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# The improvement of knowledge, attitude, and behavior of toddler feeding through nutrition education video

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**Abstract**--Background: children's health and nutrition are an important investment that could save children's life, improve children's educational result and economic productivity. The effect of malnutrition at the early life are failed to grow, failed develop and failed metabolism of the body. Nutrition education is a sustainable process to improve the knowledge about nutrition, shape the attitude and behavior of healthy life by paying attention to the daily diet and other factors that affect the meal as well as improve someone's health and nutritional status. Health education in community through audiovisual media web based could effectively improve parents' knowledge about the monitoring of toddlers' growth and development. Aim: to explore the effect of nutritional education through video towards the improvement of knowledge, attitude and behavior of toddlers feeding. Method: the method used is scoping review by using checklist PRISM-ScR, while it has 22 items of assessment and 20 items of important report and 2 items of optional that identify the question of scoping review by using framework PICO, selecting the relevant article based on the inclusion and exclusion criteria by utilizing databases such as ProQuest, PubMed, Willey Online Library, and Google Scholar to conduct the literature searching; choosing the article by PRISM Flowchart; charting the data, arranging and reporting the result. Result: The number of articles found in review is 6 (86 percent) article using quantitative study, 1 (14 percent) article using qualitative study, and all studies comes from developing countries. 7 articles that have been chosen, 6 article has grade A and 1 article has grade B. Moreover, it is obtained 3 topics, i.e., the effect of nutrition education, nutrition education media, the challenge in

feeding practice. Conclusion: nutrition education is a process to improve the knowledge about nutrition, shape the attitude and behavior to the toddler feeding practice. By using various educational media, it could affect the mother's knowledge, attitude, and behavior in toddler feeding. The factors such as mother's educational level, nutritional counselling, food security, the number of children, mother health services, decision-making powers, are key factors associated with feeding practices that should be carefully considered when designing strategies and interventions

**Keyword**--Nutrition Education Videos, Knowledge, Attitude, Feeding Practice Toddler.

## **I. Introduction**

Nutrition is one of the health foundation and human's development. Feeding practice on the baby and toddler is one of the interventions that is very effective to improve children's health and nutrition. Children's health and nutrition is an important investment that could save children's life, improve children's educational result, and improve the economic productivity (Muluye et al., 2020). The Global Nutrition report in 2020 showed that globally, around 149.2 million of children under the age of 5 were stunted, 45.4 million were malnourished, and 38.9 million were overweight (Cesare et al., 2020). In Indonesia, based on the results of nutritional surveillance data in 2020 on growth monitoring activities entered into the e-PPBGM application, toddlers with a measurement of the Weight index by Age, which was entered, of 49.6 percent of the existing target toddlers, there were 160,712 (1.4 percent) of toddlers with very less weight and there were 779,139 (6.7 percent) of toddlers with less body weight (Ministry of Health, 2021). The impact of malnutrition in the early period of life are failed to grow, such as low birth weight, shortness, thinness, low endurance, and easy to get sick. Failure to develop includes cognitive impairment, slow absorption of school value knowledge and educational success. The body's metabolic failure is at risk of obesity and exposure to non-communicable diseases (Izwardy, 2018).

Efforts made to recognize, prevent, and overcome nutritional problems by weighing weight regularly, giving breast milk only to babies from birth to 6 months of age, a varied food menu, using iodized salt, and providing nutritional supplements according to the recommendations of health workers (Ministry of Health, 2021). Mother's knowledge will influence food selection behavior and ignorance causes errors in food selection and processing (Laila, Zainuddin, & Junaid, 2018). Nutrition education is a continuous process to improve knowledge about nutrition, form healthy lifestyle attitudes and behaviors by paying attention to daily diet and other factors that affect food, as well as improving someone's health and nutritional status (Tsani et al., 2020).

During the pandemic, one of ways that can be done to provide information is by using online education. Online education is a process of teaching and learning information through videos, images, voice notes and makes it easier to create groups that function as discussion, sharing information and becoming a learning

medium, the WhatsApp application is owned by almost everyone and used as a means of online education (Kamila, 2019). Health education to the public through web-based audiovisual media can effectively improve parents' knowledge about monitoring the growth and development of toddlers. Web-based education using smartphones is an interesting audiovisual presentation that can be played in many times to make it easier to understand (Ernawati et al., 2021). Audio-visual media can encourage the recipient to use the listener's senses and sense of vision so that information can be received properly, the advantage of audio-visual media is interesting and easily stimulates the understanding of the mother cognitively, affectively, and psychomotor (Husna, 2021). Online education allows communication between group participants which is not limited by place and time. Respondents are free to choose when they wish to access the posted information and view and interact with other group members regarding the information submitted at any time according to (Clavier et al., 2019). Therefore, it can be used as an alternative to educating mothers who have toddlers during the COVID-19 pandemic which is not possible to gather in person.

## II. Method of Scoping Review

This analysis used the Scoping Review method with the PRISMA-ScR checklist which has 22 items with 20 important reporting items and 2 optional items. The topic research that will be researched by the researcher is the findings from articles in previous research journals, regarding the effect of nutrition education through videos towards the improvement of knowledge, attitudes, and feeding behaviors of toddlers. The research questions were determined by using a framework, i.e., Population Intervention Comparison Outcome (PICO).

Table 1. *Framework scoping review*

Population	Intervensi	Comparison	Outcomes
Mother having toddler	Nutrition Education Video	-	Knowledge, attitude, and behavior of toddlers feeding

Based on the framework of PICO, the question of scoping review is " 'How does the effect of nutrition education through video towards the improving of knowledge, attitudes, and behaviors of toddlers feeding?'"

### Eligibility Criteria

In selecting the relevant article, the researcher determined the inclusion and exclusion criteria that will be searched and used as scoping review source, as follow:

- a. Inclusion Criteria
  - 1) Original article
  - 2) Article published in Indonesia and English
  - 3) Article published between 2018-2022
  - 4) Article discussing about nutrition education toward toddler feeding
  - 5) Article discussing about the factors that affect knowledge, attitude, and behavior of toddler feeding

b. Exclusion Criteria

- 1) Artikel review
- 2) Artikel published under 2018
- 3) Letter and book review
- 4) Article that unrepresented *full text*

### Source of Data

Regarding of searching the relevant articles, in compiling the scoping review, there are 3 databases, such as PubMed, Willey, Pro Quest, and gray literature, i.e., Google Scholar. The literature search strategy used predetermined Keywords by adding "AND" and "OR" which are appropriate with the topic, i.e., "(Nutrition) OR (Nourishment) OR (Sustenance) AND (Education) OR (Learning) AND (Videos) AND (Knowledge) AND (Attitude) OR (Approach) AND (Behavior) AND (Toddler) OR (child) AND (feeding practice)". In the article selection stage, the reviewer used the Covidence program. Article selections are included in the PRISMA flowchart of the studies column imported for title and abstract screening while non-conforming articles are included in the irrelevant studies column. After filtering the articles, 7 articles were obtained which will then be assessed by using critical appraisal. This Scoping review used an assessment of the quality of articles with an assessment method from Hawker. Moreover, conducting data preparation and reporting result.

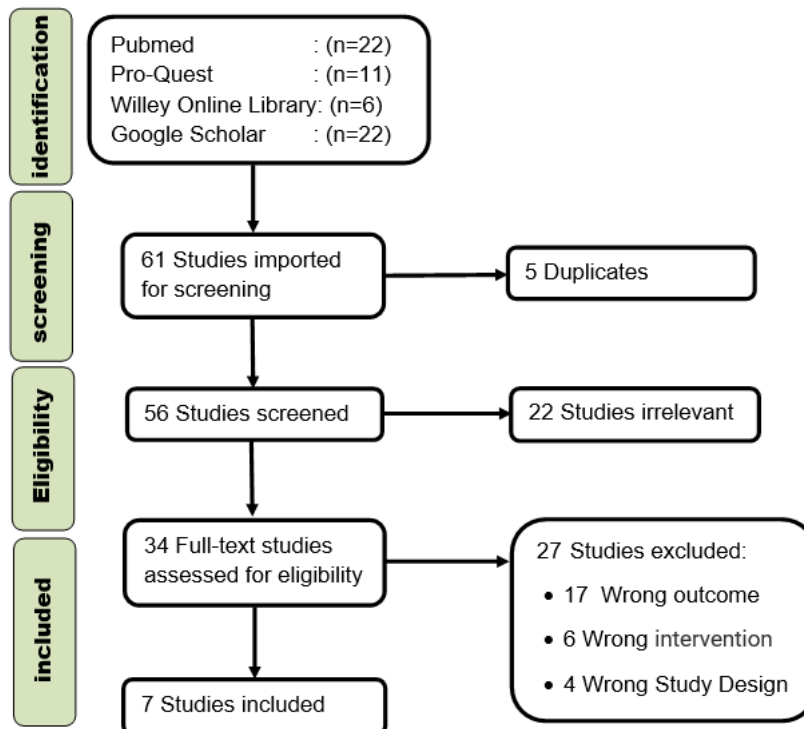


Figure 1. PRISM Flow Diagram

After obtained 7 relevant articles to answer the scoping review question, the next step is charting the data.

Table 2. Data Charting

Title/Autor/Year/Grade	Country	Aim	Data Colection	Participant/Sample Size	Result	Topic
<i>Effect of nutrition behaviour change communication delivered through radio on mothers' nutritional knowledge, child feeding practices and growth/ Effect of nutrition behaviour change communication delivered through radio on mothers' nutritional knowledge, child feeding practices and growth/ (Saaka et al., 2021)/B</i>	Ghana	To find out the influence of communication of nutritional behavior change delivered over the radio on mother nutrition knowledge, feeding practices and children's growth and development	This study used a quantitative method of a two-arm, quasi-experimental non-equivalent by conducting observation before and after the test . it was used to measure the effectiveness of radio listening behavior. Analysis Difference-in-difference (DID) was performed to assess the results of the study.	712 mothers with children aged 6-36 months randomly selected from five intervention districts and one comparison district	The results of the study shows that mothers in the radio listening intervention group had significantly higher scores of nutrition-related knowledge, attitudes and practices than their counterparts in the comparison group (DID 0.646,P <0.001). Radio listening interventions have no significant effect Towards nutritional status measured by height according to age Z-score or weight to high Z-score. The data provide evidence that health and nutrition education using radio significantly improves health/nutrition related knowledge but has little effect on nutritional status.	<ol style="list-style-type: none"> <li>1. The effect of nutrition education towards mother's knowledge</li> <li>2. The benefit of nutrition education media</li> <li>3. Types of educational media</li> <li>4. Challenge in feeding practice</li> </ol>
<i>Knowledge and application of balanced nutrition on toddlers during pandemic/ (Widowati et al., 2021)/A</i>	Indonesia	The purpose of this study is to find out the effect of health education on mother's knowledge and behavior in the application of balanced nutrition for toddlers	This research uses quantitative method, analysis used statistical tests which is used Paired T test and the Wilcoxon test	30 mothers who have children aged 1-5 years.	The result of paired t test obtained p value of 0.011 ( $\alpha = 0.05$ ) which means that there is an effect of health education on the level of knowledge about balanced nutrition in toddlers, while the results of the Wilcoxon test on the practice of applying balanced nutrition toddlers obtained p value 0.091 which	<ol style="list-style-type: none"> <li>1. The effect of nutrition education towards mother's knowledge</li> <li>2. The benefit of nutrition education media</li> <li>3. Types of educational media</li> <li>4. The challenge of feeding practice</li> </ol>

					means that there is no effect of health education on the practice of implementing balanced nutrition in toddlers.	
<i>Effects of Nutrition Education on Improving Knowledge and Practice of Complementary Feeding of Mothers with 6- to 23-Month-Old Children in Daycare Centers in Hawassa Town, Southern Ethiopia/</i> (Muluye et al., 2020)/A	Ethiopia	This study aims to find out the effect of nutrition education on knowledge improvement and practice of complementary breastfeeding in mothers with children aged 6 to 23 months at a daycare center in Hawassa Town, Southern Ethiopia	This research is a quantitative study using research analysis with chi-square test and independent t test	Two hundred (200) mother-daughter pairs (100 for each group) were recruited	The result showed that the nutrition education intervention has no significant difference ( $P > 0.05$ ) on the knowledge and practice of complementary food between the two groups during the pretest, while the difference was very significant ( $P < 0.05$ ) during the posttest. In conclusion, the provision of nutritional education improve the knowledge and practice of providing appropriate complementary food to mothers.	The effect of nutrition education towards mother's knowledge
<i>Effect of Nutrition Education Intervention on Knowledge Attitude and Practice of Mothers/ caregivers on Infant and Young Child Feeding in Shabelle (Gode) Zone, Somali Region/</i> (Guled et al., 2018) /A	Ethiopia	Designed to document the effect of nutrition education interventions on mother/caregivers' knowledge, attitudes and practices on optimal infant and child feeding in the Shabelle Zone of the Somali Region	Quantitative Research Methods with Sampling Techniques using a randomized controlled trial study, data analysis was performed with Chi-square and Fishers for categorical variables, and t-tests for continuous variables	415 mothers/caregivers	The results showed a statistically significant improvement in the knowledge, attitudes and practices of mothers/caregivers ( $P < 0.05$ ) compared to the health care control group, the independent sample t-test mean difference score ( $P < 0.001$ ), and the average score of the paired sample t-test in the intervention group ( $P < 0.001$ ). Nutrition education interventions were effective in improving mother/caregiver behavior related to	<ol style="list-style-type: none"> <li>1. The effect of nutrition education towards mother's knowledge</li> <li>2. The benefit of nutrition education media</li> <li>3. Types of educational media</li> <li>4. The challenge of feeding practice</li> </ol>

					child feeding practices.		
<i>The Effectiveness of Web-Based Audiovisual Media Applications in Monitoring Children's Growth to Prevent Stunting</i> / (Ernawati et al., 2021) /A	Indonesia	To explore the comparison of mother's knowledge about health education conducted through web-based audiovisual media between the intervention group and the control group who only read books about mother and child health	This research is a quantitative study using research analysis Wilcoxon	Samples used as a group the intervention was 50 mothers, and the control group was 50 mothers.	The results of health education research through web applications are more effective with statistical scores of 60 for pretest scores and 80 for post-test scores (p = 0.000), while educational scores that are just by reading books from the control group show the same thing. scores for pre- and post-test scores, 70 (p = 0.960).	1. Benefits of nutrition education media 2. Types of educational media	of
The usefulness of nutrition and health videos displayed on mobile phones in rural Uganda: Experiences of community health workers and mothers/(Schneider et al., 2022)/A	Uganda	Learn about VHT experiences using educational videos during their visits with family and to analyze the mother's reflection about the education of this video, the benefit of nutrition and health videos shown on mobile phones in rural Uganda	This research used qualitative methodm conducting individual interviews with eight VHTs and held four focus group discussions (FGDs)	Involving 16 mothers	Result show that educational videos used by VHT improves the perceived impact, competence, meaningfulness, and freedom of selecting VHT work, reflecting an increase in intrinsic task motivation, we conclude that educational videos are a promising method to maintain and improve VHT programs in Uganda	1. The effect of nutrition education on maternal behavior 2. Types of educational media	of
Effect of a community based child health counselling intervention on health seeking behaviours, complementary feeding and nutritional condition among children aged 6–23 months in rural China: A pre and post comparison study/(Yao et al., 2022)/A	China	Find out the Effect of community-based child health counseling interventions on health-seeking behaviors, complementary feeding and nutritional conditions among children aged 6-23 months in rural China	Pre and post comparison study	1218 and 1293 nanny couples participated in pre- and post-study	The result showed that children have better adherence to routine health checks and YYB consumption after the intervention. There is little improvement in the achievement of PMBA indicators. Nutritional conditions of the child the age of 6-23 months also improves with a decrease in	The effect of nutrition education on mother's behavior	

### III. Result and Discussion

The findings were systematically obtained from data extracted from this scoping review article compiled in 3 topics, including the effect of nutrition education, nutrition education media, challenges in feeding practices.

#### 1. The effect of Nutrition Education

##### a. The effect of nutrition education towards mother's knowledge

There are four articles showing that there is an effect of nutrition education based on knowledge, as stated in the first article (Saaka et al., 2021) that health and nutrition education using radio drama significantly improve health/nutrition related knowledge but has little effect on nutritional status. A mother's knowledge will affect the nutritional status of her toddler, since she know how the nutritional needs of their toddlers will try to meet the nutritional needs of their toddlers according to the knowledge they have (Setiadi, 2020). This statement is supported by the theory of (Notoatmodjo, 2014) that stated there are factors that influence changes in a person's knowledge, i.e., the source of the message, the content of the message, and the recipient of the message. The source of the message can be someone or something that the the recipient of the message believes.

In article two (Widowati et al., 2021), there is an effect of mother's knowledge level about balanced nutrition in toddlers before and after being given health education in the form of videos, audiovisual media contains explanations of the basic messages of balanced nutrition in toddlers which are presented attractively and with easy-to-understand language so as to facilitate the receipt of balanced nutrition information conveyed. In line with the research conducted by (Muluye et al., 2020) stating that optimal complementary feeding of breast milk depends on accurate information and skilled support from families, communities, and health systems.

In article three (Muluye et al., 2020) there is an effect of providing nutrition education on knowledge improvement and practice of providing appropriate complementary food on mothers. In article four (Guled et al., 2018) there is an effect of nutrition education interventions on mother's knowledge about infant and children feeding of intervention group has shown a statistically significant improvement in mother/caregiver practice ( $p < 0.05$ ) compared to the control group in all tests. Mother/caregiver's knowledge is only 58.5 percent at the beginning, meanwhile mothers/caregivers in the intervention group have knowledge of the right time (six months) to start complementary breastfeeding, which means that it increased significantly to 93.6 percent, after 8 months of nutrition education. Mother/caregiver knowledge about the availability of fruits/vegetables, and whether these available fruits/vegetables could be given



to their children increased in the intervention group from 32.7 percent, and 17.1 percent at the beginning to 92.6 percent and 79. Percent in post-intervention. However, it was not in the control group where the knowledge of participants in this issue decreased slightly in the same period (82.9 percent and 68.6 percent to 80.1 percent and 69.7 percent). The overall knowledge of the mother/caregiver means that the intervention group score increased significantly after the intervention. This statement is supported by the theory of (Graziose et al., 2018) nutrition education is a combination of educational strategies, accompanied by environmental support, designed to facilitate the voluntary adoption of food choices and other food and nutrition-related behaviors conducive to health and well-being. Nutrition education is delivered through a variety of places and involves activities at the individual, community and policy levels.

b. The effect of nutrition education towards mother's attitude

In article four (Guled et al., 2018) there is an effect of nutritional education interventions on mother's attitude about infant and children feeding, the intervention group has shown a statistically significant improvement in mother/caregiver practice ( $p < 0.05$ ) compared to the control group in all tests. This statement is appropriate with the theory of (Tsani et al., 2020) that nutrition education is a process of increasing knowledge about nutrition, forming healthy living attitudes and behaviors. Nutrition education is a combination of educational strategies, accompanied by environmental support, designed to facilitate the voluntary adoption of food choices and other food and nutrition-related behaviors conducive to health and well-being. Nutrition education is delivered through various places and involves activities at the individual, community and policy levels (Graziose et al., 2018).

c. The effect of nutrition education towards mother's behavior

There are three articles showing that there is an effect of nutrition education on behavior in children's feeding practices. In article four (Guled et al., 2018) there is an effect of nutrition education interventions on mother or caregiver about the feeding practices on infant and children. Meanwhile the intervention group has shown a statistically significant improvement in mother/caregiver practice ( $p < 0.05$ ) compared to the control group in all tests. In article six (Schneider et al., 2022) Educational video is a promising method for improving children feeding and hygiene in Uganda. Mobile phones with nutrition education videos can effectively improves motivation in rural Uganda. Videos increase impact, meaningfulness, competence, and perceived job choices. families feel that learning from video is easier compared to traditional education. Mothers reported improvements in child feeding and hygiene practices during the intervention. In article seven (Yao et al., 2022) shows that there is an effect of community-based child health counseling interventions, an increase in the number of PMBA indicators (introduction of solid, semi-dense, or soft foods, minimum dietary diversity and consumption of iron-rich foods or iron-enriched foods) observed after the intervention. According to Kwasnicka in (Saaka et al., 2021) that successful behavior change requires the target population to engage with the need to change, maintain motivation to sustain

change and be supported by a context (service provider, society, social network).

As the basic theory developed by Lawrence Green in (Widowati et al., 2021), behavioral causes and non-behavioral causes are the main factors that affect someone's health. Behavioral causes are influenced by three factors, such as: predisposing factors (age, work, education, knowledge and attitudes), supporting factors (physical environment and distance to health facilities), and strengthening factors (support provided by families and community leaders). The practice of complementary feeding of breast milk is always influenced by other factors, especially the availability of food at home, the attitude of caregivers, and the socioeconomic status of the family and the mother who prepares food for the family (Muluye et al., 2020). and environment) that facilitates change.

## 2. Nutrition Education Media

### a. The benefit of nutrition education media

The first article (Saaka et al., 2021) states that the benefits of educational media through radio are improve mother's knowledge about nutrition and the diversity of children's food, which can contribute significantly to children's growth if there are concurrent improvements in other barriers such as food insecurity and household socioeconomic constraints. In article two (Widowati et al., 2021) audiovisual media that presents knowledge and daily real-life experiences will be more easily accepted by mothers so that they can quickly increase their knowledge and understanding. Article five (Ernawati et al., 2021) states that web-based education using smartphones is a more interesting audiovisual presentation and can be played over and over again to make it easier to understand. Researchers believe that health education through web-based audiovisual media to the public, especially parents, can be the right alternative choice in preventing stunting.

In line with the theory of (Ahmad, 2021) that the use of educational media can increase observations between learning participants, can increase the interest and interest of learning participants. The use of educational media aims to be able to attract the interest of students' thoughts, feelings, and willingness to follow the learning process. This statement is supported by the theory from (Notoatmodjo, 2012) the advantages of audiovisual media provide reality (motion, sound, place, emotion) that can be captured by the audience and videos can be downloaded, played repeatedly can be shared with others, can be used for self-study, allow for client adjustment and video equipment are cheap and easy to obtain, can make people truly understand the content of the news with more in-depth analysis, can make people think more specifically about their information in the video.

### b. Types of educational media

In the first article (Saaka et al., 2021) states that nutrition education is delivered through radio media on mother nutrition knowledge, feeding

practices and child growth and development. In the second article (Widowati et al., 2021) the provision of health education through video media on mother's knowledge about balanced nutrition in toddlers. Based on the results of research in article five (Ernawati et al., 2021) it can be concluded that public health education through audiovisual media consisting of videos about toddler growth and development and web-based stunting can effectively improve parents' knowledge about monitoring the growth and development of toddlers. In article six (Schneider et al., 2022) educational videos are methods to maintain and increase motivation, volunteering and influencing the correct feeding and hygiene practices of children in Uganda. According to theory of (Ahmad, 2021) there are several types of learning media such as visual media: graphs, charts, diagrams, posters, cartoons, comics. Audio media : radio, cassette, CD, recorder and Audio-visual media : video, film, television.

### 3. The challenge in feeding practice

In article one (Saaka et al., 2021) that a mother who lacks economic resources may not provide adequate care to grow and develop optimally, the mother does not care how rich the knowledge she has, since nutrition education itself is not enough to have a positive effect on the growth of the children if the promoted food is not available at home. In line with the study conducted by (Bimpong et al., 2020) that poor income levels can cause mothers to have a less desirable attitude towards children feeding recommendations because the lack of income becomes a reason for difficulties in feeding children with a variety of foods and recommended frequencies.

In article two (Widowati et al., 2021) states that the dissemination of a balanced nutrition message for the community requires appropriate and community-based educational strategies and methods to have an impact on changing people's behavior towards balanced nutrition and healthy living behaviors. Strategies that can be done by practitioners are to develop a balanced nutrition message according to culture and use regional languages and appoint balanced nutrition ambassadors to be role models in feeding toddlers. In article four (Guled et al., 2018) poor food intake, poor maternal and children parenting practices, and poor hygiene and sanitation practices due to the lack of mother/caregiver knowledge and awareness about improper infant and child feeding practices combined with culture and beliefs that are contributing factors. In line with the theory of (Adhikari et al., 2021) that factors such as maternal education, nutrition counseling, food security, number of children, maternal health services, decision-making powers are identified as key factors related to feeding practices and these factors should be carefully considered when designing strategies and interventions. This statement is appropriate with research conducted by (Saaka et al., 2021) that a person's nutritional status is influenced by many interrelated and complex factors both at the household and community levels. In the household, nutritional status is influenced by the household's ability to provide sufficient food both in quantity and quality, care from caregivers/mothers and nutritional knowledge, especially from mothers and other socio-cultural factors.

#### 4. Conclusion

Nutrition education is a sustainable process to improve the knowledge about nutrition, form healthy living attitudes and behaviors by paying attention to daily diet and other factors that affect children's feeding practices, and improve someone's health and nutritional status. By using various types of educational media that can support the occurrence of a two-way interaction process, improve observations between learning participants, increase the interest of learning participants, therefore it can influence the knowledge, attitudes and behaviors of mothers in feeding toddlers. Factors such as mother's education, nutrition counseling, food security, number of children, mother health services, decision-making power are key factors associated with feeding practices and these factors should be carefully considered when designing strategies and interventions.

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