



The Relationship between Baby-Led Weaning and Infant Nutritional Status: Literature Review

Ichtiwa Aruni Putri¹, Tubagus Ferdi Fadilah^{2*}

¹Medical Education Study Program, Faculty of Medicine, Trisakti University, Indonesia

²Department of Pediatrics, Faculty of Medicine, Trisakti University, Indonesia

Corresponding author's email: tb_ferdi_md@trisakti.ac.id

ABSTRACT

Early childhood development reaches its pinnacle in the first two years, both in terms of physical growth and intelligence. Meanwhile, a good nutritional status supports growth and plays a role in determining the success or failure of human resources improvement efforts. Complementary food as a method of infant feeding is one of the factors that affect the nutritional status. Parents have long used the traditional method to initiate complementary feeding, but a new method known as baby-led weaning (BLW) has recently gained widespread popularity. However, the application of this approach as the first complementary feeding method to infants still raises a lot of debate particularly on the nutritional adequacy. Therefore, this study aims to examine the relationship between baby-led weaning and the nutritional status of infants. Several studies previously conducted found that there is no significant difference between BLW and the traditional method with the nutritional status of infants. However, infants that are fed using the BLW method are usually underweight, hence, it is recommended to be avoided when parents are able to provide food choices carefully. It is expected to broaden understanding of baby-led weaning and its relationship to nutritional status. To find previously published studies relevant to the current study question, a search was conducted on Google Scholar, PubMed, ProQuest, and EBSCO databases using the keywords "baby-led weaning", "complementary feeding", "nutritional status", "BMI", and "nutritional status". Screening of titles and abstracts was carried out on 84 studies, then, 32 studies irrelevant to this topic were excluded. Furthermore, a duplication screening was performed on 5 studies and screening methodology, discussion, as well as overall text in 6 studies. Therefore, among the 84 studies initially reviewed, only 16 met the criteria for final assessment.

Keywords: *Baby-Led Weaning; Complementary Feeding; BMI; Nutritional Status*

1. INTRODUCTION

The "golden age" of early child development is accomplished in the first two years, both in terms of physical growth and intelligence. Meanwhile, good nutritional status promotes growth and contributes to the success or failure of human resource improvement efforts [1]. Malnutrition reportedly influences the lives of children around the world [2], particularly in Indonesia and the most affected age group is toddlers between 0-5 years. Based on Basic Health Studies, in 2018, the prevalence of moderate malnutrition was 13.8% and severe malnutrition was 3.9% [3].

Complementary food is a method of feeding infants over six months that affects infant's nutritional status. It further become an indicator of health development programs' progress because it is key to determining the

level of welfare and human health. The World Health Organization (WHO) recommends the introduction of complementary food to infants at the age of 6 months. Furthermore, complementary foods are needed when the nutrition obtained from breast milk is no longer sufficient to meet a child's needs, which increases according to age and development [4]. To date, parents usually apply the traditional method for giving complementary foods to infants, namely by softening one or some food ingredients known as puree or porridge. This method is still widely used but recently, there is a popular technique known as baby-led weaning (BLW). In contrast to the traditional method, BLW introduced by Rappley and Markett in 2005 emphasized giving solid food to infants using individual hands, which from the start were not introduced to puree or porridge foods fed by the parents [5].

Moreover, in line with the current trend, parents often access information about infant care through the internet, especially social media. This is one of the factors that made the baby-led weaning method widespread and popularly used by parents for infants. However, the use of this approach as the first complementary feeding method for infants remains controversial. Aside from concerns about the risk of choking, this approach also raises questions about the nutritional adequacy of infants. A previous study found that there was an increased incidence of underweight in the BLW group [6]. Furthermore, Brown, *et al* in a study on 298 participants reported that infants given complementary foods with a

non-BLW or standard approach had heavier body weight compared to others fed with BLW [7].

Therefore, this literature review aims to examine the possible relationship between the baby-led weaning method and the nutritional status of infants based on several journals that have been published previously. This is also expected to help readers, particularly parents, learn more about baby-led weaning and its relationship to nutritional status.

2. METHOD

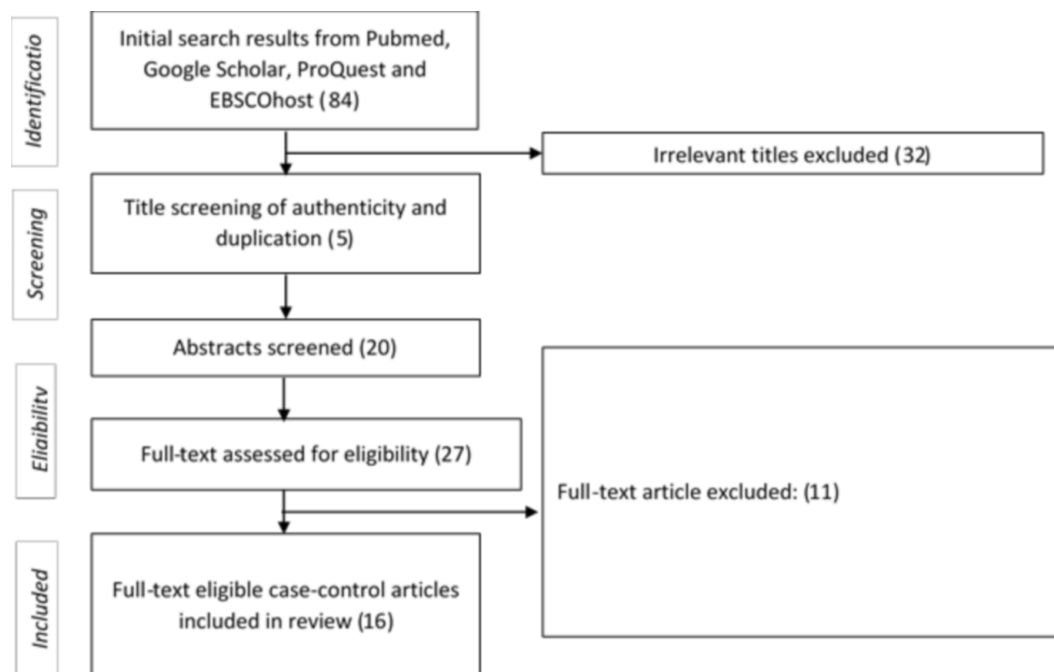


Figure 1 Method

3. RESULT AND DISCUSSION

3.1. Body Mass Index on Baby-Led Weaning and Traditional Methods

Several studies have been conducted to determine the effect of baby-led weaning on infant nutrition. A study conducted by Townsend and Pitchford from 2006 to 2009 with 155 children (aged 20-78 months) found a significant difference in Body Mass Index (BMI) scores according to percentile level between the BLW group and the traditional method. Furthermore, the BLW group had lower BMI scores across all growth curves (NHS, CDC, and WHO), while the mean BMI percentile across the NHS and CDC growth curves was close to the expected mean of 50th percentile rating. The mean percentile ratings for the traditional methods group, on the other hand, were higher than the mean level, indicating that more children in this group are classified as overweight. Similarly, the study discovered an increased incidence of

obese children in the traditional method group (8/63), while more children in the BLW group were classified as underweight (3/63) using WHO BMI criteria [6].

In a study conducted by Brown and Lee in 2010, there was no significant difference in infant birth weight, estimated weight at 6 months, or current weight between infants using the Baby-Led Weaning (BLW) or Standard Weaning (SW) approaches. However, mothers who used BLW saw their infants grow significantly larger in the first 6 months postpartum [8].

Several health professionals doubt that 6-month-old infants are able to get enough food to keep up with growth when they are left to feed themselves, especially in the early days of complementary feeding [9]. However, one study found that puree or porridge which is often made from fruit or vegetables and diluted with water or milk is significantly low in energy, meaning that the volume normally consumed in the early weeks only makes a relatively small contribution to meeting the

nutritional needs of a traditionally fed infant. In contrast, finger food, when selected carefully, tends to be nutrient-dense, therefore, an infant that consumes a little as part of the diet is more likely to meet the nutritional needs [10].

3.2. Body Mass Index on Baby Led Weaning and Baby-Led Introduction to SolidS (BLISS)

Given that BLW affects infant micronutrient intake, a modified method known as Baby-Led Introduction to SolidS (BLISS) has recently become popular. Cameron et al. (2015) conducted a study on 25 families with five-month-old infants who were given complementary foods using the BLISS method in 2015. However, the results revealed no significant difference in energy obtained between the BLISS (2228 kJ/day) and BLW (1862 kJ/day) sub-samples [11]. Meanwhile, Brown et al. found no significant difference in nutrient intake between the modified BLW (BLISS) and the control group in a study comparing BLISS and traditional methods (traditional method). Protein accounted for 10% of total energy intake in both groups, with fat accounting for 45% and carbohydrates accounting for 45%. Weight differences are also visible for infants who followed the BLW or BLISS approach, with 86.5 percent being normal weight, 8.1 percent being overweight, and 5.4 percent being underweight [7]. Similarly, the traditional approach resulted in 78.3 percent of infants being normal weight, 19.2 percent being overweight, and 2.5 percent being underweight. However, there was a significant difference in overweight between the two groups. Infants who used the traditional approach were significantly heavier at 18–24 months than those who used the BLW or BLISS approach [7]. Furthermore, three supportive studies conducted by Kumar, Erickson et al., and Taylor et al. revealed that weaning infants using the BLISS approach had no significant effect on BMI, energy self-regulation or energy intake, and nutrition at 24 months of age when compared to those fed traditionally [12],[13],[14].

3.3. Nutritional Intake in Infants with Baby-Led Weaning

In 2019, Alpers conducted a study to compare the nutritional intake of infants using the traditional or standard weaning (SW) method versus baby-led weaning (BLW). There was no difference in energy intake with either method, but in this study, the proportion of energy from macronutrients and the types of food offered were different [15].

One of the advantages of the BLW approach, as previously stated, is that it allows infants to improve their self-regulation. It is defined as "the ability to adjust consumption capacity in response to the consumer's physiological needs [16]." In this case, the infant has the

ability to control the portion of the individual food. Furthermore, several studies have found a link between self-regulation and a lower risk of obesity [17],[18].

Another advantage of the BLW method is that it offers infants a wider variety of foods than the traditional method. This study backs up the findings of Hidayat et al, who found that a lack of food variety is one of the indicators of stunting. Furthermore, WHO and UNICEF recommend that infants aged 6-23 months receive adequate complementary foods with a minimum variety of 4 to more than 7 types of food, referred to as the minimum dietary diversity (MDD). According to the findings, the majority of stunted children did not meet the MDD [19].

Jones found no significant difference in body weight and BMI between infants introduced to complementary foods using the traditional method or self-feeding (BLW) in a 2019 study, but those fed using the traditional method had significantly longer body length than the BLW group [20]. Furthermore, recent studies found significant differences in infant BMI between groups, with 14.7 percent of infants whose mothers preferred traditional weaning classified as overweight [21].

4. CONCLUSION

The Baby-Led Weaning as an approach to complementary feeding has many advantages, namely fun for infants to learn about food, enhances participation in family mealtimes, and improves self-regulation. However, in its application, parents need to also consider the risk of being underweight. Furthermore, the majority of previous studies found that there was no difference between the BLW and traditional methods in relation to infant nutritional status. Therefore, the method of choice for providing complementary feeding depends on the parents' decision. The combination of complementary feeding methods is a choice to balance the nutrients needed by infants when the BLW or traditional methods alone is unable to provide adequate nutrition. This study is expected to increase the knowledge about baby-led weaning and its relationship with nutritional status. Further research is now needed to establish the outcomes of following a BLW or an SW approach.

ACKNOWLEDGMENT

The authors are grateful to the Faculty of Medicine, Trisakti University, which allowed the compiling of this literature review.

REFERENCES

- [1] Kementerian Kesehatan Republik Indonesia. Penilaian status gizi. Badan pengembangan dan pemberdayaan sumber daya manusia kesehatan: Jakarta; 2017.

- [2] Nasirin C. Mother's Knowledge of Nutrition and Feeding Practice: A Case Study on Kampung Sehat STIKES Mataram, West Nusa Tenggara Province, Indonesia. *ARC Journal of Nursing and Healthcare*. 2016;2(3):1–9.[doi:10.20431/2455-4324.0203001](https://doi.org/10.20431/2455-4324.0203001).
- [3] Kementerian Kesehatan Republik Indonesia. Hasil utama riskesdas 2018. Kementerian Kesehatan Badan Penelitian dan Pengembangan Kesehatan: 2018
- [4] World Health Organization. UNICEF. Global strategy on infant and young child feeding. Geneva: World Health Organization; 2002. <http://www.who.int/nutrition/publications/infantfeeding/9241562218/en/>
- [5] Rapley G. Baby-led weaning: transitioning to solid foods at the baby's own pace. *Community Pract*. 2011;84:20–3.
- [6] Townsend E, Pitchford NJ. Baby knows best? The impact of weaning style on food preferences and body mass index in early childhood in a case–controlled sample. *BMJ Open*. 2012;2(1):e000298.
- [7] Brown A, Jones SW, Rowan H. Baby-Led Weaning: The Evidence to Date. *Curr Nutr Rep*. Juni 2017;6(2):148–56.
- [8] Brown A, Lee M. Maternal Control of Child Feeding During the Weaning Period: Differences Between Mothers Following a Baby-led or Standard Weaning Approach. *Matern Child Health J*. November 2011;15(8):1265–71.
- [9] Cameron SL, Heath A-LM, Taylor RW. Healthcare professionals' and mothers' knowledge of, attitudes to and experiences with, Baby-Led Weaning: a content analysis study: Table 1. *BMJ Open*. 2012;2(6):e001542.
- [10] Wright CM, Cameron K, Tsiaka M, Parkinson KN. Is baby-led weaning feasible? When do babies first reach out for and eat finger foods?: Is baby led weaning feasible? *Matern Child Nutr*. Januari 2011;7(1):27–33.
- [11] Cameron SL, Taylor RW, Heath A-LM. Development and pilot testing of Baby-Led Introduction to Solids - a version of Baby-Led Weaning modified to address concerns about iron deficiency, growth faltering and choking. *BMC Pediatr*. Desember 2015;15(1):99.
- [12] Kumar G. Baby-led weaning did not significantly impact body mass index when compared with traditional spoon-feeding. *Arch Dis Child - Educ Pract Ed*. Agustus 2018;103(4):222–222.
- [13] Taylor RW, Williams SM, Fangupo LJ, Wheeler BJ, Taylor BJ, Daniels L, dkk. Effect of a Baby-Led Approach to Complementary Feeding on Infant Growth and Overweight: A Randomized Clinical Trial. *JAMA Pediatr*. 1 September 2017;171(9):838.
- [14] Williams Erickson L, Taylor R, Haszard J, Fleming E, Daniels L, Morison B, dkk. Impact of a Modified Version of Baby-Led Weaning on Infant Food and Nutrient Intakes: The BLISS Randomized Controlled Trial. *Nutrients*. 7 Juni 2018;10(6):740.
- [15] Alpers B, Blackwell V, Clegg ME. Standard v . baby-led complementary feeding: a comparison of food and nutrient intakes in 6–12-month-old infants in the UK. *Public Health Nutr*. Oktober 2019;22(15):2813–22.
- [16] Daniels L, Heath A-LM, Williams SM, Cameron SL, Fleming EA, Taylor BJ, dkk. Baby-Led Introduction to Solids (BLISS) study: a randomised controlled trial of a baby-led approach to complementary feeding. *BMC Pediatr*. Desember 2015;15(1):179.
- [17] Gross RS, Mendelsohn AL, Fierman AH, Messito MJ. Maternal Controlling Feeding Styles During Early Infancy. *Clin Pediatr (Phila)*. Desember 2011;50(12):1125–33.
- [18] Brown A, Lee M. An exploration of experiences of mothers following a baby-led weaning style: developmental readiness for complementary foods: An exploration of baby-led weaning. *Matern Child Nutr*. April 2013;9(2):233–43.
- [19] Solehati T, Hidayat AM, Hendrawati S. Feeding practices in stunting children aged 24–59 months at Sukamukti Community Health Centre Garut Regency. *Ris Inf Kesehat*. 31 Desember 2019;8(2):163.
- [20] Jones SW, Lee M, Brown A. Spoonfeeding is associated with increased infant weight but only amongst formula-fed infants. *Matern Child Nutr [Internet]*. Juli 2020 [dikutip 23 Desember 2020];16(3). Tersedia pada: <https://onlinelibrary.wiley.com/doi/abs/10.1111/mcn.12941>
- [21] Kahraman A, Gümüş M, Binay Yaz Ş, Başbakkal Z. Baby-led weaning versus traditional weaning: the assessment of nutritional status in early childhood and maternal feeding practices in Turkey. *Early Child Dev Care*. 3 April 2020;190(5):615–24.

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

