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Choking Occurrence in Babies Using Baby-Led Weaning and Traditional Weaning

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Abstract

Background: development of feeding methods for babies grow over time with new ones is baby-led weaning. The concern for this method that is felt by mothers and health workers is the risk of choking when the baby is self-feeding. Studies to address this problem are still lacking; therefore, further research must be conducted.

Objectives: This study aimed to identify differences in choking incidents in babies using baby-led weaning and traditional weaning.

Methods: This study used a comparative descriptive method, with a sample of babies aged 6-12 months. The sampling technique is convenience sampling, which was taken in one month. Inclusion criteria included babies living in Indonesia, those without congenital or chronic disease, and completed the self-report questionnaire. A total of 286 respondents were eligible for this study. Data were analysed using a chi-square test.

Results: There was a significant difference in choking incidents between the baby-led and traditional weaning groups (p-value = 0.014). Baby-led weaning babies were 1.98 times more prone to choking than traditional weaning babies.

Conclusions: This study adds references to the field of baby-led weaning in terms of safety concerns. Therefore, mothers who decide to use this method for their babies should consider observing the baby during feeding.

Keyword: *Baby-led weaning, choking, feeding method, traditional weaning*

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Introduction

In the last decade, the disease trend has shifted from communicable into non-communicable diseases (NCD). The World Health Organization (WHO) reports in 2020 that NCD, such as cardiovascular diseases, cancer, diabetes mellitus and chronic respiratory diseases, are the world's leading cause of death and account for over 70% of deaths worldwide, and 15 million people die each year from NCD between 30-69 years old in which it was over 85% of the pre-term deaths worldwide (1). There are some modifiable lifestyle risk factors for NCD such as tobacco use, unhealthy diet, lack of physical activity, and harmful alcohol use, which could contribute to overweight and obesity, and elevated individuals' blood pressure (BP), glucose and cholesterol (1).

Concerns for baby-led weaning include the baby's lack of dietary iron and the risk of choking (4,8,9). This is reasonable because some babies will eat by sucking the food so that the micronutrients are not congested. Choking is the blockage of food in the airway (10). The choking risk is a concern because the baby is holding food and putting it in his mouth (8).

It certainly is different when the baby is spoon-fed, as the control of the amount and speed of entering food depend on the mother. Fear about this risk is not only felt by mothers but also by health workers. They were hesitant to suggest this method since mothers were still unfamiliar with this method and thought that strict supervision is needed when implementing it (4). This behavior is understood as health workers will provide advice based on evidence-based practice.

The application of the baby-led weaning method is dominated by young mothers and those who have access to the internet (7,11). Currently, there is a growing online community and discussions about this method. In Indonesia, the number of members of the mother's community that applies this method reaches around 50,000.

This research was conducted throughout Indonesia, considering no data on mothers who used baby-led weaning. A national study was also carried out by several previous baby-led weaning researchers in other countries (4,12).

The objective of this study was to determine the differences in choking incidence in baby-led and traditional weaning babies. The Baby's characteristics include the baby's age at the time of research and the age at which the baby was introduced to complementary food. Age is taken into consideration to determine whether these characteristics contribute to choking. This research can provide insight into the impact of baby-led weaning on infants and form the basis for further study.

Method

This study used a comparative descriptive method by comparing the choking incidence between the traditional weaning and baby-led weaning groups. The population in this study was babies aged 6-12 months in Indonesia. Samples were taken utilising consecutive sampling, which was conducted for one month in July 2018. The selection of the samples is referring to the availability of respondents and time limits (13). Recruitment of respondents was carried out online by involving mothers in a large online community in Indonesia. Permission was submitted to the online forum chairman, and then a notification on the questionnaire was announced through the forum's social media. A total of 323 respondents filled out the questionnaire, but those who met the inclusion criteria were 286 (baby-led weaning n = 95; traditional weaning n = 191). The inclusion criteria were Indonesian mothers who have babies aged 6-12 months, filled out the questionnaire completely, and babies without congenital or chronic disease. The exclusion criteria were Indonesian mothers who lived abroad. The questionnaire was given online via survey monkey. The questionnaire is a self-report about the method of supplementary feeding and choking incidents experienced by babies. Respondents received information about the feeding method definition at the beginning of the questionnaire to minimise misunderstandings about their chosen method. Questions consisted of the incidence and frequency of choking, and at the age the baby experienced choking. An explanation regarding the differences between choking and gagging was given to prevent a misreport about its incident. Unlike choking, gagging is the normal reflex when a baby is learning to eat (10). Data were then analysed with the chi-square test.

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Results

Table 1. The choking incidents' characteristics based on the age of introduction of complementary food and the baby's age.

Variable	Choking		p-value
	Present	Absent	
Age (months)			p= 0.193
6	22 (52.4%)	20 (47.6%)	
7	36 (70.6%)	15 (29.4%)	
8	28 (63.6%)	16 (36.4%)	
9	23 (62.2%)	14 (3.78%)	
10	24 (82.8%)	5 (17.2%)	
11	24 (72.7%)	9 (27.3%)	
12	32 (64%)	18 (36%)	
Age introduced to complementary foods (months)			p= 0.051
3	0 (0%)	1 (100%)	
4	1 (33.3%)	2 (66.7%)	
5	20 (54.1%)	17 (45.9%)	
6	168 (68.6%)	77 (31.4%)	

Table 2. The choking incidents report

Type	Choking		Total	Chi-square statistics (p-value)	OR
	Present	Absent			
Baby-led weaning	72 (75.8%)	23 (24.2%)	95 (100%)	0.014	1.98
Traditional weaning	117 (61.3%)	74 (38.7%)	191 (100)		
Total	189 (66.1%)	97 (33.9%)	286 (100%)		

Table 2 shows that the number of babies involved in this study who experienced choking was 189 (66.1%). When viewed from each type, three-quarters of baby-led weaning babies experienced choking (75.8%), while in the traditional weaning group, more than half experienced choking (61.3%).

Based on the analysis using chi-square, the obtained P-value 0.014 means a difference in the choking incidence between the baby-led and traditional weaning groups. The odds ratio is 1.98, which means that baby-led weaning babies have a risk of choking 1.98 times that of traditional weaning babies.

Discussion

The feeding characteristics of babies listed in Table 1 show that the distribution of choking at all ages is the same as the p-value is 0.193. This value confirms that there was no difference in the choking incidence at every age. The baby's youngest age, when introduced to complementary food in this study, was three months (n=1). The high increase in the number of babies introduced to complementary food is at five months of age. This pattern is similar to a study conducted in Australia, in which 3.6% of participants introduced complementary food when the baby was three months old (14). Although researchers recommended that babies be introduced to foods other than breast milk at the age of 6 months, the finding from most studies indicated the earlier introduction (14–16). In developing countries, early introduction to complementary foods lead to infant malnutrition and are at risk of stunting. In contrast, in developed countries, the practice is associated with increased gastrointestinal problems, respiratory tract infections, and allergic risk (17,18).

Feeding babies using the baby-led weaning method is new. There have not been many studies on the impact of applying this method (7), especially in studies using randomized controlled trials (6). This study found a significant difference in the incidence of choking between baby-led and traditional weaning ($p = 0.014$). These results address a growing issue about the risk of baby-led weaning in terms of choking. Babies eat the amount of food in their hands according to the speed the baby wants (19). Concerns of choking occurred at the baby-fed time with no attention to the interval between bites and each bite's size.

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In traditional weaning babies, feeding uses a spoon, and the mother regulates the speed of eating. Mother can measure the amount of food to be given and pause for the next feeding. Mother's control is believed able to reduce the risk of baby choking.

Choking may also be due to the texture of the food. Finger food is typical in the baby-led weaning method, while traditional weaning babies usually eat crushed food. Mothers should avoid giving small size and circle shape foods. In baby-led weaning, babies must have developed postural balance skills to sit with no or little assistance, stability to reach, grasp, and bring food into the mouth (20).

The result of this study was different from the findings in other researches (3,21), which stated no difference in the choking incidence between baby-led and traditional weaning. This gap may be caused by the different ages of the babies studied. The youngest baby in this study was six months old so that there were not many opportunities to eat, and choking occurred. In this study, the choking incidence in each age showed no difference in choking.

This study also found that baby-led weaning babies had 1.98 times choking risk than traditional weaning babies. The concern is that babies who bring their food into their mouths cannot manage the right amount according to the mouth's capacity and the speed of putting food into the mouth. Babies may ingest food while there is food that remains in the mouth. The value of 1.98 can be a warning for mothers who apply baby-led weaning and an urge to take precautions.

Mothers may take BLISS (The Baby-led Introduction to Solids) into consideration that preventing iron deficiency, growth faltering, and choking incidents (8,9). Babies may continue to use the baby-led weaning method, and mothers make food recipes that contain high iron and high energy, are easy to chew, and do not make crumb in the mouth. Babies usually eat raw apples, but according to the BLISS guidelines, babies should not consume this type of food. Mothers reported raw apple is responsible for the choking events (8). BLISS provides a modified recipe that meets the needs of iron and energy and reduces the risk of choking. Also included in BLISS is safety guidance during eating and distinguishing between choking and gagging, and how to manage if choking occurs.

The mother's assistance to observe the child grasp the amount of food and bring the food in his mouth is essential to reduce the risk of choking. In a previous study, a baby's family dining involvement was high among baby-led weaning (63%) (22). Family dining involvement gives the idea that babies are allowed to eat like adults in terms of time and independence without the mother's help. While the traditional weaning, most babies are rarely involved in the family dining. This situation does not mean that babies should not be involved in family dining, but they must be supervised when eating, including during family dining. In the BLISS method, mothers are encouraged to recognize the hunger and satiety signs and responding appropriately to the needs of the baby during mealtime (23).

In this study, there was no complete data regarding the frequency of choking because some mothers stated that they forgot the time. Therefore, this data cannot be displayed. Another cause is, although the differences between choking and gagging have been explained, mothers felt unsure in determining what their baby is going through. The recommendation for further research is to design a cohort and ask the mothers to record in the daily journal regarding the frequency of choking and at what age it occurs. If the mother has doubts about whether the baby is choking or gagging, they can describe what happened using the baby's journal, and the researcher should determine what that is. Further studies need more number of samples for both feeding method groups.

Conclusion

The results of this study provide new insight into choking incidents in baby-led weaning babies. There was a significant difference between choking incidents in baby-led and traditional weaning babies. Baby-led weaning babies had 1.89 times the greater choking risk than traditional weaning babies. It is advised that mothers should modify the food and observe when the baby eats according to the guidelines to prevent choking. The results of this study provide the basis for further research on baby feeding methods, which still needs further investigation.

Conflict of Interest

The author certifies that there is no conflict of interest to declare.

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