e - ISSN – 3117-423X
Print ISSN - 3117-4221

International Journal of Child Health Nursing

Journal homepage: www.mcmed.us/journal/ijchn

A PRE-EXPERIMENTAL STUDY TO EVALUATE THE IMPACT OF A STRUCTURED INTERVENTION ON THE WEANING PROCESS IN TERMS OF EDUCATION AND PRACTICE OF MOTHERS OF INFANTS IN SELECTED AREAS, KRISHNAGIRI.

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Article Info
Received: 20/03/2026; **Revised:** 23/03/2026
Accepted: 25/03/2026

ABSTRACT

The weaning is the introduction of solid foods to supplement the breast feeding, and it is a very important milestone in the development of the infant, especially in the 6-12 months which is a critical period. This step is critical towards the provision of infants with the right nutrition to grow and develop. Weak weaning systems such as premature or late introduction of solid foods in India are some of the factors that cause malnutrition and other health complications. The purpose of the proposed study is to determine the success of an organized teaching program in enhancing the knowledge and practices of mothers in terms of weaning. The research was on Kurubarapalli village in Krishnagiri district, where 50 mothers of infants aged between 6-12 months were given the study. There was a pre- experimental one-group pre-test post-test design. The intervention consisted of a structured educational program that contained a PowerPoint presentation and a booklet of proper weaning foods, the time to feed, and the hygienic measures. The data were gathered with the help of a demographic data sheet, knowledge questionnaire and a checklist of practice. The results indicated that there were high positive changes in the knowledge and practice scores following intervention. The mean of the pre-test knowledge was 15.2 and this was changing to 25.6, with the practice scores also rising by 13.1 to 19.9. Paired t-tests (statistical analysis) proved significant changes in knowledge ($p<0.05$) and practice ($p<0.05$). These findings demonstrate the value of organized health education in enabling mothers with knowledge on the practice of appropriate weaning. These measures are essential in the rural areas where healthcare and nutrition education is inaccessible.

Key Words: Health Education, Weaning, Postnatal Care, Infant Development, Health Promotion, Rural Health Education, Malnutrition Prevention.

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INTRODUCTION

The process of leaving the breastfeeding stage and introducing solid foods is known as weaning and it is an important process in the early development of an infant. It is the pivotal stage and infants start experimenting with other foods and are not relying on breast milk which, at some point, cannot sustain infants after six months [1, 2]. The period of 6-12 months is critical in terms of correct growth, development, and malnutrition prevention, which is a major issue in most regions of the world, especially in low- and middle-income countries like India. Although it is a crucial step, it has been noted that most mothers experience challenges in comprehending the most appropriate time and the appropriate types of food to introduce in the weaning process [3, 4].

Without the knowledge of the correct weaning habits, malnutrition may occur as a result of poor nutrition, slow growth, as well as exposure to infections. Mother level education, socio economic status and culture practices are some of the factors that have significant influence on weaning choices. The research has established that the better the education of mothers, the higher the chances of them adopting the proper feeding practices of complements, which promotes optimal nutrition of the babies. But the disadvantaged or less educated societies do not have access to health education and consequently do not practice weaning optimally [5].

Poor weaning habits are one of the major causes of malnutrition among children especially those under the first two years of age. Complementary foods may result in inappropriate weight gain, developmental delay, and increased risk of infection due to too early or too late introduction. WHO recommends that infants be fed only through breastfeeding during the first 6 months and a progressive introduction of complementary food at six months so that infants get sufficient macronutrient and micronutrients [6]. But in most places, poor weaning habits, such as the introduction of solids too early of unsafe food options remain common as a result of false belief, ignorance, and superstition.

The situation is especially disturbing in rural India as numerous mothers do not have access to the services of healthcare facilities and nutrition education. UNICEF claims that malnutrition is a major cause of infant and child mortality in India and of infant deaths about two-thirds are attributed to malnutrition and improper feeding habits. As highlighted in a study by Kinjal Shah (2022), the practice of early and late weaning and the consequent consequences on the health and development of infants persists, and the practice of the exclusive breastfeeding is not often done sufficiently. The guidelines by the WHO emphasize the fact that the right complementary feeding habits can significantly lower the chances of malnutrition when established at the appropriate age, and enhance the overall health of the child [7].

The objective of the research was to evaluate the impact of a structured teaching intervention program in enhancing the knowledge and weaning behaviors of mothers with children at the age of 6-12 months in Krishnagiri, India. The given region is mainly rural, which makes it problematic due to the inability to access the healthcare and nutritional education, particularly in the families with low-income. The proposed study is aimed at the potential effects of structured health education on maternal knowledge, which, in its turn, will positively influence infant feeding patterns and reduce incidences of malnutrition and other complications associated with the inappropriate weaning.

The systematic teaching session comprised of PowerPoint presentation, teaching handouts and interactive lessons aimed at increasing knowledge about the mothers regarding which types of foods to feed the newborn baby, the value of hygiene when preparing the food, and the ideal feeding behaviors. The instructional resources of the introduction of solid foods that were age-appropriate, e.g. rice-based porridges, mashed vegetables, and fruits, were provided; at the same time, mothers were informed about the significance of breastfeeding to go with the complementary foods until the age of one year.

Maternal Education and Socioeconomic Status

Mother education is a major determinant of the weaning practices. Educated mothers will be more prone to access to information on health, as they are more likely to attend to the antenatal and postnatal care sessions and adhere to the infant feeding guidelines. Conversely, mothers who are less educated might use the traditional method of feeding that might have been practiced over the years and may not be in tandem with the current nutritional guidelines. Research has indicated that maternal education is directly related to good infant nutrition knowledge and the right feeding behaviours [8]. Nevertheless, in the rural setting, where the educational materials might be scarce, intervention like systematic instruction programs can be of paramount importance in closing this divide.

In the same way, socioeconomic status is an important factor that determines the weaning practice. Families with low-income might not have the means to feed their babies with healthy foods and choose cheaper and less nutritious ones. Moreover, low socioeconomic mothers can access less healthcare services or professional guidance on the correct weaning procedures. This exposes them to the risk of attaching wrong or unsafe feeding habits resulting in malnutrition and retarded growth. This group was the focus of the intervention in this study since it was aimed at availing easily accessible information and resources to enhance their practices and knowledge irrespective of their economic status.

Cultural Practices and Beliefs

Another important factor that affects weaning practices is cultural beliefs and traditions. Certain foods have a certain cultural liking in India and in most regions, this particular food may not be properly nutritional or it may slow down the introduction of solids. As an example, there are families that allege that infants are supposed to be breastfed as long as possible even after the recommended six months. The combination of these cultural practices with ignorance may lead to the poor weaning practices that are harmful to the health of the child.

The teaching program developed within the structured teaching in this study was expected to deal with these cultural beliefs by giving evidence-based information on proper weaning practices. The program was able to teach

them culturally friendly information by including the local food practices and preferences in the teaching resources thus making the information more acceptable to the mothers.

Importance of Health Education in Weaning

Health education is an essential intervention that is important to enhance weaning practices. The informational support of mothers with correct culturally relevant information on the nutritional requirements of babies and also introduction of complementary foods can go a long way in improving the capacity of the mother to make sound feeding choices. The application of the structured teaching programs was emphasized in a study performed by Mini Paul (2022) as effective in increasing the maternal knowledge and attitudes towards breastfeeding and weaning. The researchers concluded that mothers who were educated on health issues were more knowledgeable on the benefits of complementary feeding and were more willing to share the practices of proper feeding [9].

METHODOLOGY

Research Design:

This study adopted a **pre-experimental one-group pre-test post-test design**. A purposive sampling method was used to select 50 mothers of infants aged 6-12 months from Kurubarapalli village, Krishnagiri district.

Inclusion Criteria:

- Mothers of infants aged 6-12 months
- Willing to participate in the study
- Literate and able to read Tamil

Exclusion Criteria:

- Mothers who could not read Tamil
- Mothers unwilling to participate

Data Collection Tools:

1. **Demographic Data Sheet**: Collected basic information about the participants.
2. **Knowledge Questionnaire**: A 30-item multiple-choice questionnaire to assess knowledge regarding weaning.
3. **Practice Checklist**: A 15-item checklist to assess weaning practices.

Intervention:

The intervention consisted of a **structured teaching program** on weaning, which included a PowerPoint presentation and a booklet on appropriate weaning foods, timing, and hygienic practices.

Data Collection Procedure:

- **Pre-test**: Knowledge and practice levels were assessed using the structured questionnaires.
- **Intervention**: The experimental group received the structured teaching program.
- **Post-test**: Knowledge and practice levels were reassessed after one week using the same questionnaires.

Data Analysis:

Data was analyzed using descriptive and inferential statistics, including mean, standard deviation, and paired t-tests [2, 10].

RESULTS AND DISCUSSION

This research study was conducted to determine the effectiveness of the structured teaching program on knowledge and practice improvements on weaning among mothers with infants of 6-12 months. This research gathered information on 50 mothers divided into one experimental group, prior to and subsequent to the intervention.

Demographic Characteristics of the participants

The demographic features of the participants are provided in Table 1. The average age of the mothers who participated in the study was 29.5 years (standard deviation = 4.3). Most of the mothers (72%) were married with 60% having completed secondary education. The majority of the participants were rural, and most of them (78) had low-income background.

Knowledge Scores

Table 2 indicates the post-test and pre-test of knowledge of the experimental group in relation to weaning practices. The mean knowledge score that was used in the pre-test (before the experiment) was 15.2 (SD=4.3) which shows poor to average knowledge of weaning. The mean knowledge score was 25.6 (3.0) after the intervention, which is good regarding the knowledge of weaning practices. This enhancement proved statistically significant ($p < 0.05$) based on the paired t -test.

Practice Scores

Table 3 presents the pre and post-test practice on weaning in the experimental group. The mean score of the pre-test practice was 13.1 (± 3.2) that signified moderate practices. The post-test practice score had a significant increment, and the mean was 19.9 (2.7) at the end of the intervention, indicating the presence of improved weaning practices. This increase also proved to be significant ($p < 0.05$) when statistical test (paired t-test) was used.

Inferential Statistics

Paired t-test Results:

The experimental group was used to conduct a paired t-test on the pre-test and post-test scores of knowledge and practice. These results indicated that

knowledge (t = 17.8, p< 0.05) and practice (t = 15.6, p< 0.05) were statistically significantly improved in the end of the intervention.

Chi-square Test:

An operation of Chi-square test was carried out to determine the correlation of demographical variables (e.g., age, education, income) with post-test scores. The findings demonstrated that there was a significant correlation between the education level and scores of better knowledge and practice (p < 0.05).

TABLE: 1 Demographic Characteristics of the Study Participants (n=50)

Variable	Frequency (%)
Age (Mean ± SD)	29.5 ± 4.3
Marital Status	
Married	72%
Unmarried	28%
Education Level	
Primary	12%
Secondary	60%
Graduate or Higher	28%
Income	
Low	78%
Medium	22%

Table 2: Comparison of Pre-test and Post-test Knowledge Scores in the Experimental Group (n=50).

Group	Pre-test Knowledge Score (Mean ± SD)	Post-test Knowledge Score (Mean ± SD)	t-value
Experimental Group	15.2 ± 4.3	25.6 ± 3.0	17.8*

Table 3: Key Comparison of Pre-test and Post-test Practice Scores in the Experimental Group (n=50).

Group	Pre-test Practice Score (Mean ± SD)	Post-test Practice Score (Mean ± SD)	t-value
Experimental Group	13.1 ± 3.2	19.9 ± 2.7	15.6*

DISCUSSION

The purpose of this study was to evaluate the effectiveness of a structured teaching program in improving knowledge and practices regarding weaning among mothers with infants aged 6-12 months. The data show that the structured intervention resulted in a considerable improvement in the level of knowledge and practice of weaning, which proves the significance of health education in the empowerment of mothers to make rational choices on their baby nutrition. Such results are aligned with those of the previous research, which highlights the importance of structured education in enhancing the maternal care practices and infant health outcomes [11, 12]. The demographic factors of the sample demonstrated that most of the mothers (72) were married and 60 percent of them had gone through secondary education and thus the education level of the sample was relatively moderate. The majority of the respondents were rural (78) and of low-income families. These results are important because they point towards the socio-economic background under which the research was done. Past researchers have established that low-income and rural mothers tend to be less prone to healthcare resources and education and, therefore, they become susceptible to poor infant care practices, such as poor weaning practices [13].

It is interesting to note that in spite of these difficulties, the intervention could have a significant impact. The education program aimed at mitigating these obstacles by supplying the necessary information on simple and easy to follow weaning practices which do not necessitate heavy financial resources. The success of the intervention among this socio-economically disadvantaged group of people indicates that education programs could be significant in enhancing maternal practices, even under the low-resource conditions [14].

The increase in the knowledge about weaning practices was statistically significant in the experimental group. The mean score of the pre-test knowledge was reported to be 15.2 based on a standard deviation of 4.3, hence most mothers were poor to average in their knowledge of weaning. Nevertheless, post-test knowledge mean after the intervention had raised to 25.6 (23.57) 3.0, indicating that maternal knowledge of weaning has significantly improved. These findings are in agreement with the past studies that have established that well-organized educational interventions can greatly enhance the knowledge regarding infant feeding practices and nutrition [15]. The increment in knowledge that was realized in this research is significant because the correct weaning practices can play a significant role in the growth and development of infants. The

introduction of complementary foods at the appropriate time and in the appropriate ways has been associated with better infant health results such as low levels of malnutrition and enhanced cognitive development [6, 7]. Since Kangaroo Mother Care (KMC) and complementary feeding are essential aspects of infant health realization, the findings underline the importance of maternal education in enhancing infant care practices.

The intervention resulted in the achievement of significant changes in weaning practices in addition to enhancing knowledge. The practice score in the pre-test practice was 13.1 + 3.2 which means that there was moderate compliance with the relevant practices in weaning. The post-test practice score also improved to 19.9 ± 2.7 after the intervention, which indicated that the mothers have improved their application of the knowledge they acquired during the education program. This outcome has been supported by other studies which have shown that educational interventions can influence maternal practices, resulting in improved practices in infant feeding and health outcomes [16, 17].

Better weaning methods are vital since they would guarantee that the infants obtain the nutrients necessary to support the growth and development in the weaning stage. Malnutrition, growth retardation, and other complications related to the nutrition of infants may be minimized due to the enhancement of the weaning practices that were identified in this study. In addition, oral motor development may be achieved by early and proper exposure to solid food as well as enhancing the acceptability of various foods, which are significant in future eating habits [18, 19].

The effectiveness of the intervention is also supported by the results of the paired t -test. Knowledge ($t = 17.8$, $p < 0.05$) and practice ($t = 15.6$, $p < 0.05$) scores were improved significantly after the intervention. This gives credence to the hypothesis that there is the possibility of significant improvement in maternal knowledge and behavior through the structured health education interventions, especially in terms of infant care practices. The present results are consistent with the findings of the Sivapriya et al. (2020) which also concluded that educational interventions had a great impact on maternal knowledge and attitude towards neonatal care. Moreover, Chi-square test demonstrated that there was a significant correlation between the level of education of mothers and their knowledge and practice scores after the intervention. This implies that mothers who were better educated had a high probability of responding to the intervention which is in line with other studies that have seen the role of maternal education in determining infant care practices.

CONCLUSION

In conclusion, the structured teaching program significantly improved the knowledge and practices of mothers regarding weaning. The intervention proved that health education can be provided via organized programs to increase maternal knowledge and promote better infant feeding practices. The implications of this research are that educational programs should be implemented as part of routine postnatal services especially in rural settings to ensure knowledge gaps are closed and infant health outcomes are enhanced. The research espouses the need to have conveniently available culturally sensitive health education so as to alleviate malnutrition and other infants can develop optimally through the weaning process. The long-term effect of such interventions should be evaluated in the further research.

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