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The culture of complementary feeding practice among stunting in toddlers aged under 24 months

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Abstract

This systematic review examined the relationship between complementary feeding practices and the prevalence of stunting among children under 24 months. Drawing on a diverse range of studies, in the last 10 years (2013-2023) the review investigated the local cultural conditions, and complementary feeding practices factors influencing stunting. Methods involved synthesizing data from various contexts to identify patterns and associations between the culture, complementary feeding practices, and stunting prevalence. This study carried out a systematic review of journals using two academic databases (PubMed, and Google Scholar) with a publication range from 2013 to 2023. The journal-reviewed guidelines used Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines. Results revealed a significant relationship between the local cultural conditions, complementary feeding, and the impact of stunting on child development. This study found 10 studies exploring the relationship between the local cultural conditions, complementary feeding, and the prevalence of stunting among children under 24 months in the last 10 years. The review underscored the need for interventions targeting cultural determinants of stunting and complementary feeding. In conclusion, this systematic review of 10 journals explored the relationship between the local cultural conditions, complementary feeding practices, and the prevalence of stunting among children under two years old in the last 10 years offers. The study elucidated the multifaceted nature of stunting, influenced by cultural beliefs, and complementary feeding practices. The findings emphasized the importance of culturally sensitive interventions aimed at educating parents on proper complementary feeding practices to prevent stunting, particularly in communities where cultural beliefs shape complementary feeding habits. In addition, this observation underscored the importance of addressing contextual factors such as the mother's knowledge of complementary feeding, and the food diversity given, so that there are no food taboos whose nutrients the child's body needs for growth the time to start complementary feeding, and hygiene during complementary feeding processing. It is necessary to emphasize sensitive interventions in solving the stunting problem so that stunting can be resolved comprehensively.

Keywords: complementary feeding practice; culture; stunting

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INTRODUCTION

Stunting is the devastating result of poor nutrition in utero and early childhood. Children suffering from stunting may never attain their full possible height and their brains may never develop to their full cognitive potential. These children begin their lives at a marked disadvantage with consequences continuing into adulthood: they face learning difficulties in school, earn less as adults, and face barriers to community participation. Stunting has been declining steadily over the last decade, with 148.1 million, or 22.3% of children under age 5 worldwide affected in 2022. Nearly all children affected lived in Asia 52% of the global share. More intensive efforts are required if the world is to achieve the global target of reducing the number of children with stunting to 89 million by 2030. (Unicef, 2023).

Based on data from the National Nutrition Status Survey of Indonesia (SSGI), the prevalence of stunting in Indonesia is 21.6% in 2023. This figure is still high, considering that the stunting prevalence

target in 2024 is 14% and the WHO standard is below 20%. Munira (2013) asserted that Stunting was caused by chronic malnutrition and recurrent infectious diseases. To explore the causes of stunting from various points of view, Soesanti et al. (2020), discussed the background and purpose of the study, highlighting the influence of culture on the feeding practices of stunted children under the age of two in Pasongsongan Village. The stunted children only consumed rice porridge until the age of one, which means that the food intake contains mostly carbohydrates. The mothers of stunted children argued that the children's intestines are not strong enough to digest food with coarser textures like eggs, fish, beef, and chicken. Sea fish were given when the children could walk because there had long been a belief that fish contain worms. Not feeding fish and other animal products that are good sources of protein can negatively affect their growth. The feeding practice of stunted children under the age of two in Pasongsongan Village was strongly influenced by culture. The mindsets of mothers of stunted children regarding feeding practices must be changed.

Meanwhile, Stewart et al. (2013) presented the role of complementary feeding within the layers of contextual and causal factors that led to stunted growth and development and the resulting short-and long-term consequences. Contextual factors were organized into the following groups: political economy; health and health care systems; education; society and culture; agriculture and food systems; and water, sanitation, and environment. These community and societal conditions underlie infant and young child feeding practices, which are a central pillar to healthy growth and development and can serve to either impede or enable progress.

In Other Research, Tessema et al. (2013) explained an overview of the complementary foods that were often introduced before or after the recommended age of 6 months and were often nutritionally inadequate and unsafe. Inappropriate feeding practices might account for approximately one-third of malnutrition, depending on population, place, time, and season, and in combination with other causes such as infection and food shortage. After a child reaches 2 years of age, it is very difficult to reverse stunting that has occurred earlier unless significant improvement is made in the food security and dietary environment of the child to understand their association with stunting in rural communities of Sidama, Southern Ethiopia.

Based on research by Tello et al. (2022) in Ecuador, stunting occurred mainly in children in rural residences, in poor households, and where there were four or more children. In children from ages 6 to 12 months, 32.5% received food with adequate dietary diversity. Lower percentages of complementary feeding occurred in the poorest, adolescent mothers or those with less education. Children who did not receive the minimum frequency of meals for their age had higher odds of stunting (OR 3.28; 95% CI 1.3, 8.27). Children from age 19 to 23 months who consumed foods rich in iron showed lower probabilities of stunting (OR 0.04; 95% CI 0.00, 0.51).

Stunting cannot be separated from feeding culture and economic factors. Nurbiah (2019) explained that the main nutritional problems that occurred in children in their first 1,000 days of life were very influential in the process of children's linear growth. Stunting experienced by children before two years old had an impact on their level of intelligence and learning development as adults. This prospective study also revealed a correlation that baby food selection is influenced by sociocultural factors and attitudes associated with stunting in children. There were special rituals associated with feeding patterns in newborns, dietary restrictions during pregnancy and lactation (food taboo), and other health behaviors that were closely related to culture. Hadi et al. (2022) explained that the incidence of stunting was caused by the nutritional status of the mother and was not supported by adequate intake of micronutrients in the process of improving the pursuit of growth for a long time. The risks and problems in children are influenced by adequate nutritional intake.

Child growth and development are regarded as crucial markers of the nutritional and health conditions of communities. Stunting in children is therefore perceived as the main risk factor for unsatisfactory physical and mental development in children under 5 years of age, with far-reaching impacts on affected individuals and society. Ali (2020) believed that Indonesia's culture is very rich and diverse. This culture includes the socio-culture of maternal nutrition during pregnancy and childbirth, breastfeeding, and toddlerhood Socio-cultural nutrition during breastfeeding, for example,

throwing away colostrum because it is considered dirty, and socio-cultural nutrition during toddlerhood, such as early complementary feeding (before six months). According to Selva & Karjoso (2023), Stunting occurs from the initial nutritional status of the mother before pregnancy, and during pregnancy, and this condition is thought to be influenced by local habits in attitudes and behavior.

METHODS

This systematic review was aimed at analyzing various methodologies employed in studies related to culture, complementary feeding practices, and their association with stunting among children under the age of two. The review process adheres to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines, ensuring transparency and rigor in study selection, data extraction, and synthesis.

Study selection criteria

Table 1. Study selection criteria

Table 21 Stady Selection enterna						
Inclusion Criteria	Exclusion Criteria					
Studies addressing the culture, complementary feeding practices, and their relationship with stunting among children under two years old.	•					

Search strategy

A comprehensive search strategy was employed to identify relevant studies. Databases including PubMed, and Google Scholar, were systematically searched by using relevant keywords such as "culture", "complementary feeding", "stunting", and specific study methodologies (e.g., "qualitative," "cross-sectional," "systematic review"). Additionally, reference lists of identified articles were scanned for additional relevant studies.

Study selection process

Two independent reviewers screened the titles and abstracts of retrieved articles to assess their eligibility based on the inclusion and exclusion criteria. Full-text articles of potentially relevant studies were then assessed for final inclusion in the review.

Data extraction

Data extraction was performed independently by two reviewers using a predefined extraction form. Extracted data included study characteristics (authors, publication year), study objectives, methodologies employed (e.g., qualitative, quantitative, mixed methods), study population characteristics, data collection methods, analytical techniques, and key findings related to complementary feeding practices and stunting.

Quality assessment

The quality of included studies was assessed using relevant tools such as the Critical Appraisal Skills Programme checklist for qualitative studies and Quality Assessment Tools for quantitative studies. Studies were evaluated based on their methodological rigor, transparency, and potential biases.

Data synthesis

A narrative synthesis approach was utilized to summarize and integrate findings from the included studies. Themes related to complementary feeding practices, stunting prevalence, and

factors influencing this relationship were identified and analyzed across studies. Where appropriate, quantitative data were pooled for meta-analysis to provide a quantitative summary of findings.

Subgroup analysis

Subgroup analyses were conducted based on study methodologies (qualitative, quantitative, mixed methods) and geographical locations to explore potential variations in findings across different contexts.

Sensitivity analysis

Sensitivity analysis was performed to assess the robustness of the findings by excluding studies with a high risk of bias or methodological limitations.

Reporting

The findings of the systematic review were reported following the PRISMA guidelines, including a flow diagram illustrating the study selection process, a detailed description of included studies, summary tables, and a narrative synthesis of key findings.

By systematically reviewing and synthesizing existing literature, this study was aimed at providing a comprehensive understanding of the methodologies employed in investigating complementary feeding practices and their impact on stunting among children under two years old, thereby informing future research directions and public health interventions in this area.

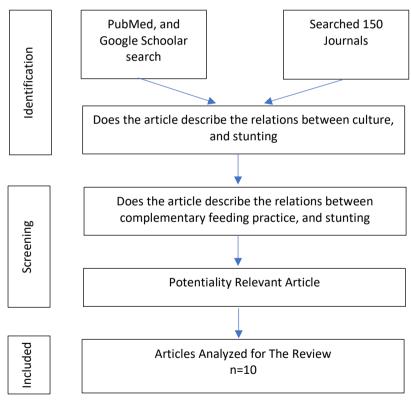


Figure 1. PRISMA framework

RESULTS AND DISCUSSION

Results

The results described review techniques from identifying and screening the works to be reviewed to their analysis. The results included the fact that stunting had two broad conclusions; it

deals with the local cultural conditions, and that complementary feeding has an impact of stunting on the development of the children.

The first result of the study revealed that the relationship between the local cultural conditions with stunting prevalence was a significant relationship among children under 24 months. Complementary feeding patterns are based on cultural beliefs that influence the nutritional condition of children under 24 months.

According to Soesanti et al. (2020), a Food taboo was a prohibition against consuming certain foods and was based on the idea that these foods might trigger any unexpected or dangerous reaction. Children under one year old were only given soft and delicate food like porridge because their intestines were deemed unable to digest food with a coarser texture. When the children under 24 months were sick Mothers regularly brought their children to the Posyandu (*Pos Pelayanan Terpadu*/Integrated Service Post) to get immunized, get vitamins, and supplements, or get monitored for growth, and go to a shaman to massage their children and for getting *jamu*. In addition to food, according to tradition, traditional herbs *jamu cekok* must be given to children under two years old. Jamu was given to make the child healthy and increase appetite. Jamu was specifically served after a massage session by a masseuse or a shaman baby.

Stewart et al. (2013) explained that beliefs about complementary feedings were heavily influenced by the individuals who surround the primary caregiver—husbands, mothers-in-law, grandmothers, other family or neighbors within the community, and the health care providers upon whom the caregivers depend for help and support. Nurbiah et al. (2019) explained that most of the stunting children (36.6%) had a mother who practiced food taboos in the family, Food taboos in the family there were traditions of eating forbidden. Bhutia (2014) explained That socio-cultural factors played an important role wherein, they affected the attitude of the caregiver in feeding and care practices.

Based on Selva & Karjoso (2023), Local food culture influenced the improvement of the nutritional status of toddlers, especially during the stunting prevention phase. Whereas in the prevention phase, local food culture by utilizing processed food forms had not improved the nutritional status of toddlers already suffering from stunting. Local food for toddlers suffering from stunting must be accompanied by other supplements to have a significant effect. Toddlers drank Jamu, a kind of traditional herbal medicine made of leaves and was made by roasting, and some were boiled. It has yet to be discovered what type of foliage was used. Hadi et al. (2022) explained that the results showed that the variables of eating culture, CED status, consumption of worm medicine, type of food, and family support were related to the incidence of stunting (p = 0.000 < 0.05), but the most related variable was the type of food with p = 0.000 (lower limit is 0.252 and upper limit is 0.556).

The second result of the current study was that the relationship between the complementary feeding practice with stunting prevalence is a significant relationship among children under 24 months. The practice of complementary feeding also influenced the nutritional status of children, the time to start complementary feeding, the cleanliness of the cooking process, food diversity, and environmental conditions influenced the nutritional status of children under 24 months.

Based on Soesanti et al. (2020), Mothers of stunted children under two began introducing porridge as a complementary food for their infants from the age of five or six months and continued to serve it solely until the age of eight or twelve months. The babies could eat about twice or three times a day. Mashed bananas were served occasionally once a day during the day. Four informants told the researcher that. they began introducing bananas to their six-month-old or nine-month-old babies. The practice of feeding nine-month-old to twelve-month-old babies varied. For breakfast, an informant served rice porridge called tajin. Tajin was porridge made of rice without coconut milk. The practice of feeding stunted children in Pasongsongan Village illustrated that the complementary food provided for them contains mostly carbohydrates and less protein and other nutrients. This was due to the strong taboo culture of eating fish and the culture of giving porridge or *lontong* to children until the age of one year.

Poor quality foods were the first category of determinants negatively impacting infant and young child growth. Inadequacies in micronutrient nutrition may arise from low dietary diversity, limited or no intake of animal-source foods, and high anti-nutrient content such as phytates and polyphenols in the plant-based diets of many poor populations. Stewart et al. (2013) stated that foods and drinks consumed by 86% of the children had below the minimum dietary diversity recommended by the WHO (< 4 food groups).

According to Tello et al. (2022), the socioeconomic characteristics, the lack of minimum frequency of meals, and not consumption of food rich in iron were predominant in the association with stunting. Not achieving the minimum meal frequency for age was significantly associated with stunting in children from age 6 to 12 months. Children between 6 and 8 months of age did not meet the adequate energy intake requirements, which worsens their nutritional status; this inadequate intake extended to children between 9 and 11.9 months of age.

Meanwhile, Ali (2020) explained that there was a relationship between Protein-energy malnutrition with stunting. Around two-thirds of households with almost 80% of children in Pakistan did not have access to enough amount of healthy and nutritious food. Not only the insufficient quantity and poor quality of food but also an individual's digestive capacity and immune response, together with a lack of healthcare and social services, are responsible for stunting. All these factors played an important role in determining the optimal linear growth rate in children.

Bhutia (2014) explained that Protein-energy malnutrition was measured in terms of stunting. The prevalence of stunting among those under five is 48%. The determinants of Protein energy malnutrition were broadly classified under four distinct categories: Environmental factors including the physical and social environment, behavioral factors, health-care service-related, and biological factors. The socio-cultural factors played an important role wherein, they affected the attitude of the caregiver in feeding and care practices. Faulty feeding practices in addition to the poor nutritional status of the mother further worsened the situation. Selva & Karjoso (2023) explained that the social environment could provide an overview of the differences in people's eating patterns in certain areas.

Nurbiah et al. (2019) explained that In East Lombok society, it was revealed that the habit of giving pre-lacteal at the beginning of an infant's life is closely related to the incidence of stunting. Hadi et al. (2022) explained that the sociocultural determinant of the family was a determining factor for the occurrence of stunting. The culture influenced children's feeding practices in terms of beliefs, values, and behaviors related to different foods. The family, especially the family eating culture, had a very important role in children's health and the pattern of nourishing stunting children. Therefore, the role of the family in promotion and health care was needed to prevent the impact of stunting in the future which was in balance with the intake of nutritious and healthy food so that the family could be independent in implementing a healthy lifestyle for their stunted children which has an impact.

Discussion

This systematic review of the culture of complementary feeding practice among stunting toddlers aged under 24 months has two general conclusions. The first conclusion is that stunting is related to local cultural beliefs, as well as the complementary feeding practice as nutrition is needed for children's growth and development. According to Ali (2020), the key determinants of malnutrition and stunting in South Asian countries were very similar. They could be placed into three main categories; food insecurity and inadequate nutrient intake, socioeconomic status and inequalities, and maternal and environmental factors.

In the culture of complementary feeding practice of children under the age of two, many researchers are looking for a relationship between the influence of Complementary Feeding Practice and the prevalence of stunting. According to Soesanti et al. (2020), the practice of feeding stunted children in Pasongsongan Village illustrated that the complementary food provided for them contained mostly carbohydrates and less protein and other nutrients. This was due to the strong taboo culture of eating fish and the culture of giving porridge or *lontong* to children until the age of one year. Parents tend to follow the culture of society in providing complementary food to their children. The

food taboo in the community that prevents serving ocean fish and comes up with solely porridge or *lontong* for infants under two years old can result in protein deficiency and growth becomes stunted. Inadequate practices include infrequent feeding, excessively dilute feeds with low energy density, inadequate feeding during illness, providing insufficient quantities of food, and non-responsive feeding, food, and water safety, which relates primarily to the infection pathway to stunted growth, but may also contribute through inorganic contaminants and environmental pollutants (Stewart et al., 2013).

Infant and young child feeding (IYCF) patterns constitute a major component of child-care practices. Tessema et al. (2013) showed that stunting was significantly associated with IYCF practices that include the late and early introduction of complementary foods. Both early and late introduction of liquids and solid food reduces the duration and frequency of breastfeeding and increases the risk of infant morbidity and mortality; therefore such unhealthy behavior needs to be discouraged.

As explained previously, the first two years of a child's life are essential for their adequate growth and development, and yet that is the same period during which the prevalence of stunting is highest. Therefore, there is sufficient evidence to suggest that adequate complementary feeding is essential to reduce the incidence of stunting in children. Tello et al. (2022) and Nurbiah et al. (2019) explained that most of the stunted children (36.6%) had a mother who practiced food taboos in the family, Food taboos in the family there were traditions of eating forbidden.

Appropriate child-feeding behavior goes a long way in preventing and overcoming malnutrition and determining a child's growth. As feeding practice changes with age, a fourfold increase in the prevalence of undernutrition is seen from 15.4% (0-6 months) to 52.6% (12-23 months). This can be attributed to the early initiation of complementary feeds in the earlier months late weaning and the inadequate amount of complementary feeds in the later months. Sutarto et al. (2022) explained that there is a phenomenon of giving MP-ASI to infants under the age of 6 months.

According to Selva & Karjoso (2023), food and eating in the community had cultural and social values. Thus, the utilization of local food culture for toddler food was easily accepted, easy to obtain, and affordable, significantly influencing stunting prevention in the regions. Hadi et al. (2022) explained that the culture influenced children's feeding practices in terms of beliefs, values, and behaviors related to different foods. The family, especially the family eating culture, had a very important role in children's health and the pattern of nourishing stunting children. Thus, the role of the family in promotion and health care was needed to prevent the impact of stunting in the future which was balanced with the intake of nutritious and healthy food so that the family could be independent in implementing a healthy lifestyle for their stunted children.

 Table 2. Complementary Feeding Practice

No	Authors	Year	Countries	Study Desain	Culture	Complementary Feeding Practice
1	Soesanti et al.	2020	Indonesia	Qualitative Method	Jamu was given to make the child healthy and increase appetite & served after a massage session by a masseuse or a shaman baby	The complementary food provided for them contains mostly carbohydrates and less protein and other nutrients
2	Stewart et al.	2013	USA	PRISMA guidelines	These beliefs about complementary feedings are heavily influenced by the individuals who surround the primary dependents for help and support.	Three aspects of complementary feeding have been delineated to represent its contribution to stunted growth and development

3	Tessema et al.	2013	Canada	Cross- Sectional	The mothers sub- optimally fed their children, i.e, they did not follow at least one or more of the recommended practices for optimal feeding for their children from 0-24 months of age.	Foods and drinks consumed 86% of the children had below the minimum dietary diversity recommended by the WHO (< 4 food groups).
4	Tello et al.	2022	Ecuador	Cross- Sectional	To improve the hygienic and sanitary conditions of the population, generate adequate access to local foods that favors the consumption of foods rich in protein and local cultural eating practices, to reduce the high prevalence of stunting in children under two years of age.	The socioeconomic characteristics, the lack of minimum frequency of meals and not consumption of food rich in iron were predominant in the association with stunting.
5	Nurbiah et al.	2019	Indonesia	Quantitative and qualitative mehtods	Most of stunting children (36.6%) had mother who practiced food taboos in the family, Food taboos in the family there were traditions of eating forbidden. Cultural factors like prelacteal feeding is the most influential factor that affects the occurrence of stunting.	In East Lombok society shows that the habit of giving the prelacteal in the beginning of infant's life is closely related to the incidence of stunting.
6	Ali A.	2020	Pakistan	Quantitative and qualitative mehtods	Stunting in children occurs due to continuous inadequate daily intake of energy and nutrients that do not meet their recommended requirements	The key determinants of malnutrition and stunting in South Asian countries are very similar. They can be placed into three main categories; food insecurity and inadequate nutrient intake, socioeconomic status and inequalities, maternal and environmental factors.
7	Bhutia D.T.	2014	India	PRISMA guidelines	The socio-cultural factors play an important role wherein, they affect the attitude of the caregiver in	Faulty feeding practice in addition to the poor nutritional status of the mother further worsens the situation.

					feeding and care practices.	
8	Selva & Karjoso	2023	Indonesia	PRISMA guidelines	Drunk Jamu is a traditional herbal medicine made from leaves made by roasting, and some are boiled. It has yet to be discovered what type of foliage was used.	The social environment can provide an overview of the differences in people's eating patterns in certain areas.
9	Hadi et al.	2022	Indonesia	Cross- Sectional	The socio-cultural determinant of the family is a determining factor for the occurrence of stunting	Culture influences children's feeding practices in terms of beliefs, values, and behaviors related to different foods
10	Sutarto et al.	2022	Indonesia	Qualitative approach	Stunting occurs from the initial nutritional status of the mother, and this condition is thought to be influenced by local habits in attitudes and behavior	There is a phenomenon of giving MP-ASI to infants under the age of 6 months.

CONCLUSION

In conclusion, this systematic review examined 10 journals exploring the relationship between the local cultural conditions, complementary feeding practices, and the prevalence of stunting among children under two years old in the last 10 years offers. The study elucidated the multifaceted nature of stunting, influenced by cultural beliefs, and complementary feeding practices. The findings emphasized the importance of culturally sensitive interventions aimed at educating parents on proper complementary feeding practices to prevent stunting, particularly in communities where cultural beliefs and dietary restrictions shaped complementary feeding habits. In addition, this observation underscored the importance of addressing contextual factors such as the mother's knowledge of complementary feeding, and the food diversity given, so that there were no food taboos whose nutrients the child's body needs for growth the time to start complementary feeding, and hygiene during complementary feeding processing. It was necessary to emphasize sensitive interventions in solving the stunting problem so that stunting can be resolved comprehensively.

Limitations and Future Direction

Limitations of the systematic review included the predominance of studies focused on specific cultural contexts, potentially limiting generalizability. Additionally, the reliance on observational data and self-reported information introduced potential biases. The review predominantly explored individual-level factors, possibly overlooking broader systemic determinants of stunting. Furthermore, cultural influences on feeding practices might be multifaceted and dynamic, not fully captured in the analysis. Overall, while the review provides valuable insights, these limitations highlight the need for further research with rigorous methodologies and comprehensive approaches to address the complexities of stunting and complementary feeding practices.

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Declarations

Suminar R., served as the principal investigator, with Fatimah S., and Karim F., as contributing members. All authors affirm the availability of data and materials. No conflicts of interest exist among the authors. Each author contributed expertise in nutrition, child development, and cultural studies to this systematic review. The review adheres to ethical standards and guidelines.

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