

## Development of a Stunting Prevention Model in Pre-Prosperous Families: Delphy Study

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### ABSTRACT

**Introduction:** Stunting conditions are very close to family welfare conditions, so one way to reduce the prevalence of stunting is to involve the role of the family. **Purpose:** This study aimed to develop a stunting prevention model in underprivileged families with expert consensus. **Methods:** The method used in this research is a Delphi study which consists of 3 rounds. The Delphi Study Types used are classic Delphi and online Delphi. This research involved nine experts until the third round. The implementation of the Online Delphi round is sent via the WhatsApp application. **Results:** In the results obtained in the third round for Factors Affecting Stunting in underprivileged families, there are 11 sub-themes. For the efforts that need to be made to prevent stunting, especially for underprivileged families, there are 12 sub-themes and educational materials that need to be provided to prevent stunting, especially for underprivileged families there are nine sub-themes. **Conclusion:** Component analysis for developing a stunting prevention model through the Delphi study resulted in experts agreeing to develop educational materials on this model.



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## INTRODUCTION

The problem of stunting is one of the problems faced by the world, especially in poor and developing countries (Utami et al., 2019). Stunting is a problem because it is associated with an increased risk of illness and death and suboptimal brain development resulting in stunted motor and retarded mental growth. Stunting conditions are very close to family welfare conditions, so one way to reduce the prevalence of stunting is to involve the role of the family (Faye et al., 2019). This condition can be done by increasing family welfare to meet at least one of the five indicators of a prosperous family (Elis et al., 2020).

Data on the prevalence of stunted children under five in 2020, Indonesia is the second highest in Southeast Asia, reaching 31.8%, with the first highest prevalence of stunting being Timor Leste at 48.8%, and the lowest stunting children coming from Singapore with 2.8% (Dhar, 2021). Children aged >12 months are more likely to experience stunting than children aged <12 months. This condition is because the older a child is, the greater the need for nutrients needed to burn energy in the body

(Beal et al., 2018).

The various roles of the mother are key factors in preventing stunting. The mother is the only source of nutrition for the developing child during the critical period of 1000 days, in the first six months of life, when breastfeeding is exclusive (Nshimiyiryo et al., 2019). Mothers play an important role in shaping children's food intake through their food intake and the food they provide for children (Elis et al., 2020). In addition, mothers are also the main person responsible for meal and food planning, so it is proven that mothers' role is vital in fulfilling children's nutrition needs to prevent stunting (Titaley et al., 2019). The long-term health impacts of malnutrition in childhood suggest that it is important to address it initially before the critical stage of childhood development reaches that it urgently requires the role of the mother early on to prevent stunting (Soliman et al., 2021).

Stunting is closely related to the nutritional status of toddlers. Factors that affect the nutritional status of children under five are direct factors and indirect factors (Hary Cahyati et al., 2019). The direct factors include nutritional intake and infectious diseases, while the indirect factors include culture, family support, and knowledge (Prasetya & Khomsan, 2021). Culture influences the nutritional status of children, such as people who live in coastal areas. They have socio-cultural conditions that differ from other areas, especially how they feed their children (Harsono et al., 2022). Also, their geographical conditions affect access to food, hygiene, water and sanitation. The family also plays important roles, such as in food selection and food preparation (Ho et al., 2022). Different parenting styles will affect the nutritional status of children (Gobel et al., 2020). Knowledge is important in reducing stunting, especially for mothers who educate (Bustami & Ampera, 2020).

More than a lack of knowledge is needed to change one's behaviour (Gezimu et al., 2022). Through education, one's knowledge can increase. The recommendations also illustrate how more than education is needed to support behaviour change (Arlinghaus & Johnston, 2018). There are several types of knowledge: general or informational knowledge, knowledge that increases personal awareness, and knowledge that enhances skills (Suleman et al., 2021).

Therefore, the need for efforts to prevent an increase in stunting is not only to pay attention to supplementary feeding but to various aspects as a whole (Manggala et al., 2018). Early warning or early warning of the occurrence of stunting is not only the duty of a mother (Pratiwi & Wahyuningsih, 2018). Still, it is the responsibility of all parties, be it family, community or social environment, cadres and health workers (Wiliyanarti et al., 2022). The importance of this Early Warning model being developed so that early detection and efforts to prevent stunting can be carried out in order to reduce existing cases. Regarding health behaviour change, education to increase general knowledge is rarely needed. Therefore, it is important to involve experts through a Delphi study to be able to provide input regarding important aspects of providing education and programs needed in an effort to prevent stunting early. Therefore, it is necessary to develop a stunting prevention model through comprehensive education through input from experts who are competent in their fields.

## METHODS

The type of research used in this study is a Delphi study to produce an agreement from experts. Research This research took place from May to July 2023. The experts used in this study were obstetrics, pediatric nursing specialists, psychiatric nursing specialists, obstetric gynaecologists, and nutritionists with a minimum master's education. Criteria for selecting experts are based on information on expert

involvement or expert experience in the field of stunting, inclusion criteria for experts with a minimum of master's education and a minimum of 2 years of experience both in service and in education.

The Delphi Study Types used are classic Delphi and online Delphi (Barrett & Heale, 2020). The choice of the Delphi method is more time-effective than the R&D method. The stages are shorter and get information and input from many experts so that the preparation of educational modules and program modules can be carried out with guidance from input from experts. This study was conducted in three rounds. Each round is worked on by experts for a maximum of 12 days. The research team will provide time warnings to experts two days before the given deadline.

Round 1 was carried out by giving open questions to experts. The questions given in round 1 were three questions. The first question is, "In your opinion, what are the factors that can influence the occurrence of stunting, especially in poor families (both from the spiritual, intellectual, cultural, psychological and physical aspects)?" The second question is, "In your opinion, what efforts need to be made to prevent stunting, especially in pre-prosperous families?". And the third question is, "In your opinion, what educational materials need to be provided to prevent stunting, especially for underprivileged families?" The questions were sent to the experts online (online Delphi) via the WhatsApp application, where the questionnaire was created using the Google form application. The selection of questions is in accordance with research needs, namely to find out the factors that trigger stunting in underprivileged families, the form of program that will be implemented to prevent stunting, and the educational material that will be provided during the implementation of the model to prevent stunting.

The questionnaire in round 2 was obtained from the Delphi round 1 results which were the answers of the experts added to the results from the literature. Statements from experts are summarized and then divided into sub-themes. Furthermore, items in Delphi round 2 that meet the content validity index (CVI) percentage set by the researcher is 80% will be submitted to round 3. The score for CVI uses numbers 1 to 5 (category 5 for strongly agree and 1 for disagree). The highest score is accumulated at 100% so that the level of rigor agreed upon by the research team in this round is 80%. The data from the Google form is downloaded in Excel form, and then the scores for each subtheme from all experts will be calculated using formulas in Excel and then compared with the CVI. The Delphi round 3 study aims to produce agreement from experts regarding the components in the material in the developed model where items that meet the CVI percentage set are 85%. Increased CVI in the third round so that the subthemes that emerged were subthemes that had been agreed upon by experts, reaching 80% who answered strongly agree. The experts involved fill out their willingness to take part in the Delphi study via the Google Form. The experts agreed to take part in this Delphi study after reading the explanation and rules that applied during the Delphi study. By agreeing to the form sent, the experts were willing to fill in the form within the time frame given for each round.

## **RESULTS**

This research invited 13 experts spread throughout Indonesia; of the 13 invited, nine experts were willing to participate in the third round of this research. The following are the characteristics of the experts involved:

Table 1. Characteristics of The Experts

<b>Variables</b>	<b>n</b>	<b>%</b>
<b>Age (years)</b>		
< 35	3	33.3
≥ 35	6	66.7
<b>Gender</b>		
Man	1	11.1
Woman	8	88.9
<b>Last Education</b>		
S2	4	44.4
Specialist	4	44.4
S3	1	11.1
<b>Years of Service (years)</b>		
<10	4	44.4
≥10	5	55.6
<b>Provincial Origin</b>		
South Sulawesi	4	44.4
North Kalimantan	1	11.1
Sumatra	1	11.1
Southeast Sulawesi	1	11.1
Special Region of Yogyakarta	2	22.2

Table 1 shows the data on the characteristics of the experts who assisted in carrying out this research, where many experts were more than 35 years old, namely 6 people (66.7%). The experts who were involved were mostly women, 8 people (88.9%), the longest working experience was more than ten years, namely 5 people (55.6%), experts from South Sulawesi Province 4 people (44.4%), experts from the Special Region of Yogyakarta as many as 2 people (22.2%), from North Kalimantan 1 person (11.1%), from Sumatra 1 person (11.1%), Southeast Sulawesi 1 person (11.1%).

#### 1. Delphi Research Round 1

In round 1, conducted online, Delphi used the Google form to provide open questions to the experts involved. The results in this round obtained sub-themes for Factors Influencing Stunting in underprivileged families, as many as 19 sub-themes, Efforts that need to be made to prevent stunting, especially in underprivileged families, obtained 15 sub-themes, Educational materials that need to be provided to prevent stunting, especially in underprivileged families as many as 12 sub-themes theme. The Delphi round 1 results obtained the following sub-themes:

Table 2 Expert Consensus Results from Delphi Round 1

<b>Factors Affecting Stunting in Poor Families</b>	<b>Efforts need to be made to prevent stunting, especially in underprivileged families.</b>	<b>Educational materials must be provided to prevent stunting, especially for underprivileged families.</b>
1. Public trust in certain things	1. Massive health education and promotion	1. Definition, signs, risks, ways to prevent stunting
2. Knowledge and education of parents	2. Comprehensive and integrated efforts involving	2. Balanced Nutrition

<b>Factors Affecting Stunting in Poor Families</b>	<b>Efforts need to be made to prevent stunting, especially in underprivileged families.</b>	<b>Educational materials must be provided to prevent stunting, especially for underprivileged families.</b>
3. Citizen's awareness	various sectors	Information
4. Customs	3. Increasing Access to Good Nutrition	3. Exclusive breastfeeding information
5. The psychological condition of the mother from pregnancy to breastfeeding is like stress	4. Supplementary feeding program and nutritional supplements	4. Complementary Foods for Breast Milk (MPASI)
6. Diseases associated with pregnancy	5. Environmental Improvement	5. Hygiene and Sanitation and PHBS
7. Fulfilment of nutritional intake, especially protein	6. Empowerment of Women in underprivileged families	6. Child Health Care
8. Access to nutritious food	7. Monitor and evaluate stunting prevention programs regularly	7. Stimulation and Positive Interaction
9. Family Economy	8. Development of special stunting cadres for home visits	8. How to care for pregnant women, nursing mothers, babies and toddlers
10. Population density	9. Improving the health of women of childbearing age so that during pregnancy	9. Father's Role in Children's Growth
11. Limited access to health services	10. Organizing community outreach and education campaigns	10. Parenting pattern of the active role of family members
12. Poor sanitation and unclean water	11. Undertake house renovation for sanitation improvement	11. Material handling degenerative diseases and infectious diseases
13. Smoking habits around children	12. Education on appropriate and standard infant and child feeding	12. The importance of monitoring the growth and development of children every month
14. The spiritual condition of the parents	13. Enable Penta helix element collaboration	
15. Poor parenting practices	14. The importance of monitoring the growth and development of children every month	
16. Infectious diseases in children	15. Assistance to target families	
17. Breastfeeding		
18. Family support		
19. limited access to information		

## 2. Delphi Research Round 2

In Delphi round 2 for Factors Affecting Stunting in underprivileged families, 17 sub-themes met the content validity index (CVI) percentage of 80%. For efforts that need to be made to prevent stunting, especially for underprivileged families, there are 14 sub-themes and educational materials that need to be provided to prevent stunting, especially for underprivileged families there are 11 sub-themes produced. Furthermore, an analysis of each of the resulting sub-themes was carried out. All sub-themes that have been analyzed are then submitted to Delphi round 3.

### 3. Delphi Research Round 3

In Delphi round 3, there were 11 sub-themes for the Factors Affecting Stunting in underprivileged families (table 3). Efforts need to be made to prevent stunting, especially for underprivileged families; 12 sub-themes (Table 4) and educational materials that need to be provided to prevent stunting, especially in underprivileged families; there are 9 sub-themes (Table 5) that meet the content validity index (CVI) percentage of 85%.

**Table 3 Consensus Results for Factors Affecting Stunting in Poor Families**

<b>Factors Affecting Stunting in Poor Families</b>	<b>Content Validity Index (CVI)</b>
1. Knowledge and education of parents	93.3
2. Citizen's awareness	86.6
3. Diseases associated with pregnancy	86.6
4. Fulfilment of nutritional intake, especially protein	93.3
5. Access to nutritious food	88.8
6. Family Economy	86.6
7. Poor sanitation and unclean water	88.8
8. Poor parenting practices	95.5
9. Infectious diseases in children	95.5
10. Breastfeeding	91.1
11. Family support	91.1

**Table 4. Consensus Results Efforts That Need to be Made to Prevent Stunting, Especially in Underprivileged Families**

<b>Efforts Need To Be Made To Prevent Stunting, Especially In Underprivileged Families.</b>	<b>Content Validity Index (CVI)</b>
1. Massive health education and promotion	88.8
2. Comprehensive and integrated efforts involving various sectors	97.7
3. Increasing Access to Good Nutrition	93.3
4. Supplementary feeding program and nutritional supplements	93.3
5. Environmental Improvement	93.3
6. Monitor and evaluate stunting prevention programs regularly	91.1
7. Development of special stunting cadres for home visits	91.1
8. Improving the health of women of childbearing age so that during pregnancy	93.3
9. Education on appropriate and standard infant and child feeding	93.3
10. Enable Penta helix element collaboration	91.1
11. The importance of monitoring the growth and development of children every month	88.8
12. Assistance to target families	95.5

**Table 5. Consensus Results on Educational Materials That Need to be Provided to Prevent Stunting, Especially for Underprivileged Families**

<b>Educational Materials that Need to be Provided to Prevent Stunting, Especially in Poor Families</b>	<b>Content Validity Index (CVI)</b>
1. Definition, signs, risks, ways to prevent stunting	95.5
2. Balanced Nutrition Information	97.7
3. Exclusive breastfeeding information	93.3
4. Complementary Foods for Breast Milk	95.5
5. Hygiene and Sanitation	93.3
6. Child Health Care	95.5
7. Stimulation and Positive Interaction	91.1
8. How to care for pregnant women, nursing mothers, babies and toddlers	91.1
9. Parenting pattern of the active role of family members	88.8

## DISCUSSION

The early prevention model developed aims to prevent stunting, a multidimensional factor. A pre-prosperous community group is a group that is prone to experiencing stunting. So one way to reduce the prevalence of stunting is to involve the role of the family and examine other aspects broadly (Nadhiroh et al., 2022). This model can be done by increasing family welfare to meet at least one of the five indicators of a prosperous family. Indicators of pre-prosperity are families that cannot fulfil one of the indicators of a prosperous family, including the needs for food, clothing, shelter, health and education (Beal et al., 2018).

Therefore, the researchers hope to examine the factors that can trigger stunting, look for efforts that can be made to treat stunting, and educational materials that need to be provided to prevent stunting, especially in pre-prosperous families through expert methods or Delphi studies (Nasa et al., 2021). Conducting Delphi studies uses sequential rounds punctuated by controlled feedback that attempts to elicit consensus, the opinion of a group of experts in a particular field. The experts involved in this study were 9 experts from several fields of science: obstetrics, pediatric nursing specialists, psychiatric nursing specialists, obstetric gynaecology doctors, and nutritionists. This study is because researchers want to get information for providing holistic care (all aspects of both physical, psychological, spiritual, and social).

The results of the Delphi study obtained in this study have resulted in a consensus for Factors Affecting Stunting in underprivileged families, and there are 11 sub-themes, namely knowledge and education of parents, community awareness, diseases associated with pregnancy, fulfillment of nutritional intake, especially protein, access to nutritious food, economy family, poor sanitation and unclean water, poor parenting practices, infectious diseases in children, breastfeeding, and family support.

For efforts that need to be made to prevent stunting, especially in underprivileged families, 12 sub-themes are obtained, namely massive health education and promotion, comprehensive and integrated efforts involving various sectors, increasing access to good nutrition, programs for providing additional food and nutritional supplements, environmental improvement, monitoring and evaluating stunting prevention programs regularly, fostering special stunting cadres for home visits, Improving the health of women of childbearing age so that during pregnancy, Education on proper and standard infant and child feeding, Activating Penta helix



element collaboration, The importance of monitoring the growth and development of children every month, and assistance to the target family.

Pre-prosperous families will receive educational materials to prevent stunting as early as possible (Dewi et al., 2023). Nine sub-themes are agreed upon by experts in educational material in the development of a stunting prevention model, namely definition, signs, risks, ways to prevent stunting, information on balanced nutrition, information on exclusive breastfeeding, complementary food for breastfeeding, hygiene and sanitation and, child health care, stimulation and positive interaction, how to care for pregnant women, nursing mothers, infants and toddlers, and parenting of children with the active role of family members.

Model edukasi atau pencegahan sebelumnya hanya fokus pada masing-masing satu aspek dari komponen yang dikembangkan pada penelitian ini. Misalnya penelitian dengan judul *The Effect of Spiritual-Based Holistic Integrative Early Childhood Education on Stunting Prevention*, merupakan pencegahan dalam bentuk aspek spiritual (Jeniawaty & Mairo, 2022). Selain itu, banyak penelitian yang memberikan intervensi dalam bentuk edukasi yang fokus pada (Safitra et al., 2021; Sukmawati et al., 2021). Bukan hanya itu pendekatan edukasi yang digunakan pada penelitian terdahulu adalah orang tua dan kader Kesehatan atau dari segi aspek social saja (Sharma et al., 2020; Suharto et al., 2020). The results of this expert study are expected to build a stunting prevention model that can be applied to improve community behaviour, especially in pre-prosperous families, to help reduce the incidence of stunting. This holistic and multidimensional based education does not only focus on nutrition issues but also other dimensions.

## CONCLUSIONS AND SUGGESTIONS

The research results are used to develop a stunting prevention model starting when women are pregnant, especially in underprivileged communities. The results of this consensus will become material in preparing educational modules to assist the community in changing behaviour towards a better direction.

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