

# The Effect of Moringa Oleifera Flour Given for Mothers Breastfeeding Against Morbidity of Baby Ages 0-6 Months in Jeneponto District

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## Abstract

**Background:** Moringa oleifera is one of the vegetable food sources which has many nutritional content (minerals, vitamin A, vitamin C and vitamin B, sources of calcium, protein, potassium, and iron, amino acids such as methionine and cystine) which are very important to prevent disease.

**Aims:** To assess the large difference in infant morbidity from groups of mothers who received Moringa oleifera flour and groups who received iron tablets.

**Method:** : Experimental with Randomized Double Blind design, Controlled design. The population in this study were community groups of pregnant and lactating women, a large sample of 20 pregnant women each group (Moringa Oleifera flour (GTK, n = 20) and received iron folate capsules (GBF, n = 20)). Bivariate analysis uses chi-square and multivariate logistic regression to see the value of OR.

**Results:** There is a significant effect of moringa flour intervention on Morbidity of Infants aged 3 months ( $\rho = 0.018$ ) and 6 months ( $\rho = 0.006$ ). Based on the Odds Ratio test, the use of Moringa flour 5,500 times better for infant morbidity compared to the use of iron (Fe) tablets at 3 months of age and the use of Moringa flour 7.857 times better for infant morbidity than the use of iron (Fe) tablets at the age of infants 6 months are measured based on the morbidity of children in the last 3 months.

**Conclusion:** There is an effect of the intervention of Moringa flour on infant morbidity, the use of Moringa flour is better than the use of iron tablets (Fe). Moringa flour provides the same benefits as Fe and can be an alternative fulfillment of nutrition to maintain the health of children in order to avoid disease.

**Keyword:** *Moringa Oleifera, Iron Tablets, Morbidity.*

## Introductions

Morbidity and mortality due to childhood illnesses remain a major global concern. Malaria, respiratory infections, and diarrheal diseases are the main causes of child morbidity and mortality. Preventable infections are a major cause of morbidity and mortality in CHER and children <5 years are generally affected<sup>1</sup>). occurrence of adverse health outcomes in children, defined as the incidence of validated morbidity (diarrhea, acute respiratory infections, or malnutrition) or severe events (hospitalization or death)<sup>2</sup>.

Acute respiratory disease is one of the main causes of poor health in children. This includes a variety of effects, including viral and bacterial infections in the lungs and respiratory tract. This can also be caused or triggered by various risk factors, especially exposure to air pollution. Low birth weight, malnutrition and population density are also important risk factors. In developing countries, all of these risk factors continue to affect a large portion of the population, with acute respiratory disease continuing to be a ubiquitous form of childhood morbidity and one of the leading causes of

death. Upper respiratory tract diseases, such as asthma, wheezing, fever, and allergic rhinitis, have increased in many countries<sup>3</sup>.

Progress towards nutritional goals requires high level policy commitment and broad community support. Existing food and nutrition policies need to be reviewed so that they comprehensively meet all major nutritional challenges and address the distribution of these problems in society. A further aim of the review is to ensure that nutrition is placed centrally in other sectoral policies and in overall development policies. Important factors for the successful implementation of this policy are official responsibilities by relevant government agencies, the establishment of cross-sectoral governance mechanisms, the involvement of development partners, the involvement of local communities<sup>4</sup>.

Moringa oleifera extract is able to maintain a decreased level of serum ferritin up to 50%<sup>5</sup>. The administration of moringa oleifera increases the hemoglobin of pregnant women which is the same as the effect of iron/folic acid tablets. In addition, moringa oleifera can increase antioxidant levels and reduce MDA, and 8-OHdG<sup>6</sup>. Moringa oleifera can increase the number of PCV, HB and RBC, its use can increase the number of WBC, possible toxicological responses<sup>7</sup>. Micronutrient supplementation is widely used to prevent anemia during pregnancy and proves that pregnancy results are better and Moringa leaves are local plants, considered to contribute to anemia prevention<sup>8</sup>

Referring to the background above looking at the occurrence of conditions and based on research related to the use of moringa oleifera to support government programs on the implementation of a healthy Indonesia program with a family approach to reduce the prevalence of stunting and monitoring infant growth, it is necessary

to conduct research on the “effects of Moringa flour Oleifera in pregnant women against morbidity of infants aged 0-6 months in the working area of the Tamalate health center in Jeneponto district, South Sulawesi. “

### Materials and Method

This study uses an experimental method with a Randomized Double Blind design, Controlled design is part of an intervention study that began in 2017. This study was conducted in the area of Tamalatea Health Center, Jeneponto Regency, South Sulawesi. The population in this study is the community groups of pregnant and lactating women who are scattered in Tamalatea sub-district, Jeneponto regency, the number of samples followed since pregnant women is 20 pregnant women each group, the number of babies born followed by 40 with the assessment of the first group receiving Moringa Oleifera flour capsules (GTK, n = 20), the second group received iron folate capsules (GBF, n = 20). Bivariate analysis uses chi-square and multivariate logistic regression to see the value OR.

This research was carried out after obtaining approval from the Ethics Commission of the Faculty of Public Health, Hasanuddin University number UH2908199017. Before the implementation of measurements and interviews will be given an explanation of the actions to be taken for each respondent (Mother and baby). After the explanation, the respondents were asked for approval to participate in this study by signing an informed consent.

### Results

Data shows that the characteristics based on (Maternal Age, Education, Maternal Occupation, Home Smoking, Child Gender, Breastfeeding, Breastfeeding Pattern).

**Table 1. Characteristics of Respondents**

Variable	Iron Tablet		Moringa capsules		Total		P Value
	n	%	n	%	N	%	
<b>Mother's Age</b>							
<26 years	5	27.8	7	38.9	12	33.3	0.728
≥ 26 years	13	72.2	11	61.1	24	66.7	
<b>Education</b>							
Low <12 Years (elementary or non-primary)	11	61.1	14	77.8	25	69.4	0.469
Height ≥ 12 years (SMP, SMA and PT)	7	38.9	4	22.2	11	30.6	

Variable	Iron Tablet		Moringa capsules		Total		P Value
	n	%	n	%	N	%	
<b>Mother's Job</b>							
Does not work	17	94.4	16	88.9	33	91.7	1,000
Work	1	5.6	2	11.1	3	8.3	
<b>Smoking in the House</b>							
Yes	14	77.8	15	83.3	29	80.6	1,000
Not	4	22.2	3	16.7	7	19.4	
<b>Child Gender</b>							
Man	9	50.0	11	61.1	20	55.6	0.737
Women	9	50.0	7	38.9	16	44.4	
<b>MP-ASI</b>							
<6 months	4	22.2	1	5.6	5	13.9	0.338
≥ 6 months	14	77.8	17	94.4	31	86.1	

Table 1 Shows a description of the respondents were (91.7%), there were people who smoked at home with mothers with age ≥ 26 years with a total of 24 people 29 (80.6%) and still found MP-ASI <6 months 5 people (66, 7%), had low category education with 25 people (13.9%). (69.4%), mothers with unemployed status 33 people

**Table 2. Analysis of differences in morbidity of 3-month infants from groups of mothers who received moringa oleifera flour and groups who received iron folate**

Morbidity of 3-Month Infants	Moringa Oleifera Flour		Iron Folate Tablets		Total	
	n	%	n	%	n	%
Never Sick Last 3 Months	14	77,8	7	38,9	21	58,3
Have been Sick the Last 3 Months	4	22,2	11	61,1	15	41,7
p = 0,018						
Odds Ratio = 5,500						

**Table 2.** From the statistical test results obtained p = 0.018, this means that there is a significant influence of the intervention of Moringa flour on Morbidity of Infants aged 3 Months. Based on the Odds Ratio test, the use of Moringa flour 5,500 times better for infant morbidity than the use of iron (Fe) tablets at the age of 3 months of the baby is measured based on the morbidity of children in the last 3 months.

**Table 3. Analysis of differences in the morbidity of 6-month infants from groups of mothers who received moringa oleifera flour and groups who received iron folate**

Morbidity of 6-Month Infants	Moringa Oleifera Flour		Iron folate tablets		Total	
	n	%	n	%	n	%
Never Sick Last 3 Months	15	83,3	7	38,9	22	61,1
Have been Sick the Last 3 Months	3	16,7	11	61,1	14	38,9
p= 0,006						
Odds Ratio = 7,857						

**Table 3** From the statistical test results obtained ρ = 0.006, this means that there is a significant influence of the intervention of Moringa flour on Morbidity of Infants at 6 Months. Based on the Odds Ratio test, the use of

Moringa flour is 7.857 times better for infant morbidity compared to the use of iron (Fe) tablets at the age of 6 months of the baby is measured based on the morbidity of children in the last 3 months.

## Discussion

Morbidity or illness in infants is something that must be avoided, because this can affect the nutritional status of the baby which can ultimately have an impact on the baby's growth. The most common cause of morbidity in young infants is infection. Infectious disease itself will be able to cause the baby to have no appetite so that it can affect its growth. Based on the results of this study, there was a significant effect of moringa flour intervention on Morbidity of Infants aged 3 months and 6 months. The use of moringa flour 5,500 times better for infant morbidity in usa 3 months and the use of Moringa flour 7.857 times better for infant morbidity compared to the use of iron (Fe) tablets at the age of 6 months of infants measured based on the morbidity of children in the last 3 months.

Morbidity of children is a leading cause of death of children in developing countries, especially in Ethiopia. Despite the marked increase in reducing infant mortality in Ethiopia, diarrhea and fever in children are still the main causes of death. In Ethiopia, the burden of child mortality is alarming and calls for decisive efforts to combat these health problems. On research<sup>9</sup>. Showed that the child's sex, age of the child, level of anemia, level of education of the husband, mother's employment status, marital status, breastfeeding status and area were all selected as significant risk factors associated with childhood diarrhea and fever and significantly associated with opportunities Higher morbidity in Ethiopia.

World Health Organization (WHO) named the Moringa tree as a miracle tree, after discovering the important benefits of Moringa leaves<sup>10</sup>. In the results of research in the third month the use of Moringa flour 5,500 times better for infant morbidity than the use of iron tablets. This can be explained that Moringa leaves contain high iron which can optimize the growth and development of children, iron serves to help red blood cells carry oxygen throughout the body so as to maintain health. If a child becomes ill, the metabolism in the body will immediately go down. Food is needed which contains a lot of fiber, especially in children who have impaired exposure or diarrhea. Moringa leaves contain high anti-infectious, toxins and bacteria in the child's

body can be overcome by consuming Moringa leaves Moringa leaves can help smooth digestion in children. When a child is sick, this anti-inflammatory will detoxify the child's body. So the child will recover quickly and be healthy again<sup>10</sup>.

Breast milk besides being able to help in the growth process, it can also protect babies from various infectious diseases such as diarrhea and ARI. However, the results of the study found, there are infants who have been sick for the last 3 months despite being given the intervention of moringa oleifera flour capsules and Iron Tablets, this is in line with the research conducted.<sup>11</sup>, that there is no effect of breastfeeding on the growth status of infants, the incidence of respiratory infections, and diarrhea in children aged 7-12 months.

Based on research conducted by<sup>12</sup>. Chronic exposure to arsenic, strong and toxic carcinogens through drinking water is a public health problem throughout the world. Because little is known about the effects of arsenic in early life on immunity, we evaluated the impact of exposure in utero on infant immune parameters and morbidity in a pilot study. The effect of arsenic exposure on the incidence of respiratory infections is only seen in boys. The findings suggest that exposure to arsenic in the uterus interferes with the development of the child's thymus and increases morbidity, possibly through immune suppression. The effect seems to be partly dependent on gender. Arsenic exposure also affects breast milk levels from trophic factors and maternal morbidity

On research<sup>13</sup>, shows the need for integrated interventions directed during the prenatal and postnatal periods, using multi-sectoral approaches to address various factors from the community to the individual level. There is a strong need for efforts to increase adequate food intake during pregnancy accompanied by educational interventions. encourage pregnant women to receive adequate antenatal care, optimal infant and child feeding practices for growth and development, exclusive breastfeeding to prevent infections and diseases that can ultimately affect growth.

Research conducted in Malawi shows that babies who get complementary food at the beginning of 3 months of birth have an impact on infant morbidity<sup>14</sup>. In addition when the baby started to eat or consume solid foods, infants are particularly vulnerable to digestive problems, especially diarrhea, this happens because

of the preparation or storage of solids which are not hygienic, potentially as an intermediary for the entry of bacteria and viruses into the body of the baby and the baby's activity began to explore its environment. However, the results of research in the UK did not show a significant difference in the early age of introduction of solid food to diarrhea<sup>15</sup>.

Research conducted by<sup>16</sup> comparing hygiene in urban and rural areas in Bangladesh that is that more samples from urban areas are contaminated than rural areas, urban caregivers are more likely than rural caregivers to practice hygiene, especially washing hands with soap after defecation and beforehand, giving eat children. Poor socio-economic status and dense housing, use of public toilets, use of contaminated water for drinking and washing, low levels of education or lack of proper knowledge and hygiene practices may be related to higher levels of food contamination in urban areas.

### Conclusion

Morbidity or illness in infants is something that must be avoided because this can affect the nutritional status of the baby which can ultimately have an impact on the baby's growth. In this study, there was a significant effect of the intervention of Moringa flour on Morbidity of Infants aged 3 months and 6 months. Based on the Odds Ratio test, the use of Moringa flour was 5,500 times better at 3 months of age and the use of Moringa flour was 7,857 times better for Morbidity of infants compared to tablet use. iron (Fe) at the age of 6 months of the baby is measured based on the morbidity of children in the last 3 months. Moringa flour provides the same benefits as Fe and can be an alternative fulfillment of nutrition to maintain the health of children in order to avoid disease.

**Conflict of Interest:** None.

**Source of Funding:** Source of personal funding

**Ethical Clearance:** From Faculty of Public Health, Hasanuddin University.

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