher in the breastfeeding promotion group. From this research, results support a causal relationship breastfeeding in infancy with receptive language at age 3 and with verbal and nonverbal IQ at school age (Belfort et al., 2013).

It is supported from study from Jonathan (2017) that scale IQ of ever breastfed children was 4.5 (95% CI: 2.7, 6.2) higher than never breastfed children. Besides that, the association between breastfeeding duration and child IQ was stronger when LA levels were high. Conclusions Duration of breastfeeding and colostrum PUFA levels were associated with children's IQs in the EDEN cohort (Bernard et al., 2017). observed among children aged 5–6 years from the EDEN cohort that full-scale IQ was higher among those children who had been breastfed and the colostrum presented high levels of arachidonic acid and 3-long-chain polyunsaturated fat acid (3-LC PUFA), whereas children whose colostrum had low levels of arachidonic acid and 3-LC PUFA showed intermediate IQ levels, and those who never breastfed presented the lowest mean IQ.

Human milk provides a nutritional advantage over infant formulas, particularly for lipid contents. Polyunsaturated fatty acids (PUFAs), the omega-6 (n-6) and the omega-3 (n-3), specifically their long-chain forms (long chain PUFA [LC-PUFA]), are naturally found in human milk and are needed for the developing brain of the fetus and the infant. children breastfed with higher AA and n-3 LC-PUFA levels have higher IQs than never breastfed children; this is consistent with a large body of literature showing the importance of AA and n-3 LC-PUFA on the development of the infant's brain. This study to recounted the group of children exposed to colostrum high in LA and low in DHA had similar IQs to those who were never breastfed. At larger sample size, Overall, these results are consistent with our previous analyses on children's language and



cognition at 2 and 3 years, children's developmental scores were positively associated with breastfeeding duration and negatively with colostrum LA levels. In 1080 children from the EDEN cohort, there is a crude difference of 4.5 IQ points between ever and never breastfed children (Bernard et al., 2017). Another potentially important component of breast milk that could be responsible for the observed cognitive differences is insulin like growth factor I, which is contained in higher concentration in breast milk than in formula and has been shown to be absorbed intact across the newborn infant's gastrointestinal tract (Article, 2015).

A smaller body of research also shows breastfeeding to be related to better gross motor development and improved cognitive ability. One theory is that, several components of breast milk (notably long-chain polyunsaturated fatty acids, which accumulate in the brain and retina) may affect cognitive development via their effects on neural development. It may be that the contents of breast milk are a determinant of cognitive ability, whereas contact with the mother may be more important for developing the noncognitive skills measured here (Borra et al., 2012). Cross-sectional studies have shown that breastfed infants have enhanced early white matter development, as well as larger whole brain and cortical volume and thickness (Luby et al., 2016). Some study to reported formula-fed infants, with most differences in the 2- to 5-point range (Article, 2015). based on the largest randomized trial ever conducted in the area of human lactation, strongly suggest that prolonged and exclusive breastfeeding improves cognitive development as measured by IQ and teachers' academic ratings at age 6.5 years. When the child was 1 and 3 years old, parents were surveyed by telephone. The FF surveyed parents on topics related to child and family well-being, and additional details of the study, including city and hospital selection, are published elsewhere and a 20 study meta-analysis found that breastfeeding increased cognition scores by 5 points for low birth weight infants and 3 points for normal birth weight infants (Gibson-davis & Brooks-gunn, 2014). children who were breastfed scored 7.4 points higher ( $P < .01$ ) on the PPVT-III than children who were not breastfed. Breast feeding was associated with 4.6-point higher mean in children's intelligence. In addition, breastfeeding can also affect the quality of the future, such as research conducted Cesar (2015), participants obtaining advanced educational qualifications was 1.58 (95% CI 1.15–2.18) times higher in participants who had been breastfed for more than 7 months than in those who had never been breastfed. This study to reported that breastfeeding duration showed dose-response associations with performance in intelligence tests, (Victora et al., n.d.). children not breastfed at all had adjusted intelligence scores 6.0 points lower than children breastfed for longer than 12 mo. and 5.9 points lower than children exclusively breastfed for 5 month or longer. The findings of this study concur with previous research suggesting that exclusive breastfeeding is particularly important for the cognitive development of SGA (small for gestational age) children (Slykerman et al., 2005). These studies have been carried out in developed are important for brain development, would be a possible mechanism for the association between breastfeeding and performance in intelligence tests.

## CONCLUSION

1. Some studies have shown that breastfed children score higher on cognitive tests, such as IQ, than formula-fed children.
2. Breast milk has an effect on children's intelligence and is seen significantly after 3-5 years of age through intelligence tests

## ACKNOWLEDGMENT

The authors would like to thank University of Muhammadiyah Pringsewu which facilitated the conference.

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## **The Effect of Ginger Compress Therapy on Pain Reduction in Gout Patients in The Work Area of The Sukaraja Public Health Center Bandar Lampung in 2022**

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### **Abstract**

World Health Organization (WHO, 2017), the prevalence of gout in the world is 34.2%. in Indonesia based on the diagnosis of health workers, which is 13.3% and based on the diagnosis and symptoms, which is 18.9%. Then in Bandar Lampung the number of cases of gout arthritis was ranked 3rd with a total of 2,773 cases. From the data obtained from March - May the number of gout patients in the working area of the Sukaraja Public Health Center in Bandar Lampung is approximately 157 people with gout arthritis. Based on the results of a pre-survey conducted by researchers at the Sukaraja Health Center, the results of interviews with 10 people with gout and 7 out of 10 experiencing pain did not know about ginger compresses and 3 did not experience pain and already knew about ginger compress therapy to reduce pain. The purpose of this study was to determine how the effect of ginger compress therapy on reducing pain in gout patients in the working area of the Sukaraja Public Health Center in Bandar Lampung in 2022.

Type of research: using Quasi Pre-Experimental method with Group Pre-Post Test Design approach. Sampling used purposive sampling with a sample of 40 respondents. The research instrument used was SOP (Standard Operating Procedure) ginger compress and NRS (Numeric Rating Scale). Analysis of the data used is the Wilcoxon Signed Rank Test statistical test. The results showed that there was an effect of ginger compress therapy on reducing pain in gout patients in the work area of the Sukaraja Public Health Center in Bandar Lampung in 2022.

The results of the Wilcoxon Signed Rank Test statistic that  $P < 0.05$  means that there is a difference in pain scale between before and after the ginger compress intervention. Conclusion: the effect of ginger compress therapy on reducing pain in gout patients in the work area of the Sukaraja Public Health Center after giving ginger compresses in the work area of the Sukaraja Public Health Center in Bandar Lampung. Suggestion: this research is expected to increase knowledge about one of the medicinal plants, namely the ginger plant and for further researchers it is hoped that they can dig deeper into the factors that can affect gout.

**Keywords** : Gout, Pain, Ginger Compress Therapy

## INTRODUCTION

Uric acid is the end product of purine metabolism, a component of nucleic acids found in the nucleus of body cells. The cause of the accumulation of crystals in the area around the joints is due to its purine content which increases uric acid levels in the blood from 0.5 to 0.75 g/ml of purines consumed (Jailana et al, 2017). Uric acid is a level of uric acid in the blood that exceeds the normal limit. The normal value of uric acid is 3.0 – 7.0 mg/dl in men and 2.2 -5.7 mg/dl in women (Yunita et al, 2018). The presence of gout in the joints of the feet causes local, systemic and psychological responses. The local inflammatory response causes nerve compression, resulting in a pain response. Joint cartilage degeneration and pain response lead to impaired physical mobility. Increased metabolism causes the use of excess energy so that the client tends to experience malaise, anorexia and the client's nutritional status is not balanced. Pannus formation at the ankle causes body image problems and the prognosis of the disease causes an anxiety response (Muttaqin,2012). *World Health Organization* (WHO, 2017), The prevalence of gout in the world is 34.2%. Gout often occurs in developed countries such as America. The prevalence of gout arthritis in America is 26.3% of the total population. Based on the National Basic Health Research in 2018, it is known that the prevalence of joint disease in Indonesia based on the diagnosis of health workers is 13.3% and based on the diagnosis and symptoms is 18.9% while the highest diagnosis areas are Aceh (13.3%), Bengkulu (13, 0%) and Bali (12.7%). Cases in Lampung occupies the 5th position with the number of cases 118,659 (Dinkes Provinsi Lampung, 2020). Then in Bandar Lampung itself the number of cases of gout arthritis is in the 3rd rank with the number of cases 2,773 (Rikesdas Lampung,2018).

According to data obtained from the World Health Organization, it is stated that in 2016, around 71% of the causes of death in the world are non-communicable diseases (NCDs) which kill 36 million people per year. About 80% of these deaths occur in middle and low income countries. As many as 73% of deaths are currently caused by non-communicable diseases, 35% of them due to heart and blood vessel disease, 12% by cancer, 6% by chronic respiratory diseases, 6% due to diabetes, and 15% due to PTM, one of which is gout (WHO,2016).

The therapy used to reduce pain and inflammation in gout patients is pharmacological and non-pharmacological therapy. Pharmacological therapy used to reduce inflammation is non-steroidal anti-inflammatory drugs such as ibuprofen, naproxen and allopurinol (Gliozzi, et al, 2016). Non-pharmacological therapies that can be used to reduce joint pain include: warm compresses, anticipatory guidance, distraction, self-hypnosis, cutaneous stimulation (Transcutaneous Electrical Nerve Stimulation, TENS), skin massage, and relaxation (Zuriati, 2017). Other supporting efforts of non-pharmacological treatment, namely by utilizing herbal ingredients that are known from generation to generation by the community can be efficacious in reducing pain, one of which is: ginger (Wilda & Panorama, 2020). Ginger compress is a mixture of warm water and grated ginger that has been grated so that there will be a hot and spicy effect. The hot and spicy effect of ginger can cause vasodilation of blood vessels resulting in increased blood circulation and cause a decrease in pain by getting rid of inflammatory products such as bradykinin, histamine and prostaglandins that cause pain. Heat will stimulate nerve cells to close so that the transmission of pain impulses to the spinal cord and brain can be inhibited (Kumar, 2013).

Based on previous research conducted by Sriwiyati and Noviyanti (2018), researching "The Effectiveness of Ginger Compresses on Reducing the Joint Pain Scale of Gout Patients in Tempurejo and Jurug Jumapolo Villages, Karanganyar". The results showed that the pain

scale before the ginger compress was mostly on a scale of 4 and 5, while the average pain after the ginger compress was on a scale of 3. This means that there is a decrease in the pain scale between before and after giving ginger compresses. This research is in line with that carried out by Senna Qobita Dwi Putri (2017), regarding "The Effect of Giving Ginger Compresses to the Intensity of Gout Arthritis Pain in the Elderly At PSTW Budi Sejahtera, South Kalimantan". The results showed that there was an effect of giving ginger compresses to the treatment group before and after being given ginger compress therapy, in the control group there was also the effect of giving warm compresses to the intensity of gout arthritis pain. From the data obtained from March - May last, approximately 157 patients with gout arthritis experienced gouty arthritis. Based on the results of a pre-survey conducted by researchers in Sukaraja Health Center, the results of interviews with 10 people with gout and 7 out of 10 experiencing pain did not know about ginger compresses and 3 did not experience pain and knew about ginger compress therapy to reduce pain.

## METHOD

This research is a type of experimental quantitative research where quantitative research methods are used to determine the effect of the independent variable (treatment) on the dependent variable (outcome) under controlled conditions. This study uses the Quasy Pre-Experiment method using the One Group Pre-Post Test Design, which is a study that tries to prove the effect of ginger compress therapy on reducing pain in gout patients in the working area of the Sukaraja Public Health Center in Bandar Lampung after and before being given a ginger compress. Sampling in this study researchers used purposive sampling method, with 40 respondents who were experiencing pain due to gout. In this study, the instruments used were SOP (Standard Operating Procedure) ginger compress and NRS (Numeric Rating Scale) to measure pain scale in gout patients.

This assessment was carried out through interviews with observation sheets to respondents regarding the first pain scale before giving treatment and to find out changes in the pain scale during the ginger compress process and after giving the compress. The data analysis technique used the Wilcoxon sign rank test.

## RESULTS

### 1. Univariate analysis

the characteristics of the response group based on the respondent's age, gender, occupation, education, pain scale before and after being given ginger compress therapy.

#### a. Characteristics of Respondents

**Table 1. Characteristics of respondents based on age, gender, occupation and education in the work area of the Sukaraja Public Health Center in Bandar Lampung in 2022.**

Age	Frequency(f)	Percent(%)
40-50	12	30%
51-60	16	40%
61-65	12	30%
Gender	Frequency(f)	Percent(%)
Men	18	45%
Woman	22	55%
Profession	Frequency(f)	Percent(%)



Civil Servant	8	20 %
Self employed	11	27,5%
Housewife	14	35%
Farmer	17	17,5%
<b>Education</b>	<b>Frequency(f)</b>	<b>Percent(%)</b>
Primary school	12	30 %
Junior high school	10	25%
Senior High	9	22,5%
School	9	22,5%
University		
Total	40	100%

Based on table 1. it is known that the characteristics of respondents based on age are mostly between 51-60 years as many as 16 respondents (40%), based on gender, most of them are women as many as 22 respondents (55%), and based on occupation most of the housewife are 14 respondents (35 %), then the education level of most of the primary schools is 12 respondents (30%).

**b. Characteristics of the gout pain scale**

**Table 2. Characteristics of the gout pain scale in respondents before ginger compresses were applied in the work area of the Sukaraja Public Health Center in Bandar Lampung in 2022.**

Pain Scale	Frequenc	Percent
Mild pain ( 1-3)	9	22,5%
Moderate pain (4-6)	15	37,5%
Severe pain(7-9)	12	30%
Very Heavy (10)	4	10%
Total	40	100%

Based on table 2. it is obtained that from 40 respondents, the majority of respondents' pain scale before the ginger compress intervention was moderate pain as many as 15 people (37.5%).

**c. Characteristics of the Gout Pain Scale**

**Table 3. Characteristics of the Gout Pain Scale in respondents who have had ginger compresses in the working area of the Sukaraja Public Health Center, Bandar Lampung in 2022**

Pain Scale	Frequenc	Percent
Mild pain ( 1-3)	23	57,5%
Moderate pain (4-6)	13	32,5%
Severe pain(7-9)	4	10%
Very Heavy (10)	0	0%
Total	40	100%

Based on table 3, it was found that the majority of respondents' pain scales after the ginger compress intervention were mild pain as many as 23 people (57%)

## 2. Bivariate analysis

**Table 4. The Effect of Ginger Compress on Pain Reduction in Gout Patients in the Sukaraja Bandar Lampung Health Center Work Area in 2022**

Ranks				
		N	mean	sum
before intervensi -after	Negative Ranks	4 0 <sup>a</sup>	20. 50	820. 00
	Positive Ranks	0 <sup>b</sup>	.00	.00
	Ties	0 <sup>b</sup>		
intervensi	total	40		
a. before intervensi < after intervensi				
b. before intervensi > after intervensi				
c. before intervensi = after intervensi				
Test Statistics <sup>a</sup>				
	Before- after intervensi			
<b>Z</b>	-5.628 <sup>b</sup>			
Asymp. Sig. (2- tailed)	.000			
a. Wilcoxon Signed Ranks Test				
b. Based on positive ranks.				

Based on table 4.4 The results of this study are analyzed the results of this study shows that from 40 respondents, the average respondent's pain scale before the intervention was 5.83 with a standard deviation of 2.581. While the average respondent's pain scale after the intervention was 3.68 with a standard deviation of 2.105. Thus there is a difference in the average pain scale in respondents before and after giving ginger compress therapy. The results of the statistical test using the Wilcoxon signed rank test showed that the p value = 0.000 ( $p < 0.05$ ), which means that there is an effect of ginger compress therapy on reducing pain in gout patients at the Sukaraja Bandar Lampung Public Health Center in 2022.

## DISCUSSION

### 1. Univariate analysis

#### a. Characteristics of Respondents Based on Age in the working area of the Sukaraja Public Health Center, Bandar Lampung

From the results of the study obtained data the majority of respondents aged 51-60 years, namely as many as 16 respondents (40%). Increasing age is an important risk factor in both men and women. This may be due to many factors, such as an increase in serum uric acid levels (the most common cause is a decrease in kidney function), increased drug use diuretics, and other drugs that can increase serum uric acid levels. According to Ode (2012) age is a risk factor for high levels of uric acid in the body, because when a person gets older there will be changes in the form of a

decrease in metabolic processes in the body. Increasing age, if a person consumes protein in large quantities it will result in the accumulation of purines in the blood.

This is in line with research by Wuragian, Bidjuni, dan Kallo (2014) which states that as many as 23.3% of gout sufferers are aged 30-49 years, 40% are aged 50-64 years, and 36.7% aged > 65 years. Based on these studies, it can be observed that the majority of gout sufferers are aged 50-64 years. This is reinforced by the research of Astuti and Tjahjono (2013) which states that the most gout sufferers are in the 48-60 year age group, which is 45.0%, compared to the 34-47 year age group, which is 30% and the 20-33 year age group, which is 25%.

According to Sutrani in Andry, Saryono's research, the characteristics of respondents are based on age, there are age categories in this study based on age classification categories and are supported by theory according to the Indonesian Ministry of Health in Mujahidullah (2012). The elderly are classified into 3 groups: the early elderly group (55-64 years), the middle elderly group (65 years and over), the elderly group with high risk (70 years and over). Researchers reveal that increasing age is a risk factor. High uric acid levels are due to decreased kidney function, increased use of diuretic drugs, and other drugs that can increase serum uric acid levels.

#### **b. Characteristics of Respondents by Gender in the Work Area of the Sukaraja Health Center Bandar Lampung**

On the characteristics of gout pain by gender, it was found that from a sample of 40 people who suffered from gout pain, 55% or 22 people were female and 45% or 11 people were male. This is also evidenced by the results of WHO research which revealed that gout is not evenly distributed and is mostly experienced by the female sex. The most common age range is 45-65 years of age.

In theory from Muttaqin (2008), gout pain is more common in men than women because men do not have the hormone estrogen which can help remove uric acid. According to the Kapita Selecta Theory in 2009 that uric acid disease can be suffered by both men and women, in men it usually affects middle age, while in women it is usually near the age of menopause. In men and women there is the hormone estrogen but the amount of the hormone is influenced by age, the hormone estrogen functions to help remove uric acid through the urine. In line with research conducted by Kalim (2013) which found that 94.9% of respondents who suffered from gout were female. Based on gender, those who experience an increase in uric acid are generally men, but women are actually more at risk (Breuer, et al., 2017). Reinforced by research conducted by Widyanto, Pain, and Blitar (2009) revealed that men have higher serum uric acid levels than women, thus increasing the risk of men experiencing increased uric acid. Before the age of 30 years, uric acid is more common in men than women, but the risk of high uric acid becomes the same between men and women after the age of 60 years. Women have an increased risk of gout after menopause, the risk begins to increase at the age of 45 years and over due to a decrease in estrogen levels, because estrogen has a uricosuric effect. Research reveals that the majority of women who experience increased uric acid are women who are over 50 years old, so the high uric acid in female respondents can be caused by a decrease in estrogen levels due to menopause or due to age.

**c. Characteristics of Respondents Based on Occupation and Education in the Work Area of Sukaraja Health Center Bandar Lampung**

From the results of the research based on occupation and education, the majority of household workers were found to be 14 respondents (35%), then based on education, most of them were elementary school students as many as 12 respondents (30%). The level of education and occupation of the respondent can be factors that trigger an increase in uric acid levels in the blood. Respondents' knowledge of uric acid levels is also very necessary in order to avoid things that can increase uric acid levels. The higher the level of education of a person, the greater the chance of that person to avoid attacks of excess uric acid levels in the body. The type of work carried out coupled with daily activities adds to the workload of the respondent's body. The type of work that has less activity can also trigger increased levels of uric acid in the blood.

Theory According to Kozier (2015), the higher a person's education, the easier it is to accept the values that will become his beliefs. A person with a higher education will get a variety of information, one of which is about health problems, and know more about ways and adaptations to maintain their quality of life. In line with research conducted by Utami, R, Arundina, A, & Liana, D. F (2015), stated that as many as 25.49% of respondents who were attacked by gout were the majority with elementary school education/equivalent who had less knowledge about a low-purine diet. Someone with a low level of education will hinder the development of a person's attitude towards receiving information and new values introduced and the work of the majority of respondents who are housewives who have sufficient knowledge about a low-purine diet (37.25%) and a minority of good knowledge (11, 76%). This states that the work environment can make a person gain experience and knowledge either directly or indirectly. In line with research conducted by Purba, R. B, Rumagit, F. & Loleh, N. P (2015). stated that the majority of respondents' education was at the elementary school level, amounting to 18 people (46.2%) and at least Diploma/Bachelor education amounting to 5 people (12.8%). Education is an attempt to instill understanding and purpose in humans to grow understanding, positive attitudes and actions. Basically, the educational effort is a change in attitudes and behavior in humans towards a positive direction by reducing the factors of negative socio-cultural behavior. And strengthened by research from Ilyas, N. O, Suprihartono, F. A, & Dewi, M (2014). stated that respondents who do not work as much as 64.1%. So the low sample activity results in less energy expenditure, resulting in the accumulation of fat in the body, which will affect the metabolism of uric acid in the blood. In this study, researchers stated that lack of activity has the potential to be overweight and fat accumulation occurs, both in men and women. Lack of physical activity is the cause of obesity so that it will reduce the excretion of uric acid due to excess fat in the body.

**d. Characteristics of Respondents Based on Pain Scale Before and After Pain Scale Given Ginger Compress Therapy in the Work Area of Sukaraja Health Center Bandar Lampung**

The results obtained from this study showed that the majority of gout respondents before the ginger compress were 40 people experiencing mild pain scale 9 people (22.5%), while 15 people (37.5%), weighing 12 people (30.0%), and very heavy 4 people (10.0%). And after the ginger compress, 23 people (57%), moderately experienced mild pain (32.5%), heavy dam as many as 4 people (10%). This is supported by the research of Sriwiyati and Noviyanti (2018). The title is about "The Effectiveness of Ginger Compress on Reducing Joint Pain Scale of Gout Patients in Tempurejo and Jurug Jumapolo Villages, Karanganyar". The results showed that the pain scale before

the ginger compress was mostly on a scale of 4 and 5, while the average pain after the ginger compress was on a scale of 3. This means that there is a decrease in the pain scale between before and after giving ginger compresses. This is also reinforced by the management of gout according to Noviyanti (2015), which can be overcome by using pharmacological therapy of anti-inflammatory drugs and non-pharmacological therapy of ginger compresses and skin massage and relaxation.

Gout often occurs in the elderly, it is characterized by hyperuricemia or an increase in uric acid in a person's body. The way that can reduce the degree of gout pain is to use non-pharmacological and pharmacological therapies. Pharmacological therapy is the act of giving analgesic drugs such as anti-inflammatory drugs and non-steroidal anti-inflammatory drugs (NSAIDs) as pain relievers, while ginger compress therapy is a non-pharmacological action (Ilham, 2020). Where a warm compress will cause a feeling of heat, the body's physiological responses include stabilizing thick blood, relaxing muscles, balancing tissue metabolism, increasing tissue permeability, fostering a sense of comfort and relaxation reduce anxiety (Syamsu, 2017). This is reinforced by Arlina's Research, 2019 with "The Effect of Giving Warm Compresses Using Grated Red Ginger To Reduce Pain Scale in Elderly Women with Gout Arthritis". This study used 45 respondents with a total sampling technique. Where the average value before giving warm compresses using grated red ginger was 6.76 (minimum scale 5 and maximum 9) with a standard deviation of 0.908. Meanwhile, after the intervention, the average value was 3.44 (with a minimum value of 1 and a maximum of 6) with a standard deviation of 1.439. The results of the Wilcoxon test prove that the p value = 0.001 means that there is an effect of warm compresses using grated red ginger on reducing pain in the elderly with Gout Arthritis at Tresna Werdha Teratai PSTW Palembang. According to the opinion of researchers from several other studies that support ginger compress therapy in reducing pain intensity in gout patients, on average, it produces a significant effect on the function of ginger other than as an anti-inflammatory and the Wilcoxon sign rank test results have an average value of - the average p value < of 0.005 where it can be concluded that there is a change in the pain scale before and after being given ginger compresses in gout patients.

## 2. Bivariate analysis

Based on the results of the study, it was shown that from 40 respondents prior to the ginger compress the pain scale obtained a mean value of 5.83 with a standard deviation of 2.581. While the average respondent's pain scale after the intervention was 3.68 with a standard deviation of 2.105. Thus there is a difference in the average pain scale in respondents before and after giving ginger compresses. The results of the Wilcoxon sign rank test statistic showed that the p value = 0.000 ( $p < 0.05$ ), which means that there is an effect of ginger compresses on reducing pain in gout patients at the Sukaraja Health Center.

This is in line with what was done by Senna Qobita Dwi Putri (2017). About "The Effect of Ginger Compress on Gout Arthritis Pain Intensity in the Elderly at PSTW Budi Sejahtera, South Kalimantan". The results showed that there was an effect of giving ginger compresses to the treatment group before and after being given ginger compress therapy, in the control group there was also the effect of giving warm compresses to the intensity of gout arthritis pain.

According to (Ministry of Health RI, 2011), ginger compress is a combination of warm therapy and relaxation therapy that is beneficial for people with joint pain. The use of ginger in the form of a compress is safer than the use of ginger extract orally. Ginger has pharmacological and physiological effects such as anti-inflammatory, antioxidant,



antitumor, antimicrobial, anti-diabetic and antiemetic. Ginger is a rhizome plant that has a spiciness level influenced by gingerol and shogaol compounds. Gingerol is a spicy flavor compound from fresh ginger, while shogaol is a spicy flavor compound from dried ginger. These compounds provide pharmacological and physiological effects such as antioxidants, anti-inflammatory which can inhibit cyclooxygenase-2 so as to reduce pain inflammation.

Gout is an inflammatory disease of the joints that can be caused by excess levels of uric acid compounds in the body, either due to excess production or increased intake of purines (Minasdiarly (2007)). The impact that can be caused by gout arthritis can be in the form of pain, especially in the joints (Suratun. 2008).

The impact of gout arthritis pain that can be caused to the elderly is in the form of a decrease in the quality of life of the elderly because the pain is very disturbing daily activities. Complaints appear in the joints starting with stiffness or soreness in the morning then pain occurs in the joints at night the pain occurs gradually continuously so that it is very disturbing to the elderly (Santoso.2009).

Pain is a condition in the form of an unpleasant feeling, is very subjective because the feeling of pain is different for each person in terms of scale or level, and only that person can explain or evaluate the pain he is experiencing (Hidayat, 2016). According to the theory of Potter & Perry (2005). Pain management for gout can be overcome by pharmacological and non-pharmacological therapy. One of the non-pharmacological therapies that are useful for reducing pain is the provision of warm compresses and ginger compresses. Non-pharmacological pain management aims to minimize side effects, ginger compress therapy serves to reduce pain by using heat effects. The hot effect of ginger compresses can cause vasodilation of blood vessels so that it will cause an increase in blood circulation and cause a decrease in pain. According to researchers, there are many benefits contained in ginger. This ginger compress can not only reduce pain in gout sufferers but can also reduce pain in other ailments such as rheumatoid arthritis, rheumatism, and also osteoarthritis. Ginger compress is also an alternative therapy that can minimize side effects and is safe because it is not consumed directly, ginger taken orally can cause allergies and mild diarrhea for respondents, this red ginger compress does not have to make the patient feel uncomfortable, the distinctive smell of ginger and the heat caused will make the patient feel not on medication but like wearing a balm. This study can only reduce pain, red ginger compresses can not reduce uric acid levels or remove crystals (tofus) in the joints.

## CONCLUSION

There is an effect of ginger compress on reducing pain scale in gout patients in the work area Sukaraja Public Health Center with statistical test results showed that the p value = 0.000 ( $p < 0.05$ ), which means that there is an effect of ginger compresses on reducing pain in gout patients at Sukaraja Public Health Center in Bandar Lampung in 2022.

## SUGGESTION

### 1. For Respondents

The results of this study can be applied as one of the non-pharmacological therapies to reduce pain in gout sufferers and can add further knowledge of respondents about ginger compress therapy to reduce pain in gout sufferers and about the benefits of herbal plants such as ginger.

### 2. For Family

The results of this study can be an alternative to additional therapy in addition to drugs that are usually given during the management of gout so that the risk of disease that can arise due to the effects of the drug can be minimized and ginger compress therapy for reducing pain in gout patients can be done independently.

### 3. For institutions

to improve the quality of service and increase ability in the field of non-pharmacological therapy and can provide learning about ginger compress therapy and as a provision for students to increase interest in learning about non-pharmacological therapy as material for conducting research.

### 4. For Further Researchers

For further researchers, it is hoped that the results of this study can improve the quality for the development of further research in the field of nursing, especially the treatment of gout patients and can look for more factors that can reduce gout pain.

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## Relationship of Age and Long Hemodialysis Therapy (HD) With The Event of Depression in Chronic Renal Failure Patients at Demang Hospital Raya Island Central Lampung

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### Abstract

Patients with Chronic Kidney Failure will experience decreased function, various complications will occur, increasing the risk of morbidity and mortality. Hemodialysis is an alternative to remove metabolic wastes or certain toxins from the blood circulation. Long and routine dialysis activities can result in a loss of hope that triggers a depressive episode. The purpose of this study was to determine the relationship between age and duration of therapy with the incidence of depression in chronic kidney failure patients at the Demang Se Island Raya Hospital, Central Lampung in 2022. This study uses an analytical method with a cross sectional approach, the number of samples is 39 people, the sampling technique uses purposive sampling, the instrument is in the form of a questionnaire and bivariate data analysis using chi square. The results showed that respondents aged > 60 years were 17 respondents (43.6%), 25 respondents (64.1%) had hemodialysis therapy 0 – 1 year and 19 respondents (48.7%) were depressed. There is a relationship between age (p-value = 0.008) and length of therapy (p-value = 0.018) with the incidence of depression in chronic kidney failure patients at Demang Se Island Raya Hospital, Central Lampung in 2022. It is recommended that health care providers conduct regular screening for depression, motivation, and counseling for clients with chronic renal failure undergoing hemodialysis.

**Keywords** : Age, duration of therapy, hemodialysis, depression

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### INTRODUCTION

Kidneys are one of the human organs that have a very important role in maintaining overall body health, because the kidneys are one of the vital organs in the body. Kidney functions, among others, clean the blood and remove body fluids, regulate the balance of blood chemical levels in the body, and secrete hormones that regulate blood pressure. Therefore, if the kidneys experience a decrease or are unable to

perform these functions, then the kidneys are said to have kidney disorders. Decreased kidney function can occur for many reasons that develop without even realizing it. At first, it could be from minor causes, such as lack of drinking or a sedentary lifestyle, a diet high in fat and carbohydrates, or a bad environment, all of which can lead to metabolic disorders that lead to degenerative diseases. Some of these diseases are Chronic Kidney Disease (CKD) or Chronic Kidney Disease (CKD) (Rahayu, 2018).

Individuals with chronic kidney failure will experience a decrease in carrying out their functions, then the above functions will also be disrupted, urine cannot be produced and excreted, fluid balance is disturbed which can cause the body to swell and short of breath, toxins will accumulate, blood pressure can be uncontrollable, anemia which will aggravate the work of the heart to impaired bone formation. The above complications will affect the function of other organs ranging from the heart, liver, digestion to the brain which will increase the risk of morbidity (illness) and mortality (death) (Echder T, Schrinier RW, 2012).

According to the World Health Organization (WHO) in 2019, Chronic Kidney Failure (CKD) in the world each year increases by more than 30%. The United States of America, the United States, the incidence of Chronic Kidney Failure (CKD) is estimated at 100 million cases of the population per year, this figure increases by about 8% every year, and almost every year around 70 people in the United States die due to kidney damage, while in Indonesia, according to Maulana (2020) based on data from the Indonesian Renal Registry, a registration activity from the Indonesian Nephrology Association, in 2019, stated that there were 4038 CKD sufferers. Data in Lampung Province shows the number of patients undergoing hemodialysis increased from 15,128 new patients in 2019 and in 2020 to 17,193 new patients (Lampung Provincial Health Office, 2020). However, this figure does not reflect the actual situation.

Susalit (2017), said kidney disease is an iceberg phenomenon, the sufferers of which are mostly unknown and unrecorded. Similar conclusions also come from the results of Sari and Yunita's research (2020), that almost half of the population with kidney disease does not know that there is something wrong with their kidneys, while most chronic kidney failure is only diagnosed in the advanced and late stages. Some of the further consequences caused by CKD include: the kidneys lose the ability to concentrate or dilute urine normally, and the occurrence of anemia (Padila, 2012).

Patients with chronic kidney failure require special treatment called replacement therapy, namely kidney transplantation and hemodialysis. Hemodialysis or hemodialysis is a method of dialysis therapy that is used to remove fluids and waste products from the body when accurately or progressively the kidneys are unable to carry out the process. Hemodialysis therapy is often referred to as kidney replacement therapy because it functions to remove metabolic wastes or certain toxins from the human blood circulation, such as urea, creatinine, uric acid, and other substances through a semi-permeable membrane as a separator of blood and dialysate fluid in the kidneys. artificial process where diffusion, osmosis, and ultra-filtration occur (Arif & Kumala, 2014).

Dialysis activities that are routinely undertaken by patients with kidney failure can have an impact on the loss of hope that triggers depressive episodes. Depression in CKD patients undergoing dialysis is caused by significant and prolonged changes in the social environment, psychological state and a decrease in the patient's physical abilities. Depression is common but undiagnosed in patients with chronic kidney disease. Depression in dialysis patients can affect mortality regardless of the

regularity of undergoing dialysis itself. The hospitalization rate in CKD patients with mental disorders is 1.5 – 3.0 times higher than that of other chronic disease patients and it is also said that depression is an independent risk factor for mortality in these patients. According to the latest estimates from WHO, more than 300 million people are now living with depression, an increase of more than 18% between 2005 and 2018 (WHO, 2019). While in Indonesia the exact prevalence of depression in dialysis patients is still unclear, this depression rate ranges from 10% - 66% (Chilcot, 2018).

Research conducted by Chin-Ken Chen et al in 2019 showed that of 200 patients who experienced signs and symptoms of depression as many as 35%, and patients who had suicidal ideation as many as 25%. While the results of other studies explain that patients with kidney disease who experience depression as many as 28.8% of 59 people. This study shows that there are still many patients with chronic kidney failure who experience depression. Supported by the results of research conducted by Sandra., Dewi & Dewi, (2018) which examined the picture of stress in terminal kidney failure patients undergoing hemodialysis therapy at the Arifin Achmad Pekanbaru Hospital, it was found that most of the patients experienced moderate stress caused by the patient's perception about threatening stressors and lifelong therapy.

Fitriyani, Winarti, and Sunarsih's research, (2018) states that a negative self-concept causes depression to occur as much as 62%. Another study stated that the prevalence of chronic kidney failure undergoing hemodialysis was 41.6% depression (Andrade & Sesso, 2012). In line with previous research by Rustina (2012) who found that 35.8% of chronic kidney failure patients undergoing hemodialysis were depressed.

Depression is generally triggered by certain life events. In fact, life events are not always followed by depression, this may be due to other factors that play a role in changing and influencing the relationship. Rarely depression is influenced by only one factor, but more often it is caused by various factors, including physical factors such as genetic factors, age, gender, lifestyle, physical illness, drugs. In addition, there are psychological factors such as personality, mindset, self-esteem, stress and duration of therapy (Chilcot, 2018).

Age is a time bracket since the existence of a person and can be measured using time units from a chronological point of view, normal individuals can be seen from the degree of anatomical and physiological development. Age is also the length of time living or existing (since born or held) (Yunita, 2020). Research conducted by Riska (2020) found that respondents who were elderly (60-69) years experienced more depression (40.5%). compared to younger respondents. Depression is more common in the older age group due to a decrease in physical and intellectual abilities that will reduce the patient's independence. The length of hemodialysis therapy is the period of hemodialysis therapy undertaken by the patient (Hadi, 2015). The duration of hemodialysis is closely related to the efficiency and adequacy of hemodialysis, so the duration of hemodialysis is also influenced by the level of uremia due to the progressive deterioration of kidney function and comorbid factors, as well as blood flow rate and dialysate flow rate. The longer the hemodialysis process, the longer the blood is outside the body, so the more anticoagulants are needed, with the consequence of frequent side effects (Padila, 2012).

The research gap was found in the results of a study conducted by Rustina (2020) in Pontianak, it was found that respondents who had undergone hemodialysis for a long time tended to have lower levels of depression, compared to respondents who had just undergone hemodialysis. The results of the study (Armiyati & Rahayu, 2018) in Semarang, also showed a positive linear relationship between the length of hemodialysis and the patient's coping mechanism. The longer the patient undergoes

hemodialysis, the more adaptable the patient is and can overcome the problems (stressors) that arise.

The HD Demang Se Island Raya room has 10 bed capacities where in one day you can do 2 morning and afternoon shifts. Based on the initial survey conducted by researchers on October 17, 2021, data obtained that there were 20 patients undergoing hemodialysis, 16 patients undergoing HD 2 times per week, and 4 patients undergoing HD 1 time per week. Based on the results of interviews with ten patients with chronic kidney failure who are undergoing hemodialysis and the results show that there are 6 people who show signs of patient anxiety, anxiety, hopelessness and feeling depressed during hemodialysis therapy and 4 people say they want to stop doing hemodialysis therapy, disobedience to the HD schedule, do not want to abstain from food, feeling sad, disturbed sleep patterns, unable to concentrate and decreased appetite, besides that they say they are bored with this program, and always ask when will end dialysis therapy. So far, it is not known what the factors that cause these complaints are and at the Demang Se Island Raya Hospital, Central Lampung, no research has been carried out related to this phenomenon. Therefore, researchers are interested in conducting a study with the title "The Relationship between Age and Duration of Hemodialysis Therapy (HD) with Depression Incidence in Chronic Kidney Failure Patients at Demang Se Island Raya Hospital, Central Lampung in 2022".

## **METHODS**

This study uses an analytical survey method with a cross sectional approach. To find out the relationship between the independent variable and the dependent variable identified at one time, especially on age and duration of hemodialysis therapy with the incidence of depression in chronic kidney failure patients at the Demang Se Island Raya Hospital in 2022. The population in this study were all patients with chronic kidney failure who underwent hemodialysis at the Demang Se island Raya Hospital, Central Lampung, amounting to 39 people. With the technique of sampling using a total sampling technique of 39 people. Here the researchers used the Total Sampling technique for all patients with chronic kidney failure who did hemodialysis (HD) at the Demang Se Island Raya Hospital because the total population was less than 100 so that the entire population was used as a research sample (Sugiyono, 2017). The instrument used in this study was a questionnaire, data collection methods by interview and observation. The method of data analysis was univariate and bivariate analysis with Chi Square test.

## RESULTS AND DISCUSSION

### 1. UNIVARIATE ANALYSIS

#### a. Respondent Age

Table 1  
Frequency Distribution of Respondents Based on the Age of Patients  
Undergoing Hemodialysis at the Demang Se island Raya Hospital, Central  
Lampung

Patient Age	Frequency	Percentage
< 45 years old	10	25,6
45 – 59 years old	12	30,8
≥ 60 year old	17	43,6
Total	39	100

Based on table 1, it is known that most of the respondents are in the age group > 60 years, namely 17 respondents (43.6%).

#### b. Duration of Hemodialysis Therapy

Table 2  
Frequency Distribution of Respondents Based on the Length of  
Hemodialysis Therapy at the Demang Se island Raya Hospital, Central  
Lampung

Frequency Percentage	Frequency	Percentage
0 – 1 years	25	64,1%
≥ 1 years	14	35,9%
Total	39	100%

From table 2 it is known that most of the respondents are in the group with long hemodialysis therapy between 0-1 years, namely 25 respondents (64.1%)

#### c. Incidence of Depression in Chronic Kidney Failure Patients

Table 3  
Frequency Distribution of Respondents Based on Depression Incidence of  
Chronic Kidney Failure Patients Undergoing Hemodialysis at Demang Se  
Island Raya Hospital, Central Lampung

Depression	Frequency	Percentage
Light	10	25,6%
Currently	10	25,6%
Heavy	19	48,8%
Total	39	100%

Based on table 3, it is known that most of the respondents are in the group with severe depression, namely 19 (48.8%) respondents.

## 2. Bivariate Analysis

### a. Relationship of Age with Depression in Chronic Kidney Failure Patients

Table 4

The Relationship between Age and Depression in Chronic Kidney Failure Patients at the Demang Se island Raya Hospital, Central Lampung

Usia	Depression						Total		P Value
	Light		Currently		Heavy		n	%	
	n	%	n	%	n	%			
< 45 years	6	60,0	2	20,0	2	20,0	10	100	0,008
45 – 59 years	3	25,0	5	41,7	4	33,3	12	100	
≥ 60 years	1	5,9	3	17,6	13	76,5	17	100	
Total	10	25,6	10	25,6	19	48,8	39	100	

Based on table 4, it is known that from 10 respondents aged <45 years, 6 respondents (60%) experienced mild depression, 2 respondents (20%) experienced moderate depression and 2 respondents (20%) experienced severe depression. Of the 12 respondents aged between 45 – 59 years, 3 respondents (25%) experienced mild depression, 5 respondents (41.7%) experienced moderate depression and 4 respondents (33.3%) experienced severe depression. Meanwhile, from 17 respondents aged > 60 years, 1 respondent (5.9%) experienced mild depression, 3 respondents (17.5%) experienced moderate depression and 13 respondents (76.5%) experienced severe depression. The results of statistical tests using the ch-square test obtained p-value = 0.008 and < value (0.05), so it can be concluded that there is a relationship between age and the incidence of depression in chronic kidney failure patients at Demang Se Island Raya Hospital, Central Lampung in 2022.

b. **The Relationship of Length of Hemodialysis (HD) Therapy with Depression in Chronic Kidney Failure Patients**

**Table .5**  
**The Relationship of the Length of Hemodialysis Therapy (HD) with Depression Incidence of Chronic Kidney Failure Patients at Demang Se island Raya Hospital, Central Lampung**

HD therapy duration	Depression						Total		P Value
	Light		Currently		Heavy		n	%	
	n	%	n	%	n	%			
0 – 1 years	6	24,0	8	32,0	11	44,0	25	100	0,01 8
> 1 years	4	28,6	2	14,3	8	57,1	14	100	
Total	10	25,6	10	25,6	19	48,8	39	100	

Based on table 5, it is known that of the 25 respondents with hemodialysis therapy duration between 0-1 years, 6 respondents (24%) experienced mild depression, 8 respondents (32%) experienced moderate depression and 11 respondents (44%) experienced severe depression. Meanwhile, of the 14 respondents with hemodialysis therapy > 1 year, 4 respondents (28.6%) experienced mild depression, 2 respondents (14.3%) experienced moderate depression and 8 respondents (57.1%) experienced severe depression. The results of statistical tests using the ch-square test obtained p-value = 0.018 and < value (0.05), it can be concluded that there is a relationship between the length of hemodialysis therapy and the incidence of depression in chronic kidney failure patients at Demang Se Island Raya Hospital, Central Lampung in 2022.

## DISCUSSION

The results of statistical tests inform that there is a significant relationship between age and the incidence of depression in patients with chronic renal failure with p-value = 0.008 <0.05 and duration of hemodialysis therapy with the incidence of depression in patients with chronic renal failure with p-volume = 0.018. <0.05 means that age and duration of hemodialysis therapy have an influence on the incidence of depression in patients with chronic kidney failure at the Demang Se Island Raya Hospital.

Based on the results of the study, it is known that most of the respondents' age > 60 years are 17 respondents (43.6%). This proves that the level of patients undergoing hemodialysis is in the elderly (elderly), most respondents with hemodialysis therapy duration are between 0-1 years, namely as many as 25 respondents (64.1%) and most respondents experiencing severe depression as many as 19 respondents ( 48.7%).

According to the research analysis, it can be concluded that almost all patients undergoing hemodialysis have depression of varying degrees. Age and duration of hemodialysis therapy are risk factors for chronic kidney patients undergoing hemodialysis therapy to experience depression, from mild, moderate, and severe depression. Patients who can accept their condition well will have a positive outlook on life, because it focuses on the respondent's acceptance of the perceived condition.

## CONCLUSION

- a. Most of the respondents aged > 60 years, namely 17 respondents (43.6%).
- b. Most of the respondents who took hemodialysis therapy were between 0-1 years, as many as 25 respondents (64.1%).
- c. Most of the respondents experienced severe depression as many as 19 respondents (48.7%).
- d. There is a relationship between age and the incidence of depression in patients with chronic kidney failure at the Demang Selayar Raya Hospital, Central Lampung in 2022 with p-value = 0.008.
- e. There is a relationship between the length of hemodialysis (HD) therapy and the incidence of depression in chronic kidney failure patients at the Demang Se Island Raya Hospital, Central Lampung in 2022 with p-value = 0.018

## SUGGESTIONS

- a. For the Demang Se Island Raya Hospital  
It is expected that health care providers will carry out regular screening for depression, motivation, and counseling for clients with chronic kidney failure undergoing hemodialysis regarding chronic kidney failure, its management, problems encountered and prognosis, which aims to change the client's and family's perceptions of the disease.
- b. For further research  
The results of this study are expected to be a reference for further researchers so that they can develop research by connecting the depression level of patients undergoing hemodialysis with other variables and increasing the number of samples.

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## **The Effectiveness of Peppermint Aromatherapy in Reducing Nausea in Patients With Chemotherapy at Jendral Ahmad Yani Metro Hospital**

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### **Abstract**

Chemotherapy is a chemical used to control and destroy cancer cells. The most common side effect of chemotherapy is nausea. The current of management nausea with pharmacology therapy. Chemotherapy patients who receive antiemetics still feel nauseous. The purpose in this research was to analyze the effectiveness of peppermint aromatherapy to reduce nausea in patients chemotherapy. This research used quantitative method with quasi experiment pretest and posttest group designs. The Sampling used non probability with consecutive for 16 respondents in control group and 16 respondents in the intervention group. Pretest measurements were carried out before the intervention (in the intervention group) and before routine care (in the control group). The intervention carried out was giving 5 drops of peppermint aromatherapy to a tissue and inhaled for 5 minutes. The intervention was given for 1 day 2 times in the morning and evening. Posttest measurements were carried out the next day after the intervention and routine care. The analysis of data using Wilcoxon Sign Rank test. The results of this research showed that the decrease in nausea scale in the intervention group was higher (7.87) than the control group (3.87). This shows that there is a difference in mean scale of nausea in the control group and the intervention group before and after giving peppermint aromatherapy with Pvalue = 0.001. The conclusion of this research is that peppermint aromatherapy is effective in reducing nausea in patients with chemotherapy. Chemotherapy patients can use inhaled peppermint aromatherapy as an alternative option in reducing nausea other than antiemetics.

Keywords: chemotherapy, nausea, peppermint aromatherapy

### **INTRODUCTION**

Cancer is a non-communicable disease that is one of the leading causes of death in the world. Cancer can occur due to the uncontrolled growth of abnormal cells. Based on the Global Burden of Cancer study (Globocan, 2018), in the world the incidence of cancer was recorded at 348,809 cases and in 2020 it increased to 396,914 cases. According to the Basic Health Research (Riskesdas) in 2018, the prevalence of cancer in Indonesia reached 1.79 per 1000 population, up from 2013 which was 1.4 per 1000 population.

The current treatment for cancer is surgery, radiation (radiotherapy), and chemotherapy. The most effective therapy for cancer is chemotherapy (Desen, 2008). Cancers that are effective with chemotherapy treatment are leukemia, non-Hodgkin's lymphoma, and multiple melanoma. The success of chemotherapy has a different mechanism of action. Until now, cancer that can be cured with chemotherapy reaches more than 10 types of cancer or 5% of all cancer patients (Desen, 2008). Although effective in killing cancer cells, chemotherapy also has side effects and complications. Side effects that often occur are nausea, alopecia, fatigue, weight loss, anorexia, constipation, skin toxicity, and infertility (Susanto, 2006).

Nausea is an uncomfortable feeling in the back of the throat that can lead to vomiting (PPNI, 2017). Nausea can appear shortly after the first dose of chemotherapy drug is given. The severity of nausea is different for each patient, some experience mild nausea or even severe nausea to vomiting. Nausea and even vomiting in patients after chemotherapy or Chemotherapy Induced Nausea and Vomiting (CINV) occurs in about 70-80% of patients (Firmansyah, 2010).

Handling of nausea in chemotherapy patients to date is by pharmacological therapy, administration of anti-nausea drugs (antiemetics). However, not all chemotherapy patients feel the benefits of anti-emetic therapy. Many found in chemotherapy patients who received anti-emetics still complained of nausea at different periods of time, some before chemotherapy, during chemotherapy or after chemotherapy. Inappropriate handling of nausea can affect treatment therapy in patients, such as lowering the cure rate. Nausea can also cause dehydration, electrolyte imbalance, weight loss, and malnutrition. So the management of nausea in patients with chemotherapy is very important. In addition to pharmacological therapy, interventions that can be used as non-pharmacological therapy or complementary therapies to reduce nausea in chemotherapy patients. One of the therapies that can be used is by using aromatherapy.

Aromatherapy is a therapy that uses essential oils or pure oil extracts to help improve or maintain health, arouse enthusiasm, refresh and calm the soul and body (Astuti, et al, 2015). One type of aromatherapy that can be used to reduce nausea in chemotherapy patients is peppermint aromatherapy. Peppermint aromatherapy through inhalation or absorption of the oil triggers changes in the limbic system, the part of the brain associated with emotion and memory. So that the effect caused by the brain becomes calm and helps normalize hormone secretion. Inhaling peppermint aromatherapy can provide relaxation, relieve pain, and reduce the intensity of nausea (Sci, 2004). The aroma of essential oils can affect serotonin which causes a person to feel relaxed and comfortable. Where this condition will suppress the stress stimulus that causes the body to feel comfortable and suppress nausea and vomiting (Andini et al., 2022).

## METHODS

This research is a quantitative research. The research design in this study was a Quasy Experiment Design with a pretest and post test group. The sampling method in this research used the Non Probability Sampling method with Concecutuve Sampling. The sample in this research amounted to 32 respondents who were divided into 2 groups, namely the control group and the treatment/intervention group. The control group is the group that received standard therapy from the room. While the treatment/intervention group was the group that received standard therapy from the room and received inhaled peppermint aromatherapy by dripping 5 drops of peppermint aromatherapy oil onto a tissue, and instructing the respondent to inhale for 5 minutes. This intervention was carried out 2 times in the morning and evening. The measurement of the nausea scale was carried out before (pretest) and after (post-test) treatment.

The data collection tool in this research used the Rhodes Index Nausea vomiting and Retching (INVR) questionnaire. The data obtained were analyzed using univariate and bivariate computerization using the Wilcoxon Sign Rank statistical test. This research has passed the ethical test of the Health Research Ethics Committee (HREC) Jend. Ahmad Yani Metro Hospital with the number: 890/7993/LL-3/03/2022.

## RESULTS AND DISCUSSION

### 1. UNIVARIATE ANALYSIS

#### a. Characteristics

**Table 1**  
**Frequency Distribution of Respondents Based on Age, Gender and Education at**  
**Jend Ahmad Yani Metro Hospital in 2021**

Characteristics	Intervention Group	%	Control Group	%
Age (Year)				
31-35	1	6,3	0	0
36-40	0	0	0	0
41-45	3	18,8	2	12,5
46-50	6	37,5	3	18,8
51-55	3	18,8	8	50
56-60	2	12,5	2	12,5
61-65	1	6,3	1	6,3
66-70	0	0	0	0
Gender				
Male	10	62,5	11	68,8
Female	6	37,5	5	31,3

Education				
elementary school	1	6,3	1	6,3
junior high school	3	18,8	3	18,8
high school	10	62,5	8	50
Diploma/bachelor	2	12,2	4	25

Source: primary data June 2022

Table 1 shows that in the control group, the majority of respondents aged 46-50 years were 6 respondents or 37.5% and at least 31-35 years old and 61-65 years old, each with 1 respondent or 6.3 %. Meanwhile, in the intervention group, the most respondents were aged 51-55 years with a total of 8 respondents or 50%, and the least respondents were aged 61-65 years, each with 1 respondent or 6.3%.

Respondents based on gender, namely in the intervention group, male respondents were more than 10 respondents (62.5%) compared to 6 female respondents (37.5%). While in the control group, there were more male respondents, namely 11 respondents (68.8%) and female respondents as many as 5 respondents (31.3%).

Respondents based on education in the education intervention group were the high school with 10 respondents (62.5%) and the least, elementary school with 1 respondent (6.3%). While in the control group, the most education was high school with 8 respondents (50%) and the least was elementary school with 1 respondent (6.3%).

#### b. Mean Nausea Scale Before Intervention

**Table 2**  
**Mean Respondents Nausea Scale Before (Pretest) Giving Peppermint Aromatherapy At the Jendral Ahmad Yani Metro Hospital.**

Variable	Mean	SD	Min-Max	CI:95%	n
Nausea scale of control group before treatment (pretest)	18,31	7,078	5-27	14,54-22,08	16
Nausea scale in intervention group before treatment (pretest)	18,06	6,797	8-29	14,44-21,68	16

Source: primary data June 2022

Table 2 can be explained that the mean nausea of patients in the control group before treatment (pretest) was 18.31 with the lowest score on the nausea scale being 5 and the highest score on the nausea scale being 27. At the 95% confidence level, it is believed that the mean score of the nausea

scale of the patient is the control group was in the range of 14.54 to 22.08. While the mean score of the nausea scale of the intervention group before treatment (pretest) was 18.06, the lowest score of the nausea scale was 8 and the highest score of the nausea scale was 29. At the 95% confidence level, it is believed that the mean score of the nausea scale of the intervention group patients was in the range 14.44 to 21.68.

**c. Mean Nausea Scale After Intervention**

**Table 3**  
**Mean Respondents Nausea Scale After (Posttest) Giving Peppermint Aromatherapy At the Jendral Ahmad Yani Metro Hospital**

Variable	<i>Mean</i>	SD	Min-Max	CI:95%	N
Nausea scale of control group after treatment (posttest)	14,44	5,112	4-23	11,71-17,16	16
Nausea scale in the intervention group after treatment (posttest)	10,19	4,183	4-16	7,96-12,42	16

Source: primary data June 2022

Based on table 3 above, it can be explained that the mean nausea of the control group patients after treatment (posttest) is 14.44 with the lowest nausea scale score is 4 and the highest nausea scale score is 23. At the 95% confidence level it is believed that the mean score of the scale is Nausea in the control group was in the range of 11.71 to 17.16. While the mean score of the nausea scale of the intervention group after treatment (posttest) was 10.19 with the lowest score of nausea scale 4 and the highest score of nausea scale being 16. At the 95% confidence level, it is believed that the mean score of the nausea scale of the intervention group patients is in the range 7.96 to 12.42.

## 2. Bivariate Analysis

**Table 4**  
**The Differences In Nausea Scale Between The Control Group And The Intervention Group Before (Pretest) And After (Posttest) Intervention**

Variable		<i>Pretest</i>		<u><i>Posttest</i></u>		Difference	<u><i>P</i></u> value
		Mean	SD	Mean	SD	Mean	
Nausea Scale	Control Group	18,31	7,078	14,44	5,112	3,87	
	Intervention Group	18,06	6,797	10,19	4,183	7,87	0,001

Source: primary data June 2022

Based on table 4, it can be explained that the results of the Wilcoxon Sign Rank test analysis obtained that the mean patient's nausea scale before intervention in the control group was 18.31 with a standard deviation value of 7.078 and in the intervention group was 18.06 with a standard deviation value of 6.797. While the mean scale of the patient's nausea after the intervention in the control group was 14.44 with a standard deviation of 5.112 and in the intervention group was 10.19 with a standard deviation of 4.183. And the result of the P-value is 0.001.

In this research, the results of the Wilcoxon Sign Rank test analysis showed that after receiving the intervention, peppermint aromatherapy was administered by inhalation for 5 minutes. From these data shows a decrease in the mean score of nausea in patients, both in the control group and the intervention group. In the control group, before the intervention the mean score of nausea was 18.31 (severe nausea and vomiting) it down to a score of 14.44 (moderate nausea scale) after the intervention. With a difference in the mean score of 3.78. While in the intervention group, before giving peppermint aromatherapy the mean score was 18.06, it down to a score of 10.19 after giving peppermint aromatherapy. With a difference in the mean score of 7.87. So that the P-value in the intervention group was obtained, which was = 0.001. Thus, it can be concluded that peppermint aromatherapy is effective in reducing nausea, where the average score of patients receiving peppermint aromatherapy inhalation is lower than the group not receiving peppermint aromatherapy therapy.

Based on the description of the results of the research above, it can be explained that peppermint aromatherapy therapy has proven to be effective in reducing nausea in patients with chemotherapy. This is in accordance with the theory that explains that peppermint aromatherapy that is used by inhalation or inhaled will enter the limbic system where the aroma will be processed so that we will be able to smell it. When aromatherapy is inhaled, its chemical components will enter the olfactory bulb, then into the limbic system in the brain. The limbic system is the center of pain, pleasure, anger, fear, and various other emotions. The limbic system receives all information, both hearing, sight, and smell. This system also controls and regulates body

temperature, hunger, thirst and nausea. The amygdala is responsible for the response to smell, while the hippocampus is responsible for memory and smell recognition.

The mechanism of aromatherapy is to stimulate the release of neurotransmitters that have an analgesic effect and increase feelings of comfort and relaxation (Potts, 2009). Through inhalation, the fragrance from aromatherapy is transmitted through 2 pathways. The first pathway is through the limbic system to the hypothalamus and to the pituitary. The second pathway is transmitted through the olfactory cortex to the thalamus and then to the neocortex. Through these two pathways, aromatherapy will be processed to create individual perceptions. The message received will be converted into action in the form of the release of electrochemical compounds that can cause relaxation. One example of the perception caused by individuals to inhaled peppermint aromatherapy is the effect of calming oneself. The calm effect will reduce individual anxiety. A decrease in individual anxiety can reduce the risk of nausea and vomiting (Grunberg, SM, 2004).

## CONCLUSION

The administration of peppermint aromatherapy is effective in reducing nausea in chemotherapy patients at The Jendral Ahmad Yani Metro Hospital.

## ACKNOWLEDGMENT

The author realizes that without the support, guidance and direction of various parties, this research could not be completed properly. Therefore, allow the author to thank:

1. Drs. H. Wanawir AM, M.M., M.Pd., as Chancellor of the Muhammadiyah University of Pringsewu Lampung.
2. Dr. Fitri Agustina, as Director of Jendral Ahmad Yani Metro Hospital .
3. Ns. Yuliana S.Kep., as head of the RPDA/Chemotherapy room

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## Operation Informed Consent on Knowledge of The Patient's Operation Risk

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### Abstract

The magnitude of the loss due to anxiety about the operation, the nurse as the health worker who has the longest contact with the patient is expected to be a psychological medicine for the patient by increasing the patient's knowledge about surgical procedures, namely by explaining Informed Consent. The purpose of this study was to determine the relationship between the nurse's Informed Consent explanation and the knowledge of the patient's operating risk in the Surgical Room at the Sukadana Hospital, East Lampung in 2022. This type of research uses an analytical method with a cross sectional approach. The population in this study were patients who were treated in the operating room totaling 66 patients taken in June – July 2022. The data collection tool used a questionnaire sheet and analyzed using spearman rank. The results of the research analysis Based on the results of research conducted on 66 nurses with data management, it shows that the explanation variable for informed consent with knowledge of surgical risks in patients at Sukadana Hospital, East Lampung is seen from the level of strength (closeness) which has a strength level (closeness) of 0.277 or a sufficient relationship. Based on the output above, it is known that the value of Sig (2-tited) is 0.025. The linkage of informed consent explanation requires the seriousness of all nurses in the central surgical installation, to increase knowledge of the risks of surgery by patients, nurses can manage time as well as possible during the preoperative phase.

**Keywords:** Informed consent, Operation risk



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## INTRODUCTION

The surgical procedure will provide an emotional reaction for the patient who undergoes it. One form of emotional reaction that arises is anxiety. Anxiety that arises will affect the patient's physical and psychological changes which result in the activation of the sympathetic autonomic nerves which is characterized by an increase in heart rate, blood pressure, and respiratory rate and in general lowers energy levels in patients which ultimately harms the patient himself because it will have an impact

on the operation. Anxiety that occurs in patients can be caused by the patient's ignorance of the experience of the surgical procedure and the surgical procedure that will be carried out (Muttaqin, A & Sari, 2009).

The magnitude of the loss due to anxiety about the operation, the nurse as the health worker who has the longest contact with the patient is expected to be a psychological medicine for the patient by increasing the patient's knowledge about surgical procedures (Akbar, 2018).

Medical action should not be carried out without informed consent with the person concerned. Informed Consent or consent for medical action is the consent given to the patient or his family on the basis of an explanation of the medical action to be taken for the patient. In order to be able to perform certain medical actions, both diagnostic and therapeutic, informed consent is required which is the construction of a conformity of wills that must be declared by both the doctor and the patient after each has stated his or her will so that each has stated the information in a reciprocal manner. Therefore, informed consent is defined as consent after giving information (Astuti LP, Prasida DW, 2018).

Informed Consent protects patients against all medical actions carried out without the patient's knowledge, provides legal protection to doctors against unexpected and negative consequences. Giving an explanation to the patient in carrying out medical actions has the aim of reducing the patient's fear, the explanation given aims to avoid the consequences of the risk of surgery on a suspected patient (Mustikasari, 2020).

According to a research journal conducted by Novinda Kurnia Fitri and Luky Dwiantoro in 2019 with the title Relationship of Informed Consent with Knowledge of Pre-Operational Patients at RAA Soewondo Pati Hospital. This study used a descriptive correlational research method with a cross sectional approach which was conducted on 60 samples at the RAA Soewondo Pati Hospital during July-August 2019. The samples were obtained purposively. Data were collected using a questionnaire. Bivariate data analysis using Spearman's test. The results of the study obtained p value = 0.030 ( $p < 0.05$ ) which indicates that there is a significant relationship between informed consent and knowledge of preoperative patients at RAA Soewondo Pati Hospital with a correlation coefficient value of  $r = 0.281$  which indicates that the relationship between informed consent and knowledge has a significant relationship. strong enough (Fitri et al, 2019).

Based on the results of interview observations conducted by researchers to 10 patients who will undergo surgery at Sukadana Hospital, East Lampung on October 13 to 15, 2021, it was found that 3 patients with good knowledge about the risks of the surgery they will undergo and 7 patients lack knowledge about the risks of the surgery they will undergo. The patient said he did not know about the risks of the operation he would undergo due to the low level of patient education and the nurses who were less patient in explaining, the explanation given by the nurse was only modest, the nurse only gave a form to be signed. There was no conversation or explanation about the risks of surgery, the patient seemed passive to ask the nurse. Based on the results of interviews and observations above, that the patient's knowledge about the risks of surgery is lacking due to the low level of education, and the nurse's explanation is less than optimal.

Observing the description above, the researcher is interested in conducting research on the relationship between the explanation of the nurse's informed consent and the knowledge of the patient's operating risk at Sukadana Hospital, East Lampung.

## METHODS

The type of research used in this study is quantitative. The method used in this research is an analytical survey with a cross sectional approach, namely by means of an observation approach or data collection at once (once). The study was conducted in June – July 2022. The number of samples was 66 patients, because the number of samples was less than 100, in this study the sample used was a total population of 66 patients. The sample inclusion criteria in this study are; Willing to be respondents, patients with surgery, age > 18 years. The exclusions were patients who did not complete the questionnaire. The instruments used in this study were a knowledge questionnaire with the Guttman method of 20 questions and an informed consents questionnaire with the Guttman method of 15 questions, which were adopted by researchers from previous researchers who were tested for validity in 2019, and sourced from standard hospital informed consent certificates. The test used is the spearman rank test. In this study, data collection methods include primary data, namely data taken directly from respondents and secondary data in the form of documentation. The primary data in the study were taken directly from the respondents through a questionnaire. While the secondary data in this study is in the form of supporting research data such as medical record data of patients with surgery at the Sukadana Regional General Hospital, East Lampung Regency in 2022.

## RESULTS AND DISCUSSION

### 1. Characteristics of Respondents

Characteristics of Respondents Based on Age, Gender, Occupation in the Surgical Office of Sukadana Hospital, East Lampung can be seen in the following table.

**Table 1. Characteristics of Respondents**

	<b>Frequency</b>	<b>Percentage</b>
Total of participant	66	100%
<b>Gender</b>		
Male	13	19%
Female	53	80%
<b>Age</b>		
36 – 42	5	7.6%
29 – 35	19	28.8%
22 – 28	42	63.6%
<b>Education</b>		
Entrepreneur	51	77.3%
Civil Servant	9	13.6%
Employee	6	9.1%

Based on Table 1 above, it can be seen that most of the respondents are female, as many as 53 respondents (80.3%). Most are aged 22-28 years as many as 42 respondents (63.6%). Most of them are self-employed, that is, there are 51 respondents (77.3%). Based on the data obtained by the researchers, the number of respondents was 66 people, where the gender of the respondents who were female was more than 53 people (80.3%), and based on the theory expressed by Muhit & Siyoto, it shows that gender affects communication, in theory it is explained that

gender determines different communication styles and has its own uniqueness in the therapeutic communication process (Muhit, A., & Siyoto, 2018).

The communication referred to in this study is providing an explanation of informed consent to the patient and perceived by the patient so as to produce a patient knowledge which in this case is knowledge of the risk of surgery. In the other hand, based on the theory of age affects the perception and mindset of a person. As he gets older, his grasping power and mindset will also develop, so that the knowledge he gains is getting better (Lestari, 2015). This is in line with research (Selvia Aprilyanti, 2017) Still age in productive periods usually have higher productivity level than with an old workforce so that the physical possessed becomes weak and limited.

**Table 2. Dependent and Independence Variable**

	<b>Frequency</b>	<b>Percentage</b>
Total of participant	66	100%
<b>Explanation of Nurse's Informed Consent</b>		
Well	43	65.2%
Enough	11	16.7%
Not enough	12	18.2%
<b>Operational Risk Knowledge</b>		
Well	37	56.1%
Enough	15	22.7%
Not enough	14	21.2%

Based on table 2, it can be seen that most of the respondents have a good level of Informed Consent Explanation, namely there are 43 respondents or 65.2%. respondents mostly have a good level of knowledge of operating risks, namely 37 respondents or 56.1%.

## 2. Bivariate Analyze

**Table. 3 The results of the Spearman Rank correlation between Informed Consent Explanation and Knowledge of Patient Operation Risks in the Operating Room of Sukadana Hospital, East Lampung in 2022.**

			Informed consent Explanation	Knowledge of Patient Operation Risks
Spearman's rho	Informed consent Explanation	Correlation Coefficient	1.000	.277*

		Sig. (2-tailed)	.	.025
		N	66	66
	Knowledge of Patient Operation Risks	Correlation Coefficient	.277*	1.000
		Sig. (2-tailed)	.025	.
		N	66	66

\*. Correlation is significant at the 0.05 level (2-tailed).

From the results of data processing, the interpretation of the output of the Spearman Rank correlation analysis is as follows:

- Seeing the level of strength (closeness) of the relationship between the Informed Consent Explanation variable and the knowledge of the patient's operating risk in the Surgical Room at Sukadana Hospital, East Lampung. From the above output,
- the correlation coefficient is 0.277\*. This means that the level of strength of the relationship (correlation) between the explanation variable of informed consent and knowledge of surgery risk is 0.277\* or a sufficient relationship. An asterisk (\*) means that the correlation is significant at a significance value of 0.05.
- Looking at the direction (type) of the relationship between the Informed Consent Explanation variable and the knowledge of the risk of surgery treated in the operating room at Sukadana Hospital, East Lampung. The correlation coefficient number in the above results is positive, is 0.277, so that the relationship between the two variables is not unidirectional (type of relationship is not unidirectional), thus it can be interpreted that the explanation is increased, the knowledge of operating risk will increase.
- Seeing the significance of the relationship between the two variables.
- Based on the output above, it is known the significance value or Sig. (2-tailed) is 0.025, because the value of Sig.(2-tailed) is  $0.025 < 0.05$ , it means that there is a significant relationship between the Informed Consent Explanation variable and Operational Risk Knowledge at Sukadana Hospital, East Lampung 2022.

More than most of the respondents as many as 43 respondents (65.2%) had a good explanation of informed consent. Explanations are able to increase one's knowledge of something in accordance with the theory showing that knowledge or cognitive is very important in a person's perception, one's knowledge also affects individual perceptions and behavior, the higher one's knowledge, the better to

interpret it (Notoatmojo, 2010). Therefore, a good explanation of informed consent is needed to be able to increase knowledge of good surgical risks and vice versa if knowledge is lacking, knowledge about surgical risks will be less. The pre-operative stage is the first stage of perioperative care which begins when the patient is admitted to the reception room patient and ends when the patient is transferred to the operating table for surgery. In this phase the scope of nursing activities during this time may include establishing a baseline patient assessment in the clinic or home setting, preoperative interviews and preparing the patient for anesthesia administered at the time of surgery (Apipudin A et al, 2017).

All 66 patients with data management showed that the explanation variable of informed consent with knowledge of surgical risks in patients at Sukadana Hospital, East Lampung seen from the level of strength (closeness) which had a strength level (closeness) of 0.277 or a sufficient relationship. Meanwhile, seen from the direction (type) of the relationship between the two variables, the correlation coefficient number is positive, namely 0.277, which is not unidirectional because the quality of the explanation of informed consent is increased, the level of knowledge of operating risks will increase. Based on the output above, it is known that the value of Sig (2-tited) is 0.025 or the value of p value. Because the p value < 0.025 or p value < 0.05 so  $H_0$  is rejected and  $H_a$  is accepted. Thus, there is a significant relationship between the explanation of informed consent and knowledge of surgical risks in patients in the operating room of Sukadana Hospital, East Lampung in 2022.

The results of the Spearman Rank test show that there is a relationship between informed consent explanation and knowledge of surgical risks in patients at Sukadana Hospital, East Lampung. Based on the theory, knowledge is the result of knowing and occurs after people carry out sensing of a particular object. Sensing occurs through the five human senses, namely the senses of sight, hearing, smell, taste and touch. Most of human knowledge is obtained through the eyes and ears. Knowledge is information that is known or realized by someone (Notoatmojo, 2010).

Knowledge in this case is the patient's knowledge of the risks of surgery that may occur or be experienced by the patient. The aim is to minimize miscommunication and misperception in a surgical procedure performed on a patient. Informed consent is also an aspect of legality in patient safety standards. In accordance with the theory which states that According to (Asrul Buamona, 2017) in his book entitled "Medical Record and Informed Consent" it can be concluded that the purpose of the first informed consent is for the patient to determine an attitude towards medical actions that may be risky and dangerous and can even be dangerous. detrimental to the patient. Second, for doctors, it is a means of asking for approval of the actions to be given, which will result in a therapeutic relationship as a legal relationship that occurs between doctors and their patients. Third, approval of medical action provides protection to doctors against unexpected results, for example against risks of treatment that cannot be prevented by doctors even though doctors have taken medical actions carefully and in accordance with

professional standards. Fourth, the purpose of having informed consent for patients and doctors is as evidence in the evidence organized by the Honorary Council for Medical Ethics (MKEK), the Indonesian Medical Discipline Honorary Council (MKDKI) and the general courts, both criminal and civil.

One of the effect of Anastasi that should be explain in informed consent is the initial symptoms are most often seen more than 24 hours after the surgical procedure and may have occurred while the patient was on the hospital ward while the patient was asleep. Other peripheral nerve injuries are more closely related to positioning or surgical procedures. These injuries occur to the peroneal nerve, the brachial plexus, or the femoral and sciatic nerves. Then external pressure on the nerve can compromise its perfusion, impair its cellular integrity, and ultimately lead to edema, ischemia, and necrosis (A, 2015).

## CONCLUSION

Informed consent for patient operation decision cloud be held for incerasing the knowledge of operation risk. All of the risk of operation for medical treatment will be less from the knowing of the procesing. there is a relationship between the explanation of informed consent with knowledge of the risks of surgery. Based on the conclusions above, knowing the relationship between nurse therapeutic communication and patient recovery motivation, it is recommended for hospitals to add human resources in the operating room considering the high number of surgeries that have an impact on service quality in each phase of the process, one of which is the explanation of Informed Consent. Improving the quality of human resources with perioperative training for all nurses in the operating room. The hospital should have a decree of assignment or delegation which contains the policy of giving informed consent to the patient's operation.

## ACKNOWLEDGMENT

This appreciation to sponsors and fund donors in this case is for University of Muhammadiyah Pringsewu, and thankful for parties as Sukadana Hospital that have an important role as the researcher in conducting research.

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## Leg Gymnastics To Resolve Ineffectiveness Peripheral Perfusion Of Type 2 Diabetes Mellitus Patients

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### ***ABSTRACT***

Decreased blood circulation to the periphery which can interfere the health, decreased oxygen resulting in failure of nutrient delivery to tissues at the capillary level is an ineffective perfusion of peripheral tissues. Loss of sensation in the distal area of the foot that occurs in the patients with type 2 diabetes mellitus have a high risk of developing foot ulcers and even amputation. Diabetes Mellitus which is known as a condition of impaired metabolism in the body, because the body is unable to make or supply the hormone insulin which causes an increase in blood glucose levels that exceed normal. Effort to treat foot care by doing exercise action needs to be done to prevent complications that can worsen conditions such as doing leg exercises by moving the legs which result in stretching the muscles and will compress the veins around the muscles which can accelerate blood circulations in the legs, improve blood circulations and strengthen the small muscles in the legs. The description on Leg gymnastics to Resolve Ineffectiveness Peripheral Perfusion of Type 2 Diabetes Mellitus Patients using the Literature Review method sourced from the google scholar and proquest database. Foot exercise has a significant effect on the ineffectiveness of peripheral perfusion before and after being given foot exercises from the five sourced of journals that have been reviewed. One of the recommendations as an effort to prevent complications of Peripheral Arterial Disease (PAD) in Diabetes Mellitus Patients is to do leg exercises.

***Keywords:*** Type 2 Diabetes Mellitus, Ineffective Peripheral Perfusion, Leg Gymnastics

### **INTRODUCTION**

Diabetes Mellitus or better known as diabetes is a condition of impaired metabolism in the body due to the body's inability to make or supply the hormone insulin, causing an increase in blood sugar levels exceeding normal (Pratiwi Pebi, Amatiria Gustop & Yamin Mashaurani, 2014). WHO in the Minister of Health, 2014, explained that there were 382 million people living with Diabetes Mellitus in the world in 2013. By 2035 the number is estimated to increase to 592 million. The International Diabetes Federation (IDF), states that the prevalence of diabetes mellitus in the world is 1.9% and has made diabetes mellitus the seventh leading cause of death in the world, while in 2012 the incidence of diabetes mellitus in the world was 371 people, where the proportion of the incidence of type 2 diabetes mellitus is 95% of the world's population suffering from diabetes mellitus. The number of Diabetes Mellitus sufferers was 366 million people in 2011 increased to 387 million people in 2014 and is expected to increase to 592 million people in 2035. The number of deaths that occurred in 2014 was 4.9 million people where every seven seconds there is one death of Diabetes Mellitus patients in the world.

Minister of Health of the Republic of Indonesia (2016), Said that the number of people with Diabetes Mellitus (DM) in Indonesia was 10 million and the province of Lampung with a population based on the BPS (Central Bureau of Statistics) in 2010 said, as many as 7.608.405 people, there were 3.761 people suffering from diabetes mellitus. In 2018 the prevalence of Diabetes Mellitus at the General Hospital of dr. H. Abdul Moeloek 78% who have diabetic ulcers. The number of deaths due to complications of diabetes mellitus reached approximately 9.09% of the number of patients with Diabetes Mellitus who were treated at the General Hospital dr. H. Abdul Moeloek. From the data at the General Hospital dr. H. Abdul Moeloek Lampung province showed the prevalence rate of Diabetes Mellitus reached 39.5% with 76.2% experiencing complications. Medical Record, (2018) in Padila R, (2019), Cases of Diabetes Mellitus are still quite high and the need for maximum nursing action to reduce the occurrence of complications. Patients with diabetes mellitus, one of which can occur complications such as neuropathy, in the form of reduced sensation in the feet and is often associated with injuries to the feet. Peripheral neuropathy causes loss of sensation in the distal area of the foot which has a high risk for foot ulcers and even amputation. To prevent complications, it is necessary to take appropriate actions to overcome them (Fitria Eka et al. 2017). Nursing actions in type 2 Diabetes Mellitus patients to prevent these complications can be carried out foot care such as cleaning the feet and doing foot exercises.

Diabetic foot exercise can improve blood circulation in the feet, improve blood circulation and will strengthen the small muscles of the feet so that the feet of diabetics can be well maintained. If you do foot care regularly, it will reduce diabetic foot disease by 50-60% (Wahyuni & Arisfa, 2016). The results of the research of Sanjay Putu Budhi, Yanti Ni Luh Putu Eva, Puspita Luh Mira (2019), with the title "The Effect of Diabetic Foot Exercise on Foot Sensitivity in Type 2 Diabetes Mellitus Patients" that the results of data analysis showed better foot sensitivity in type 2 Diabetes Mellitus patients who given diabetic foot exercise with p value = 0.000. Wilkinson (2016) and Herman & Kamitsuru (2017), state that Ineffective Peripheral Perfusion is a decrease in peripheral blood circulation which can interfere with health, a decrease in oxygen that results in failure to deliver nutrients to the tissues at the capillary level.

## METHODS

The method used to compile a *literature review* is to use an electronic database. The journal search method uses google scholar and proquest database with a *Quasi Experimental* research design. The keywords used in the journal search are diabetes mellitus patients and foot exercises, Restricted journals from 2015-2020.

## RESULT AND DISCUSSION

The results of research conducted by Khomsah, I.Y., Sofiani, Y. & Irawati, D. (2020), 18 patients with type 2 diabetes mellitus showed that before the foot exercise the Ankle Brachial Index value was on average 0.817 and there was an increase in the value with an average value of 0.817. average ABI to 0.917. The results of the research by Lasia, I.M, Agustini, I.G & Purwaningsih (2020), 23 respondents scored the Ankle Brachial Index before doing leg exercises an average of 0.88 and after leg exercises the average was 1.02. The results of the research by Mangiwa I, Katuk, M.E & Sumarauw L. (2017), 30 respondents before the foot exercise had an average ABI value of 0.8-0.89 after the foot exercise there was an average increase to 0.9-1.4 . The results of the research by Wahyuni, A. & Arisfa, N. (2016), showed that the average ABI value of 10 respondents before doing leg exercises was 0.62 and after foot exercise the average ABI value was 0.93. The results of the research by Zukhri, S. (2015), 40 respondents before the foot exercise exercise obtained an average ABI value of 0.800 after the foot exercise the average value became 1.005. This shows that there is a significant effect of leg exercise on increasing the value of the Ankle Brachial Index in patients with type 2 diabetes mellitus.

Diabetic foot exercise is effective in preventing peripheral vascularization and increasing blood circulation in the feet. This is supported by the opinion of Agustiningsih (2013) in zukhri (2015), that the effect of foot exercise on blood circulation in patients with type 2 Diabetes Mellitus in Layengan village, Semarang district shows a picture of leg blood circulation from 0.5-0.8 to 0.8- 1,2 which means there is an increase in blood circulation in the legs. The results of this *literature review* are also in line

with the research of Plotnikof (2010) in Khomsah, I. Y., Sofiani, Y., & Ira wati, D. (2020), with the title “multicomponent, home-based resistance training for obese adults with type 2 diabetes: a randomized controlled trial”, showed a significant increase in upper body strength p-Value 0.003 and lower limb p-Value 0.0001 in the intervention group compared to the control group which was carried out 3 days a week. In addition to leg exercise, the examination of the ABI (*Ankle Brachial Index*) value can be used as a tool to detect signs of symptoms of peripheral vascular disorders such as ischemia. Some complications in people with diabetes mellitus, one of which is Peripheral Arterial Disease (PAD), is a narrowing of peripheral arteries caused by atherosclerosis so that blood flow to the extremities is reduced (Setiati et al, 2015).

Peripheral Arterial Disease (PAD) and the arteries that are often affected are arteries in the lower extremities (Shrikhande & McKinsey, 2012). In Arterial Disease (PAD) there is a decrease in low peripheral circulation so that ulcers or recurrent ulcers can occur (Purwanti, 2013). Non-pharmacologic measures to prevent complications of Peripheral Arterial Disease (PAD) can perform examination and treatment of foot gymnastics and check the ABI value. Leg gymnastics is an exercise performed by people with diabetes mellitus to prevent injuries and complications in the peripheral arteries. Leg exercise can improve blood circulation and strengthen the small muscles of the legs and can increase the strength of the calf muscles, thigh muscles and also overcome the limitations of joint movement (Nurrahmani & Kurniadi, 2014).

Leg exercise that is done regularly will also have an impact on the value of the *Ankle Brachial Index* (ABI) for people with Diabetes Mellitus, because the movements in diabetic foot exercises are useful for improving blood circulation in the legs and preventing complications such as (PAD). *Ankle Brachial Index* (ABI) is a non-invasive examination of blood vessels to detect decreased peripheral perfusion or lower extremity circulation with a simple examination through measuring blood pressure in the Ankle (legs) and Brachial (hands) areas using a Doppler Probe. The results of the ABI measurement show the condition of blood circulation in the lower limbs with a value range of 0.9-1.2 which indicates that circulation to the leg area is normal (Gitaraja, 2015) in Mangiwa, I., Katut, M.E., & Sumarauw, L. (2017).

The *literature review* of the five journals that discuss the effectiveness of foot exercises in patients with diabetes mellitus. The author assumes that the foot exercise can be categorized as an intervention that is quite safe and effective in preventing the occurrence of peripheral arterial disease. Leg exercise can improve blood circulation in the legs and joints and ligaments around the legs, the veins will be more active in pumping blood back to the heart so that blood circulation in the legs will become smoother which will increase blood pressure. This is supported by the opinion Dewi, S. & Sundari (2012) in Mangiwa, I., Katuk, M., & Sumarauw, L. (2017), who revealed that foot exercises can increase the potential for diabetic wounds on the feet, and increase insulin production which is used in transport glucose to cells helping lower glucose in the blood. The results of this literature are also in line with research conducted by Subekti (2017) in Khomsah, I. Y., Sofiani, Y., & Irawati, D., (2020), with the title "the effect of foot exercise on peripheral blood circulation seen from the *Ankle Brachial Index* (ABI) value in type 2 Diabetes Mellitus patients in the Melati One Room at Dr. Irawati, Diana. Moewardi", showed the results of the intervention 3 times a week with a duration of 30 minutes for 2 weeks that foot exercise had an effect on peripheral blood circulation with a p-Value of 0.001.

The value of the *Ankle Brachial Index* is a simple investigation to detect signs and symptoms of peripheral vascular disorders such as ischemia (AHA, 2012). ABI is a method by measuring the pressure in the ankle (leg) and brachial (hand) area using a Doppler probe. (Gitarja, 2015) in Mangiwa, I., Katuk, M., & Sumarauw, L. (2017). In the *literature review* of the five journals that discuss the effectiveness of increasing the value of the *Ankle Brachial Index* (ABI) after doing leg exercises. The researcher assumes that there is a significant increase in the value of the *Ankle Brachial Index* (ABI) after the foot exercises because the foot exercises that are carried out improve blood circulation in the lower extremities and there is an effective contraction of the calf muscles (gastrocnimeus and soleus) which is needed in the ankle so that it can be used to treat the ankle, improve venous blood circulation and increase leg blood pressure which has an impact on the *Ankle Brachial Index* value. The results of this *literature review* are also in line with research by Agustianingsih (2013) in Zukri (2015), with the results that leg blood circulation in the intervention group increased the *Ankle Brachial Index* value from 0.5 to 0.8 to 0.8 to 1.2, which means that there is an influence diabetic foot exercise on the value of the *Ankle Brachial Index* (ABI).

Based on the journals that have been reviewed, one of the non-pharmacological therapies that can be used to prevent complications and improve blood circulation in the legs in patients with diabetes mellitus is by doing foot exercises. The implementation of foot exercises in patients with diabetes mellitus will cause leg movements which will result in leg muscles and compress the veins around these muscles so that it will encourage blood to the heart and venous pressure will decrease. It is hoped that the results of this journal *literature review* serve as a basis for the development of nursing science that can be applied to the management of foot exercises in patients with type II diabetes mellitus and can be a reference for students in non-pharmacological management of patients with type 2 Diabetes Mellitus who experience ineffective peripheral perfusion.

Examination of the value of the *Ankle Brachial Index* (ABI) needs to be done especially for patients with diabetes mellitus in order to determine the adequacy of peripheral blood circulation or detect the possibility of Peripheral Arterial Disease (PAD).

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## Instagram Ads Define Market Segmentation

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### Abstract

The development of the current digitalization era has changed the pattern of humans in communicating with others, to connect others with just one touch in the digital world. The era of digitalization also requires manufacturers to compete in developing their business strategies, especially effective sales promotions to attract many customers. Nowadays, many people use social media to do marketing. One of the social media that is widely used by people in marketing today is Instagram. Instagram is a platform that has paid advertising features or better known as Instagram ads. This study uses a qualitative approach with a descriptive method. In this study, researchers used Instagram as the object of research because, among other social media, Instagram is one of the most popular social media today. In addition, the subject of this research is the features contained in Instagram ads. Instagram ads can help producers to advertise products to be appropriate and on target. So that it can increase brand awareness and sales, and can provide detailed information on people who see ads, ranging from age, gender, location, and time when viewing ads.

**Keywords:** Instagram Ads, Marketing, Market Segmentation



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### INTRODUCTION

In this era of digitalization, the Internet has become the most important part of everyday life and has changed the form of activities and interactions with people around us. The internet has allowed users to meet each other in cyberspace, and hear and share common interests with those around us (Hatta & Adrenanus, 2019).

The development of the current digitalization era has changed the pattern of humans in communicating with others, to connect others with just one touch in the digital world. Before the digitalization era, marketing was only done through radio, print, and television media. But over time and with the development of the digitalization era, where everything can be done with just one click on our favorite gadget.

The era of digitalization also requires manufacturers to compete in developing their business strategies, especially effective sales promotions to attract many customers. In the rapid era of increasingly sophisticated digitalization, currently the use of the internet is no stranger to marketing a product. An effort made to market

goods or services using the internet can also be called e-marketing. This makes marketing communication costs more efficient. One of the e-marketing media that is becoming a trend today is social media (social networking).

In (Hatta & Adrenanus, 2019) As many as 120 million Indonesians use mobile devices, such as smartphones or tablets to access social media, with a penetration of 45 percent. Within a week, online activity on social media via smartphones reached 37 percent. This illustrates the behavior of Indonesian people in this digitalization era who tend to spend a lot of time on their favorite smartphones.

Nowadays, many people use social media to do marketing. One of the social media that is widely used by people in marketing today is Instagram. Instagram is a platform that has paid advertising features or better known as Instagram ads. Instagram ads are a business platform developed by Facebook which aims to be a forum for marketing products on social media, especially on Instagram. Many producers use Instagram ads to introduce their products so that they can increase sales.

In (Sahi, 2021) what can be obtained from the use of Instagram ads is to increase (a) Brand awareness, (b) Obtain specific Instagram user information, (c) There are various choices of ad formats, namely images, videos, and several images. in one post, (d) Directing visitors to visit the website

## METHODS

This study uses a qualitative approach with a descriptive method. In (Sahi, 2021) Qualitative research is conducted to build knowledge through understanding and discovery. Meanwhile, according to Umami (Sahi, 2021), the descriptive method is more about analyzing the surface of the data, not the depth of the data or the meaning of the data, and aims to describe the state or status of events.

In this study, researchers used Instagram as the object of research because, among other social media, Instagram is one of the most popular social media today. In addition, the subject of this research is the features contained in Instagram ads.

## RESULTS AND DISCUSSION

Instagram is an online digital-based social media platform that features paid advertising (Instagram Ads). The Instagram ads feature can advertise products to be displayed on the user's homepage and instastories with customized specifications. When users want to take advantage of these features, users are given the option to automatically determine targets that have been set by Instagram or according to their wishes.



source: Instagram app

Figure 1. Estimated Target Audience Size



In Figure 1 the form of choice is to determine the target itself. There are 4 features to determine the target audience, namely: 1) Audience Name, 2) Location, 3) Interests, 4) Age and Gender.

### **1. Audience Name**

The name of the audience is the name of the target market that will be selected.

### **2. Location**

This location determines the distribution of the location of the advertised content. If the advertised product is only in the area around the producer, you can choose the location where the producer is located.

### **3. Interest**

In this column, you can determine the audience who watched the ad according to their interests. For example, if the advertised product is in the form of sports equipment, it can choose the interests of viewers who like sports, so the advertisement will be more targeted.

### **4. Age and Gender**

This column also specify the age range that can see the ads that are displayed. For example, if the product being sold is for teenagers, then the age range chosen is around 15 - 27 years.

Gender can also be determined so that the advertised product is right on target according to the predetermined market.

In addition, Instagram can provide detailed data from our accounts by utilizing features such as:

#### **1. Instagram Insights**

Helianthusonfri J (2019) in his book Learning Social Media Marketing One of the excellent feature of an Instagram account is Instagram Insights. Instagram Insights can be used to get various data related to a user's Instagram account.

#### **2. Activity Menu**

In the activity menu, you can see the number of interactions that occur in user accounts. Then, there is also information about how many accounts have been reached by user posts. In the interactions section, you can see the number of interactions that occur on the user's Instagram account so that they can monitor the data from day to day.

#### **3. Profile visits**

Displays the number of visits that occurred to the user's Instagram profile. The higher the profile visits number, the more people who open the user's Instagram profile

#### **4. Website clicks.**

Displays the number of clicks that occur on the URL address in the user's Instagram account bio

#### **5. Menu Content**

This menu displays data insights for each content published on Instagram. In the posts column, you can see feed content that has just been published on Instagram. Meanwhile, in the stories column, you can see the content of Instagram stories that have been published.

#### **6. Audience Menu**

This menu displays data about followers/audiences on Instagram. In this audience menu, you can find the following data. A number of followers, top location of followers. Can be seen by city or country, follower percentage data based on age and gender range, follower percentage data based on gender, and follower active time data. In the follower's section,

you can also see what day and time followers are active on Instagram. This data will help in knowing the right time to post content on Instagram. From this data, we can evaluate and improve marketing activities on Instagram.

### CONCLUSION

From this description, Instagram ads can help producers to advertise products so that they are appropriate and on target. So that it can increase brand awareness and sales, and can provide detailed information on people who see ads, ranging from age, gender, location, and time when viewing ads.

The use of facilities on Instagram, namely Instagram ads, can build interactions with users and can increase brand awareness, including being able to find out from (a) activity interactions, being able to know the number of visitors to Instagram, and interacting with the target market using several facilities available in the profile such as Users can do direct messages, access websites, can send emails and can find out in detail the number of people who access activity interactions. (b) Content Interactions, utilizing Instagram ads, greatly impacts the information obtained from user interactions, on our Instagram such as likes, comments, shares and saves so that we can find out the wishes of users and can be a reference for determining future marketing strategies, especially on part of the content to be presented. (c) The audience, Instagram ads users are very helpful in knowing the audience by gender, age range, and region and the interesting thing is that if you don't advertise content or don't use Instagram ads facilities, then the audience view can't display information.

### ACKNOWLEDGMENT

Thank you for all the opportunities that have been given to me by the University of Muhammadiyah Pringsewu as the organizer of the International Conference on Social, Technology, Education, and Health Science (ISTEHS). I hope the articles that I make can be useful in the world of business and science.

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<https://business.instagram.com/>

## Non-pharmacological therapy to Reduce cortisol in labor: Literature review

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### Abstract

Labor pain and anxiety are important concerns during labor, especially among the primigravidae. It may increase the duration of labor, increase stress hormones, and affect maternal and newborn related outcomes. This study aims to determine the literature review of Non-pharmacological therapy to Reduce cortisol in labor : Literature review. Method: The literature review method with the PRISMA approach is used in this literature review. Synthesis of data using the PICO method. The source of the articles used was through Google Scholar, PubMed NCBI and EBSCO. The inclusion criteria set were articles with the keywords "Labor", "Cortisol", "reducing" and "on pharmacological", articles in Indonesian or English, published in 2012-2022, and accessible in full text. Results: 8 articles were used in the literature review. The result: In this literature review, 8 articles were found that matched the inclusion and exclusion criteria. Seven interventions stated that they could significantly reduce cortisol levels during labor through (massage, psychological support (emotional freedom technique, continuous support, mental health education), chewing mint candy and yoga exercises), while acupuncture did not have a significant impact on reducing cortisol in labor. Conclusion: Intervention efforts that show a decrease in cortisol include providing psychological support during pregnancy and childbirth, prenatal yoga, chewing mint gum and doing massage. Recommendation: We also recommend randomized controlled trials to be conducted with a larger study population to clarify the efficacy of these interventions to reduce cortisol levels in labor.

**Keywords:** non pharmacological, reduce, cortisol, labor



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## INTRODUCTION

Pregnancy to childbirth are physiological, anatomical, psychological and social changes that affect different body systems (King et al., 2019) . It is well known that cortisol levels

increase during pregnancy and continues to increase with the progress of labor. These physiological changes are seen as a need to maintain maternal/fetal well-being and indicate a bad delivery problem. When delivery time comes, her conditional response is waiting for pain and her brain perceives any contractions as pain, causing stress and increasing adrenal-pituitary-hypothalamic nervous system activation, hypertension, and heart rate. Mothers who experience stress and anxiety through the HPA (Hypothalamic-Pituitary and Adrenal) axis which can release the stress hormone cortisol. In this review, we present a brief overview of the current understanding of the activity of the hypothalamic-pituitary-adrenal (HPA) axis during late pregnancy and labor and the inherent challenges of measuring cortisol as a biomarker of stress during labor. (Benfield et al., 2014)

Stressor and pain factors contribute to an increase in labor duration and the proliferation of pain through the secretion of catecholamines, cortisol, and epinephrine and can suppress the immune system. (Leff-Gelman et al., 2020) . The impact of this stress causes unwanted complications such as the length of the cervical ripening process, prolonged labor, risk of fetal distress, low APGAR score, elective caesarean section. (Nystedt & Hildingsson, 2014) . Severe pain, fear, anxiety, and prolonged labor increase the risk of assisted delivery and the mother's willingness to perform a cesarean delivery without medical indication. Labor complications increase the risk of postpartum blues disorders, postpartum depression with increased cortisol levels. (Dutsch-wicherek et al., 2020; Kurniawan, 2013; Ria et al., 2018) . The high impact of Cortisol on labor also has an effect on low breastfeeding success (Karakoyunlu et al., 2019) .

Various pharmacological and non-pharmacological approaches have been carried out to control and reduce stress and anxiety of mothers. (Amiri et al., 2019) One of them is by suppressing cortisol levels in the blood to reduce anxiety and stressors in maternity mothers.

Pharmacological interventions to reduce pain and anxiety include opioids, narcotics, epidural analgesia, para cervical blocks, spinal blocks, pudendal blocks, and nitrous oxide, which are widely used for labor analgesia. However, midwives do not have the capability to do so . The use of sustained epidural analgesia in natural labor has led to a reduction in the intensity of pain syndromes in labor, and reduced cortisol concentrations in the early postnatal period. However, an increase in the frequency of postpartum blues occurs in the first days after delivery. Adequate labor pain relief has little impact on the frequency of postpartum depression six weeks after delivery (Riazanova et al., 2018) .

Several non-pharmacological studies have been carried out to reduce anxiety and labor pain so that it can be seen the effectiveness of cortisol levels in childbirth women.

In research on practical skills of the EFT (Emotional Freedom Techniques) method, yoga exercise, emotional support, chewing mint candy, acupuncture techniques (Asadi et al., 2015; Dewi et al., 2017; Jumrah, 2022; Mardjan et al., 2018 ; Stjernholm et al., 2021) . However, interventions to lower cortisol levels in labor have not been widely discussed in the literature review. Accordingly, this study to investigate the literature review intervention to reduce cortisol level

## METHODS

This study uses the form of a literature study which was carried out by analyzing several previous studies and evaluating them (Kumar, 2016) . The selection of this literature review aims to determine interventions to reduce cortisol levels in mothers facing childbirth . This research was conducted through Google Scholar, PubMed/Medline, DOAJ (Directory of open access journals to make it easier for researchers to get references as desired. Researchers can search for journals with the keywords “Labor”, “Cortisol”, “reducing” and “non pharmacological”. Determination of the journal can be used or not explained into the inclusion and exclusion criteria. These inclusion criteria were published in the range of 2012-2022, the literature discusses the scope of care to reduce cortisol levels at the time of deliver, the research location is not limited, Indonesian and English articles and full text, free of charge. Exclusion criteria are articles that use a systematic review research method.

Data collection strategies can be in the form of keyword search methods used to search for articles to be studied. The keyword search method that can be used as a reference to obtain relevant literature can use “PICO” (Population in Question, Intervention of Interest, Comparator and Outcome). The determination to use PICO adjusts to the reference sources we will use (13). If the source is an international library reference (Google Schoolar, PubMed and DOAJ (Directory pf open access journals) then the keyword must use English in the search. The more keywords embedded in the search, the more specific the search will be.

Data collection includes inclusion and exclusion criteria, selection of articles and assessment of the quality of articles relevant to the topic of article writing. Inclusion criteria are descriptions of the factors the authors chose to include articles for review. Exclusion criteria are an explanation of the author's factors to decide that the article in the search is not included in the article to be reviewed. It is also worth mentioning the number of studies used and not used in writing this review.

The selection of journals or literature to be analyzed must be carried out comprehensively and sequentially. Screening is filtering or selecting data (research articles) which aims to select research problems that are in accordance with the topic or title, abstract and keywords studied. Quality or feasibility assessment is based on data (research articles) with full text by meeting the specified criteria (inclusion and exclusion criteria) Comprehensive screening process using the PRISMA (Preferred Reporting Items For Systematic Review and Meta Analyses) method (LoBiondo-Wood & Haber, 2015) .

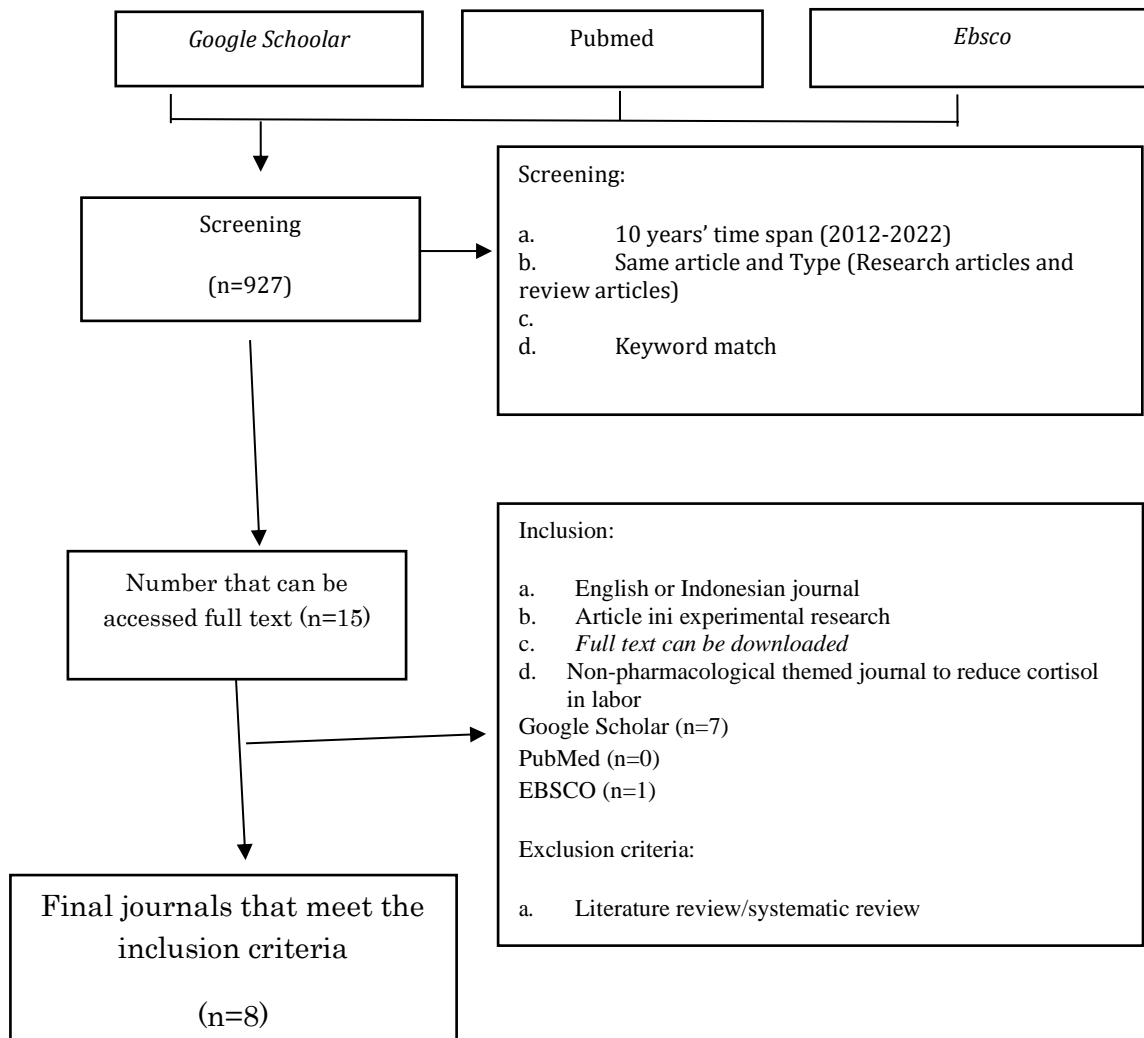


Figure 1. prism model article review

Based on the data used to browse journal articles according to the title Non-pharmacological therapy to Reduce cortisol in labor: Literature review . There are seven sources from google scientist, 0 articles from PubMed and 1 article from EBSCO which are used to conduct a literature review. These articles were then assessed using the Joanna Briggs Institute (JBI) Critical Assessment Checklist for Analytical Cross Sectional Studies to assess the quality of the articles (Jordan et al., 2018; Moola et al., 2017) .

## RESULTS AND DISCUSSION

### Results .

Table 1. Result of article synthesis

No	Researcher (Years)	Objective	Methods and Sample	Findings
1	(Stjernholm et al., 2021)	The aim of this study was to investigate whether continuous labor support by a midwife promotes labor progress and vaginal delivery	A randomized controlled study at a university hospital in Sweden in 2015–17. Primiparous women with singleton pregnancy and spontaneous labor onset were randomized to continuous support (n = 30) or standard care (n = 29) during delivery. The primary outcome was the duration of active labor. Secondary outcomes were delivery mode, women's need of labor analgesia and satisfaction with delivery, maternal cortisol levels, and neonatal morbidity.	Continuous support was followed by shorter active labor $11.0 \pm 5.7$ h compared to $13.7 \pm 3.9$ h with standard care ( $p = 0.001$ ). Women in the continuous support group tended to have lower cortisol levels and low cortisol during the first ( $p = 0.02$ ) and second ( $p = 0.04$ ) stages of labor were correlated with shorter active labor. Continuous support was followed by spontaneous delivery in 73%, instrumental delivery in 24% and emergency cesarean section in 3% in contrast to standard care which was followed by spontaneous delivery in 62%, instrumental delivery in 24% and cesarean in 14% ( $p = 0.19$ ). The continuous support group received combined analgesic methods more often ( $p = 0.04$ ). Women's satisfaction with delivery and neonatal morbidity were comparable

2	(Salari et al., 2013)	This study aim To determine the effect of mint chewing gum on salivary cortisol in nulliparous women in the first stage of labor	The study was a randomized, single-blind, controlled clinical trial in which 60 nulliparous women, who admitted at the first stage of labor in Melanin Hospital in Mashhad in 2012, were allocated to two experimental and control groups. The experimental group was asked to chew mint gum (1 gr) for 20 minutes and then their saliva sample were taken to measure cortisol level.	The mean salivary cortisol levels at the first and second measurement were $44/9 \pm 12/7$ and $41/4 \pm 13/0$ in experimental and also $39/3 \pm 10/3$ and $42/8 \pm 11/0$ nmol in control groups. The salivary cortisol level showed a significant increase from the first to the second measurement in control group (P 0.000)
3	(Mardjan et al., 2018)	To assess the effectiveness of Emotional freedom Techniques to decrease anxiety in facing childbirth.	This research used the quasi-experimental pre-test and post-test method of treatment and control. The treatment was done during the third trimester, started and followed for 3 months i.e., month 7th, 8th, 9th. The EFT was implemented every month then continued independently by the mother, until before childbirth process. The research instrument used TMAS (Taylor Manifest Anxiety Scale) and cortisol blood test. The subjects were 38 respondents composed of 19 interventions and 19 controls.	Result with paired t-test, TMAS1,2,3, each stage got significant difference, pre and post blood cortisol level p = 0.0001. Linear regression analysis on TMAS p = 0.001 and $R^2 = 0.57$ , whereas blood cortisol level p = 0.004 and $R^2 = 0.43$ . This analysis proved EFT contributed significantly 57% to lower anxiety levels and 43% to lower blood cortisol level, indirectly affected the readiness to face childbirth process.
4	(Dewi et al., 2017)	The purpose of this study is to	Quasy experimental research method with	The results showed that there was a significant



	prove the effect of a combination of prenatal yoga and pregnancy exercise on changes in cortisol levels and the duration of the first stage of labor	Non-Equivalent Group Design. The subjects of this study were 26 third trimester pregnant women in the Tanjung Anom Public Health Center, Nganjuk Regency who were selected by purposive sampling technique, which consisted of a treatment group and a control group.	difference in cortisol levels before and after the intervention in the treatment group. From the Mann-Whitney test results, a significance value of 0.010 was smaller than 0.05. There was a decrease of -209.67 ng/ml in the treatment group, and -129.96 ng/ml in the control group. The mean length of labor in the treatment group and the control group after statistical tests with the Wilcoxon test was obtained, the value of $p = 0.003$ was smaller than 0.05.	
5	(Asadi et al., 2015)	This study aims to investigate the effects of acupuncture on labor pain, serum cortisol levels, and duration of labor.	We conducted a randomized, single-blind, controlled trial that included 63 nulliparous women: 32 in the study group and 31 in the control group. Acupuncture was performed at the SP-6 and the LI-4 points in the study group, and sham acupuncture was performed at the same points in the control group. Pain scores and serum cortisol levels were measured before and after the intervention.	The mean serum cortisol level in the study group was 426 NM (95% CI Z 395e456), which increased to 452 NM (95% CI Z 411e495). In the control group, initial cortisol level of 385 NM (95% CI Z 346e424) increased to 414 NM (95% CI Z 343e486) after sham acupuncture. The changes in serum cortisol level did not vary significantly between groups. No significant variations in pain scores or serum cortisol levels were observed between the two control groups. However, the duration

				of labor was significantly lower ( $p < 0.001$ ) in the group receiving real acupuncture. Our results show that acupuncture is significantly associated with a decreased duration of labor, even though it was no better than a placebo for the treatment of labor pain.
6	(Hosseini et al., 2013)	The purpose of this study is to investigate the effects of massage therapy on the progress of labor and plasma level of cortisol in nulliparous women in labor	This experimental study, 30 subjects were selected voluntarily among nulliparous women aged 20 to 30 years in active labor phase. They, then, divided into two equal experimental and control groups randomly. The experimental group in the active phase (dilated 3-4 cm) to transitional phase (dilated 8-10 cm) received massage therapy. The massage was done for 10 minutes with 10 minutes rest in between sets. Meanwhile, control group received no intervention. Next, labor duration and plasma levels of cortisol hormone were evaluated by drawing blood of parturient women. Results were analyzed using independent t-test and paired t-test	The mean age of control and experimental groups were, $23.9 \pm 3.0$ and $23.6 \pm 4.0$ years, respectively. In terms of educational level, 10% in both groups were under diploma, 23.3% and 24.3% of subjects in control and experimental groups, in turn, had diploma, and 16.7% and 15.7% in control and experimental groups possessed bachelor degree, respectively . The results from statistical analysis showed that labor duration and level of cortisol hormone had significant reduction in experimental group than control group ( $p \leq 0.05$ ) . Other outcomes showed the effect of education on maternal stress, labor pain and infant BDNF levels.

7	(Baljon et al., 2022)	This study to investigate the effectiveness of BRM intervention over standard care on managing labor pain, anxiety and maternal-related outcomes among primigravidae in active labor in Saudi Arabia	This study used single-blind-parallel randomized controlled trial (RCT) was conducted at the Maternity and Children Hospital (MCH), Makkah, Saudi Arabia, by recruiting primigravidae aged 20 to 35 years. The labor pain used VAS and the anxiety used (AASPWL). The secondary outcomes were duration of labor, maternal stress hormone levels, maternal vital signs, maternal satisfaction, fetal heart rate, and APGAR scores.	A total of 225 participants were randomized for the control (n = 112) and intervention group (113). BRM correspondingly lowered adrenocorticotrophic (ACTH) (133 vs 209 pg/mL, $p < 0.001$ ), cortisol (1231 vs 1360 nmol/mL, $p = 0.003$ ), and oxytocin (159 vs 121 pg/mL, $p < 0.001$ ). It also shortened the labor duration (165 vs 333 minutes, $p < 0.001$ ), improved vital signs, which, in higher APGAR scores, and increased maternal satisfaction. The labor unit management could consider adopting BRM as one of the non-pharmacological analgesia for healthy women in labor.
8	(Friday, 2022)	to determine the effect of maternal mental health education with a balanced rocking chair theory approach on self-efficacy, stress, maternal cortisol levels, adaptation to labor pain and levels of brain derived neurotrophic factor (BDNF) in newborns.	This study used a quasi-experimental design. The research sample was 80 respondents who met the inclusion criteria (39 interventions and 41 controls). Data were analyzed by <i>chi square</i> , <i>paired T</i> , <i>Wilcoxon</i> , <i>independent T</i> and <i>spearman rank correlation</i> .	The results of the analysis showed that the mean maternal cortisol levels in the control and intervene groups were $80.78 \pm 14.69$ nmol/L and $96.76 \pm 30.96$ nmol/L. There is an effect of maternal mental health education on cortisol levels in the intervention and control groups $p$ value (0.004)

In this literature review, 8 articles were found that matched the inclusion and exclusion criteria. Seven interventions stated that they could significantly reduce cortisol levels during labor (massage, psychological support (emotional freedom technique, continuous support, mental health education), chewing mint candy and yoga exercises), while acupuncture had no significant impact on decreasing cortisol in labor. .

## Discussion

### *Psychological Support*

This literature review shows that there are three psychological support interventions that have a significant effect on reducing cortisol levels in childbirth.

The World Health Organization states that almost all women can experience mental disorders during pregnancy and in the first year after giving birth. Conditions such as extreme stress, emergency and conflict situations, and natural disasters can increase the risk of certain mental health disorders. Maternal mental health problems will be associated with long-term risks for mothers and their partners, and for their children (Alipour et al., 2018) .

High-quality prenatal care systems should develop capacity for risk assessment and treatment for depression and anxiety. Early screening efforts using validated screening tools, providing maternal mental health education, and being aware of various medical, psychological, and complementary approaches to treating stress and anxiety, need to be developed. to guide and refer the best patients. The use of this practice will improve the quality of life in pregnant women with depression and anxiety and can help reduce the chances of poor birth outcomes, postpartum mental health problems, and adverse effects on offspring (Wood, 2015) .

The first form of psychological support is to promote continuous support for mothers in labor. This support can come from families and health workers. Mothers who get full support can reduce maternal anxiety. Continuous delivery support was followed by a shorter active labor compared to standard care. Women with continuous support had high rates of vaginal delivery and tended to have lower cortisol levels during all stages of active labor reflecting lower stress levels. Low cortisol correlates with shorter active labor. Based on these results, we recommend continuous delivery support for all primiparous women during active labor (Stjernholm et al., 2021) .

Maternal mental health education is adopted from the Mindfulness Based Childbirth Education (MBCE) model which is an integration of education through relaxation skills and techniques to reduce anxiety and fear in the face of a normal delivery process. educational model to achieve maternal mental well-being by involving the family, especially husbands, education that provides services to reduce stress on mothers through skills, program evaluation that will pay attention to maternal mental aspects such as stress, self-efficacy and anxiety and use of media in the form of module development and audio assistance visually to mothers and families to deal with the labor process which is a transitional period of changing the mother's role (Jumrah, 2022) .

Another form of psychological support is by using Support Emotional Freedom techniques is (SEFT) one of the therapeutic methods to relieve or heal emotional and physical problems by performing tapping at certain points of meridians on the face and hands with prayers affecting the HPA, reducing exposure of ACHT hormones and

Cortisol so that clients become calmer and more confident (Salas et al, 2011). The decrease in cortisol hormone levels that occurred in this study was due to the positive role of SEFT's action on third trimester pregnant women who experienced an increase in cortisol hormone levels during pregnancy. A decrease in the hormone cortisol objectively indicates a decrease in stress or anxiety, which means that pregnant women experience a calm after being given SEFT (Mardjan et al., 2018)

#### *Mint candy*

This literature review shows that chewing mint gum during labor can reduce anxiety and cortisol. Mint gum reduces salivary cortisol levels in the first stage of labor in nulliparous women, which is evidence for reducing stress. Although careful assessment of appropriate changes in stress levels is required laboratory and clinical studies (Salari et al., 2013)

Aromatherapy is a complementary medicine that can reduce stress and create a feeling of calmness by stimulating the olfactory system through the use of essential oils. One of the mint aromatherapy as a simple, inexpensive, non-invasive, and effective intervention to reduce anxiety during labor (Suriyati, 2019) . Another study showed that mint chewing gum was effective in reducing anxiety in students in writing essays (Patama et al., 2022) . Some respondents said that chewing gum reduces stress by reducing excessive muscle tension and reducing energy through chewing movements, thereby making the respondent feel relaxed, relaxed, and can stabilize the respondent's emotions. In the study, aromatherapy of mint oil, whose main constituents were menthol/menthone, carvone, linalool, pulegone or piperitenone oxide. Menthol essential oil, exhibiting cooling, analgesic and antipruritic effects and facilitating concentration, is most often used in aromatherapy (Kieltyka-dadasiewicz & Kubat-sikorska, 2018)

#### *Gymnastics*

This literature review shows that there is one research article that discusses yoga exercise in reducing cortisol levels in first stage labor. The average cortisol level of the treatment group that was given the intervention of a combination of prenatal yoga and pregnancy exercise decreased more than the control group, which was only given the intervention of pregnant exercise. The mean cortisol level in the treatment group decreased by -209.67 ng/ml. The mean cortisol level in the control group also decreased by -129.96 ng/ml. The results of this study are supported by a theory that suggests that yoga practice is associated with an increase in Gamma Amino Butyric Acid (GABA). GABA is a neurotransmitter that plays an important role in the symptoms of mental disorders. The main function of GABA is to reduce arousal and reduce aggression, anxiety and active in excitatory function (Subu, 2011). Lestari, (2022) stated that yoga is a unique method of balancing the autonomic nervous system and exerting an influence on physical disorders and disorders related to stress. Prenatal yoga breathing techniques cause an increase in parasympathetic work, provide a calming effect, stimulate the release of oxytocin and it is also mentioned that yoga breathing exercises for three weeks cause a significant decrease in cortisol hormone production (Dewi et al., 2017) .

#### *Massage Therapy*

Severe labor pains and anxiety during the active phase of labor lead to increased levels of catecholamines and the hormone cortisol leading to reduced strength of uterine contractions, uncoordinated contractions, and ultimately a long duration of labor. (Chaillet et al., 2014; Tzeng et al., 2017) . With the onset of labor pain, stress hormones increase, which causes an increase in the rate of respiratory rhythm, heart rate, reduced energy, and fatigue (Kiriakopoulos et al., 2019) . Previous research has shown that massage therapy reduces anxiety, depression, pain, and postpartum depression. Massage therapy together with body relaxation causes anxiety and stress reduction (Haseli et al., 2019; Marwiyah & Pusporini, 2017) . Stress increases the secretion of the hormone cortisol in all vertebrates in response to various stressors (Jankord & Herman, 2008) . In addition, cortisol, being the most important stress-induced hormone, is a significant modulator of anxiety disorders. Studies have shown that massage significantly reduces the duration of the first phase of labor and may lead to a reduction in labor pain. The underlying reason is that the catecholamines and cortisol hormones, which are secreted in response to labor pain and anxiety, cause disturbances in the cervical dilatation process, decrease uterine wall smooth muscle contractions, and further prolong the duration of labor (Miller et al., 2019) . Since prolongation of labor may pose risks to both mother and fetus, the goal of nursing and midwifery personnel in the delivery room is to use an appropriate method to shorten the duration of labor as far as possible.

This literature review describes two studies showing massage can reduce cortisol levels during the first stage of labor. According to the results of a comparison between the two groups, massage therapy decreased labor duration and cortisol levels. A possible reason is that massage can reduce stress and cortisol levels, and increase uterine activity by reducing anxiety (Hosseini et al., 2013) .

This trial noted a significant decrease in the levels of the stress hormones, cortisol, and ACTH, and an increase in the level of oxytocin in the intervention group. In contrast, the hormones cortisol and ACTH increased significantly in the control group. This positive effect in lowering stress hormone levels has been demonstrated in previous studies using massage, reflexology, yoga, and Swedish massage as interventions. These observations are consistent with effects on decreased perception of pain and anxiety, and mechanisms of action on the parasympathetic nervous system. and sympathetic. Touch is believed to affect the release of oxytocin and lower ACTH levels. Reflexology is known to help reset and stabilize hormone levels, and allow the body's systems to work at their full potential. This trial only covered cortisol, ACTH, and oxytocin levels, but further research could be done by adding a few others, such as beta-endorphin, epinephrine, and norepinephrine levels to better understand the effect of the intervention across various hormones (Baljon et al., 2022) .

### *Acupuncture*

In this literature review, there is one article which states that acupuncture intervention caused lower cortisol levels in the intervention group, however, it did not provide a significant difference in decreasing cortisol levels in laboring mothers but reducing labor duration (p value > 0.05). At the time of the current study, the efficacy of acupuncture on LI-4 and SP-6 could improve labor pain, reduce labor duration and serum cortisol levels in a single-blind randomized controlled clinical trial. Our results showed that there were no significant differences between the case and control groups with respect to labor pain and serum cortisol levels. Given the effect of cortisol on pain relief, our hypothesis is that lack of cortisol elevation is the main factor associated with lack of pain

relief. Interestingly, a significant reduction in the duration of labor was noted in the acupuncture group.

## CONCLUSION

In the current literature review it was found that mothers experience more intense stress in the active phase and this stress has a negative impact on breastfeeding and baby sucking behavior, women should get support from health professionals to cope with uncertainty, fear, anxiety. and anxiety during labor to maintain more successful breastfeeding. Cortisol is the main biomarker in indicators of labor stress. Intervention efforts that show a decrease in cortisol include providing psychological support during pregnancy and childbirth, prenatal yoga, chewing mint gum and doing massage. We also suggest randomized controlled trials to be conducted with a larger study population to clarify the efficacy of the given intervention to reduce cortisol levels in labour. In addition, we highly recommend using other techniques applied to different body points for reduce cortisol in labor .

## ACKNOWLEDGMENT

The authors would like to thank University of Muhammadiyah Pringsewu which facilitated the conference.

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## The Correlation Between Physical Activity And The Incidence of Obesity in Adolescence at SMP Muhammadiyah 1 Pringsewu In 2022

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**Abstract :** The Correlation Between Physical Activity And The Incidence Of Obesity In Adolescence At Smp Muhammadiyah 1 Pringsewu In 2022. **Purpose :** Obesity is an excessive or abnormal buildup of fat that can interfere with health. The main cause of obesity is because it is not as common between energy intake and expenditure. The imbalance occurs due to an increase in food intake and a lack of physical activity. One of the factors that most influence the occurrence of obesity is physical activity. **Literature Review :** This study aims to find out how much the correlation between physical activity and the incidence of obesity in adolescence at SMP Muhammadiyah 1 Pringsewu in 2022. **Methodology :** The research design used is an analytical survey. The sample in this study was 94 respondents with purposive sampling. The method of collecting data is by weighing weight and measuring height to determine body mass index (BMI), and using a physical activity questionnaire. **Result :** The results showed that 35 obese students (37.2%), and most of them did light physical activity as many as 19 (76.0%) while students who did not experience obesity were 59 (62.8%), and most did moderate physical activity as many as 51 (76.1%). The results of the Chi-square analysis test obtained a p value = 0.000. **Conclusion:** The results showed that there was a significant correlation between physical activity and the incidence of obesity in adolescents at SMP Muhammadiyah 1 Pringsewu in 2022. **Recommendation:** By knowing the correlation between physical activity and the incidence of obesity in adolescence, it is hoped that adolescents can increase daily physical activity by carrying out routine activities such as exercising to reduce risk factors obesity.

**Keywords** : Physical Activity, Obesity

## INTRODUCTION

Adolescence is a period of human growth and development after childhood and before adulthood in the age range of 10-19 years (WHO, 2020). Adolescents according to the Child Protection Act are people between the ages of 10-18 years, and are a fairly large group of Indonesians (almost 20% of the total population). Adolescence is a transitional age from children to adults starting from the age of 9-10 years and ending at the age of 18 years. Many changes occur with increasing muscle mass and fat tissue in the body. In addition, hormonal changes also occur, changes from the sociological and psychological aspects. This change affects the nutritional needs of the food

Obesity is the accumulation of excessive or abnormal fat that can interfere with health. Obesity is defined as a condition with abnormal or excessive fat accumulation in adipose tissue so that it can interfere with health. Obesity is usually expressed by the presence of 25% total body fat in men and as much as 35% total body fat in women (Mokolensang et al., 2016). According to a survey by the World Health Organization (WHO), more than 340 million children and adolescents aged 5-19 years were overweight or obese in 2016 (WHO, 2020). The epidemiology of obesity at the age above 18 years is around 21.8% and the prevalence of obesity in Indonesia at the age above 18 years is around 21.8%.

The highest prevalence was found in North Sulawesi (30.2%), DKI Jakarta (29.8%), East Kalimantan (28.7%), West Papua (26.4%), Riau Islands (26.2%), and followed by other provinces. This data tends to increase from 2007 which was 10.5% to 11.5% in 2013 and increased to 21.8% in 2018 (Risikesdas, 2018). According to Risikesdas data (2017), the prevalence of obesity in the province of Bandar Lampung is below 22%, which means it has not become a problem. Bandar Lampung city has a high prevalence of obesity in adults. Of the 10 districts in the province of Lampung, including: there are 3 who have the highest obesity with prevalence above 10%, namely: Lampung Barat District 10.3%, Bandar Lampung City 11.1% and Metro City 9.9% (Risikesdas, 2017).

The Indonesian Ministry of Health through the GERMAS (Healthy Living Community Movement) which was designed in 2016 has invited the public to prevent diseases, especially non-communicable diseases such as diabetes mellitus, heart disease and others. However, in reality there are still many teenagers in Indonesia who lack physical activity. This is evident from the 2018 Risikesdas data where 49.6% of adolescents aged 15-19 years are classified as lacking in physical activity (Risikesdas, 2018).

Physical activity is a faithful movement of the body due to skeletal muscle contractions that require more calories than energy expenditure at rest (Zahida et al., 2018). One of the factors that most influence the occurrence of obesity is physical activity. Rapid technological developments contribute to the increasing prevalence of obesity, without realizing it, technology accompanies us to a sedentary lifestyle including less physical activity, eating instant food, and consuming less fruit and vegetables. (Wahyuni, 2019).

According to data from the Pringsewu District Health Office (Dinkes) in 2020 there were 8.7% of adolescents aged 13-15 years and 8.1% of adolescents in the USA 16-18% with underweight and very thin conditions, while the prevalence of overweight and obesity was 16.0% at the age of 13-15 years and 13.5% in adolescents aged 16-18 years (Pringsewu, 2020).

Based on a preliminary survey conducted by researchers at SMP Muhammadiyah 1 Pringsewu by conducting interviews, it was found that out of 10 students, 2 of them were obese who spent more than 8 hours sleeping in one day, there was 1 who was obese and spent time more than 2 hours to watch TV, play social media in one day. And 7 of them who are not obese they spend their time doing activities

outside the home such as group work, making school assignments, participating in outbound activities at school. From the phenomena above, it can be seen that physical activity has an effect on the incidence of obesity in adolescents which causes various negative impacts for the adolescents themselves or the surrounding environment, therefore the purpose of this study was to determine how big the relationship between physical activity and the incidence of obesity in adolescents is. adolescent age. As well as another reason, namely wanting to provide knowledge to adolescents about physical activity on the incidence of obesity among adolescents.

Based on the above background, researchers are interested in conducting research on "The Relationship Between Physical Activity and Obesity Incidence in Adolescents at SMP Muhammadiyah 1 Pringsewu in 2022.

## METHODS

The research method used is an analytic survey with a cross sectional approach. The variables studied were physical activity and the dependent variable was obesity. The population in this study amounted to 122 respondents. The sampling method used purposive sampling and obtained a sample of 94 respondents. The instrument used in this study was the Physical Activity Questionnaire for Adolescents (PAQ-A). Data analysis used chi-square statistical test.

## RESULT AND DICUSSION

Based on the results of data collection and data analysis carried out, the following results were obtained:

**Tabel 1**  
**Distribution Frequention of respondent Characteristic At SMP Muhammadiyah 1 Pringsewu**

Sex	Frequention(f)	Persentase (%)
Male	44	46,8
Female	50	53,2
<b>Total</b>	<b>94</b>	<b>100,0</b>

The results of the study concluded that most of the respondents with female sex were 50 respondents (53.2%) and a small proportion of respondents with male sex were 44 respondents (46.8%).

**Tabel 2**  
**Distribution frequention respondent Characteristic Based On Age at SMP Muhammadiyah 1 Pringsewu**

Age	Frekuensi (f)	Persentase (%)
12Year Old	6	6,4
13Year Old	43	45,7
14Year Old	30	31,9
15Year Old	12	12,8
16Year Old	2	2,1
17Year Old	1	1,1
<b>Totally</b>	<b>94</b>	<b>100,0</b>

Based on the results of the study, it is known that the number of characteristic frequency distributions of respondents based on age is mostly 13 years old as many as 43

**Tabel 3**

**Distribution frequection of respondent based physical activity Adolescent at SMP Muhammadiyah 1 Pringsewu**

Activity	Frekuensi (f)	Persentase (%)
Light	25	26,6
Medium	67	71,3
Heavy	2	2,1
<b>Totaly</b>	<b>94</b>	<b>100</b>

Based on the results of the study showed that there were most of the respondents who did moderate physical activity as many as 67 respondents (71.3%), while a small proportion of respondents who did strenuous physical activity were 2 respondents (1.1%).

**Tabel 4**  
**Distribution frequection of respondent based obesity At Adolence At SMP Muhammadiyah 1 Pringsewu**

Weight	Frequency(f)	Persentase (%)
28 – 38	25	26,6
39 – 49	30	31,9
50 – 60	17	18,1
61 – 71	20	21,3
72 – 82	2	2,1
<b>Highes</b>		
135 – 145	18	19,1
146 – 156	52	55,3
157 – 167	21	22,3
168 – 178	3	3,2
<b>BMI</b>		
No Obesity (18,5 – 24,9)	59	62,8
Obesity ( $\geq 25$ )	35	37,2

Based on the results of research on adolescents at SMP Muhammadiyah 1 Pringsewu, it shows that there are most teenagers who have the highest weight range with the majority 39-49 kg as many as 30 respondents (31.9%), adolescents who have the highest height range with the majority 146 -156 cm as many as 52 respondents (55.3%) and based on BMI the majority of respondents were not obese as many as 59 respondents (62.8%).

**Table 5**  
**Correlation Physical Activity With Obesity At Adolence SMP Muhammadiyah 1 Pringsewu**

Physical Activity	Obesity				Total		<i>p- value</i>
	Yes		No				
	N	%	N	%	N	%	
Light Activity	19	76,0	6	24,0	25	100,0	0,000
Moderate Activity	16	23,9	51	76,1	67	100,0	
Heavy Activity	0	0,0	2	100,0	2	100,0	
Total	35	37,2%	59	62,8%	94	100,0%	

Based on table 4.5, the results show that the respondents who are obese are the most respondents who do light physical activity as many as 19 respondents (76.0%), and respondents who are obese at least are respondents who do heavy physical activity as many as 0 respondents (0. 0%), while the majority of respondents who do not experience obesity are respondents who do physical activity were 51 respondents (76.1%), and respondents who were not obese were at least 2 respondents who did strenuous physical activity (100.0%). Based on the results of the Chi-square analysis test above, it was found that  $P = 0.000$  where  $p < (0.05)$  which



means that there is a significant relationship between physical activity and the incidence of obesity in adolescents at SMP Muhammadiyah 1 Pringsewu.

## DISCUSSION

### 1. Univariate Analysis

#### a. Gender

Based on the results of the study, it is known that the number of frequency characteristics of respondents based on gender is 44 respondents (46.8%) and 50 female respondents (53.2%). The results of this study are in line with previous research conducted by Sembiring (2022) which stated that most of the respondents were female as many as 83 respondents (73.0%) (Sembiring et al., 2022).

The results of this study are in line with previous research conducted by Prima (2018) which stated that most of the respondents were dominated by women as many as 96 respondents (54.9%) (Prima et al., 2018). The results of this study are in line with Fitriyani's research (2017) which states that most of the female students are 40 students (50.6%) (Fitriyani, 2017).

Researchers assume that physical activity can affect the occurrence of obesity in a person, the more often someone does light physical activity such as watching television, playing online games, sitting around reading novels, the greater the risk of obesity, compared to someone with moderate or heavy physical activity. .

#### b. Age

Based on the results of research on adolescents at SMP Muhammadiyah 1 Pringsewu in 2022 it is known that the number of frequency distributions of respondents' characteristics based on the age of 12 years are 6 respondents (6.4%) age 13 are 43 respondents (45.7%) age 14 are 30 respondents (31.9%) age 15 as many as 12 respondents (12.8%) age 16 as many as 2 respondents (2.1%) and age 17 as many as 1 respondent (1.1%).

The results of this study are also in line with previous research conducted by Afrilia (2018) which stated that most of the 13 years old were 40 respondents (66.7%) (Afrilia, 2018). The results of this study are in accordance with previous research conducted by Yulinar (2017) which stated that children aged <10-12 years were 68 respondents (70.8%) (Yulinar, 2017).

#### c. Physical activity

Based on the results of this study showed that 67 respondents (100.0%) did moderate physical activity, 25 respondents (100.0%) did light physical activity and 2 respondents (100.0%) did heavy physical activity. Most of the teenagers in SMP Muhammadiyah 1 Pringsewu did moderate physical activity. The results of this study are also the same as the research conducted by Sembiring (2022) which stated that moderate physical activity was 54 respondents (47.0%) (Sembiring et al., 2022).

Physical activity is any bodily movement that increases energy or energy and burns fat. Physical activity is said to be sufficient if a person does physical exercise or sports for 30 minutes every day or at least 3-5 days per week (Kemenkes, 2014). Individuals with low physical activity have a greater risk of weight gain than active people exercise regularly. Lack of physical activity is probably one of the main causes of the increasing incidence of obesity in affluent societies.

The results of this study are in line with research conducted by Ashifa Mutia (2021) which stated that respondents with moderate physical activity were 53 respondents (55.2%) while respondents with light physical activity were 43 respondents (44.8%) (Mutia et al. ., 2022). This happens because most of the respondents carry out physical activities organized by the school, namely during sports lessons at school and do 2-3 times/week sports activities such as aerobics, dancing and playing games which are very active after school, in the afternoon/evening. days and on weekends. Regular physical

activity including aerobic exercise and children's aerobic exercise should be done every day, or at least 3 days a week, for at least 60 minutes (CDC, 2015).

Various physical activities can be in the form of light, moderate and heavy physical activity if done regularly can improve health. Physical activity does not have to be structured exercise. Any activity that keeps them active can be a great way to burn calories and increase stamina. Physical activity has long-term benefits for adolescents and the benefits are especially during the growth period so that their growth can be optimal (Fitriyani, 2017).

The results of this study also showed that 25 respondents (100.0%) did light physical activity. This is because some of the respondents use the break time to buy snacks that are available in the canteen school. In addition, they spend their rest time chatting with their friends. Outside of school hours, most of the respondents spend their time watching TV, playing games or studying.

This is also in line with Mahyuni's research (2017) which states that adolescents who have physical activity during their break do activities such as eating or playing mobile phones, studying or reading in the library and activities at home such as watching television, playing online games on the computer (Mahyuni). et al., 2017). Lack of physical activity can lead to obesity and musculoskeletal disorders. Therefore, WHO recommends that children and adolescents between the ages of 5 and 17 years participate in at least 60 minutes of moderate to intense physical activity. Physical activity of 60 minutes or more per day provides health benefits. You should also perform muscle and leg strengthening activities at least three times a week (WHO, 2017).

#### d. The incidence of obesity

The results showed that from 94 respondents, 59 respondents (62.8%) were not obese and 35 respondents (35.0%) were obese. Based on the results of the study, the respondents who experienced the most obesity were women. Obesity accumulates in the form of excess body fat, adversely affecting physical health, shortening life expectancy and increasing health problems (Yahya & Nadjibah, 2017).

This is in line with previous research by Ardiana (2017) with the results of obesity studies being more commonly found in girls as many as 42 respondents (55.4%) (Ardiana & Fitriahadi, 2017). According to several studies conducted, girls tend to have a higher risk for obesity than boys because women's metabolism is slower than men's, men's basal metabolic rate is 10% higher than women's. Therefore, women tend to convert more food into fat (Ardiana & Fitriahadi, 2017).

Obesity describes a state of fat that is stored in the body as a result of excessive calorie intake. Clinically, people are declared obese if there is excess body weight of 15% or more than their ideal body weight. With scientific measurements, the determination of obesity can be based on the proportion of fat to total body weight (Sembiring et al., 2022).

Obesity occurs because there is no energy balance where the energy consumption is much greater than the energy used in physical activity. The results of previous research conducted by Mahyuni (2017) showed that the cause of obesity in adolescents was influenced by several factors where one of the factors causing obesity, among others, was less active physical activity caused by the habits of teenagers who like to play getget and watch television (Mahyuni). et al., 2017). In addition, a high Body Mass Index (BMI) in adolescents will predict an increased risk of death and diseases such as cardiovascular disease (Aprilia, 2015). The results of previous research conducted by Emelia (2016) stated that adolescents who are obese can suffer from comorbidities such as type 2 diabetes mellitus, liver disease, metabolic syndrome, and cardiovascular disease (Emelia et al., 2016).



## 2. Bivariate Analysis

The relationship between physical activity with the incidence of obesity in adolescents. Based on the results of this study indicate that there is a relationship between physical activity and the incidence of obesity in adolescents at SMP Muhammadiyah 1 Pringsewu ( $p\text{-value} = 0.000 < 0.05$ ). This means that  $H_a$  is accepted and  $H_o$  is rejected. This study is supported by previous research conducted by Ashifa mutia (2022) which showed that there was a significant relationship between diet and physical activity on the incidence of obesity in adolescents ( $p\text{-value} = 0.011$ ) (Mutia et al., 2022). This is also in line with research conducted by Sembiring (2022) which showed that there was a relationship between physical activity and obesity in adolescents at SMA Swasta Cerdas Bangsa Medan ( $p\text{-value} = 0.021$ ) (Sembiring et al., 2022).

Based on the results of this study, 19 respondents (76.0%), 16 respondents (23.9%) did moderate physical activity and 0 respondents (0.0%) did strenuous physical activity. , while respondents who are not obese who do light physical activity are 6 respondents (24.0%), 51 respondents (76.1%) who do moderate physical activity and 2 respondents (100.0%) who do heavy physical activity.

Based on this study, most of the adolescents with obesity did light physical activity. This is in line with Ikhmawati's research (2021) which shows that 58.1% of obese adolescents do light physical activity (Ikhmawati, 2021). Obese children do not use their break time for physical activity. They spend their break at school with activities in the classroom (Ardiana & Fitriahadi, 2017). This is in accordance with research which says that out of 82 students with the type of light physical activity who the majority were obese as many as 52 people (63.41%) (Fadhilah et al., 2021).

Light physical activity will facilitate the accumulation of fat in the body. The process of accumulating fat around the body takes place slowly, for a long time and often goes unnoticed. Obese people spend more energy doing physical activity, but may show less activity because of their greater body weight, especially light physical activity. Several determinants of weight gain in children and adolescents in addition to the habit of consuming foods that tend to be high in fat and lacking in fiber and lack of physical activity (Sindy, 2018). According to Ibrahim (2019), there is a significant relationship between physical activity and the incidence of obesity in adolescents at SMAN 1 Gamping, Sleman, Yogyakarta with a significant value of 0.011 ( $p < 0.05$ ) and the close significant relationship  $r$  (-0.49) indicates moderately negative. (Ibrahim, 2019).

Obesity in adolescents occurs because of the interaction between eating a lot with little activity. Physical activity causes the process of burning energy so that when teenagers do a lot of activities, the more energy is used (Suryaputra & Nadhiroh, 2012). Physical activity can burn fat and calories according to the type of physical activity. If someone is categorized as inactive, the fat and calorie content in the body will accumulate without any burning process. On the other hand, obesity also affects physical activity (Candra et al., 2016).

Obese children do not use hours at rest for physical activity. They spend their time off at school with activities in the classroom (Ardiana & Fitriahadi, 2017). Some examples of physical activities that are more often carried out by obese adolescents include watching television, lying down while playing mobile phones, playing PlayStation,

go to play with friends, sit in the cafeteria, play computer and internet, sleep while reading comics/novels. Watching television is the activity that is most often done among all the activities listed above (Pramono, 2014).

Based on opinions that are in accordance with events in the community, today's teenagers increasingly have a sedentary lifestyle, such as gathering with friends to play online games, watching movies for hours until they forget or do not have time to carry out physical activities accompanied by consuming excessive food. This can lead to

obesity, where food intake and energy expenditure are not balanced. If sedentary behavior lasts for a long time, it will lead to several problems such as health diseases including obesity, diabetes mellitus and coronary heart disease. So it is necessary to prevent obesity including being able to use an approach to the community or at the youth posyandu to promote a healthier lifestyle. Change itself can be started from environmental factors, family, school and peers. The next step that can be taken is to reduce food intake and increase physical activity activities such as sports, jogging, gymnastics, swimming and so on. However, physical activity alone is not enough if it is not balanced by eating foods that are high in fiber, sleeping regularly and managing stress well.

## CONCLUSION

Based on the research on the relationship between physical activity and the incidence of obesity in adolescents at SMP Muhammadiyah 1 Pringsewu, it can be concluded:

1. The frequency distribution of respondents' characteristics by gender is mostly in children with female sex as much as 53.2% and the most age frequency distribution is at the age of 13 years as much as 45.7%.
2. The frequency distribution of respondents based on physical activity at the age of teenagers at SMP Muhammadiyah 1 Pringsewu is by doing moderate physical activity as much as 71.3%.
3. The frequency distribution of respondents based on the incidence of obesity in adolescents at SMP Muhammadiyah 1 Pringsewu is 62.8% with non-obesity.
4. There is a relationship between physical activity and the incidence of obesity in adolescents at SMP Muhammadiyah 1 Pringsewu, with  $p\text{-value} = 0.000$  where  $p < (0.05)$  so  $H_a$  is accepted and  $H_0$  is rejected.

## AKNOWLEDGMENT

Thnak You Very much to Health Faculty of University Muhammadiyah Pringsewu on supporting this research, this Research may hope can be give perspective about important physically Activity to prevent obesity

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## The Relationship between Stress and Blood Pressure in Hypertensive Clients in The Work Area of the Health Center Inpatient Kemiling Bandar Lampung 2022.

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### ABSTRACT

Stress is the body's response that is not specific to any demands or burdens on it. Stress can cause negative or conflicting feelings or threaten emotional well-being. Based on the results of a preliminary study conducted at the Kemiling Inpatient Health Center, it was found that 18 respondents or 45.0% experienced moderate stress, and the remaining 22 respondents or 55.0% experienced severe stress. Objective: This study was to determine whether there is a relationship between stress and blood pressure in hypertensive clients in the working area of the Kemiling Inpatient Health Center Bandar Lampung in 2022. The method of this research is descriptive analytic. This research uses two variables. The research location is in Kemiling Inpatient Health Center. The number of respondents is 30 people with a sampling technique using total sampling, data collection tools using a questionnaire. Results: There were 18 respondents with moderate stress levels with high blood pressure as many as four people (5.9%) and normal blood pressure as many as 14 people (12.2%). And who experienced severe stress there were 22 respondents with high blood pressure as many as nine people (7.2%), and normal blood pressure as many as 13 people (14.9%). And the result of the p value is 0.1, which means that there is no relationship between stress levels and blood pressure. Conclusion: The results from the study there is no relationship between stress levels and blood pressure in hypertensive clients in the working area of Kemiling Inpatient Health Center Bandar Lampung.

Keywords : Stress, Blood Pressure. Hypertension

Source : 49 (2007-2021)



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### INTRODUCTION

One of the causes of high blood pressure is stress. Stress is a condition in which the body is disturbed due to psychological pressure. Stress is not due to physical illness but more about mental health. However, due to the influence of stress, physical illness can arise due to weakness and low endurance. Stress can actually affect your overall physical condition, and cause a sudden rise in blood pressure. Therefore, people who have a history of this disease are advised to stay away from or at least manage stress levels. Stress-related hypertension can be severe, but when the stress goes away, blood pressure returns to normal (South, 2018).

Hypertension itself is a condition that causes high blood pressure continuously where the systolic pressure is more than 140 mmHg, diastolic pressure is 90 mmHg or more. Hypertension or high blood pressure is a condition of chronically increased blood

circulation. This happens because the heart works faster to pump blood to meet the needs of oxygen and nutrients to the body (Koes(Ones Irianto, 2014).

As explained in the word of Allah SWT in QS. Ash-Syua'ra ' Verse 80 this verse explains that Allah heals humans when they are sick. God has the power to heal any disease that a person suffers from. Even so, humans also have to find out how to get that healing. Meaning: "And when I am sick, it is he who heals me."

Hypertension has increased from year to year. As many as 1 billion people around the world or 1 in 4 adults suffer from hypertension. Hypertension will increase to 1.6 billion by 2025. Hypertension is more common in middle-aged people with the age group 55-64 years (Adib, 2009). The World Health Organization (WHO) in 2012 showed that around 982 million people or 26.4% of the earth's inhabitants suffer from hypertension with a ratio of 26.6% men to 26.1% women. This figure is likely to increase to 29.2% in the year. In Indonesia, those suffering from hypertension is 29.4% higher. Based on research conducted by Riskesdas (2018) to determine the prevalence of mental emotional disorders (psychological distress) in Indonesia, it is known that there are 3.2% of people who have mental emotional disorders. Lampung Province, 2018 high blood pressure (hypertension) is the third of the top ten diseases in Lampung Province with a total of 71,034 cases (11%) of 645,255 cases.

High blood pressure can be caused by various factors, one of which is stress. Stress is a nonspecific response of the body to any pressure or demands placed on it may arise, both from pleasant and unpleasant conditions (Sadock & Sadock, 2016).

Stress is a mental disorder faced by a person due to pressure. This pressure arises from the individual's failure to fulfill his needs or desires. This pressure can come from within, or from outside. Stress is not necessarily a bad thing, although it is usually discussed in a negative context. Stress has a positive value when it becomes an opportunity when bargaining for potential outcomes. Stress can trigger hypertension through activation of the sympathetic nervous system which results in an intermittent (uncertain) rise in blood pressure (Andria, 2018). When a person experiences stress, the hormone adrenaline will be released and will then increase blood pressure through arterial contraction (vasoconstriction) and an increase in heart rate. If stress continues, blood pressure will remain high so that the person will experience hypertension (South, 2014).

Stress is associated with hypertension. The relationship between stress and the incidence of hypertension occurs through sympathetic nerve activity. Increased nerves can raise blood pressure intermittently (erratically). So that prolonged stress can result in persistently high blood pressure. Stress will increase peripheral vascular resistance and cardiac output so that it will stimulate sympathetic nerve activity (Sugiharto, 2019).

Continuous stress can occur and make the body tired. Therefore, knowing how to deal with stress is important, so that the body always responds well to many situations that come up. The way to deal with stress is Psychopharmaceutical Therapy, which is this therapy by using drugs in experiencing stress experienced by disconnecting the network between psycho-neuro and immunology so that the psychosocial stressors experienced to do not affect cognitive, affective or psychomotor functions that can interfere with other body organs. The drugs used are usually anti-anxiety and anti-depressant, Somatic Therapy is this therapy only for symptoms caused by stress so that it is not expected to interfere with other body systems, and Psychotherapy is this therapy using psychological techniques adapted with one's needs. This therapy can include supportive psychotherapy and reductive psychotherapy where supportive psychotherapy provides motivation or support so that the patient experience's self-confidence, while reductive psychotherapy is carried out by providing repeated education. In addition, there are reconstructive psychotherapy, cognitive psychotherapy and others (Azelia Trifiana, 2021).

The impact of stress is allowed to continue. The body will begin to find problems such as heart disease, high blood pressure, diabetes, and obesity. A sudden and prolonged rise in blood pressure due to stress can cause long-term health problems in blood vessels and heart disease. This is because the stress hormones released by the body can damage blood vessels and force the heart to pump blood harder. (Aprinda praises 2020).

The result from the study according to (Katerin Indah Islami 2015), it was found that respondents who suffered from hypertension were 33 respondents (70.2%) who experienced stress and 14 respondents (29.8%) who did not experience stress. While respondents who did not suffer from hypertension found 8 respondents (17%) experienced stress, and 39 respondents (83%) did not experience stress. Based on the description above, because many stressful events cause an increase in blood pressure in hypertensive clients, and can affect the overall physical condition, and cause a sudden increase in blood pressure, that is the reason why I as a researcher wants to examine the relationship between stress and increased blood pressure in hypertensive clients.

## METHODS

Type of writing Scientific writing used is descriptive analytic, which is a form of observational study (non-experimental). The research design that will be used is cross sectional, which means that each research subject will only be observed once and the measurement of the subject variable at the time of examination (Sastroasmoro S, 2014). This scientific paper aims to find out whether there is a relationship between stress and increased blood pressure in hypertensive clients in the working area of the Kemiling Inpatient Health Center Bandar Lampung in 2022.

## RESULTS AND DISCUSSION

### 1. Univariate Stress Data Analysis Results

Table 1. Stress level table

	Frequency	Percent	Valid Percent	Cumulative Percent
Currently	18	45,0	45,0	45,
Heavy	22	55,0	55,0	100,0
	40	100,0	100,0	

The results of Univariate Stress Data Analysis found that 18 respondents or 45.0% experienced moderate stress, and the remaining 22 respondents or 55.0% experienced severe stress.

### 2. Results of Univariate Data Analysis of Blood Pressure

Table 2. Blood pressure table

	Frequency	Percent	Valid Percent	Cumulative Percent
<140 mmHg	27	67,5	67,5	67,5
>140 mmHg	13	32,5	32,5	100,0
	40	100,0	100,0	

The results of Univariate Blood Pressure Data Analysis found that 27 respondents or 67.5% had normal blood pressure, and the remaining 13 respondents or 32.5% had high blood pressure.

### 3. Results of Univariate Hypertension Data Analysis

Table 3. Univariate Hypertension Data Analysis

	Frequency	Percent	Valid Percent	Cumulative Percent
<b>Hypertension Levels one</b>	40	100,0	100,0	100,0
	40			

The results of Univariate Hypertension Data Analysis are known to all respondents have hypertension level 1 as many as 40 respondents or (100%) have hypertension level 1

### 4. Results of Bivariate Data Analysis

Table 4. Bivariate Data Analysis

Levels Stress	Blood Pressure		P Value
	High	Normal	
<b>Currently</b>	4 (5,9%)	14 (12,2%)	0,1
<b>Heavy</b>	9 (7,2%)	13 (14,9%)	
	13,0	27,0	

The results of the Bivariate Data Analysis above show that there are 4four respondents who experience moderate stress with high blood pressure (5.9%) and 14 people who experience normal blood pressure (12.2%). Severe stress with high blood pressure as many as 9 (7.2%), and those experiencing severe stress with normal blood pressure as many as 13 (14.9%).

Based on the data above, there were 18 respondents with moderate stress levels with high blood pressure as many as four people (5.9%) and normal blood pressure as many as 14 people (12.2%). And who experienced severe stress there were 22 respondents with high blood pressure as many as 9 people (7.2%), and normal blood pressure as many as 13 people (14.9%). And the result of the p value is 0.1, which means that there is no relationship between stress levels and blood pressure.

The results of this scientific research paper show that multiple 'that' stress levels have no relationship with an increase in blood pressure by showing that multiple 'that' the p value is 0.1, with the results of data that multiple 'that' respondents who experience moderate stress with normal blood pressure are 14 people (12, 2%). And who experience severe stress with high blood pressure as many as 9 people (7.2%). Therefore, there is no relationship between stress and increased blood pressure. The factors that can cause stress, Robbins (2016) are:

1. Environmental factors, arise because the stimulus becomes more severe and prolonged so that individuals cannot achieve the desired goals so that a person's blood pressure increases, and causes stress to arise. However, as for the environment under pressure, but when a person can cope with the environment, the person's blood pressure will not increase.
2. Organizational factors, one of which is individual factors, basically the related factors for this case arise from within the family. Such as economic problems,

this problem depends on how a person can generate sufficient income for family needs. But when a person's income is low and insufficient, that's where someone will start to worry and have an impact on stress levels.

## CONCLUSION

From the results of this research which has been carried out by the Kemiling Inpatient Health Center with a sample of 30 respondents using the data collection method through the distribution of questionnaires. Based on the results of the analysis of the collected data and processing the analysis using SPSS, it shows that: The absence of a relationship between stress and an increase in blood pressure in hypertensive clients in the working area of the Kemiling Inpatient Health Center Bandar Lampung in 2022, shows that 18 respondents who experienced moderate stress with high blood pressure as many as 4 people (5.9%) and normal blood pressure. as many as 14 people (12, 2%). And who experienced severe stress there were 22 respondents with high blood pressure as many as 9 people (7.2%), and normal blood pressure as many as 13 people (14.9%). And the result of the p value is 0.1, which means that there is no relationship between stress levels and blood pressure.

## SUGGESTION

As a closing in this study, the researchers put forward some suggestions as follows:

1. Share the research site

To further improve that there is a relationship between stress and blood pressure in hypertensive clients in the working area of the Kemiling Inpatient Health Center Bandar Lampung in 2022.

2. For students

Students are looking for valid information on the relationship between stress and blood pressure in clients.

3. For nurses

The results from this study as additional material for nursing science that there is a relationship between stress and blood pressure in hypertensive clients in the working area of the Kemiling Inpatient Health Center Bandar Lampung in 2022.

4. For researchers

For further researchers, it is hoped that they can conduct more in-depth research with the theme of the level of knowledge of stress with blood pressure on hypertension clients in the working area of the Kemiling Inpatient Health Center Bandar Lampung in 2022.

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## Intellectual Disability Class Management and The Implementation

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### Abstract

This study aims to determine the implementation of class management for children with intellectual disabilities in SLB Dharma Bhakti Dharma Pertiwi Bandar Lampung, precisely in class VII SMPLB-C. In addition, this research was conducted as a reference for teachers and students when preparing and organizing classroom learning. The resource person in this study was a seventh-grade teacher at SLB Dharma Bhakti Dharma Pertiwi Bandar Lampung. This study used a qualitative research type with a descriptive approach. In collecting data used interviews, observation, and documentation. Data analysis was carried out in three stages, namely, data reduction, data presentation, and drawing conclusions, known as the Miles and Huberman model data analysis technique. The results of this study indicated that classroom management is an effort made consciously by the teacher to organize teaching and learning process activities systematically which leads to the preparation of facilities, arrangement of study rooms, arrangements in the learning process, and situation management, as well as the creation of good learning conditions to achieve learning objectives. . The learning process in the SLB Dharma Bhakti Dharma Peratiwi Bandar Lampung class, can take place effectively and smoothly so that students do not get bored in participating in learning. Implementation of classroom management in learning can assist teachers in achieving learning objectives effectively and optimally.

Keywords: intellectual disability, class management, learning, special school



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Website: <http://proceeding.umpri.ac.id/>

## INTRODUCTION

Learning is the key in education. The quality of an educational institution can be seen through (1) building facilities, (2) quality books, and (3) professional teachers and education personnel (Afriza, 2014). In improving the quality of learning, teachers play an important role as decision makers in doing efforts for achieving learning. Teachers have to master leading learning and managing learning where a class needs to be organized and related to learning. Various

efforts need to be made by educators to carry out learning that is oriented towards educational goals. The effort can be in the class management form. These efforts are such classroom management to students or known as classroom management. Classroom management is an effort made by a teacher to create or maintain optimal conditions in learning so that the objectives of learning can be achieved (Afriza, 2014).

Class management itself comes from two words, namely management and class. Management comes from the English "management" which means management. Management is a process of monitoring an activity that involves the implementation and achievement of goals. In addition, management is a series of joint goal-setting processes carried out by planning, regulating, implementing, and evaluating a group (Novan, 2014). On the other hand, according to Nawawi in Afriza, the class can be divided into two views: 1) a closed classroom is a space separated by a wall around it as a gathering place for many students to participate in the teaching and learning process. 2) class in a broad sense is a small communication that can be part of the school community, one of which is organized by a work unit that organizes teaching and learning activities to achieve the goals that have been set (Afriza, 2014).

From some of the definitions above, it can be concluded that classroom management is a conscious effort made by teachers to organize teaching and learning process activities systematically which leads to the preparation of facilities, arrangement of study rooms, arrangements in the learning process, and situation management as well as creating good learning conditions for students achieve learning objectives.

In addition, Alma in Purwanti (2015) revealed that classroom management has the following principles, warmth, and enthusiasm in learning can build a pleasant classroom climate for students, spurring students to think through words or actions taken by the teacher, varied, the flexibility of teachers in teaching, inculcating a disciplined attitude, and emphasizing positive things to students.

The efforts of teachers in managing classrooms and learning also apply to teachers in special schools. In essence, classroom management in special education is an effort made by teachers in regulating the process of systematic teaching and learning activities in the classroom to achieve learning objectives in special education. One of them is in education for children with intellectual disabilities in special schools, it is necessary to carry out classroom management in their learning.

Children with intellectual disabilities or better known as mental retardation are children who experience intellectual development disorders below the average child in general (Garnida, 2016). At this time intellectual disability refers to a new term that has been issued by the American Psychiatric Association, intellectual disability is a child who has an intellectual disability with deficits in three areas of adaptive function that have an influence on children's daily tasks (Luckasson, 2016).

The three domains of adaptive function are conceptual, social, and practical. In the conceptual field, children will have difficulty in reasoning, memory range, low language skills, to academic abilities that are far below average. In the social field, children have difficulty feeling empathy and things related to adaptation, and children have difficulty socializing caused of low communication skills. The practical field is the field of children's skills where children are able to organize themselves for self-development that is still lacking, be responsible, manage finances, manage academic tasks, and work.

Tunagrahita or more commonly known as intellectual disability is a term used for individuals who have below-average intelligence levels accompanied by adaptive

behavior disorders that occur during development until before the age of 22 years (Devita & Desmayanasari, 2021). These adaptive behavior disorders can be in the form of social skills, interpersonal skills, and social responsibility (Ningsih et al., 2022)

Based on the description of the background and the formulation of the problem in this study, namely "How is the application of classroom management to students with intellectual disabilities?". The purpose of this study was to determine the application of classroom management to special education for students with intellectual disabilities.

## **METHODS**

This study used a qualitative research type with a descriptive approach. SLB Dharma Bhakti Dharma Pertiwi was chosen as the place for conducting the research, the research subject is the seventh-grade teacher with mental retardation at SMPLB-C. In the data collecting technique, the researcher used interview, observation, and documentation methods. As well as using data triangulation techniques in analyzing the data collected through observation, interviews, and documentation techniques.

Interviews are questions and answers conducted by researchers with research sources to be asked for opinions or information to collect data. Interviews were conducted with informants or resource persons as sources of data and information with the aim of digging up information from the focus of the research conducted (Salim & Sahrum, 2012). Interviews were conducted openly so that researchers could obtain detailed information related to the research problem. In this study, researchers conducted interviews with resource persons, namely the seventh-grade teacher of SMPLB-C. Interviews are conducted openly.

Observation is one of the data collection techniques that are carried out by observing directly an object at a certain time and writing systematically on certain things that are observed in a special place of an organization, such as an association or activity of a group of people or even activities in a school (Salim & Sahrum, 2012). In this study, the selected observation was participatory, where the researcher was involved in learning activities that became the source of research data.

In qualitative research methods, after data is collected and analyzed, supporting documents such as photos, notes, and documents related to the research carried out are needed (Salim & Sahrum, 2012). In addition, documentation can be used in answering research problems. One of the characteristics of qualitative research is that researchers act as instruments and collect data (Thalha & Budur, 2019). In this study, the instrument acts as a systematic written guide in conducting interviews, observations, and documentation in preparing the information that needs to be sought.

In this study used data analysis techniques Miles and Huberman, where data analysis is carried out interactively and continues until the required data is obtained (Sugiyono, 2015). In line with the opinion of Hickler and May in Santana K (Septiawan, 2007) that it is important for readers to understand that this research requires complete data and information and are not in a hurry to complete the research until the data is needed. There are three stages in this analysis technique, namely, data reduction, data presentation, and conclusions.

## **RESULTS AND DISCUSSION**

In classroom management, aspects that need to be considered are classroom management and student management. In classroom management the teacher pays

attention to the learning facilities and media that will be used by the teacher during the implementation of learning and the teacher manages the classroom starting from the position of the tables and chairs that will be used by students, arranging how the order of students sits, arranging the layout of existing learning devices. In the classroom, in classroom management, teachers are required to be able to arrange a comfortable classroom for students during the learning process.

Based on the results of interviews conducted on June 23, 2022, at SLB Dharma Bhakti Dharma Pertiwi in class VII Tunagrahita. The following is an excerpt from an interview with the resource person, Ms. M. S.Pd. as a class VII teacher with mental retardation. In classroom management, the first thing that must be considered is the arrangement of the classroom, such as seating positions and student comfort in receiving learning. Based on the results of interviews with Mrs. M as a class VII teacher with mental retardation, the resource persons paid attention to the comfort of students, the efforts made were in the form of adjusting the seating position between students so that there was no commotion among students such as narrow space or too hot seats due to exposure to sunlight, then set the position of the learning device so that it is neat and does not endanger students because students with intellectual disabilities have been minimal ability to avoid the danger. The comfort of students in learning can be built by the teacher by arranging classrooms and creating a conducive situation so that students are enthusiastic about participating in the learning series. Learning activities include all activities that are intentionally carried out, and classroom settings are related to how to create a good environment for the implementation of learning. In setting up classrooms, teachers should pay attention to several aspects that will be regulated, such as comfort in learning, if students feel comfortable while learning, it will make it easier for teachers to organize learning.

In addition to classroom arrangements, classroom management also needs to be considered in designing educational facilities and media. Educational facilities and media as one of the resources that support the learning process, and the success of educational programs is influenced by educational facilities and media (Fatmawati et al., 2019).

“Providing of learning facilities for class, submitted to the school once a month on a date that has been determined by the school, after the teacher submits the learning facilities needed, the school will provide these facilities and distribute them to the classes. In the selection of learning media, it is adjusted to the needs of students and the objectives of learning, the media used are varied from educational game tools or technological media. Learning carried out by teachers does not necessarily do learning, preparation is needed before implementation and evaluation after learning takes place. In addition, learning activities carried out by teachers should be able to be oriented to children's development (Amka, 2020). In this case, Ms. M does the following.

In the preparation stage, the teacher makes lesson plans and prepares the learning media that will be used. Before learning begins, the teacher condition's students and makes approaches such as inviting students to sing, play, and pray before starting learning, besides that the teacher approaches students so that students feel comfortable and enthusiastic about participating in learning. In the implementation of learning the teacher used the method of question and answer, discussion, lecture, and assignment. In carrying out the evaluation, it is carried out in accordance with the recommendations of the education office through an assessment sheet that has been prepared and a description of the student's abilities.

One of the main tasks of the teacher is to condition the learning environment to support changes in student behavior, in other words, the class climate is the teacher's effort to increase student learning motivation (Aulisah et al., 2021). In this case, Ms. M explained that. "To create a conducive classroom climate, teachers should make students as comfortable as possible with class conditions and classroom arrangements are also a factor." In optimizing learning by teachers, it is necessary to pay attention to the classroom climate created by teachers.

Management of learning interactions that play a role in developing the relationship between learning and previously acquired knowledge. The learning interactions formed at SLB Dharma Bhakti Dharma Pertiwi according to Mrs. M is as follows. "Learning interactions can be formed and enhanced by the teacher through the approaches taken by the teacher during the learning process and the selection of discussion and question-and-answer learning methods can improve student learning interactions with the teacher or with other students"

The reciprocal relationship that occurs between teachers and students, as well as students with other students, is one indicator of whether students can follow the learning that has been given by the teacher well or still have difficulty digesting the learning that has been given by the teacher. The success of teachers in transferring the knowledge given to students can be seen from the interactions made by students both inside and outside the classroom.

## **CONCLUSION**

Classroom management is an effort made consciously by the teacher to organize teaching and learning process activities systematically, which leads to the preparation of facilities, arrangement of study rooms, arrangements in the learning process, and management of situations as well as the creation of good learning conditions to achieve learning objectives. In essence, general classroom management and special education class management for students with intellectual disabilities have the same aspect, namely the aspect of classroom management and student management.

The learning process in SLB Dharma Bhakti Dharma Pertiwi Bandar Lampung class can take place effectively and smoothly. Teachers always consider the convenience of students in learning, methods, models or strategies are suitable for use in the topic of the teaching and learning process in the classroom, the approaches taken by the teacher and students as well as the creations and innovations provided by the teacher in the learning process. So that students do not get bored in following the lesson. Class management carried out by teachers is structured, such as seating arrangements to communicate between students and other students when sitting in groups during the teaching and learning process.

## **ACKNOWLEDGMENT**

The researcher would like to thank the University of Muhammadiyah Lampung which has supported and assisted in this research. And thanks to SLB B-C and Autistic Dharma Bhakti Dharma Pertiwi Bandar Lampung who have helped researchers in collecting data and information for the purpose of this study.

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## The Effect of Mothers Online Nutrition Education on Childrens Breakfast Habits During The Covid 19 Pandemic

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### Abstract

Having breakfast for school-age children is a matter of particular concern. Getting used to breakfast for school age children is not easy. If children are not used to have breakfast for school-age children is not easy. If children are not used to having breakfast onin the morning, Children tend to be less physically active, lower cardiovascular respiratory fitness is not easy. If children are not used to having breakfast inon the morning. Children tend to be less physically active, having lower cardiovascular respiratory fitness levels than children who have breakfast onin the morning and reduced concentration and decreased learning achievement in children. The population of this research were 110 mothers of children who are the students of SDN IV Way Galih. The research was conducted on July 9, 2021 and was located at SDN IV Way Galih. The data collection techniques forin the Google form application, the data sources were collected using whatsappwhat application and email. The statistical test in this research used the chi-squarechip-square test. Conclusion of this research is that there is an effect of providing online nutrition education to mothers on children's breakfast habits during the covid 19 pandemic with a p value of p-value of 0,000. Further researchers are advised to examine the problem of habits regarding breakfast for toddlers and preschoolers as well as an education about healthy breakfast, which is conducted offline, direct practice of cooking healthy food for breakfast with mothers and children by limiting the participant's distance when doing it, shorter time activity and wearing masks, keeping the distance according to the health protocol.

Keywords : The effect, mothers, online nutrition education.

Received : xx-xx-xxxx. Published : xxxx-xxxx



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Website: <http://proceeding.umpri.ac.id/>

## INTRODUCTION

School-aged children are children aged between 6 to 12 years. The age of school children has already formed behavior (Ambarwati, 2018). Early breakfast habits are very important for children's health. Breakfast is a problem of concern especially for school age children. Getting used to breakfast for school-age children is not easy (Aprillia, 2011).

Mother's knowledge is very decisive in serving breakfast to children with an attractive breakfast presentation, delicious taste and a menu that varies every day and this greatly affect the interest affect the interest of school-age children to consume breakfast at home. Another factor that causes breakfast in children is that the family does not do breakfast habits at home every morning before outside activities, children are always given pocket money by parents, children do not have time to eat in the

morning because parents are busy working and children only drink water and cakes (Fatimah and Putri, 2019).

According to data in Indonesia in 2018, children aged 5 years to 9 years were 96, 9% the percentage with a lack of consumption of eating vegetables and eating fruit. The percentage in the age group 3 years and over has the habits of consuming sweet drinks 91, 49% and sweet foods 87, 9%, instant food 87, 9% and foods containing flavoring 88, 4% (Ministry of Health, 2020). Nutrition status monitoring data (PSG) in 2017 in Lampung Province, the prevalence of stunting in children reached a percentage of 13, 65% and Lampung Province was in 8 th place out of all Provinces in Indonesia (Kemenkes, (Keenest, 2017).

The impact if children are not used to having breakfast in the morning is that they tend to be less physically active and has a lower level of cardiovascular respiratory fitness compared to children who regularly eat breakfast in the morning before activity (Zogara, 2021). Reduced concentration of children in the learning process and decreased learning achievement in children. The results of research in Palembang city in 2014 that there is a relationship between breakfast and student achievement.

Breakfast education is very important given to parents, especially mothers because it can be useful in increasing the ability to concentrate on learning in children and physical abilities in children (Aghadiati, 2019). The mother's role is very important in providing nutrition by getting used to breakfast before leaving for outside activities (Susetyowati, 2016). The role as the child's nurse is to provide education to mothers to get used to having breakfast at home in order to form healthy lifestyle behaviors for children and parents.

Based on a preliminary study at SDN IV Way Galih that no research has been taken on nutritional education to mother on breakfast habits. Based on the above background, researchers are interested in taking research on the influence of online nutrition education for mothers on children's breakfast habits during the covid 19 pandemic.

The problem of breakfast is a problem that is of concern, especially for school-age children. Getting used to breakfast for school-age children is not easy. According to data in Indonesia in 2018, children aged 5 to 9 years were 96, 9% the percentage with a lack of consumption of eating vegetables and eating fruit. The percentage in the age group 3 years and over has the habit of consuming sweet drinks 91, 49% and sweet foods 87, 9%, instant foods 87, 9% and foods containing seasonings 88, 4%.

The impact if children are not accustomed to having breakfast onin the morning is that they tend to be less physically active and cardiovascular respiratory fitness compared to children who regularly eat breakfast in the morning before the activity. The children's concentration inon the learning process is reduced, and their learning achievement is reduced (Kemenkes, (Keenest, 2020).

As for the formulation of the problem that direct this research, how is the mothers knowledge about children breakfast and how is the children breakfast habit and how to analyze the relationship between mothers knowledge about nutrition and breakfast habits in children.

The general purpose of this study was to determine the effect of mother's knowledge about nutrition on children's breakfast habits. The specific objectives were to identify mothers knowledge about nutrition on childrens and identify breakfast habits in children and evaluate the effect of mothers knowledge about nutrition on children breakfast habits.

Usefulness of research for school-age children it can increase knowledge for school-age children and be able to instill habits of breakfast behavior at home. Benefits

for mothers this research can be information for families about the importance of breakfast in children and the benefits of breakfast habits in children at home before activities outside the home and prevent children from consuming snacks outside.

Benefits for schools this research can be a source of knowledge and scientific evidence for schools, especially teachers in educating school-age children early on the importance of having breakfast at home and preventing children from consuming snacks outside and the impact of snacks. Benefits to the nursing profession. It is hoped that the results from this study will be useful as evidence-based practice in pediatric nursing.

## **METHODS**

Research on the effect of providing nutrition education is quantitative research. This study used a quasi experiment with a total sample of 110 mothers. The population in this nutrition study were 110 mothers of children attending SDN IV Way Galih. Nutrition education research time is on July 2021, and the research location is at SDN IV Way Galih. Data collection techniques for the Google form application, data sources with the WhatsApp application and email. The statistical test for this study was to use the chi-square test. The Incomplete sentence chi-square via a test that has a test that has a relationship between two variables.

Data retrieval using Google form and researchers asked permission from the school leadership and asked for WhatsApp numbers of student's parents and researchers gave questionnaires that had been tested for validity and reliability. Questionnaire question given by the mothers as many as 40 multiple-choice questions.

After the results from the questionnaire have been filled in all in the Google form. The researcher conducted a pretest to the parents of the students using the Google form application. After that, the researchers carried out a zoom application by providing online nutrition education to mothers on breakfast habits in children during the covid 19 pandemic.

The education in zoom, researchers provide power point theory of about the importance of breakfast for children and healthy breakfast, foods and attractive breakfast servings for children, and heat foods should be avoided by children. Researchers also played videos on how to serve healthy breakfast foods to children as well as tips for varied foods that children like.

After the video screening of healthy breakfast foods, the researchers also presented raw food and cooked food to zoom in on the student's parents. The food shown is balanced nutritional food according to the ministry of health such as carbohydrates, protein, fats, vitamins, fruits, and milk with balanced doses according to the needs of students.

After the 60 minutes, zoom education is over. The researcher gave time for a question and answer discussion to the parents at the end of the session. Parents are very enthusiastic about giving questions and answers and their experiences in serving breakfast to children. Eight parents participated in a question and answer discussion about serving healthy breakfast. At the end of the session, the researcher conducted a post test to the parents as many as 10 questions with the same questions as the pre test. Researchers provide positive reinforcement to all research participants.

The ethics of research for this study are based on upon the principles of nursing ethics, namely the researcher provides the principle of beneficence by

providing online nutrition education about healthy breakfasts providing benefits it parents for new knowledge. Another ethical principle is justice researchers are fair in taking samples in this study regardless of religion, ethnicity, social status and income status.

## RESULTS AND DISCUSSION

### Results

#### A. Univariate Analysis

Table 1. Frequency distribution of respondents

Characteristics	Frequency	%
Number of snacks in a day		
a. < 5000	70	63
b. > 5000	40	37
Parents income		
a. < 2.000.000	15	13
b. > 2000.000	95	86
The type of breakfast consumed in the family		
a. Rice and side dish	80	72
b. Snacks	20	18
c. Milk	10	10
Parent education		
a. JHS	0	0
b. SHS	98	90
c. University	12	10
Frequency of childrens breakfast		
a. Seldom	20	18
b. Often	56	51
c. Every Day	34	31

Characteristics of respondents based on table 1, it is known that the majority of respondents in online nutrition education research are mothers as many as 70 people (63%), the number of children's snacks a day > Rp.5.000 as many as 40 students (37, 00%), parent's income a month > Rp. 2.000.000 are 95 parents.(86%) and parent's education dominates high school 98 people (90%) and the frequency of children's breakfast, there are 20 children (18%) what rarely eat breakfast at home.

#### B. Bivariate Analysis

Table 2. Frequency distribution before and after the effect of providing online nutrition education to mothers on childrens breakfast habits during the covid 19 pandemic.

Education	Breakfast Habits		Tot al	P value
	No	Yes		
Good	10	15	110	0,000
Not enough	30	55		
Total	40	70	110	

Based on the table 2, the results of research at SDN IV Way Galih before being given education on healthy breakfast, there were 30 parents who had a helthy

breakfast habit at home. Breakfast habits for children and parents are very important because children who eat a healthy breakfast will have significantly different growth and development compared to children who do not eat breakfast. The results from this study are reinforced by lasidis research in 2018 at SD Negeri 21 Manado, students who do not eat breakfast are in this category and experience a decrease in learning achievement at school. SDN II Tagog Apu as many as 48% of students snaking at school do not meet the requirements for snack food safety because they contain chemicals (Fitriani and Andriyani, 2015).

Healthy breakfast education in this study is to use the zoom application media. This breakfast education was attended by parents of students. Education using attractive power points and raw and cooked food. In susiolossobsoil research in 2019 in Semarang, he conducted research with healthy breakfast education using the C breaklet (Creative breaklet booklet) media. Media C breaklet is media made with A5 size paper whose contents are in accordance with the knowledge of elementary school children with interesting pictures about healthy breakfast and the impact if students do not eat breakfast (Susilo, 2019).

Parent's knowledge about healthy breakfast is very important. According to Budiman and Riyanto (2013) there are five taxonomy levels of knowledge, namely knowing, understanding, application, analysis, synthesis and evaluation. Knowledge is very closely related to thawthawing level of education as of an individual, the easier it will be to absorb new knowledge. However, that does not mean that if an individual's education is a low, only elementary, junior high and high school are difficult to absorb new knowledge. However, education can be obtained from informal education not only from formal education. Parent's know Parents knowledge about healthy breakfast is very important. According to Budiman and Riyanto (2013) there are five taxonomy levels of knowledge, namely knowing understanding, application, analysis, synthesis and evaluation. Knowledge is very closely related to with the level of education of as an individual. The higher the education of as an individual, the easier it will be to absorb new knowledge. However, that does not mean that an individual's education is low, a low, only elementary, junior high, and high schools are difficult to absorb new knowledge. How can be obtained from informal education not only from formal education.

The result from the study at SDN IV Way Galih based on table 2, there was an increase in knowledge after being given an online healthy breakfast education (zoom) as many as 55 parents. Supported by research by Fatmah (2015) the results from this study after education were carried out with the result from this study in line with the healthy breakfast movement for school age. Children in 10 SDN Depok city aged 10 to 11 years. The healthy breakfast movement includes lecture methods group discussions, and simulation of healthy breakfast counseling media leaflets, booklets, flip charts and short films about healthy breakfast.

From the results of research at SDN IV Way Galih there is an effect of providing online nutrition education to mothers on children's breakfast habits during the Covid 19 pandemic with a p-value of 0,000. This is caused by several factors such as parental education, parenteral concentration, available media/facilities.

## CONCLUSION

The conclusion in this study is that there is an effect of providing online nutrition education to mothers on children's breakfast habits during the covid 19 pandemic with a p-value of 0,000.

Further researchers are advised to examine the problem of habits regarding breakfast for toddlers and preschoolers as well as education on healthy breakfast by in

person, direct practice of cooking healthy food for breakfast with mothers and children by limiting distance, shorter time and wearing masks, keeping the distance according to the protocol health.

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## Ethnomathematics: Plane Figure and Philosophy In Lampung Batik

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### Abstract

Mathematics is very closely related to everyday life, including the culture inherent in society. Mathematics with cultural nuances or called ethnomathematics will make a very large contribution to learning mathematics. This study aims to explore the concept of plane figure and philosophy in Batik Lampung. This research is included in ethnographic research. The research data was collected through observation, literature study, and interviews with practitioners, namely Lampung Batik craftsmen and Lampung traditional elders to understand the history and philosophical values of each Lampung Batik motif. The results from this study indicate that there are plane figures in the Lampung Batik motif, namely square, rectangle, triangle, circle, parallelogram, trapezoid, rhombus and kite. In addition, each Lampung batik motif has its own philosophy and is related to the history of the Lampung Batik motif.

**Keywords:** Ethnomathematics, Lampung Batik Motif, Plane Figure, Philosophy, Ethnographic.



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## INTRODUCTION

Mathematics has a close relationship to everyday life, including the culture inherent in society. A person's cultural background affects his knowledge of mathematics, because what they do is based on what they see and feel (Hardiarti, 2017). According to (Muzakkir, 2021), mathematics cannot be separated from culture because mathematics is part of human activity, which is a socio-cultural construction, cultural phenomenon and as a Pan-Human activity.

Ethnomathematics is one of the bridges between culture and education because through the application of ethnomathematics in mathematics education, students can better understand mathematics, and better understand their culture, and later educators will find it easier to instill cultural values in themselves (Wahyuni et al., 2013). Hardiarti (2017) also states that ethnomathematics is a science used to understand how mathematics is adapted from a culture. The ethnomathematical objects

can be in the form of traditional games, traditional crafts, artifacts, and activities (actions) in the form of culture.

One of the cultures in Indonesia that is related to mathematics is the Lampung batik motif. The motif reflects the local cultural wisdom in the Lampung area. In this case, Lampung batik is one of the Lampung cultures that need to be preserved and preserved. Batik itself shows an art in the form of motifs made on cloth (Anisa & Rachmaniar, 2019). Since the recognition of batik by UNESCO, batik culture has been increasingly loved by the Indonesian people because it is able to provide a special pride for the Indonesian people (Rosyadi et al., 2020). Thus, it is necessary to explore the ethnomathematics contained in Lampung batik motifs so that the results of these explorations can be used as material in implementing culture, especially Lampung Batik in mathematics learning. One form of ethnomathematics in Lampung Batik that can be explored is the concept of flat shapes in Lampung batik and the philosophy of each motif.

There are several previous studies related to ethnomathematics in Lampung culture, including (Loviana et al., 2020) in their research stating that the foundations, poles, roofs, stairs, and terraces of houses in Lampung traditional houses reflect mathematical concepts. The mathematical concept is in the form of a flat shape which is reflected in the shape of the Lampung traditional house, and the ethnomathematical activity are reflected on the process of building a Lampung traditional house, namely measurement. Merliza (2021) also stated that traditional Lampung games such as ketekhan, bedil betung, bedil locok, arul, min sundung khulah, bledukan and tablecloth, which were explored found mathematical concepts, including the concept of numbers, flat shapes, wake up space, probability, distance and speed. In addition, Merliza et al. (2022) also state that traditional Lampung cakes including Selimpok, Engkak, Sekubal, Buak tat, and Bebai maghing contain mathematical concepts both from form and mathematical activity in the form of estimates in how to measure ingredients in the manufacturing process. Several previous studies have shown that ethnomathematics in Lampung culture can be used as reference material in learning mathematics. However, in this study, researchers conducted an ethnomathematical exploration of the Lampung Batik Motif which was devoted to the Bangun Datar material. It is intended that the integration of ethnomathematics in mathematics learning is more focused on the material of flat shapes. In addition to exploring the concepts of flat shapes found in the Lampung Batik motif, researchers also explore the philosophy contained in the Lampung batik motif with the aim that it can be used as reference material in order to preserve and understand the values contained in Lampung culture.

## METHODS

This research is a qualitative research that uses ethnographic methods to describe, explain and analyze the cultural elements within a society or ethnic group. The data used for this study is written data that describes the concept of flat shapes found in Batik Lampung along with the philosophy of each motif. The data obtained under the form of qualitative data while the data sources obtained from documentation, observation, interviews, field notes and literature studies related to the Lampung Batik Motif. The instrument in this research is the researcher himself.

Documentation technique was used to collect data in the form of a variety of typical Lampung batiks motifs. Documentation was carried out by taking pictures of Lampung batik motifs in the Andanan Batik Lampung collection which is one of the centers of Lampung Batik handicraft business in Lampung Province. The purpose of



taking documentation in this place is because Andanan Batik Lampung is one of the centers of Batik craft in Lampung, which focuses on Lampung batik motifs. In addition, the owner of Andana Batik Lampung is a native Lampung Batik craftsman who understands Lampung culture and has competence in his field. After obtaining the documentation data, further observations were made on the Lampung batik motifs to identify the concepts of flat shapes contained in each motif. Interviews in this study were conducted to the traditional elders of Lampung Saibatin, namely Ibu Zatunutqen, S.Pd. and Mr. Hidayatullah, M.Pd as a typical Lampung Batik craftsman. Ms. Zatunutqen, S.Pd. as the first informant who is a Lampung traditional elder with the title Penganton, who understands the history and philosophy of Lampung culture. Meanwhile, Mr. Hidayatullah, M.Pd is a native Lampung Batik craftsman who has been working professionally since 2018 and has experience in developing the culture of Lampung batik motifs both locally and nationally. Meanwhile, a literature study was conducted to ensure that the data obtained in the field were valid data. The data analysis techniques used are source triangulation and technical triangulation.

The ethnographic research steps used refer to Spradley in (ARY et al., 2010) in Table 1 below:

Table 1. Ethnographic Research Steps

Method Stage	Ethnographic Activities
Selecting an ethnographic project	Selecting the scope of the project in this research is the Lampung Batik Motif.
Asking ethnographic questions	Researchers arrange questions that serve as a guide to what is seen, heard and as a data collection tool.
Collecting ethnographic data	Researchers collect data using documentation techniques, observation, interviews, field notes and literature studies in collecting data. Documentation techniques are carried out to obtain the appearance of the Lampung Batik motif to be identified. Observations were made on Lampung batik motifs to identify the concept of a flat shape for each motif. Interviews were conducted with Lampung batik craftsmen and Lampung traditional elders to find out the philosophy of Lampung batik motifs. Field notes were carried out while the researcher was conducting research activities. While the literature study was carried out through literature studies related to Lampung Batik Motifs.
Making an ethnographic record	Researchers made ethnographic notes in the form of field notes related to Batik Lampung motifs and recorded interviews.
Analyzing ethnographic data	Researchers analyzed the results of the data obtained to explore the concept of flat shape and philosophy on the Lampung Batik Motif.
Writing the ethnography	Researchers write the results of data analysis in the form of reports on the results of ethnographic data analysis.

## RESULTS AND DISCUSSION

### Lampung Batik Motifs

The diversity of batik motifs is spread throughout Indonesia with the uniqueness of their respective regional cultures. One of them is the Lampung Batik motif. The Lampung Batik motif was adopted from the tapis cloth motif which is a typical fabric of the Lampung region. There are several typical Lampung batik motifs, including:

#### Kapal Motif

The batik Kapal motif symbolizes fishermen in the Lampung area. This is because the south to the east of Lampung province is limited by the sea and also a large river. Based on the results of interviews with Lampung Batik craftsmen and Lampung traditional elders, it was found that the Kapal batik motif or known as Jung implies the openness of the Lampung people to the presence of people outside the region. The shape of the ship's symmetry also implies balance. According to Kartiwa in (Budiman, 2013) the shape of the ship and the color also has different meanings. The motif of the ship in red depicts the sacredness and relationship with the profane underworld, besides the third world, namely the world where humans and their natural environment, fauna and flora are the middle world. The symbolic colors along with the cargo or contents of the ship represent the philosophical macro and micro elements of the cosmos as a whole.

The mathematical concepts in the kapal motif are shown in Figure 1 below:

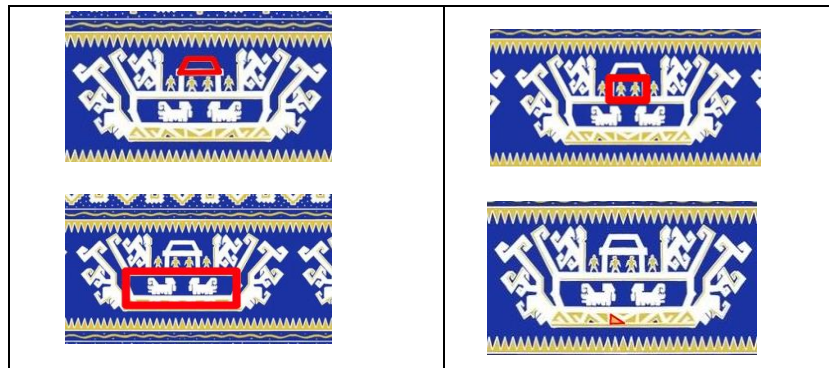


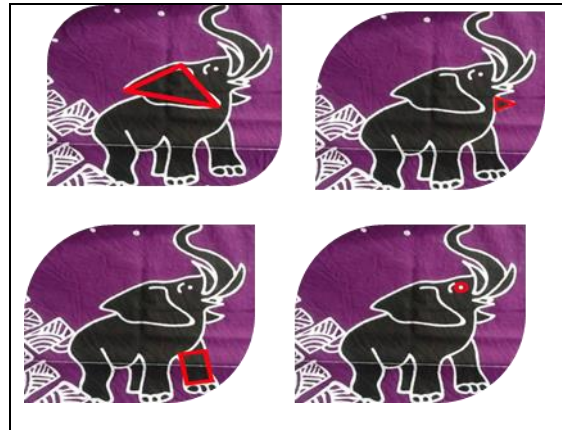
Figure 1. Plane Figure on the Batik Kapal Motif

From Figure 1 it can be seen that there are trapezoid, square and triangle on the Batik kapal motif.

#### Gajah Motif

Elephants are animals that are designated as the identity fauna of Lampung Province. Gajah batik motif was adopted from the famous Lampung elephant. Elephants are also considered as sacred animals that have magical powers for the people of Lampung. In addition, the elephant also symbolizes wisdom and expels obstacles for the people of Lampung (in an interview with Lampung Traditional Elder Saibatin with the title Penganton, Zatunutqen, 2022).

The mathematical concepts in Gajah motif are shown in Figure 1 below:



From Figure 2, it can be seen that there are trapezoid, square and triangle in the Batik Gajah motif.

### Siger Motif

Siger is the crown of majesty and honor of the people of Lampung. The Siger has two kinds of indentations, which are seven and nine. It is divided into two tribes that inhabit the Lampung area, namely the Lampung Pepadun tribe and the Lampung Saibatin tribe. The philosophy of the siger is a symbol of the feminine nature.

Siger pepadun has nine grooves defined as nine clans that make up the Abung Siwo Mego sub-tribe which is a straight-line descendant of Win Pemuka Sultan (with the title Ratu Dipuncak) the king over the Sekala Brak kingdom which is the origin of the Lampung tribe, both Pepadun and Saibatin (Sabaruddin, 2012). However, Sabaruddin (2012) states that "the nine grooves/rujis on Siger Pepadun symbolize the nine rivers that flow in the Lampung area, namely Way Sekampung, Way Semangka, Way Seputih, Way Pengubuan, Way Abung Rarem, Way Sungkai, Way Kanan, Way Tulang Bawang, and Way Mesuji". This statement is supported by the traditions of the Lampung Pepadun tribe, both Abung Siwo Mego and Sungkai Way Kanan Buay Lima that uses river water as a source of life and livelihood. The straight shape that spreads to the side implies that the character anmperament of the Lampung Pepadun tribe are hard and rude. This can be seen from the speech intonation of the people of Lampung Pepadun who speaks normally like angry (Interview with Raja cit (Circiria, 2015)). A

As for the Lampung Saibatin tribe, there are seven curves, which have the meaning of seven titles/adok, namely (1) Suttan/Dalom/Pangeran [Kepaksian/Marga], (2) Khaja Jukuan/Depati, (3) Batin, (4) Kadin, (5) Minak, (6) Kimas and (7) Mas/Itton (Interview with Khadin Darmawan in (Circiria, 2015)). These titles can only be assigned to people who are straight descendants of the royal family. The shape of the siger who is more curved back implies that the character/temper of the Lampung Saibatin person is softer than that of the Lampung Pepadun. This can be seen from the intonation of the Lampung Saibatin tribe's speaking tone, which is smoother and softer than the Lampung Pepadun tribe (Circharia, 2015).

The two sigers have the same color, namely, golden yellow, which depicts greatness, luxury, majesty, and virtuous character. With the siger meaning, the six sub-tribes and their descendants feel as one unified whole and even share the same fate. This situation will prevent the Lampung Saibatin and Lampung Pepadun tribes from being involved in horizontal and vertical conflicts (Circiria, 2015).

The mathematical concepts in the Siger motif are shown in Figure 1 below:



From Figure 3, it can be seen that there are plane figure of triangles and circles on the Batik Siger motif.

### Pucuk Rebung Motif

Pucuk Rebung Motif is made from a typical Lampung filter cloth. The Pucuk Rebung motif has a meaning according to the life view of the people of Lampung (Piil Pesenggiri). In other words, the Pucuk Rebung motif illustrates that the people of Lampung have a sense of kinship, togetherness, unity, care, and mutual cooperation with one another (interview with Zatunutqen, 2022).

The mathematical concepts in the bamboo shoot motif are shown in Figure 1 below:



From Figure 4, it can be seen that there are plane figure of rhombuses, circles and rectangles with bamboo shoots Batik motifs.

### CONCLUSION

The results of this study indicate that there is a plane figure concept in the Lampung Batik motif, namely square, rectangle, triangle, circle, parallelogram, trapezoid, rhombus and kite. In addition, each Lampung batik motif has its own philosophy and is related to the history of the Lampung Batik motif.

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