



Implementing Precede-Proceed Model toward the Mothers' Perception on the Importance of Feeding of Home-Made Complementary Food to Wasting and Stunting Toddlers

FITRIANI^{1*}, TEUNGKU NIH FARISNI¹, VENI NELLA SYAHPUTRI²,
LILY ARSANTY LESTARY³ and SITI HELMYATI³

¹Department of Public Health Science, Faculty of Public Health
Universitas Teuku Umar, Meulaboh -23615, Indonesia.

¹Department of Public Health Science, Faculty of Public Health
Universitas Teuku Umar, Meulaboh -23615, Indonesia.

²Department of Public Administration, Faculty of Social and Politic Science
Universitas Teuku Umar, Meulaboh-23615, Indonesia.

³Department of Health Nutrition, Faculty of Medicine, Public Health and
Nursing Universitas Gadjah Mada, Yogyakarta - 55281, Indonesia.

Abstract

The aim of the study was to modify the *PRECEDE-PROCEED* models to use them as a basis for planning of weaning food interventions for home-made weaning food on wasting and stunting toddlers. This study used the method of an observational cross sectional with one group pretest posttest design. The total population in this study was 1,520 toddlers under two years old. The samples in this study were 63 mothers. The data collection was done through distributing the questionnaire to the mothers. Then, the data analysis was using a sample t-paired test. The results of the study show that the application of the *PRECEDE-PROCEED* models included knowledge ($p=0.03$), attitudes ($p=0.01$), actions ($p=0.005$), family support ($p=0.004$), health worker supports ($p=0.004$), and cultural support ($p=0.0001$). Thus, it can be concluded that there is the increase in the respondents' knowledge, attitude, actions, family support, health worker supports, and cultural support after the implementation of *PRECEDE-PROCEED* models in concern to the importance of weaning food providence.



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CONTACT Fitriani ✉ teungkunihfarisni@utu.ac.id 📍 Department of Public Health Science, Faculty of Public Health Universitas Teuku Umar, Meulaboh -23615, Indonesia.



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Introduction

The effort to increase the nutritional status in children 0-24 months old can be done by upgrading the public attitudes in feeding weaning food to children. It is an inseparable premise from the holistic efforts to improve nutrition. However, there is still amounts of limited knowledge regarding how to feed infants—especially toddlers. Even worse, some mothers can give food which can be detrimental to their children's health. This condition—directly or indirectly—can manifest as the key factor in malnutrition in children, especially in the age range under 2 years.¹

An effort that can be carried on as a solution to reduce nutritional cases is through community movements in the form of nutrition-conscious mothers program. This starts from nutritious, diverse and balanced food consumption patterns and special attention to sanitation and environmental health.² Improvements in the nutritional status of children under two years old can be achieved through the provision of weaning food containing proper nutrients which is given to infants or children aged 6-24 month (under two-year-old babies). Weaning food is a food transition from breast milk to family food. It is given through some certain stages according to the age of the child, starting from pulverized texture, moist texture, and by and by it is served in the regular family texture until the child becomes accustomed to family food. This is also a means for shaping the eating pattern so that it forms future eating habits.^{3,4}

In general, there are two types of weaning food. First, it is the food which is the result of processing factories or commercial complementary food, and the other one is the weaning food that is processed at home named home-made weaning food. Indonesian Health Department recommends giving weaning food that can be obtained from cheap and easily processed commodities available in the local area.⁶ This kind of weaning food has a positive impact, including improving maternal skills and knowledge in designing foodstuffs, increasing health care-line activities, increasing community income, and becoming a means of education or nutrition counseling. In recent years, developing countries have carried out campaigns related to the preferences toward homemade weaning food rather than buying ready-made weaning food, especially for low-income families.⁷

Globally, the problem that occurs is the lack of awareness and knowledge of mothers in processing homemade weaning food which are available in abundant commodities and sources around the neighborhood. Therefore, the role of the mother in giving home-made weaning food is profoundly significant,⁹ so it is necessary to empower the community with the aim of mothers with toddlers under two years old to always be selective and creative in making homemade weaning food.⁸ Meanwhile in Indonesia, educational and organizational background is the primary cause of nutritional problems. It covers 3 important phases, they are predisposing, reinforcing, and enabling. The similar case also applies to the local area where this study was conducted. Hence, based on the elaborations above, the authors are interested in studying scientifically the *PRECEDE-PROCEED* model as the basic guidance in giving the home-made weaning food to children under two years old who are suffered from wasting and stunting in the West Aceh Regency, Indonesia.

Health behavior is influenced by individual factors and the environment. Therefore it has two different parts, namely the First *PRECEDE* (Predisposing, Reinforcing, Enabling, Constructs in, Educational/ Ecological, Diagnosis, Evaluation) and *PROCEED* (Policy, Regulatory, Organizational, Constructs in, Educational, Environmental, Development). One of the best for planning, implementing and evaluating health promotion programs is the *PRECEDE-PROCEED* model. *Precede* part of the phase (1- 4) focuses on program planning, and the *Proceed* phase section (5-8) focuses on implementation and evaluation.¹⁰ Eight phases of the model guide in creating health promotion programs, starting with more general moving to more specific results. Gradually, the process leads to the creation of a program, program distribution, and program evaluation.¹¹

To be more specific, complementary food is an additional food given to babies since a baby aged 6 to 24 months old. So, in addition to complementary food for breast milk, breast milk must also be given to infants at least until the age of 24 months. The role of complementary food is not to replace breast milk but only to supplement breast milk so in this case complementary breast milk is different from weaning

food given when babies no longer consume breast milk after they reach 2 years old.¹² Complementary food is additional food given to babies after the age of 6 months. If complementary food for breast milk is given too early (before the age of 6 months), it will reduce the consumption of breast milk and the baby can experience indigestion. On the other hand, if complementary breastfeeding food is given too late it will cause the baby to be malnourished once it occurs in a long time. Complementary food standards must be considered seriously concerning to the number of nutritional adequacy recommended by the age group and food texture according to the baby's age development.⁵

In providing complementary food, the food should meet the criteria that it is suitable for eating, it does not cause disease, and it is healthy.⁵ Other additional criteria are including: 1. It is well-cooked; 2. It is free from contamination when storing and serving the food until consumed by the baby; 3. It is free from physical changes, hazardous chemistry, influence of enzymes, microbial activity, rodents, insects, parasites, and damage due to pressure, cooking and drying; 4. It is free from microorganisms and parasites that cause food-borne diseases; 5. It must contain enough calories and vitamins; and 6. It has to be easy to digest by infant digestion. Concerning the home-made complementary food, it is made at home from the ingredients that are often found around the house so that the price is affordable. In 2005, UNICEF recommended giving complementary food ingredients which are derived from local ingredients.¹³ Home-made complementary food has the same nutritional content and is more economical than that of factory-made complementary food. A mother must pay attention to the variety and texture of food made according to the child's ability to get accustomed to the eating pattern.

In preparing the complementary food for babies, it is very important to pay attention to baby-safe food ingredients and how to mix these ingredients. The mixture of MP-ASI ingredients consists of two types, namely basic mix and double mix. Basic mix consists of cereals, peanuts, and beans. This mixture does not meet the complete nutrition so that it still requires additional nutrients such as vitamins and minerals. While double mix or multi mix consists of four groups of foodstuffs such as carbohydrate, protein, vitamins

and minerals, and fat. The staple food is the main food ingredient and is a source of carbohydrates, more preferably cereals or rice. Then, vegetable and animal protein is also good nutrients which can be obtained from beef, chicken, fish, eggs and nuts. Then, source of vitamins and minerals in the form of colored vegetables and fruits, especially green and orange fruits. And last, it is additional energy from fat, oil, and sugar.¹⁴ A double mixture can be also provided in the food square. In food squares, breast milk is positioned in the middle of a rectangle precisely because it is the most complete food for babies.¹⁵ In each corner of the quadrilateral is placed staple food, protein, vitamins, and this can act as a complete meal for the baby.

Materials and Methods

This study carried out the quantitative approach with one group pretest posttest design. The whole population in this study was 725 mothers who have toddlers under two years old in the area of *Meureubo* and *Johan Pahlawan*, West Aceh, Indonesia. These two areas are considered as the location of this study because they have the highest stunting children percentage. After implementing both inclusion and exclusion criteria, the samples chosen for the study were 63 mothers who have two-year-old toddler(s). These mother met the inclusive criteria which are that the mothers are residents of the areas; they agreed to follow the procedures, and they were willing to sign the agreement. Meanwhile others are not able to fulfill these criteria and they were taken into the exclusive criteria and did not participate in this study. The dependent variable in this study is feeding the home-made weaning food, meanwhile the independent variable is *PRECEDE-PROCEED* model which consist of the following stages, they are: predisposing (knowledge, attitude, and action), enabling (family and health workers supports), and reinforcing (cultural supports). The samples were treated using the *PRECEDE-PROCEED* model in order to increase their perception toward the feeding of weaning food to their toddlers. So that, initially the pretest was administered on March 18th, 2019. Later, the intervention was done using *PRECEDE-PROCEED* model during 3 months; besides, the supervisions were also given fortnightly. Afterward, the post-test was administered on June 3rd, 2019. Finally, the data obtained from the pretest and the post-test were analyzed using t-paired sample test.

Just to mention, this study does not work on the feeding process for the stunting children, rather on giving the educational programs for the mothers who have stunting children using the *PRECEDE-PROCEED* model.

The respondents' characteristics which are considered are concerning to age, educational background, and income. In analyzing the data, this research used paired sample t-test to see the difference between proceed and preceed that have been given to the respondents. In average, the respondents aged between 32.1 ± 7.1 years old; their average educational background is high-school; and their average income is below regional minimum wage. The average score of knowledge, attitudes,

actions, family support, health worker support, and cultural support during the pre-test and post-test increased after the intervention with *PRECEDE-PROCEED* models.

Results

Test results of the sample t-paired test obtained the value of the statistical test p-value ($0.001 < 0.05$), there were differences in the use of the *PRECEDE-PROCEED* models before and after the administration of home-made complementary food in West Aceh District.

The average increase is clearly shown in the table below.

Table 1: Average Distribution of Each variable

Variable	N	Pre-test	Post-test	P-Value
Knowledge	63	5.9±1.231	8.21±1.472	0.003
Attitude	63	4.6±1.023	6.81±327	0.01
Action	63	5.4±1.023	7.2±1.521	0.005
Family support	63	6.1±1.467	7.91±582	0.004
Health workers support	63	6.5±1.467	7.91±582	0.004
Cultural support	63	5.9±1.167	8.7±1.631	0.0001

The table shows that, first, there is a difference in the average knowledge before and after applying the *PRECEDE-PROCEED* model obtained within p-value 0.003 at $n = 63$. The results of this study illustrate that the mothers of children under two years old have poor knowledge before the implementation of the *PRECEDE-PROCEED* model. After the implementation of the precede-procedural model, the knowledge of the mothers experienced a significant increase. The average addition of knowledge scores is 2.31 ± 0.24 . Knowledge of nutrition of the mothers is very influential on the provision of home-made complementary food in toddlers who are suffered from wasting and stunting. This finding is supported by Folasade *et al.*, as they suggest that there is significant influence between mothers' knowledge and educational background and the provision of the provision of home-made complementary food. It is not only limited to the knowledge but also to practice. Low knowledge manifests in poor practice of preparing complementary food for their children.^{16,17}

Second, there are differences in attitude averages before and after and after applying the *PRECEDE-PROCEED* model obtained in p-value 0.01 at $n = 63$. The attitude of the mother is a very important domain for giving home-made complementary food. This research is in line with research suggesting that a person's attitude is related to giving baby's complementary food. Specific attitudes that can influence behavior are social attitudes expressed in a repetitive manner in activities that are commonly called habits. Then, motive drives the desires which originate from within. Values in a person are subjective norms while driving forces and restraining power is in the form of advice or information from other people. These motives then become the practice of preparing proper complementary food for their babies.¹⁸

Third, there is a difference in the average of actions before and after applying the *PRECEDE-PROCEED* model obtained in p-value 0.005 at $n = 63$. This

study describes the actions the mothers about home-made complementary food increased with the addition of a score of 1.8 ± 0.429 . the result is supported by other similar research suggesting that actions or practices have a profound effect on the administration of complementary food. An attitude does not automatically manifest in an action. In order an attitude to be a real act, supporting factors or conditions that are possible include facilities are necessary. Besides the facilities factor, a support factor from other parties is needed in realizing the action or practice.¹⁹ Besides, There is a requirement for medical services to encourage the home-made weaning food preparation practice, family mediations and supports, and general wellbeing instruction to advance ideal weaning food provision, particularly for less educated mothers.²⁰

Fourth, there are differences in the average family support before and after and after applying the *PRECEDE-PROCEED* model obtained in p-value 0.004 at n = 63. The results of this study illustrate that there is an increase in family support after applying the *PRECEDE-PROCEED* application with the addition of an average family support score of 1.8 ± 0.11 . Family support is a form of interpersonal relationship that protects a person from bad stressful effects.²¹ Family support is an attitude, an act of family acceptance of family members, in the form of informational support, assessment support, instrumental support and emotional support.^{22, 23} So family support is a form of interpersonal relations that includes attitudes, actions and acceptance of family members, so that family members feel someone is paying attention. Family social support refers to social supports that are seen by family members as something that can be accessed or held for families who are always ready to provide help and assistance if needed.²⁴ This is supported by a research that suggests that there is a relationship between family support and the provision of complementary food. Family support is considered as a vital aspect in practicing complementary food for babies. This has been found very limited in many countries. Mostly, the mothers are misleadingly directed by other family members who also have lack knowledge about nutrition in complementary food. Furthermore, the inadequate knowledge and misperceptions among older persons in the family, especially mothers or mother-in-law. This can lead

to serious problem because the elderly are usually the ones who influences and leads child feeding practices in the family.^{25, 26}

Fifth, there is a difference in the average health worker support before and after applying the *PRECEDE-PROCEED* model obtained in p-value 0.004 at n = 63. The results of this study illustrate that there is an increase in the average health worker support after applying home-made complementary food with the addition of a support from health worker is 2.2 ± 0.4 . Health worker support gives physical and psychological comfort, attention, appreciation, and other forms of assistance received by individuals from health workers. The support of health workers can be in the form of emotional support, appreciation, instrumental, and information. Health workers are sources of social support from other individuals who very rarely provide support and have a very fast-changing role. Support for mothers is an important factor in giving complementary food. The help of health workers is significant before birth, yet in addition after conveyance in puerperal stage around about a month and a half after birth. The job of health workers since they can share basic information about breastfeeding as well as the complementary food during breastfeeding. The mother will increase her awareness understand that both are useful for her infant.²⁷

Last, there are differences in cultural support averages before and after and after applying the *PRECEDE-PROCEED* model obtained in p-value 0,0001 at n = 63. The results of this study illustrate that there is an increase in cultural support scores after the application of precede procedural models to the provision of home-made complementary food with the addition of a score of 2.8 ± 0.464 . Culture is a way of life that develops and is shared by a group of people and passed down from generation to generation. Culture is formed from many complex elements, including religious and political systems, customs, languages, tools, clothing style, buildings, and works of art. The portrayal of the cultural belief on breastfeeding and complementary feeding practice will be a significant advance in encouraging the plan of intercessions to increase the provision of well-fulfilled food for babies.²⁸ Social practices and cultural belief impacted on complementary feeding practice for children under 2 years old. The impacts

sustaining this process were the statistic attributes from level of training of caregiver, the weight of burden of the caregivers. The social elements were the convictions related with specific food, sustenance taboos/restrictions.²⁹

Conclusion

Based on the results shown above, there are three conclusions that can be drawn. Initially, knowledge and understanding of the mothers, attitude, actions, family support, health worker supports, and cultural supports about stunting and home-made weaning food did grow better after the experimentation process using the *PRECEDE-PROCEED* model application. Later, the mentioned variables concerning to knowledge, attitude, actions, family support, health worker supports, and cultural supports towards stunting and home-made weaning food are vital to mothers and to workers at integrated healthcare service in preventing stunting in toddlers.

Lastly, home-made weaning food can also be used as a viable effort to support the family economy.

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Conflict of Interest

This topic has no conflict of interest.

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