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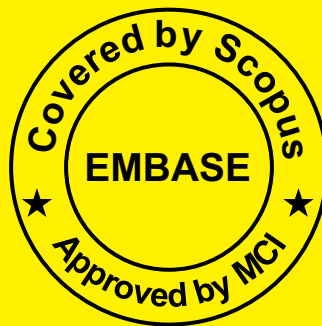
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# Importance of Collaborative Intervention of Preconception Nutrition in Suppressing the Stunting Case in East Nusa Tenggara, Indonesia

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## ABSTRACT

The result of Basic Health Research (Riskesdas) in 2013 on stunting case (short stature) in Indonesia reaches 37.2%. The basic cause of this stunting is due to anemia on women in pregnancy (37.1%). Malnutrition cases become one essential threat for women in pregnancy in Indonesia and East Nusa Tenggara in particular. In East Nusa Tenggara province, this stunting case is still a problem that requires immediate treatment. This can be seen from the proportion of stunted toddlers which is more than 50%. The purpose of this research was to find a form of collaborative intervention in order to cope with the stunting issues with specific targets for preconception mothers.

The type of descriptive research was literature study with qualitative approach.

The result indicated that the collaborative intervention related to preconception nutrition was to prevent the occurrence of anemia on women in pregnancy which ended up in stunting. Therefore, it was necessary to collaborate on all parties to intervene, especially during the preconception period.

**Keywords:** Collaboration, Preconception Nutrition, Stunting, Malnutrition

## Introduction

Nutrition is a very important thing in life. Humans can perform all the works optimally if all the nutritional needs are fulfilled. Nutrition becomes the determinant of the quality of Human Resources (HR) of a nation.<sup>1</sup> Indonesia itself has been dealing with nutritional problems for a long time and has been included in 17 countries out of 117 countries with high prevalence of stunting (37.2%), wasting (12.1%) and overweight (11.9%) on toddlers.<sup>2</sup>

Basic Health Research Results (Riskesdas) in 2013 shows that the most case of nutritional problems on toddlers in Indonesia is stunting (short stature) that reaches 37.2%. This is in line with the number of anemia case on women in pregnancy that reaches 37.1%. Stunting case becomes one threat for women in pregnancy in Indonesia and East Nusa Tenggara in particular. In East Nusa Tenggara Province, the number of stunted children is even higher, which is 51.77%. In fact, one of the districts in East Nusa Tenggara, namely South Central Timor (TTS) has stunting prevalence of 70.5%.<sup>3</sup> This figure is above Afghanistan, which ranks highest in the world with the stunting prevalence of 59%.<sup>4</sup> This is directly proportional to the economic condition of East Nusa Tenggara which is in the order of the three respectively poorest provinces in Indonesia; Papua 28.40 percent, West Papua 25.73 percent, and East Nusa Tenggara 22.58 percent.<sup>2</sup>

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In other words, the quality of the baby born depends on the mother's nutritional status before and during

pregnancy or preconception.<sup>5</sup> A pregnant woman will give birth to a healthy baby if the level of health and nutrition are in good status. However, there are still many pregnant women who have nutritional problems, especially malnutrition such as Chronic Energy Deficiency (CED) and nutrition anemia.<sup>6</sup>

Pregnant women who suffer from CED and anemia have greater risk of illness, especially in the third trimester of pregnancy compared with normal pregnant women.<sup>6</sup> As a result, they have a greater risk of having a baby with Low Birth Weight (LBW), death during bleeding, laborious postpartum delivery for being weak and they are also vulnerable to have health problems. Generally, infants born with Low Birth Weight (LBW) cannot absorb new environmental stresses optimally, which may result in stunted growth and development, and it is considered as stunting.<sup>5</sup>

### Material and Method

This research was a descriptive research type of literature study with qualitative approach. The use of qualitative method aimed to obtain data not only measured mathematically but explored its meaning. The main data sources in qualitative research were documents and journals.<sup>7</sup> Journals taken based on titles with keywords; collaboration between LBW preconception nutrition. Inclusion criteria; 1) Related to collaboration, LBW and preconception nutrition, 2) International journals indexed by scopus. Exclusion criteria; 1) Year published from 2013 - 2018, 2) Having complete journal access. The number of journals can be as many as 75 journals and after passing the inclusion and exclusion criteria of 35 filtered journals.

### Findings

**Stunting and Nutrition Issues in the Preconception Period:** The cause of nutritional problems was very complex. Mothers' preconception nutrition had a significant contribution in cases of malnutrition and stunting in children. The table 1 shows that Chronic Energy Deficiency (CED) in those who are pregnant tends to be higher than those who are not pregnant. This condition will affect the growth and development of the fetus in the womb.<sup>8</sup> Therefore, the mother should be prepared as well as possible in order not to encounter CED during the pregnancy. If it is not anticipated as early as possible, then it will end up in Low Birth Weight (LBW) as in the table 2.

**Table 1: Figure of CED on Mothers**

| Age   | CED proportion |              |
|-------|----------------|--------------|
|       | Pregnant       | Not pregnant |
| 15-19 | 38.5           | 46.6         |
| 20-24 | 30.1           | 30.6         |
| 25-29 | 20.9           | 19.3         |
| 30-34 | 21.4           | 13.6         |
| 35-39 | 17.3           | 11.3         |
| 40-44 | 17.6           | 10.7         |
| 45-49 | 20.7           | 11.6         |

Source: Riskesdas 2013

**Table 2: Figure of Low Birth Weight (LBW)**

| Baby's weight | LBW percentage |      |
|---------------|----------------|------|
|               | 2010           | 2013 |
| < 2500 g      | 11.1           | 10.2 |
| 2500-399 g    | 82.            | 85.0 |
| > 4000 g      | 6.4            | 6.8  |

Source: Riskesdas 2013

The central and local governments have made many breakthroughs to fix this problem, and after tracing it turned out that the intervention was much more focused at the time of conception and afterwards, such as; with PMT program, complementary feeding, improvement of posyandu service and community empowerment. PMT program denotes a program done by the government to improve children's nutrition status by giving additional food to the children with malnutrition status or less nutrition status. Posyandu constitutes a regular program for family planning and integrated health, to give optimal health service for children under 5 years old. The result indicated that the stunting prevalence was still high and tendency of reduction was still very slowly. Basic Health Research (Riskesdas) results in 2013 put East Nusa Tenggara in the position far above the national average with 51.77% of stunting prevalence. Not to mention, one of the districts in East Nusa Tenggara which is South Central Timor (TTS) has 70.5% of stunting prevalence. This figure is above Afghanistan which ranks highest in the world with 59% of Stunting prevalence.<sup>3</sup>

### Discussion

The relationship between Micronutrients and Maternal Nutrition Status in Preconception will be presented below.

Micronutrients are the nutrients needed by the humans' body in small amounts, but have a very important role in the formation of hormones, enzyme activity and regulate the function of the immune system and reproductive system<sup>11</sup>. Micronutrients are vitamins (both water soluble and fat soluble) and minerals. Minerals are divided into two groups: macro-minerals and micro-minerals. Macro-minerals are minerals that the body needs at least 100 mg per day (e.g. calcium, phosphorus), whereas micro-minerals (trace elements) are minerals that the body needs which less than 100 mg per day (e.g. zinc, iron).<sup>10</sup>

There are also micro-minerals which are needed only a few micrograms per day, such as cuprum and molybdenum. Micronutrients are obtained from outside the body such as from food or supplements, because the body is unable to produce it in sufficient amount in accordance with the needs of the body. Micronutrients are extremely needed by the body, even though the body only needs very small amount of it.<sup>11</sup>

For breastfeeding mothers, micronutrient status will determine the health, growth and development of infants who are breastfed, especially at the age of the first 6 months after the baby was born. Therefore, it is necessary to prepare before the conception period.<sup>12</sup> The things which are prepared include preparing the prospective mother by providing nutritious nutritional intake so that there will be no micronutrients deficiency during the conception.<sup>13</sup>

Here are some essential micronutrients that must be met during preconception; 1) **Vitamin A**; Vitamin A has really important roles in the preconception period, such as, boosting immunity, cell differentiation (cell shape and function changes), reproduction (keeping fertility to enter the conception), preparation of embryo growth, and growth and development of cells, including bones and teeth.<sup>11</sup> 2) **Iron**; Iron is an essential mineral for the formation of haemoglobin which serves to carry oxygen from the lungs to all body tissues, electrons into cells, and form the necessary iron nutrient enzymes for cellular energy production, immune system, and brain function. During this preconception, iron has extremely important role to prevent iron deficiency during pregnancy and birth<sup>6</sup>. If this is done, then there will be no baby stunting 3) **Zinc**; This is very important to be noticed by prospective mothers especially during the preconception period.<sup>12</sup> 4) **Iodine**; Iodine is an important component in thyroid hormone synthesis, a hormone that regulates

body temperature, basic metabolism, reproduction, growth and development, red blood cell formation and muscle and nerve function.<sup>14</sup>

The results of research conducted by Sumarmi et al (2017) provide an illustration that there is a relationship between the mother's body mass-index with micronutrient intake. So, the intake is necessary to prevent the occurrence of anemia on the mothers.<sup>15</sup>

Solutions directly, nutrition problems are caused by low nutrient intake and health problems.<sup>16</sup> In addition, nutrient intake and health problems are two things that affect each other.<sup>17</sup> The indirect effect is the availability of food, the pattern of care and the availability of clean water, sanitation and health services.

Actually, East Nusa Tenggara already has the authorized capital to make a total revolution both for the micro and macro level. At the micro level, East Nusa Tenggara has REVOLUSI KIA program, which is a program to decrease the number of both mother and baby's death during childbirth. This program has clearly decreased maternal mortality from 330 deaths (2008) to 128 (2015) and infant mortality from 1274 (2008) to 965 (2015). However, this program has not pressed the number of stunting.<sup>18</sup>

One thing that causes why the mentioned figures is difficult to decrease because there is no maximum intervention in preconception.<sup>19</sup> Preconception must be intervened not only by all health workers but all parties within the range of human life.<sup>5</sup> Health workers should be the leaders in this matter. Quality nutrition services to women in preconception can be realized if all the existing professions in the Community Health Center (Puskesmas) and their networks and the public are able to perform collaborative health services by implementing six strategic steps as stated by Previous study describes the role of each health worker in the hospital is an effort to overcome the problem of nutrition through six things, namely; 1) creating work culture in the workplace, 2) affirming the role of nutrition in health, 3) determining diagnosis, 4) doing quick and precise intervention, and follow-up monitoring; 5) communicating and planning related nutrition issues well, 6) developing further handling of post-intervention and continuing education related to nutrition. In addition, collaboration is also needed from other parties outside the health sector.<sup>16</sup> Collaboration with all other related sectors, either directly or indirectly, can provide a positive contribution.<sup>20</sup> The Community Health Center (puskesmas) is necessary to

create a preconception period that is fully prepared and well-done towards conception.<sup>21</sup>

Another factor that should be well considered is the state of the family itself, one of them is the level of education. An improved level of education will have an opportunity to get better jobs where income is also more regular and in greater amount.<sup>22</sup> In addition, if low levels of education do not improve the socio-economic conditions, that will end up in stunting (short stature) and malnutrition.<sup>23</sup> Then the intervention of the government and all the people is necessary, especially the environment in which the mother lives. Another study on 115 families with toddlers in 2014 with household-level food diversity. The result shows that there is a relationship between food diversity and income (number and type).<sup>24</sup> The poor are often able to survive and even rise again, especially when they have a network or social order that protects and saves them.<sup>22</sup>

The role of government in community empowerment becomes one of the alternative solutions. The bottom line is on improving the family economy.<sup>25</sup> Government through various policies should pay more attention to improve family nutrition. With the presence of village funds and village-focused development, it is expected to boost the improvement of specialized micro-nutrients in the preconception period.<sup>15</sup>

### Conclusions

Based on the exposure in the analysis and discussion in the preceding section, here are the main conclusions of the study. That preconception nutrition was very important to prevent stunting in children in East Nusa Tenggara. Therefore, it is necessary to have collaboration among the health professions and other related sectors to improve nutrition in the preconception period.

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