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The Influence of Giving Moring Capsules on Stress Levels In Pregnant Women

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ABSTRACT

Pregnant women can experience stress during pregnancy. Moringa leaves as nutrition during pregnancy. By administering Moringa leaf extract, stress in pregnant women can be reduced. The purpose of this study was to determine the effect of giving Moringa capsules on stress levels in pregnant women. The results showed that the pre-test was 9.53 ± 2.41, the post test score was 3.97 ± 1.45, the EPDS score decreased 5.57 ± 2.51 and based on the results of the Pairet T Test statistical test (EPDS score) was obtained (p <0.001). There is an effect of giving Moringa capsules to pregnant women on reducing stress in pregnant women in Bone District, South Sulawesi Province. From the results of this study it is hoped that the raw material for Moringa leaves can be used as the main raw material in additional food products to improve the health of pregnant, lactating women and toddlers as an effort to reduce maternal mortality, infant mortality and make it a continuation of the GAMARA'NA program.

Keywords: *Pregnant Women, Moringa Capsules, Stress*

1. INTRODUCTION

The incidence of maternal mortality and morbidity is still a very serious health problem in developing countries. Based on the results of reports from the World Health Organization (WHO) every day in 2020, nearly 800 women died from preventable causes related to pregnancy and childbirth. A maternal death occurs almost every two minutes in 2020. Nearly 95% of all maternal deaths occurred in low and lower middle income countries in 2020 [1].

Based on the nutrition targets set by the World Health Assembly (WHA) in 2025 and the Sustainability Development Goal's (SDG's) targets in 2030, studies in low and middle-income countries state that complications of malnutrition that cause morbidity in mothers and their babies such as anemia, hypertension and LBW, has a negative impact on the nutritional status of pregnant women which worsens the growth and development of the fetus [2]. Pregnant women generally only consume about half of the recommended energy intake [3]. Pregnancy is a physiological event that is accompanied by changes in body functions, causing a high demand for energy and oxygen in the body. Due to the increased intake of nutrients and oxygen, the oxidative stress released is also higher. Oxidative stress is an imbalance between the power of pro-oxidants and antioxidants which results in the overall release of pro-oxidants [4], [5].

Stress if exceeded can cause long-term effects on the fetus, and alter the development of the fetal nervous system. Stress during pregnancy is also associated with premature birth and low birth weight babies, risk of gestational hypertension, and undesirable health and behavioral outcomes leading to infant death, cerebral palsy, developmental delays, visual and hearing impairments [6]. Prenatal stress can affect babies' stress reactivity and their emotional temperament later in life. Prenatal stress can also impact the hereditary immune system, leading to decreased immune function and increased susceptibility to disease [7].

Moringa leaves are proven as a nutritional supplement during pregnancy [8]. Moringa is packed with many potential nutrients, can be used as a food supplement, and can even contribute to fighting malnutrition [9]. Moringa leaves contain flavonids, sterols, triterpenoids, alkaloids, saponins and phenols [10]. β-carotene, vitamin C, minerals especially iron and calcium [11]. Health benefits that not only support pregnant women during pregnancy but also

prevent adverse pregnancy outcomes [12]. Moringa leaves can increase hemoglobin levels in pregnant women who suffer from anemia [13-14]. Moringa leaf extract can also be used as an alternative to preventing anemia in pregnant women [15]. Moringa leaves can also increase milk production on postpartum days 4-5 among mothers who give birth to premature babies [16]. One serving of Moringa leaves, namely 100 g, provides one-third of the daily requirement of calcium, and provides important amounts of iron, protein, copper, sulfur and B vitamins [17].

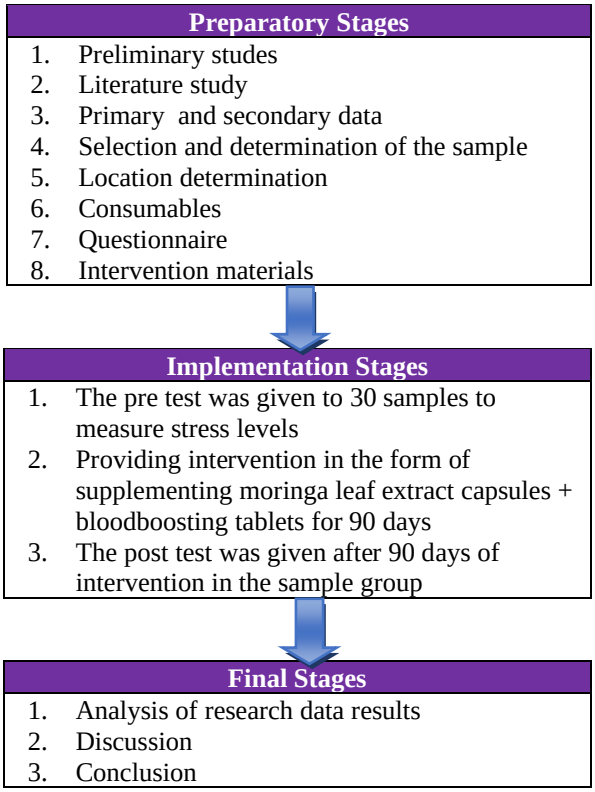
Based on Muis' research (2014), stated that stress levels decreased significantly in the group given Moringa leaf extract compared to the group not given Moringa leaf extract. Significant differences were seen in the magnitude of changes in stress levels between the two groups. Stress in pregnant women can be identified by examining levels of the hormone cortisol [18]. Research conducted by Hasni (2018) found that giving moringa leaf powder had a greater effect on reducing stress levels and cortisol levels in pregnant women compared to giving Fe [19].

In order to pursue a strategy to accelerate stunting reduction in South Sulawesi, the Regional Government through South Sulawesi Governor Decree No 44021/07255/Year 2020 concerning the Formation of a Team for the Acceleration of Gammara'na Stunting Prevention and Management, by launching the Community Movement to Prevent Stunting, is planned to begin in 2019 and officially launched in 2020 and designated Bone and Enrekang as Stunting Locus Regencies and Stunting Locus Villages. This team consisted of elements from higher education institutions (Faculty of Public Health, Hasanuddin University and Makassar Health Polytechnic), South Sulawesi Provincial Health Office, Bone and Enrekang District Health Office. The gammarana intervention is Mother Assistance by Village Nutrition Workers, by giving Moringa leaf extract capsules to all targeted pregnant women. Thus, it is hoped that the "gammarana" icon intervention will provide outcomes that are very influential in preventing cases of stunting in children.

Referring to the problems above, this research is really needed by looking at the Effect of Giving Moringa Capsules on Stress Levels in Pregnant Women.

2. METHOD

The type of research used is quantitative research, namely Quasi Experimental (pseudo-experimental). The research design used was the Pre Test - Post Test. The number of samples used was 30 people, the form of intervention given was supplementation of Moringa leaf extract capsules + blood-boosting tablets (TTD). Pre test and post test were given to 30 samples. The intervention was given for 90 days. The sample is all pregnant women in the 1st and 2nd trimesters in Bone Regency in 14 villages. Data were analyzed using the Paired T Test.



2. RESULTS AND DISCUSSION

Table 1. Stress Normality Test on giving Moringa capsules to pregnant women

Variabel	(Moringa Leaf Extract)	
	ρ	Information
Stress (Pre-Test)	0.671	Normal Distribution
Stress (Post Test)	0.372	Normal Distribution
Stress (Change)	0.139	Normal Distribution

*Shapiro-Wilk p> 0.05 declared normal distribution

Based on table 1. It can be seen that stress during the pre test, post test, and changes using the Shapiro-Wilk test is normally distributed (p> 0.05) so that data can be analyzed using a parametric test, namely the paired t test.
A clinical trial study was conducted by Aly et al, (2016), which revealed the vulnerability of oxidative stress in anemic pregnant women as a result of an imbalance in pro-oxidant and anti-oxidant levels [20].

Table 2. Effect of Giving Moringa Capsules to Pregnant Women Against Stress (EPDS Score)

Group	Time	n	Stress (EPDS score)		p Value
			Mean±SD		
			Value	Change	
Moringa Leaf Extract	Pre Test	30	9.53±2.41	5.57±2.51	**<0.001**
	Post Test	30	3.97±1.45		

* Paired T Test

Stress (EPDS score) in the intervention group (Moringa Leaf Extract) decreased 5.57 ± 2.51 and based on the results of the Pairet T Test statistic it was found that there was an effect of giving Moringa capsules to pregnant women on stress reduction (EPDS score) (p <0.001).

Moringa Oleifera may have potential effects on women including those who are pregnant. Studies of Moringa leaf extract conducted in Indonesia, among others, by increasing the intake and weight of pregnant women [21]; prevent maternal anemia and low birth weight babies [22]; hemoglobin levels of pregnant women [23]. Moringa leaves contain various macro and micro nutrients [24].

Moringa leaves contain nutrients that are very important to prevent various diseases. Besides that, it also contains all the essential (essential) amino acids, namely argine, histidine, isoleucine, leusine, lysine, methionine, phenylalinine, threonine, tryptophan and valine. In addition, moringa leaves contain protein, fat, beta carotene (A) thiamin (B1), riboflavin (B2), niacin (B3), vitamin C, calcium, calories, carbohydrates, copper, fiber, iron, magnesium and phosphorus. it is an excellent source of the moringa leaf plant [25]. It turns out that the content in Moringa is superior compared to other vegetables. The presence of high chemical substances in Moringa, namely polyphenols can be used to deal with stress during pregnancy because of its sedative properties and GABA (gamma-aminobutyric acid), which is a type of non-essential amino acid that helps maintain normal brain function by helping to block stress-related impulses from reaching receptors in the central nervous system. In addition, gamma aminobutyric acid can also reduce feelings of anxiety, and can help overcome disorders associated with emotional stress. Polyfhenol and GABA (gamma-aminobutyric acid) can overcome stress in pregnant women [26].

Table 2 shows the pre-test value of 9.53 ± 2.41, the post-test value of 3.97 ± 1.45, the EPDS score decreased by 5.57 ± 2.51 and based on the results of the Pairet T Test statistical test, it was found that there was an effect of giving Moringa capsules to pregnant women on reducing stress (EPDS score). (p<0.001) in pregnant women in Bone District, South Sulawesi Province. Muis et al's study stated that stress levels decreased significantly in the group given Moringa leaf extract compared to the group not given Moringa leaf extract. Significant differences were seen in the magnitude of changes in stress levels between the two groups [26]. Hadju's study, et al (2020) stated that supplementation with moringa leaf extract for 8 weeks in pregnant women with moderate anemia in the last trimester significantly increased hemoglobin levels and reduced perceived stress and cortisol [27].

3. CONCLUSION

Based on the results it can be concluded that there is an effect of giving moringa capsules on reducing stress (EPDS score) in pregnant women in Bone Regency, South Sulawesi Province. By providing products made from natural ingredients, Moringa leaf capsules can continue to be implemented in improving the health of mothers and children. From the results of this study it is hoped that the raw material for Moringa leaves can be used as the main raw material in additional food products to improve the health of pregnant women, breastfeeding and toddlers as an effort to reduce maternal mortality, infant mortality and be made a continuation of the GAMARA'NA program from

South Sulawesi Province as community movement to prevent stunting. In addition, preparations for providing additional food for pregnant women should pay more attention to the taste of the form so that it is attractive for consumption without reducing the existing nutrients so that it can compete with the additional food products provided by the government.

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REFERENCES

[1]. World Health Organization, "Maternal mortality," WHO, 2023. [Online]. Available: https://www.who.int/news-room/fact-sheets/detail/maternal-mortality.
[2]. R. A. Heidkamp et al., "Mobilising evidence, data, and resources to achieve global maternal and child undernutrition targets and the Sustainable Development Goals: an agenda for action," Lancet, vol. 397, no. 10282, pp. 1400–1418, 2021.
[3]. C. G. Victora, P. Christian, L. P. Vidaletti, G. Gatica-Domínguez, P. Menon, and R. E. Black, "Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda," Lancet, vol. 397, no. 10282, pp. 1388–1399, 2021.
[4]. D. V. Bhale, D. S. Patil, and R. K. Mahat, "Study of Malondialdehyde (MDA) As a Marker of Oxidative Stress in Obese Male Individuals," Int. J. Recent Trends Sci. Technol., vol. 10, no. 1, pp. 51–52, 2013.
[5]. J. T. Gohil, P. K. Patel, and G. Priyanka, "Evaluation of oxidative stress and antioxidant defence in subjects of preeclampsia," J. Obstet. Gynecol. India, vol. 61, no. 6, pp. 638–640, 2011.
[6]. N. A. Engidaw, A. G. Mekonnen, and F. K. Amogne, "Perceived stress and its associated factors among pregnant women in Bale zone Hospitals, Southeast Ethiopia: A cross-sectional study," BMC Res. Notes, vol. 12, no. 1, pp. 1–6, 2019.
[7]. [M. E., "Effects of prenatal stress on pregnancy and human development: Mechanisms and pathways," Obstet. Med., vol. 6, no. 2, pp. 52–57, 2013.
[8]. [M. N. Ulmy, A. Tahir, A. A. Arsunan, B. Burhanuddin, and H. Veni, "Effect of moringa leaves during pregnancy on growth and morbidity in 0–5 months," Enferm. Clin., vol. 30, pp. 61–65, 2020.
[9]. U. Zongo, "Effect of Moringa Leaves Powder Consumption on Young Children Nutritional and Serum Retinol Status in Burkina Faso Rural Area," Int. J. Nutr. Food Sci., vol. 7, no. 4, p. 148, 2018.
[10]. R. Ikalinus, S. Widyastuti, and N. Eka Setiasih, "Skrining Fitokimia Ekstrak Etanol Kulit Batang Kelor (Moringa Oleifera)," Indones. Med. Veterinus, vol. 4, no. 1, p. 77, 2015.
[11]. F. Fatmawati, "Pengaruh Ekstrak Daun Kelor (Moringa oleifera L.) Terhadap Kualitas Yoghurt," Indobiosains, vol. 2, no. 1, p. 21, 2020.
[12]. V. H. Muhammad Syafruddin Nurdin, Andi Imam Arundhana Thahir, "Supplementations on Pregnant Women and the Potential of Moringa Oleifera Supplement to Prevent Adverse Pregnancy Outcome," Int. J. Sci. Healthc. Res., vol. 3, no. 1, pp. 71–75, 2018.
[13]. S. S. Ponomban, R. Walalangi, J. Gizi, and P. Kemenkes, "Efektivitas Suplementasi Bubuk Daun Kelor (Moringa Oleifera) Terhadap Peningkatan Kadar Hemoglobin Pada Ibu Hamil yang Menderita Anemia," 5(1), pp. 36–44., vol. 5, no. 1, pp. 36–44, 2013.
[14]. A. (2015) Hasliani, "'Uji Manfaat Kapsul Kelor Untuk Pengobatan Anemia Pada Ibu Hamil di Puskesmas Padang Lampe dan Minasa Te'ne Kabupaten Pangkep'," J. Kebidanan Vokasional, pp. 1–7.
[15]. Nadimin, V. Hadju, S. As'ad, and A. Buchari, "The Extract of Moringa Leaf Has an Equivalent Effect to Iron Folic Acid in Increasing Hemoglobin Levels of Pregnant Women: A randomized Control Study in the Coastal Area of Makassar," Int. J. Sci. Basic Appl. Res., vol. 22, no. 1, pp. 287–294, 2015.
[16]. M. C. P. Estrella, J. B. V. Mantaring, and G. Z. David, "A double-blind, randomized controlled trial on the use of malunggay (Moringa oleifera) for augmentation of the volume of breastmilk among non-nursing mothers of preterm infants," Philipp. J. Pediatr., vol. 49, no. 1, pp. 3–7, 2000.
[17]. F. Anwar and M. I. Bhanger, "Analytical Characterization of Moringa oleifera Seed Oil Grown in Temperate Regions of Pakistan," J. Agric. Food Chem., vol. 51, no. 22, pp. 6558–6563, 2003.
[18]. M. Muis, V. Hadju, S. Russeng, and M. Naiem, "Effect of Moringa leaves extract on occupational stress and nutritional status of pregnant women informal sector worker," Int. J. Curr. Res. Acad. Rev., vol. 2, no. 11, pp. 86–92, 2014.
[19]. Hasni, "Pengaruh pemberian tepung daun kelor (Moringa Oleifera) Pada Ibu Hamil terhadap kadar stres dan kortisol," Universitas Hasanuddin, 2018.
[20]. S. Aly, H. Fayed, S. Ahmed, A. Abdella, A.-A. Tamam, and N. Mohmmed, "Effects of oral iron (ferrous versus ferric) supplementation on oxidative stress and antioxidant status in pregnant women with iron deficiency: controlled trial," Egypt. J. Haematol., vol. 41, no. 2, p. 31, 2016.
[21]. Hermansyah, V. Hadju, and B. Bahar, "Ekstrak Daun Kelor Terhadap Peningkatan Asupan dan Berat Badan Ibu Hamil Pekerja Sektor Informal," J. Ilmu Kesehat. Masy., vol. 5, no. November, pp. 192–201, 2014.
[22]. I. Iskandar, V. Hadju, S. As 'ad, and R. Natsir, "Effect of Moringa Oleifera Leaf Extracts Supplementation in Preventing Maternal Anemia and Low-Birth-Weight," Int. J. Sci. Res. Publ., vol. 5, no. 1, pp. 2250–3153, 2015.
[23]. P. C. Sihotang, P. Candriasih, and S. Amdadi, "Effect of Moringa (Moringa oleifera) Biscuit Administration on Hemoglobin Levels of Pregnant Women," Int. J. Sci. Basic Appl. Res. Int. J. Sci. Basic Appl. Res., vol. 37, no. 1, pp. 243–252, 2018.
[24]. H. V. Zakaria, S. As, and B. Bahar, "The Effect of Moringa Leaf Extract in Breastfeeding Mothers against Anemia Status and Breast Milk Iron Content," Int. J. Sci. Basic Appl. Res. (IJSBAR, vol. 24, no. 1, pp. 321–329, 2015.
[25]. R. Rismawati, V. A. Jana, N. S. Latifah, and S. Sunarsih, "Manfaat Kapsul Daun Kelor Dalam Meningkatkan Kadar Hemoglobin Ibu Hamil," J. Kebidanan Malahayati, vol. 7, no. 2, pp. 229–233, 2021.
[26]. Hasni and S. Evie, "Efektifitas Pemberian Kapsul Tepung Daun Kelor Terhadap Stres Ibu Primigravida Prodi DIII Keperawatan Tolitoli , Poltekkes Kemenkes Palu , Indonesia," Poltekita J. Ilmu Kesehat., vol. 15, no. 4, pp. 419–425, 2022.

[27]. [V. Hadju et al., “Moringa oleifera leaf powder supplementation improved the maternal health and birth weight: A randomised controlled trial in pregnant women,” Aust. J. Herb. Naturop. Med., vol. 32, no. 3, pp. 94–101, 2020.

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