SYSTEMATIC REVIEW

Grant of Lipid Nutrient Supplement Prenatal in Stunting Prevention: A Systematic Review

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ABSTRACT

Introduction: This article examining the effectiveness of the administration of Lipid-based Nutrient Supplement (LNS) during prenatal in preventing stunting. One of the risk factors for stunting is the lack of nutritional intake during pregnancy, so an effective intervention is needed to prevent stunting from the time the fetus is in the womb. This study aims to find out the effectiveness of giving LNS during the prenatal period in preventing stunting. **Methods:** Databases used are PubMed, EBSCOhost, Cochrane Library, and Oxford Academic. It's sorted using the keywords pregnant women AND lipid nutrient supplement OR lipid-based nutrient AND prevent stunting. The inclusion criteria for articles in English or Indonesian, year published in 2011-2021, RCT research methods, availability of full text on articles, the suitability of the title, the population in the study is pregnant women, and the focus of research is on the use of Lipid Nutrient Supplement (LNS) or Lipid Based Nutrient (LBN) against stunting. The feasibility assessment using Jadad Score. **Results:** The analysis of 9 selected articles showed LNS affected prevention of growth retardation measured from age length Z value (LAZ), age weight Z value (WAZ) and Z-measurement. Circumference height (HCZ) score, no display value <2.0 indicates that the incidence of developmental delay and body mass index (BMIZ) Z score, upper-middle arm circumference (MUAC), and body length aren't lower than the average. **Conclusion:** The results of the study showed that LNS prenatal administration has a high effectiveness in preventing stunting.

Keywords: Lipid-based nutrition, Lipid nutritional supplements, Pregnant women, Prevention of stunting

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INTRODUCTION

Pregnancy is a period that determines the quality of human resources and the future, because the child's growth and development is determined by its condition during the fetal period (1,2) Adequate nutritional needs are needed during pregnancy to support fetal growth, during pregnancy women need about 400 kcal of calories (3). This increase in nutrients is useful for organogenesis processes in the fetus, such as maturation of the kidneys, cardio vascular, pancreas, body composition, and lung function (4). Undernutrition includes chronic lack of energy (<23.5) in pregnant women, 6.6 times the risk of giving birth to premature babies, low birth weight and low body length (5).

Children with low birth weight accompanied by inadequate nutrition identified experiencing high incidence of infections and stunting (6). The results of the research by Supriyanto et al., (2018) conducted in Yogyakarta with the subject of parents and children aged 6-23 months, showed that low birth weight had a significant relationship with the incidence of stunting with a 6.16 times greater risk of stunting compared to children born with normal weight (7). Research conducted by Mridha (2016) on 4,011 pregnant women in the northwestern region of Bangladesh with a distribution of 1047 women in the group given Lipid-Based Nutrient Supplements for Pregnant And Lactating Women (LNS-PL) during pregnancy and 2964 in the group given Iron and Folic Acid (IFA), the results showed that there was a significant difference in Low Birth Weight Babies between the LNS-PL group by 36% and the IFA group by 39.5% (8).

Stunting is not only a problem in Indonesia but a global problem, and this is supported by the high incidence of stunting in the world (9). WHO noted that in 2016 the stunting incidence reached 22.9% or around 154.8

million children under five years of age were stunted (7). Based on the 2018 Global Nutrition Report, Indonesia ranks 108th out of 132 countries, while Indonesia ranks second after Cambodia in Southeast Asia (10). The direct causes of stunting are disease factors and nutrient intake. The government in Indonesia has launched stunting control programs, such as the procurement of software stunting reduction program, the Public Health Center a health service facility that organizes effort to public health and first-level individual health efforts by prioritizing promotive and preventive effort, develop strategies for dealing with stunting including specific nutrition interventions in the first 1,000 days of life (11). While studies in Indonesian focused more in improving knowledge of pregnant women regarding the role of nutrition in preventing stunting (11), studies in other countries focused more in providing suplements to prevent stunting (12). Interventions applied abroad are more focused on providing supplements, both giving IFA tablets and micronutrients during the prenatal period (13). Sach granting intervention to prevent stunting supplement has different effectiveness (14). Efforts to prevent or control stunting are very important because children experiencing stunting will be more susceptible to disease and tend to develop degenerative diseases and failure to thrive before the age of 12 months which affects height in adulthood. In addition, it affects the level of intelligence of children (15). Therefore, it is very important to study stunting prevention efforts by providing prenatal LNS based on this systematic review so that appropriate interventions can be carried out. This systematic review aims to identify the literature on the effectiveness of administering LNS during the prenatal period in preventing stunting.

METHODS

Source

This systematic review followed the guidance set by the "Preferred Reporting Items for Systematic reviews and Meta-Analysis" (PRISMA) group. PRISMA is a research procedure that outlines and phase of the systematic review, including eligibility requirements, established before beginning the literature search and data extraction process.

Formulation of the research question

The first search was conducted by entering keywords identified based on PICO (Population, Intervention, Comparison, Outcome), used the boolean technique which can be seen in table I. The entire database used is an international database, so the keywords used in the search for articles are in English.

Eligibility Criteria

Research focus on the use of LNS or Lipid-Based Nutrient (LBN) for preventing stunting, with inclusion criteria articles publish (2011-2021), used English or Indonesian, the design used Randomized Controlled Trial (RCT), full text article and exclusion criteria are not original research, publish for more than 10 years, full text is not available and feasibility assessment using Jadad Score.

Table I: Article Search Keywords

	Concept	Keywords	Mesh	Keyword
Population	Pregnant women	Pregnant women, Gravida, Gestasional	Pregnant women, Gravidy	Pregnat Women, Gravidy
Intervention	Lipid nutritional suplement	Lipid nutritional suplement, Lipid based nutrien, Lipid acculukation product	Lipid nutritional suplement, Lipid based nutrien	Lipid nutritional suplement, Lipid based nutrien
Comparation	-	-	-	-
Outcome	Prevent of stunting	Prevent of Stunting, Prevention of stunting, Prevention of growth disorders	Prevent of Stunting, Prevention of stunting	Prevent of Stunting, Prevention of stunting

Search Strategy

The search for articles was carried out by searching through PubMed, EBSCOhost, Cochrane Library, and Oxford Academic, used the keywords pregnant women, lipid based nutrition, prevention of stunting, lipid nutritional suplements. Articles that match the keywords are then filtered based on the specified inclusion criteria.

Selection Process

Article search used electronic sites as the data sources. Searching for articles using the PRIMA approach (Prefered Reporting Items for Systematic Reviews and Meta Analysis, including identifying articles according to criteria, filtering, eligibility and finally downloading articles

The article feasibility test has been carried out, in total there were 9 reviewers and 1 person acted as an expert, with the division of task 3 person searching articles, 3 person sorting articles and 3 person analyzing articles and 1 expert as consultant. 9 articles were extracted, each reviewer extracted 1 relevant article and then it was re-examined by another reviewer, focusing on the article analysis of only data effectiviness on LNS/LBN intervention. Data extraction include author, year of publication, study location, study design, sample size, the method of administering LNS/LBN, method outcome measurement. Data extraction table three presents the measurement results, article conclusions, and research limitations. The extraction results of each article were then analyzed with the primary outcome in the form of stunting status of children under five with mothers who were given LNS/LBN during pregnancy. Stunting status in each article was measured from the LAZ score and several other measuring tools. The schema of the search results and article selection can be seen in Figure 1.

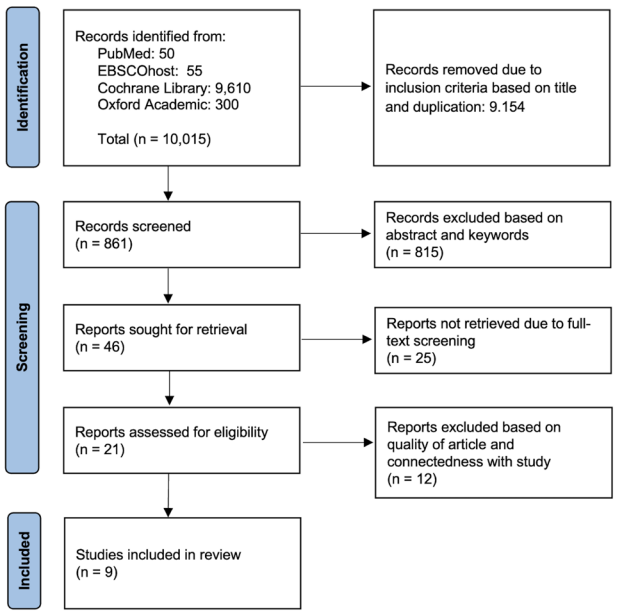

Figure 1: Selecting Article Process (PRISMA)

Quality Appraisal

To assess the quality of our articles, we used the Jadad score instrument. Points detemined as follows : random alocation, allocation concelament, blindness, withdrawals and drop out. The Jadad scale score ranges 1 to 7; hight score indicates better RCT quality if a study had a modified Jadad score > 4 points, it was considered to be of hight quality if the score was 3-4points it was moderate quality and if the score was < 3 points it was low quality. Nine relevant articles were tested for article eligibility using a jaded score before further extraction was carried out, which can be seen in table II.

RESULT

A total of 10,015 articles were drawn from four databases. After being deleted because they did not meet the inclusion criteria based on the title and duplication, the remaining 861 articles were found. Furthermore, in screening based on abstracts and keywords, 46 articles were obtained. Then filtered again based on the availability of fulltext, 21 articles were obtained and then filtered based on the quality of the articles and their relevance to the study so that 9 articles that met the requirements were obtained and will be analyzed further. The results of the data extraction of the nine selected articles can be seen in table III.

DISCUSSION

Based on the analysis results of nine research articles, six articles showed that the intervention of providing LNS/ LBN affected stunting prevention. It is evidenced by the measurement results of the LAZ, WAZ, HCZ does not show a value of < - 2.0 as an interpretation of stunting incidence, and BMIZ, MUAC, body length, weight, and anthropometry is not below the average value. The other three studies showed the giving LNS had not affect on preventing stunting.

LNS contains a variety of vitamins and minerals, and provides energy, protein and essential fatty acids. LNS is often called 'lipid based' because most of the energy provided by these products comes from lipids. LNS is acceptable to infants as well as pregnant and lactating women. LNS is used as complementary food or supplementary food for pregnant women to prevent stunting (17).

LNS can meet individual nutritional needs, contributes 200-500 kcal/KgBW of nutrition, can be consumed every day to prevent stunting. The dose given is between 20-50 g/day. LNS also functions in linear growth in children and prevents stunting. LNS can meet more significant nutritional needs in pregnancy and maternal health and impact the baby to be born (18). LNS is an affordable and cost-effective method to ensure children's nutritional intake is met, reduce anaemia, and prevent stunting in children aged 6-23 months. Giving LNS shows a positive effect to increase growth in children under two years old (19). Giving LNS can prevent stunting, as evidenced by six articles that have been analyzed (6; 19; 20; 21; 22).

Table II: The results of the article's feasibility test using a jadad score

Author	*Random Allocation*	*Allocation Concealment*	*Blinding*	*Withdrawals and Dropout*	*Jadad Score*	*Quality*
(Adu-Afarwuah et al., 2016)	2	2	2	1	7	*High quality*
(Mridha et al., 2016)	2	1	2	1	6	*High quality*
(Ashorn et al., 2015)	1	2	1	1	5	*High quality*
(Matias et al., 2016)	2	1	2	1	6	*High quality*
(Olney, Leroy, Bliznashka, & Ruel, 2018)	2	2	1	1	6	*High quality*
(Kumordzie et al., 2019)	2	1	2	0	5	*High quality*
(Dewey et al., 2017)	2	1	2	0	5	*High quality*
(Dewey, Matias, Mridha, & Arnold, 2019)	2	1	1	1	5	*High quality*
(Hambidge et al., 2019)	2	1	1	1	5	*High qualitty*

Table III: Summary of Research

Author	Objective	Location	Research type	Sample	Intervention	Outcome
Adu-Afarwuah et al., 2016 Small-quantity, lipid-based nutrient supplements provided to women during pregnancy and 6 mo postpartum and to their infants from 6 mo of age increase the mean attained length of 18-mo-old children in semi-urban Ghana: a randomized controlled trial	We evaluated the efficacy of small-quantity, lipid-based nutrient supplements (SQ-LNSs) provided during pregnancy, lactation, and infancy on attained size by 18 mo of age.	Ghana	RCT	1320 pregnant women with gestational age < 20 weeks	1320 women at #20 wk of gestation received standard iron and folic acid (IFA group), multiple micronutrients (MMN group), or SQ-LNS (LNS group) daily until delivery, and then placebo, MMNs, or SQ-LNS, respectively, for 6 mo postpartum; infants in the LNS group received SQ-LNS formulated for infants from 6 to 18 mo of age (endline). The primary outcome was child length by 18 of age.	- In the analysis by treatment, the LAZ for the LNS group was significantly greater - The difference is also significant for the z-score of weight versus age - There is no significant difference for head circumference or upper arm circumference - The prevalence of stunting in the LNS group was 8.9%.
Mridha et al., 2016 Lipid-based nutrient supplements for pregnant women reduce newborn stunting in a cluster-randomized controlled effectiveness trial in Bangladesh	The objective was to evaluate the effect of lipid-based nutrient supplements for pregnant and lactating women (LNS-PLs) on birth outcomes.	Bangladesh	RCT	4011 pregnant women at <20 gestational weeks	48 clusters received iron and folic acid (IFA; 60 mg Fe + 400 mg folic acid) and 16 clusters received LNS-PLs (20 g/d, 118 kcal) containing essential fatty acids and 22 vitamins and minerals. Both of the supplements were intended for daily consumption until delivery. Primary outcomes were birth weight and length. 48 clusters received iron and folic acid (IFA; 60 mg Fe + 400 mg folic acid) and 16 clusters received LNS-PLs (20 g/d, 118 kcal) containing essential fatty acids and 22 vitamins and minerals. Both of the supplements were intended for daily consumption until delivery. Primary outcomes were birth weight and length.	Infants in the LNS-PL group had higher birth weights (2629 6 408 compared with 2588 6 413 g; P = 0.007), weightfor-age z scores (21.48 6 1.01 compared with 21.59 6 1.02; P =0.006), head-circumference-for-age z scores (HCZs; 21.26 6 1.08compared with 21.34 6 1.12; P = 0.028), and body mass index z scores (21.57 6 1.05 compared with 21.66 6 1.03; P = 0.005) than those in the IFA group; in adjusted models, the differences in length (47.6 6 0.07 compared with 47.4 6 0.04 cm; P = 0.043) and LAZ (21.15 6 0.04 compared with 21.24 6 0.02; P = 0.035) were also significant. LNS-PLs reduced the risk of newborn stunting (18.7% compared with 22.6%; RR: 0.83; 95% CI: 0.71, 0.97) and small head size (HCZ ,22) (20.7% compared with 24.9%; RR: 0.85; 95% CI: 0.73, 0.98). The effects of LNS-PL on newborn stunting were greatest in infants born before a 10-wk interruption in LNS-PL distribution (n = 1301; 15.7% compared with 23.6%; adjusted RR: 0.69; 95% CI: 0.53, 0.89) and in infants born to women #24 y of age or with household food insecurity.
Ashorn et al., 2015 The impact of lipid-based nutrient supplement provision to pregnant women on newborn size in rural Malawi: a randomized controlled trial	The objective was to test a hypothesis that home fortification of pregnant women's diets with SQ-LNS would increase birth size in an African community.	Malawi	RCT	1391 women with uncomplicated pregnancies (<20 gestational weeks)	The women were provided with one daily iron–folic acid (IFA) capsule, one capsule containing multiple micronutrients (MMNs), or one 20-g sachet of SQ-LNS (LNS, containing 118 kcal, protein, carbohydrates, essential fatty acids, and 21 micronutrients). Primary outcomes were birth weight and newborn length. econdary outcomes included newborn weight, head and arm circumference, and pregnancy duration. Analysis was by intention to treat.	The mean 6 SD birth weight and newborn length were 2948 6 432, 2964 6 460, and 3000 6 447 g (P = 0.258) and 49.5 6 2.4, 49.7 6 2.2, and 49.9 6 2.1 cm (P = 0.104) in the IFA, MMN, and LNS groups, respectively. For newborn weight-for-age, head circumference, and arm circumference, the point estimate for the mean was also highest in the LNS group, intermediate in the MMN group, and lowest in the IFA group, but except for midupper arm circumference (P = 0.024), the differences were not statistically significant. The prevalence of low birth weight (,2500 g) was 12.7%, 13.5%, and 12.1% (P = 0.856), respectively; newborn stunting (length-for-age z score , 22) was 19.2%, 14.0%, and 14.9% (P = 0.130), respectively; and newborn small head circumference (head circumference-for-age z score , 22) was 5.8%, 3.0%, and 3.1% (P = 0.099), respectively. The associations between the intervention and the outcomes were not modified by maternal parity, age, or nutritional status (P . 0.100).
Matias et al., 2016 Prenatal Lipid-Based Nutrient Supplements Affect Maternal Anthropometric Indicators Only in Certain Subgroups of Rural Bangladeshi Women	Determine the effects of lipid-based nutrient supplements for pregnant and lactating women (LNS-PL) on weight gain and midupper arm circumference (MUAC) during pregnancy.	Bangladesh	RCT	4011 pregnant women at ≤ 20 wk gestation	4011 pregnant women at <20 wk gestation who received either 60 mg Fe + 400 mg folic acid/d or 20 g LNS-PL/d (118 kcal) containing essential fatty acids and vitamins andminerals until delivery. At 36 wk gestation, womenwere interviewed at home and then attended a follow-up examination at local clinics (n = 2877), where anthropometric measurements were taken	No significant differences between intervention groups in maternal weight gain per week, low weight gain per week, or MUAC at 36 wk gestation were observed in the full sample. However, among multiparous women aged $25 y,those in the LNS-PL group gained 34 g/wk more than their counterparts in the iron and folic acid (IFA) group (P = 0.001),whereas no differenceswere seen in the other parity/age bgroups.Women aged $25 y in the LNS-PL group had a 0.4-cm greaterMUAC than their counterparts in the IFA group (P = 0.003); no significant ifferenceswere observed in the other age groups. Amongwomenwhose height at baselinewas in the lowest quartile of the distribution, those in the LNS-PL group had a 0.1–0.3-cm greater MUAC at 36 wk gestation than those in the IFA group (P = 0.004–0.014).

Table III: Summary of Research (Continued)

Author	Objective	Location	Research type	Sample	Intervention	Outcome
Olney, Leroy, Bliznashka, & Ruel, 2018 *PROCOMIDA*, a Food-Assisted Maternal and Child Health and Nutrition Program, Reduces Child Stunting in Guatemala: A Cluster-Randomized Controlled Intervention Trial	evaluated the impact of an FA-MCHN program, *PROCOMIDA*, on linear growth (stunting [length-for-age *z* score (LAZ) < –2] and length-for-age difference [LAD]) among children aged 1–24 mo. *PROCOMIDA* was implemented in Guatemala by Mercy Corps and was available to beneficiaries throughout the first 1000 d.	Guatemala	RCT	550 pregnant women with a gestational age of 3-7 month	The group that was given Lipid Nutrient Supplement (LNS) plus a full family ration or FFR (giving food in full in the form of 6 kg of rice, 4 kg of beans, and 1.85 kg of vegetable oil per month). Each month LNS is given as many as 30 sachets (20g/sachet) to pregnant and lactating women or 60 sachets (10g/sachet intended for consumed 2x/day) in children aged 6-24 months	*PROCOMIDA* significantly reduced stunting at age 1 mo in FFR + CSB, RFR + CSB, and FFR + MNP groups compared with control [5.05, 4.06, and 3.82 percentage points (pp), respectively]. Stunting impact increased by age 24 mo in FFR + CSB and FFR + MNP relative to control (impact = 11.1 and 6.5 pp at age 24 mo, respectively). For CSB recipients, the FFR compared with RFR or NFR significantly reduced stunting (6.47–9.68 pp). CSB reduced stunting significantly more than LNS at age 24 mo (8.12 pp).
Kumordzie et al., 2019 Maternal and Infant Lipid-Based Nutritional Supplementation Increases Height of Ghanaian Children at 4–6 Years Only if the Mother Was Not Overweight Before Conception	To examine the effects of LNS on later growth and body composition at 4–6 y of age.	Ghana	RCT	Pregnant women at ≤20 weeks of gestation	1. Giving iron and folic acid during pregnancy and 200mg calcium/day for 6 months postpartum 2. Provision of multi micronutrients 3. Giving LNS to mothers during pregnancy and to children from 6 months to 18 months	Data were available for 961 children (76.5% of live births). There were no significant differences between LNS compared with non-LNS groups in height [106.7 compared with 106.3 cm (mean difference, MD, 0.36; P = 0.226)], HAZ [-0,49 compared with -0.57 (MD = 008; *P* = 0.226)], stunting (< -2 SD) [6.5 compared with 6.3% (OR = 1.00; *P* = 0.993)], or % body fat [15.5 compared with 15.3% (MD = 0.16; *P* = 0.630)]. However, there was an interaction with maternal prepregnancy BMI (kg/m2) (*P*-interaction = 0.046 before correction for multiple testing): among children of women with BMI < 25 , LNS children were taller than non-LNS children (+1.1 cm, P = 0.017), whereas there was no difference among children of women with BMI ≥ 25 (+0.1 cm; P = 0.874).
Dewey et al., 2017 Lipid-based nutrient supplementation in the first 1000 d improves child growth in Bangladesh: a cluster-randomized effectiveness trial	Evaluated home fortification pproaches for preventing maternal and child undernutrition within a community-based health program. We hypothesized that small-quantity lipid-based nutrient supplements (LNSs) provided to women during pregnancy and the first 6 mo postpartum, LNSs provided to their offspring from 6 to 24 mo of age, or both would result in greater child length-for-age z score (LAZ) at 24 mo than iron and folic acid (IFA) provided to women during pregnancy and postpartum plus micronutrient powder (MNP) or no supplementation for their offspring from 6 to 24 mo.	Bangladesh	RCT	4011 women at ≤20 week of gestation within 64 clusters	Trial with 4 arms: 1) women and children both received LNSs (LNS-LNS group), 2) women received IFA and children received LNSs (IFA-LNS group), 3) women received IFA and children received MNP (IFA-MNP group), and 4) women received IFA and children received no supplements (IFA-Control group)	At 24 mo, the LNS-LNS group had significantly higher LAZ (+0.13 compared with the IFA-MNP group) and head circumference (+0.15 z score compared with the IFA-Control group); these outcomes did not differ between the other groups. Stunting prevalence (LAZ ,22) was lower in the LNS-LNS group at 18 mo than in the IFA-MNP group (OR: 0.70; 95% CI: 0.53, 0.92), but the difference diminished by 24 mo (OR: 0.81; 95% CI: 0.63, 1.04).
Dewey, Matias, Mridha, & Arnold, 2019 Nutrient supplementation during the first 1000 days and growth of infants born to pregnant adolescents	The analyses reported herein are to examine the effects of the intervention within the subgroup of adolescent mothers with respect to birth outcomes and child growth status at 18–24 months, and to explore whether the effects of the intervention differed by child sex or household food security	Bangladesh	RCT	4011 women at<20 weeks gestation; 1552 were adolescents	Comprehensive LNS group. Pregnant women received LNS during pregnancy and the first 6 months postpartum, and their children received LNS from 6 to 24 months (LNS-LNS group); The child-only LNS group, in which women received one tablet of 60 mg iron and 400 g folic acid (IFA) daily during pregnancy and every other day for the first 3 months postpartum, and their children received LNS from 6 to Age 24 months (IFA LNS group)	Giving LNS to prenatal adolescents reduced newborn stunting by 25% and small head size by 28%. Administration of LNS had a slightly significant effect on newborn wasting but did not reduce low birth weight and small gestation age
Hambidge et al., 2019 A multicountry randomized controlled trial of comprehensive maternal nutrition supplementation initiated before conception: the Women First trial	This study tested the effects on newborn size, especially length, of commencing nutrition supplements for women in lowresource, populations ≥3 mo before conception (Arm 1), compared with the same suplement commenced late in the first trimester of pregnancy (Arm 2) or not all (control Arm 3).	Republic of the Congo (DRC), Guatemala, India, and Pakistan	RCT	7376 pregnant women	1. Group 1 started supplements 3 months before conception and continued through delivery. 2. Group 2 started the same intervention at the end of the first trimester 3. Group 3 who did not receive nutritional supplements other than self-administered or prescribed through local health services.	1. Results in this study mean LAZ and other outcomes did not differ between before conception and at the end of the first trimester of pregnancy using NGAA or GAA. 2. The mean LAZ (NGAA) for the pre-conception group was greater than that of the control group (effect size: +0.19; 95% CI: 0.08, 0.30, P = 0.0008). 3. For GAA results, stunting rates and small heads for gestational age were lower in the pre-conception group than in the control group (RR: 0.69; 95% CI: 0.49, 0.98, P = 0.0361 and RR: 0.78; 95% CI: 0.70, 0.88, P < 0.001, respectively). Preterm birth rates did not differ between groups

Children born from pregnant women who consume LNS have a Z score better than those who increasing growth and reducing the incidence of stunting (24) . Fetal growth is increased with maternal nutritional supplementation initiated before conception or at the end of the first trimester and administered to women regardless of their own nutritional status; these improvements are achieved without the support of nutritional education and without regard to other environmental factors associated with impaired fetal growth and early postpartum. labor. Poor fetal growth including linear growth in low-resource countries can be improved by maternal nutritional supplementation (20).

Although the majority of studies show effective results for preventing stunting, the other three studies have results that have no effect on stunting prevention (23; 25; 24; 22). The ineffectiveness of the results in efforts to prevent stunting in research Ashorn (2015) giving LNS is not effective in addition to dietary factors, maternal infection can also cause fetal growth restriction related to inflammation (25), Kumordizie (2019) occured due to the low maternal body weight during pregnancy < 7.3 Kg (24), and non compliance participants (22). Maternal body weight cause in effective result because because LNS has no significant effect on anthropometric measurements and LAZ compared to the comparison intervention, one of the contributing factors is maternal weight during pregnancy. Mothers who are underweight give birth to children whose measurement values are smaller than mothers who are overweight (26). Giving LNS has less effect on stunting prevention which can be caused by the limited effectiveness of LNS in the Guatemalan (US) population, and due to the non-compliance of respondents in consuming LNS or how to consume LNS mixed with staple foods (22).

The results of entire article analysis showed the intervention of giving LNS/LBN could be used as an alternative to adding nutritional supplements to prevent stunting. Until now, the Indonesian government's program in stunting prevention only provides supplementary food (PMT), blood-added tablets, and zinc. Thus, LNS can be applied as a renewal of interventions and efforts to reduce the prevalence of stunting in children.

CONCLUSION

The evidence clearly identifed that prenatal lipid nutrient suplementation had effectiveness in preventing stunting while the other three articles did not show the point of LNS administration. The significance of giving LNS is influenced by factors, such as the weight of pregnant women, characteristics of the research area concerning the nutritional status of respondents, adherence to consuming LNS/LBN. In this study, the result showed that most srticles showed that giving LNS was effectiviness in preventing stunting, so the results of this study could be a reference for health workers in providing education to prevent stunting and for the goverment to be used as a reference in efforts to reduce stunting. This study has limitations in that this study only exaninies 1 variable, namely the effectiviness of giving LNS to stunting without being combined with other variables that can affect the results of the study. The results of this systematic review are expected to be a reference for pregnant women to consume prenatal LNS to prevent stunting.

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