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Wasting Prevention in under Five-Years-Old Children with Exclusive Breastfeeding

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Abstract

Globally, the prevalence of wasting is still very high, and it poses a serious public health problem. The prevalence of wasting in the world is reported to reach 7.7% or 52 million children under five-years-old. Wasting is a condition in which a child has a lower body weight than his height; in other words, if the child's weight is in the Z score <-2 SD, then the child is wasting. Wasting is an acute nutritional problem. Wasting children are vulnerable to diseases. This paper examines evidence demonstrating the effect of exclusive breastfeeding to prevent the incidence of wasting in children aged five years old or younger. Exclusive breastfeeding defines as giving only breastmilk to infants from birth to 6 months of age without adding or replacing it with other foods or beverages. These study found that exclusive breastfeeding should be applied as an effort to prevent the incidence of wasting in under five-years-old children.

Keywords: wasting, exclusive breastfeeding, malnutrition, children

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1. Introduction

Wasting is a form of malnutrition that has become a serious problem for global public health over the past few decades, especially in developing countries [1, 2]. The United Nations (UN) formulated the second goal of Sustainable Development Goals (SDG's) which is eliminating malnutrition in 2030 and achieving one of international targets in 2025, which is reducing the prevalence of wasting [3].

Wasting is a condition in which a child has a lower body weight than his height; in other words, if the child's weight is in the Z score <-2 SD, then the child is wasting. Globally, the prevalence of wasting reached 52 million or 7.7% of children under five-years-old [4–6]. A previous study reported that wasting was responsible for 21 million or 21% of mortality of children under five-years-old and 91 million or 21% of Disability-Adjusted Life Years (DALYs) in those population, namely 7% of the total global DALY [4]. Other researchers reported that children with wasting is at risk of having diarrhea, acute

respiratory tract infections, chronic diseases, brain damage. They also had risk for having inhibited physical, intellectual, and mental growth, as well as a decreased productivity in toddlers [3,5–8].

A previous research reported that the best intervention to increase children survival around the world is by exclusive breastfeeding (EBF) [9]. However, global EBF coverage is still very low, with only 40% of infants being breastfed over the first 6 months of infant life [10]. Non-EBF practice is estimated to account for more than 11% of mortality in children under five years [4]. Children who are not exclusively breastfed are more at risk of wasting than children who are exclusively breastfed [2, 11, 12]. This paper aimed to review evidence demonstrating the benefits of EBF in preventing wasting in children aged five years old or younger.

2. Method

This was a mini-review of the benefits of EBF for prevention of wasting in children under five. The inclusion criteria were: Full paper articles with the cross-sectional design, analysis used multivariate with adjusted odds ratio, the intervention were exclusive breastfeeding for six months, and the outcome was wasting children under-five.

This research was conducted by finding and selecting data from the results of clinical trials in the world during the period of 2009-2018. The articles were searched from several databases including PubMed, Crossref, BASE, World-Cat, Scopus, Health Proof, Cochrane Database, Copernicus International Index, and Clinical Key.

During the process of searching articles, the authors use the following keywords: “undernutrition and exclusive breastfeeding,” ”wasting and exclusive breastfeeding,” AND ”wasting and exclusive breastfeeding and cross-sectional.”

3. Results

A total of 595 articles were identified from the databases. Eight cross-sectional studies were included in the analysis after eliminating duplications and excluding other articles (Figure 1).

4. Discussion

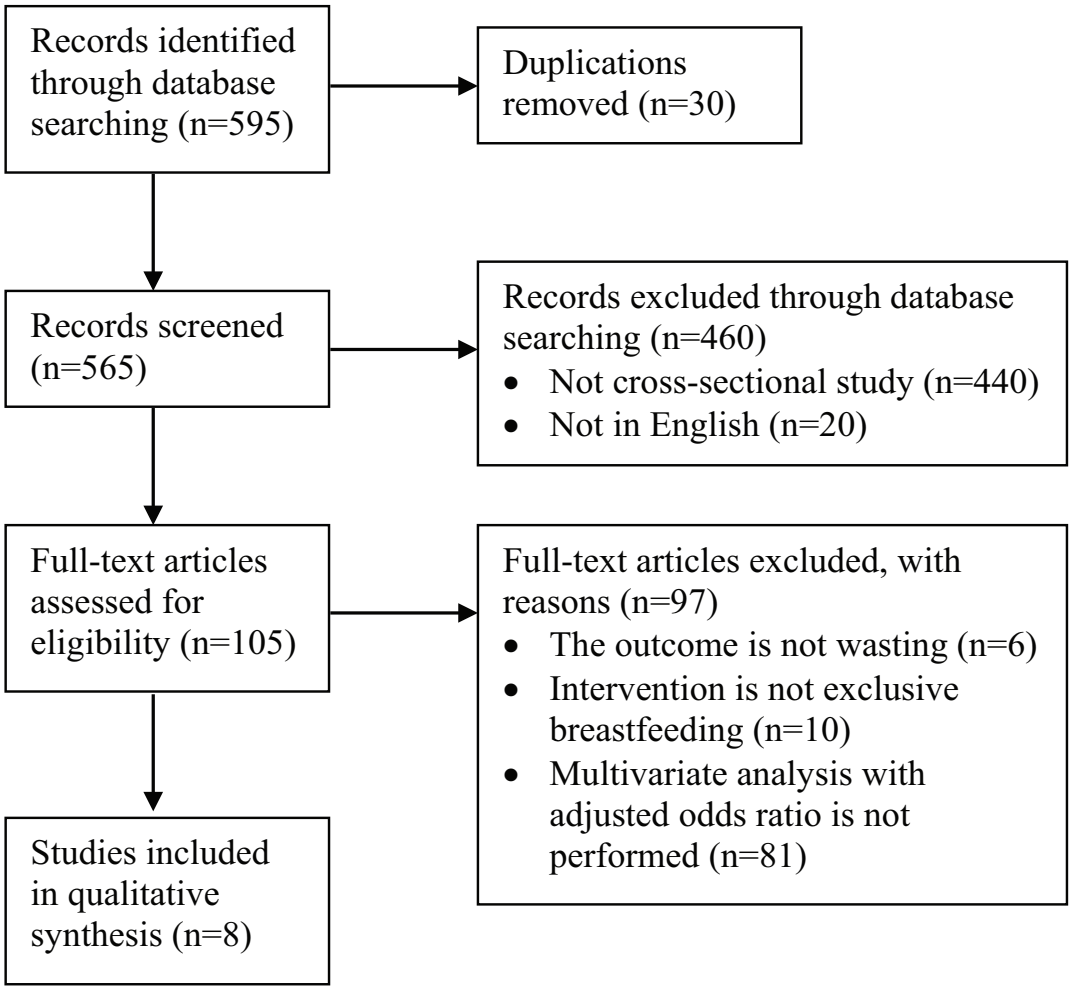

Figure 1: Flow diagram.

4.1. Wasting in children under five-years-old

WHO and UNICEF recommend the use of cut-off of malnutrition status for children under five based on the measurement of BB / body weight per height of <-2 SD median value of WHO Child Growth Standards to identify underweight children suffering from severe acute malnutrition (severe wasting). Wasting in infants is caused by food intake insufficiency or infectious diseases, especially diarrhea. Poor nutritional status causes an imbalance in immune system function. This has a role in increasing the severity, duration, and children's susceptibility to infectious diseases as well as increasing the risk of mortality. The prevalence of wasting is reported to reach 52 million people or 7.7% of children under five in the world [13, 14].

4.1.1. The risk factors of wasting in children under-five from maternal side

There are various risk factors for wasting. Several maternal factors such as maternal age, obesity and insulin resistance, have been shown to delay and shorten the period of breastmilk secretion [15–17]. The quality of fatty acids in breastmilk correlates with maternal food intake and the quantity of breastmilk is endogenously regulated. It has been shown that an obese mother's milk contains higher amounts of unsaturated fatty acids [18]. It is necessary for a mother who is overweight to have diet counseling and more physical activities during pregnancy and lactating period [19].

Maternal nutrition affects the content of micronutrients in breast-milk, especially water-soluble vitamins. Mothers with strict food restrictions, such as those consuming milled rice in Laos, may have insufficient thiamine (vitamin B1) intake that resulted in the incidence of beriberi. Whilst their diet shows cultural support in the community, education and vitamin supplements are needed to prevent vitamin and mineral deficiencies [20]. The concentration of selenium and iodine in breastmilk depends on the mother's food intake [21]. Conversely, calcium (Ca), iron (Fe), zinc (Zn), magnesium (Mg), and copper (Cu) are important supplement [22, 23]. Maternal food consumption for preventing children wasting is best practiced as early as possible, before pregnancy and during breastfeeding [24].

4.1.2. The risk factors of wasting in children under-five from children side

The response of infection to the acute phase can cause wasting. This acute phase infection is caused by common infectious diseases that help stimulate immunity but cause a decrease in nutritional status due to loss of appetite. During this acute infection, macro- and micronutrients are transferred to the immune system while basal metabolic rates, including energy and nutritional requirements, generally increase. Likewise, during gastroenteritis, nutritional deficiencies are exacerbated by malabsorption, loss of urine nitrogen and loss of nutrients. In particular, children are prone to wasting during severe, persistent, or recent infections [25, 26].

4.2. Breastfeeding and wasting

Exclusive breastfeeding means that the infant is only consuming breast milk. No other liquids or solids are given with the exception of oral rehydration solution, or drops or syrups

of vitamins, minerals or medicines. Breastmilk consisting of all the nutrients that an infant needs in their first six months of life [27]. Since 2003, the World Health Organization (WHO) has recommended exclusive breastfeeding until six months and continuation of breastfeeding until two years of age [28]. Exclusive breastfeeding is essential for the prevention of under-nutrition in children under five years of age, including preventing wasting [9]. Children under five who are not given EBF are more at risk of wasting compared to children who are exclusively breastfed [3, 12, 29].

Since the first month of life, the composition of breast-milk changes every day, starting with colostrum, then into the mature milk that meets specific needs for optimal growth, gastrointestinal function, and body defense. Colostrum contains a very high protein and vitamin A as well as growth factors and immunological components. Colostrum is often considered to be the first baby immunization because of the critical role in disease prevention. To ensure full benefit, breastfeeding must begin as soon as possible. Neonates who are exclusively breasfed have a significantly lower risk of sepsis, diarrhea, and respiratory infections when compared to babies who are partially breastfed [30–32].

Breast milk also has bioactive factors which include cells, anti-infectious and anti-inflammatory agents, growth factors, and prebiotics. Unlike infant formula that has a minimal range of composition, breast milk composition is dynamic and varies [33]. Also, breast milk contains Docosahexaenoic Acid (DHA) and Arachidonic Acid (ARA) that can stimulate the development of nerve, retinal and brain cells [34].

5. Conclusion

There is plenty of evidence that breastfeeding could prevent malnutrition. As an essential source of energy and nutrients, breast-milk can reduce mortality among ill and malnourished children. For these reasons, breast-milk can combat wasting in children by optimizing growth, development, and health of children under five-years-old.

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