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Research Article

Literacy of *Alpha-Lactalbumin* (ALA) and *Oleic Acid* Content Improves Knowledge and *Self Efficacy* in Breastfeeding Milk by Mothers Who Have Babies 0-24 Months

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ABSTRACT

Introduction: The world health organization (WHO) actively promotes breast milk as the best source of nutrition for babies and continues to increase the level of exclusive breastfeeding during the first 6 months to two years and reach at least 50% by 2025. The low level of exclusive breastfeeding is likely a lack of Education about the composition of breast milk which contains peptides including α-lactalbumin (ALA) and Oleic Acid (OA) which are able to reduce the risk of breast and ovarian cancer and have therapeutic effects which have been published under the name human α-lactalbumin made lethal to tumor cells (HAMLET), so that this literacy is able to convince mothers to give breast milk and is a health threat to mothers that it is important to give breast milk because it has anti-cancer substances that can prevent cancer. **Method:** This type of research is quantitative, with a Quasi Experimental *Nonequivalent Control Group Design. In this* research , the experimental group was treated by providing education and assessing and using knowledge and *self-efficacy instruments* . Mean while, the control group received education through the KIA book. The target population in this study is mothers who have babies aged 0-24 months in the working area of the Ujoh Bilang Health Center, Mahakam Ulu Regency. The sampling technique is purposive sampling. **Results:** there is a difference in knowledge literacy, Self Eficaccy on Breast Milk Feeding (ASI) by mothers who have babies 0-24 months in the intervention and control groups before and after being given breast milk literacy with a p value of 0.000 ($p < 0.005$) which indicates that the hypothesis is accepted, namely there is an effect of breast milk literacy on knowledge and *self-efficacy*. **Conclusion:** literacy of *alpha-lactalbumin* (ALA) and *oleic acid* (OA) content increases knowledge and *self-efficacy* in providing breast milk by mothers who have babies 0-24 months.

Keywords: Breast milk literacy, knowledge, *self-efficacy*, alpha-lactalbumin, oleic acid and breast milk.

INTRODUCTION

The World Health Organization (WHO) actively promotes breast milk (ASI) as the best source of nutrition for babies and continues to increase the rate of exclusive breastfeeding during the first 6 months to two years and reach at least 50% by 2025. WHO recommends that one way The most effective way to ensure the health and survival of children is to provide breast milk (ASI). [1].

Breast milk (ASI) has a complex composition, containing various macronutrients (carbohydrates, proteins, lipids and vitamins) as well as various bioactive compounds and active substances (growth factors, hormones, cytokines, chemokines and antimicrobial compounds. Breast milk also contains antibodies and Human Milk Oligosaccharides (HMOs) which are related to immunity. Apart from its nutritional value, it provides benefits to babies. Breast milk contains peptides including α-lactalbumin (ALA) and Oleic Acid (OA) which can reduce the risk of breast and ovarian cancer and has a therapeutic effect that has been published under the name human α-lactalbumin made lethal to tumor cells (HAMLET)[2]. Batelho's research results [3] stated that although there is a genetic factor in the history of breast cancer, it has been proven to reduce the risk of cancer in women because they have a history of breastfeeding. Although the specific cause is not known, previous research also shows that breastfeeding reduces the risk of breast cancer and the longer you breastfeed, the smaller the risk of breast cancer and also reduces the risk of other reproductive cancers, because the main component of breast milk is postulated in several research results, namely alpha -lactalbumin and Oleic acid are anti-cancer substances [3]. Alpha-lactalbumin levels were 37% higher in mature breast milk than in colostrum and increased during lactation even as total protein concentrations decreased.

The results of research [4]measuring α-lactalbumin (ALA) and Oleic Acid (OA) levels carried out in Makssar resulted in an average increase but the increase was still low compared to research results abroad. Research has also been carried out to increase OA levels by providing interventions providing food intake, namely Extra Virgin Olive Oil (EVOO) to breastfeeding mothers and the results showed an increase but the increase was still low compared to the results of research abroad. Research on ALA and OA levels has been widely carried out abroad, but in Indonesia it has only been carried out in Makassar. In East Kalimantan Province, ALA and OA levels have never been measured in breastfeeding mothers, so it is not yet known what the levels are, as was done in Makassar. Due to the low coverage of

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exclusive breastfeeding in Mahakam Ulu, East Kalimantan Province, it is necessary to carry out a preliminary study on measuring OA and ALA levels as a source of literacy material for conducting education in East Kalimantan.

The research results [5]show that α-lactalbumin (LA) levels are 20-50%, whereas in mammalian animals it is only 2-5%. This is different from mothers in China, the intake of α-lactalbumin is higher, because they regularly consume food sources of ALA (soybean oil, sunflower oil, and peanut oil) and ingredients that source ALA (soybeans and cereals) are commonly consumed by the Chinese population. including breastfeeding mothers. In East Kalimantan, specifically in West Kutai and Mahakam Ulu districts, the majority of the population is Dayak. The daily intake or consumption of food for breastfeeding mothers on average consumes carbohydrates: rice, sago, sweet potatoes, jalore, Vegetables: sugar cane eggs, kelakai, green vegetables, castor leaves, Protein: catfish, baung river fish, keli, smoked fish and also pork consumption. A varied diet is something that can also affect the quality of breast milk. Preparation for breastfeeding does not only start during the breastfeeding period, but needs to be paid attention to during pregnancy. The discovery of growth factor, cytokines, and heterogenous cell population (stem cells, probiotics, dan HAMLET complex (Human alpha-lactalbumin made lethal to tumor cell)) in the breastmilk has increasing the concern of studies on breastmilk as a natural medicine[6].

Based on Indonesia's health profile in 2022, the coverage of exclusive breastfeeding for East Kalimantan province is 75.58% and analysis data from the Mahakam Ulu Regency Health Service at Ujoh Community Health Center says it is 72.1%. Health education and promotion about exclusive breastfeeding for 6 months has been widely implemented in East Kalimantan, but the success rate of exclusive breastfeeding still does not meet the target. Increasing mothers' knowledge about exclusive breastfeeding nutrition alone is not enough to change behavior, a mother needs knowledge and confidence about education which can later change the mother's knowledge [7].

The low level of exclusive breastfeeding is likely a lack of education about the composition of breast milk which contains peptides including α-lactalbumin (ALA) and Oleic Acid (OA) which can reduce the risk of breast and ovarian cancer and have therapeutic effects which have been published under the name human α-lactalbumin made lethal to tumor cells (HAMLET), so this literacy is able to convince mothers to give breast milk and is a health threat for mothers that it is important to give breast milk because it has anti-cancer substances that can prevent cancer [3].

Bandura said that *self-efficacy* is basically the result of a cognitive process in the form of decisions, beliefs, or expectations about the extent to which an individual estimates his or her ability to carry out certain tasks or actions needed to achieve the desired results [8]. Another relevant factor that influences maternal behavior during breastfeeding is *Self Efficacy* [9]. Some evidence has shown that promotion of maternal *self-efficacy* in mothers can contribute to the prevention of early weaning or the provision of formula feeding [10].

Based on this background, the author, before conducting further research, conducted a preliminary study by examining α-lactalbumin (ALA) and Oleic Acid (OA) levels in mothers who breastfed their babies aged 0-24 months at the Mahakam Ulu Health Service, Ujoh Bilang Community Health Center. The aim of measuring α-lactalbumin (ALA) and Oleic Acid (OA) levels is to see how many levels are in the mother's breast milk, so that these results can motivate the mother to increase food intake which will later support the mother's breastfeeding. The higher levels of α-lactalbumin (ALA) and Oleic Acid (OA) in breast milk increase the risk of breast and ovarian cancer.

RESEARCH METHODS

This type of research is quantitative, with a Quasi Experimental *Nonequivalent Control Group Design.* Where in this study there were two groups, namely one experimental group and one control group which began with a pretest *given* to both groups and then given *treatment* . The research ended with a final test (*posttest)* which was also given to both groups. In this research, the experimental group was treated by providing education and training on how to assess and use knowledge and *self-efficacy instruments* . Meanwhile, the control group received education through the KIA book . The target population in this study is mothers who have babies aged 0-24 months in the working area of the Ujoh Bilang Health Center, Mahakam Ulu Regency.

The sampling technique in this research uses a non- *probability sampling approach* , namely *purposive sampling.*

RESULTS AND DISCUSSION

Results Study

The results of this study used a sample of 76 (n1 = 38 and n2 = 38) respondents in both the intervention group and the control group. The following shows the group of respondents involved in this study. Based on the results of the study in table 1. it can be concluded that most of the respondents in the intervention group were aged between 20-35 years as many as 31 people (81.6%) and in the control group aged between 20-35 years as many as 29 people (76.3%). Most of the respondents had high school education 19 (50%), while the control group 18 people (47.4%). Most of the second respondent parity (39.5%), while the control group 12 people (31.6). Most of the mothers breastfeeding status 0-6) (27%), while the control group 30 people (78.9%).

The test results of Table 2, showed that the data was normally distributed in both the intervention and control groups, meaning that the test results had a value (Pvalue) < 0.05, showed the results of statistical tests aimed at assessing differences in breastfeeding knowledge literacy pretest posttest with pretest values Mean ± Std.Dev 43.11 ± 6.85 while Posttest, 81.34 ± 12.29, with (Pvalue) <0.05, so there is a difference in knowledge after the intervention.

Table 1. Respondents' Characteristics.

No	Karakteristik	Kelompok Intervensi		Kelompok Kontrol	
		(n=38)	%	(n=38)	%
1	**Usia Ibu (Tahun)**				
	≤19	2	5.3	2	5.3
	20-35	31	81.6	29	76.3
	>35	5	13.2	7	18.4
2	**Pendidikan**				
	SD	2	5.3	7	18.4
	SMP	4	10.5	3	7.9
	SMA	19	50.0	18	47.4
	DIPLOMA/S1	13	34.2	10	26.3
3	**Paritas**				
	Pertama	9	23.7	13	34.2
	Kedua	15	39.5	12	31.6
	≥tiga	14	36.8	13	34.2
4	**Status menyusui**				
	0-6 bulan = ASI	27	71.1	30	78.9
	>6 bulan = ASI Eksklusif + MP ASI	6	15.8	2	5.3
	Susu Formula	5	13.2	6	15.8
Total		**38**	**100**	**38**	**100**

Primary data source: 2024

Table 2. Results of Paired Literacy Tests in the intervention group before and after being given Knowledge.

Variabel		N	Mean ± Std. Dev	p-Value
Knowledge	*Pre test*	76	43.11 ± 6.85	0,000
	Post test	76	81.34 ±12.29	

Source: *Paired Test*, 2024

Table 3. Results of Paired Literacy Tests in the intervention group before and after being given Self Efficacy.

Variabel		N	Mean ± Std. Dev	p-Value
Self Efficacy	*Pre test*	76	50.62 ± 11.19	0,000
	Post test	76	52.92 ± 9.74	

Source: *Paired Test*, 2024

The results of Table 3. show the results of statistical tests aimed at assessing differences in literacy Self Efficacy ASI pretest posttest with the results of pretest Mean ± Std.Dev 50.62 ± 11.19 while Post test, 52.92 ± 9.74, with a value (Pvalue) <0.05.

DISCUSSION

Literacy of Alpha-Lactalbumin (ALA) and Oleic Acid (OA) Content of Breast Milk Knowledge on breastfeeding mothers

The results showed that the results of the pre-test and post-test knowledge were different with a value (Pvalue) <0.05. According to Breastfeeding literacy refers to the understanding and knowledge of breastmilk and its importance for infants. It includes information about the benefits of breastmilk, the correct way to breastfeed, and strategies to overcome problems. The influence of literacy knowledge on breastfeeding practices is a significant area of research, especially in populations with high levels of literacy. A mother's decision to exclusively breastfeed her baby is one of the most important decisions in a child's early life. This decision is not only influenced by biological or medical factors, but also by social and cultural factors, including the mother's literacy level.

Literacy theory, which broadly studies an individual's ability to read, write, count, and comprehend information, is closely linked to exclusive breastfeeding decisions. A study conducted in a well-literate population in southern India found that despite high literacy rates, breastfeeding practices were not universally optimal [11]. Literacy knowledge has a significant impact on mothers' breastfeeding practices [11]. In a study conducted in India, it was found that despite high literacy levels among women (77%), there were still challenges in optimal breastfeeding practices [12]. Only 10.6% of mothers practised exclusive breastfeeding, despite good knowledge and beliefs about breastfeeding among them[13].

The study showed that mothers who did not receive guidance from health workers had a 3.5 times higher risk of not practising exclusive breastfeeding. This suggests that knowledge gained from formal education alone is not enough[14]. Guidance from health professionals is also very important to promote good breastfeeding practices [15]. In addition, other studies have shown that mothers' knowledge of acute diarrhoea and its management is also influenced by education level and economic conditions [16]. Mothers with higher education tend to have better knowledge on how to manage diarrhoea, which contributes to their child's health. Overall, while literacy can provide a knowledge base, support and guidance from health professionals is essential to ensure that mothers can apply this knowledge in effective breastfeeding practices. Mothers should be encouraged to breastfeed their babies as the complex components of breastmilk secretions make it an ideal food source for infants and clinical evidence has shown that there is a lower risk of developing breast cancer in mothers who breastfeed their babies [3,17].

Health literacy is closely related to maintaining exclusive breastfeeding and acts as a protective factor against early discontinuation of breastfeeding [18]. There is a need for a specific instrument to measure the lack of 'breastfeeding literacy', to measure the relationship between health literacy and health and maintaining exclusive breastfeeding. Although more robust research is needed to determine the association between health literacy levels and maintaining exclusive breastfeeding at 6 months postpartum, this study suggests that breastfeeding mothers should receive special attention from health professionals caring for mothers during the perinatal period [19].

It is necessary to conduct literacy that can change the behaviour of mothers to provide exclusive breastfeeding to their babies by adding material on Alpha lactabumin and oleic acid as anti-cancer substances. The results of Batelho's study said that although there is a genetic factor in the history of breast cancer, it has been proven to reduce the risk of cancer in these women because they have a history of breastfeeding. Although the specific cause is unknown, previous studies have also shown that breastfeeding reduces the risk of breast cancer and the longer breastfeeding, the smaller the risk of breast cancer and also reduces the risk of other reproductive cancers [3].

Alpha-lactalbumin and Oleic acid are anti-cancer substances. Alpha-lactalbumin levels are 37% higher in mature breast milk than in colostrum and increase during breastfeeding even as total protein concentration decreases.Alpha-lactalbumin and Oleic acid are anti-cancer substances. Alpha-lactalbumin levels are 37% higher in mature breast milk than in colostrum and increase during breastfeeding even as total protein concentration decreases.Many patients need simpler health education materials to encourage breastfeeding. These materials are needed before and during pregnancy. The researcher's assumption, in accordance with the results of previous studies, is that it is important to provide knowledge interventions about the anti-cancer substances of breast milk, according to the needs of mothers.

Literacy of Alpha-Lactalbumin (ALA) and Oleic Acid (OA) Content of Breast Milk Self Efficacy on breastfeeding in breastfeeding mothers.

The results showed that the results of the pre-test and post-test Self efficacy there is a difference with a value (Pvalue) <0.05.

Based on Bandura's theory, behaviour-specific self-efficacy scales have been developed to identify those with high or low self-efficacy [13,20] says that self-efficacy is basically the result of a cognitive process in the form of decisions, beliefs, or expectations about the extent to which individuals estimate their ability to carry out certain tasks or actions needed to achieve the desired results.

According to Bandura[20], the concept of self efficacy builds on the concept of self efficacy from Bandura's social cognitive theory. Self efficacy is defined as a mother's confidence in her ability to breastfeed her child [12]. A woman's performance achievements, experiences gained from her interactions with other breastfeeding women, verbal persuasion from significant others and physiological responses experienced by the mother influence BSE [14,19,21].

The influence of literacy on aspects of self-efficacy is a significant area of study, especially in the context of education and cognitive development Literacy which includes reading and writing skills, plays an important role in shaping one's self-efficacy [17]. Mothers' self-efficacy to breastfeed can contribute to breastfeeding success [22].

This study aimed to improve breastfeeding self-efficacy and breastfeeding practices through an intervention based on Bandura's

self-efficacy theory [23]. Reading and writing skills increase one's capacity to process information, understand complex concepts, and engage in critical thinking [22,24,25]. This, in turn, increases self-efficacy by providing a sense of control over one's learning and problem-solving abilities [26]. The Role of Health Literacy in Predicting Breastfeeding Intention and Breastfeeding Knowledge [25]. Literacy improves cognitive skills, including problem solving, critical thinking, and the ability to understand and process information [27,28]. This cognitive development increases confidence in one's ability to learn and apply knowledge to learn and apply knowledge, which leads to higher self-efficacy in academic and everyday tasks [25].

Breastfeeding self-efficacy (BSE) refers to a mother's confidence in her ability to breastfeed successfully (Tsai, 2013). This psychological construct is critical in determining breastfeeding outcomes, including duration and exclusivity of breastfeeding. According to Topuz [29,30] in this study, getting information about breastfeeding was the most influential factor on breastfeeding self-efficacy in the early postpartum periode [30,31]. A mother's level of breastfeeding self-efficacy should be determined during the early postpartum period [25].

The influence of literacy on aspects of self-efficacy is a significant area of study, especially in the context of education and cognitive development [17]. Literacy which includes reading and writing skills, plays an important role in shaping one's self-efficacy. Mothers' self-efficacy to breastfeed may contribute to breastfeeding success [22].

The results of research by Kaufman et al, stated that there was a relationship between breastfeeding self-efficacy and exclusive breastfeeding success (p value = 0.001 < 0.05). There is a significant relationship between breastfeeding self-efficacy and exclusive breastfeeding success. The results of this study are in line with Bandura's theory that self-efficacy also involves determination and perseverance - because this helps a person overcome problems that would interfere with the use of innate abilities to achieve the goal of providing breast milk to their baby [32,43].

CONCLUSION

1. There was an increase in knowledge after the literacy of alpha-lactalbumin (ALA) and oleic acid (OA) content in breast milk to breastfeeding mothers which showed a significant difference between the intervention and control groups.
2. self-efficacy or confidence of breastfeeding mothers also increased significantly in the intervention group.

SUGGESTION

There is a need for professional breastfeeding support through breastfeeding literacy which can increase knowledge and *Self Efficacy* for mothers to increase and promote the exclusivity of breastfeeding for babies 0-6 months and continue until the age of two years.

ETHICS

Ethics approval recommendation Hasanuddin University Faculty of Public Health Number : 1795/UN4.14.1/TP.01.02/2024

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CONFLICTS OF INTEREST

The researchers declare that there is no conflict of interest.

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