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A STUDY TO ASSESS THE EFFECTIVENESS WEANING OF SIM ON KNOWLEDGE REGARDINGWEANING WAS DEVELOPED FOR LACTATING MOTHERS WHOSE CHILDREN WERE IN THE AGE GROUP OF 6-12 MONTHS,IN SELECTED VILLAGES M.P.

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INTRODUCTION

"All children should have the basic nutrition they need to learn and grow and topursue their dreams, because in the end, nothing is more important than the health and well-being of our children"

The birth of a child is a significant event in any family. Health of the growing child is always a matter of great concern to the parents. Physical health of children is important because it is associated with mental and social development. Good nutrition plays an important role in promoting good physical health among children in order to build up healthy life. Nutritional status of infant will be based on breast feeding and weaning practices.[1]

The term weaning means "accustom to". Weaning is a gradual process of introducing supplementary foods, starting around the age of 6 months. During this baby should be supplemented by suitable foods rich in protein and other nutrients which called as "supplementary" foods. These include usually cow's milk, fruit juices, soft cooked rice, dhal, and vegetables.[2] Weaning should proceed gradually and be based on the infant's rate of growth and developmental skills. Weaning food should be carefully chosen to complement the nutritional need of an infant, promote appropriate nutrient intake, and maintain growth.[3]

Timely weaning is an important process in every child's life which has an impact on future health, growth and development. Weaning also marks development of some degree of independence in child. Weaning food should be adequate in nutrition, appropriate in consistency and given in sufficient quantity and hygienic. According to the WHO guidelines weaning should be started at 6 months of age alongwith breast feeding up to 2 years or more.[4]

During weaning the young child's diet changes from milk alone to regular family meals.[5] Weaning allows the infant to meet the changing nutritional needs and become less dependent to milk. Weaning is important for a growing child to meet the additional requirements of nutrients such as protein, vitamins, and minerals like iron and calcium. When the baby's sense of taste develops they will be more inclined towards new foods, taste and textures.[6]

The weaning period is the most crucial period of child development in which children are particularly exposed to the deleterious synergetic interaction of malnutrition and infection. Child may suffer from diarrhoea, obesity, under weight, allergy, and refusal to take food, chocking, regurgitation, vomiting, constipation and abdominal colic. These problems will hinder the growth and development of baby. Many of these problems arise during the period of weaning due to inadequate knowledge of mother and also due to faulty feeding practices.[7]

Throughout the feeding process, parents learn early to recognize their baby's sign of hunger and satiety and follow the baby's need. Babies have their own particular needs according to age and activity level, growth rate and metabolic efficiency. New born has a very small stomach holding only 1-2 fluid ounces but gradually takes more as the stomach capacity enlarges. The amount of increased intake during the first 6 months vary and reflect individual growth pattern.[8] The scientific basis for weaning is the requirement for energy, protein, fats, major minerals, iron, and other micro nutrients to satisfy normal growth and optimumhealth.[9]

The decision when and how to start weaning is a complex issue among the mothers and there are various factors influencing the process of weaning.

Understanding the decision making process, beliefs, knowledge, attitude, practices of weaning and factors influencing weaning is an important step prior to design interventional strategy to affect the change in behaviour.[4]

NEED FOR THE STUDY

Healthy children are an asset to future generation. Adequate physical, mental and social well being is the sign of good health. Infant mortality rate remains highest in India, and malnutrition remains one of the major causes. Faulty feeding practice and early weaning is associated with high infant mortality rate in India. Hence the mother's knowledge need to be assessed and they must be educated on variousaspects of child nutrition. One of the factors that determine the child's health is his growth and development throughout his life cycle. If it is promoted, we can have a happy contented life with healthy future generation.[10]

Weaning is one of the milestones of child's development process and it is very important for child's growth and development. Breast milk does not provide all the nutrients for growing baby's needs after 6 months, in particular iron and calories that solid foods provide. In fact solid food should be introduced during this period to meet baby's requirement through weaning process. Hence weaning provides nutritional balance for proper growth and development of the child. Improper weaning not only causes allergy, regurgitation, vomiting, diarrhoea, abdominal colic, but also causes of growth failure leading to kwashiorkor, marasmus and immunodeficiency among under five children.[2]

Protein energy malnutrition has been identified as a major health and nutritional problem in India. It occurs particularly during weaning in the first few years of life. It is common among under five children of low socio economic groups.

The major cause of child malnutrition is birth of low birth weight babies. Birth weight less than 2,500 gm is closely associated with poor growth not just in infancy but throughout the childhood. In India 51% of all children bellow five years of age are malnourished. It is estimated that 50-60% of children are malnourished by the age of two years due to lack of exclusive breast feeding and improper weaning practices.[6]

Each year 27 million children are born in India. About 10% of them do not survive up to 5 years of age. In absolute figures, India contributes to 25 % of the over

9.0 million under five deaths occurring worldwide every year. About 50% of the deaths in India are attributed to malnutrition alone and 50% children stunted in their growth. Contributing causes of

malnutrition includes infections, insufficient nutritional intake due to lack of knowledge regarding nutrition, and inadequate home care practices.[2]

A survey conducted, in Raichur Madhya Pradesh reported that there are 2062 boys and 2469 girls who suffer from severe malnutrition due to lack of knowledge on nutrition. Many children suffer from multi-vitamin deficiency, 75% infant suffers from iron deficiency, 45% suffer from vitamin A and iron deficiency. Due to malnutrition 1048 children died in 2009 in Raichur alone, it is exceeded to 1233 in 2010. The findings of third national family welfare survey reveal unacceptable prevalence of malnutrition in children. About 42% of under the age of five years are under weight, about 48% are stunted, and 19.8% are wasted. Average 3 children die every day due to malnutrition. There is no doubt that Raichur will become Somalia within few years, if this continues further. Emphasis is given to begin Bal Sanjivini Yojana in order to educate mothers regarding nutrition, to improve the health status ofchildren.[11]

Proper feeding and weaning practices have three focal levels, family, community and commercial. At the family level breast milk is sufficient till few months and till then supplementary foods should not be started. At the community level nutritional program should become an active part of primary health care and rural development system. Communities must be given tool and guidance to monitor the children's growth and nutrition and to produce and distribute appropriate supplementary foods to combat malnutrition.[12]

Weaning education to the mothers is very essential to provide knowledge regarding weaning and to promote healthy weaning practices. A study conducted on need of weaning education; among 12 developing countries suggest that it is possible even in poor communities to improve substantially the nutritional status of infants and young children by nutritional education, face to face communication by locally recruited workers. Reinforcement by radio and other mass media may be the most effective channel for weaning education. It is estimated that, through its effect on nutritional status, weaning education may reduce the diarrhoea mortality rate among children under 5 years of age by 2-12%.[13]

A study was conducted among 500 mothers having children 6-24 months, attending OPD in Basaweshwar and Sangameshwar teaching and general hospital Gulbarga to assess the knowledge regarding weaning. Data was collected using a semi structured questionnaire and the results revealed that mean age of weaning is 8.24±2.79 months. About 23% mothers started weaning at 6 months Parity, religion and occupation have no significant influence on weaning age. About 34.1% were under weight, 34.5% stunted and 23.8% muscle wasted. Mothers knowledge on weaning time is inadequate and practices inappropriate and needs education.[4]

India is the country of villages and about 70% of people live in villages and income level of village people is low. Studies in developing countries like India revealed that all these cases of malnutrition are to be found in household where there is no absolute shortage of food. The reason, why available food is not given to the child is that mother does not know how much food the child needs. Most of the mothers do not understand the importance of weaning foods and the pattern of weaning. During my community posting I come across the mothers who lacking knowledge regarding weaning and child nutrition. It was felt that supplementary feeding practices were non beneficial like delayed starting of supplementary foods, prolonged breast feeding, improper feeding practices and unhygienic food preparation. This inspired me to conduct a study to assess the knowledge of lactating mothers in selected villages and to educate them on weaning by self instructional module. [10]

SUMMARY

This chapter dealt with the Introduction, Need for study and Statement of problem.

OBJECTIVES

OBJECTIVES OF THE STUDY

1. To prepare self instructional module on weaning.

2. To determine the effectiveness of self instructional module in lactating mothers regarding weaning, in terms of gain in knowledge as measured by post test.

3. To find the association of pre-test knowledge scores with selected demographic variables.

OPERATIONAL DEFINITIONS

1. **Effectiveness:** In this study effectiveness refers to the knowledge gain on weaning as determined by significant difference in pre-test and post test knowledge scores.

2. **Self instructional module:** In this study it refers to the structured learning material which includes meaning, type of weaning foods, weaning process, preparation and storage of weaning foods, identification of problems associated with weaning, prevention and management of problems.

3. **Knowledge:** In this study knowledge refers to correct response obtained from mothers to the knowledge questions on weaning as measured by a structured knowledge questionnaire.

4. **Lactating mother**: In this study lactating mothers refers to mothers who have infants between 6-12 months age who started supplementary feeding.

5. **Weaning:** In this study weaning refers to the process of introducing supplementary foods along with breast milk at appropriate time under hygienicconditions to promote normal growth and development.

ASSUMPTIONS

1. Lactating mothers may have some knowledge regarding weaning and may be willing to express their knowledge.

2. The self instructional module may be effective in improving the knowledge of lactating mothers regarding weaning.

DELIMITATIONS

1. The study is limited to lactating mothers who have infants aged 6-12 months and residing in selected villages at the time of data collection.

2. The sample size is limited to 50 lactating mothers in selected villages.

RESEARCH HYPOTHESES

H_1: The mean post- test knowledge of lactating mothers regarding weaning will be significantly higher than mean pre-test knowledge scores at 0.05 level of significance.

H_2: There will be significant association between pre-test knowledge scores with selected demographic variables at 0.05 level of significance.

CONCEPTUAL FRAMEWORK

A theoretical framework is a collection of concepts whose inter relationship describes or explains phenomena that have not been proven. It communicates clearly the interpretation of various concepts[14].Conceptual framework is the theoretical approach to the study of problems that are scientifically based which emphasise the selection, arrangement and classification of its concepts. Conceptual framework states functional relationship between events and is not limited to statistical relationship.[15]

The present study aimed at evaluating the effectiveness of self instructional moduleon knowledge of lactating mothers regarding weaning.

The conceptual framework of the present study was developed by the investigator based on the **Imogene King's Goal Attainment Model**. The model focuses on interpersonal relationship of the mothers and the investigator. In which interaction takes place between the investigator and the mothers and is influenced by the perception of both. This interaction leads to mutual goal-setting that is to be achieved by the mother in terms of gain in knowledge.

Interaction

King defines interaction as "a process of perception and communication between person and environment and between persons and person, represented by verbal or non verbal behaviours that are goal directed"[16].

Each individual interaction brings different knowledge, needs, goals, past experiences and perceptions which influences the further interactions. In this study, the researcher and the subject

come together for an interaction a different set of perceptions to exchange.

Perception

According to King, it includes the important and transformation of energy and processing, storing and exporting information. Perception is action oriented in the present and based on the information that is available. Perception is a process in which data obtained through the senses and from memory are organized, interpreted and transformed.[16]

In this study researcher perceives the subjects and need for information regarding the knowledge on weaning after a structured knowledge questionnaire. Mutual goals were set to improve the knowledge of lactating mothers on weaning thereby preventing malnutrition among under fives.

Communication

King defines communication as "a process whereby information is given from one person to another either directly in face to face meeting or indirectly through television or written record. Communication is required to verify accuracy of perception for interaction and transaction."[16]In this study the researcher communicates to the subjects by providing a self instructional module on weaning.

Transaction

Each human being perceives the world as a total person in making transactions with individuals and things in environment. "Transaction represents a life situation in which perceiver and thing perceived are encountered; in which person enters the situation as an active participant and each is changed in the process of these experiences"[16]

In the study transaction between the subject and the self instructional module takes place. The subject perceives the need to improve the knowledge about weaning to save their children from threat of malnutrition. After a week subject knowledge on weaning was assessed by post test in order to find out the effectiveness of self instructional module. The goal is said to be achieved when there is an improvement inthe level of knowledge. When there is no improvement in knowledge go for feedback and process has to start from beginning.

SUMMARY

This chapter dealt with the objectives, operational definitions, assumptions, delimitations, Hypotheses and conceptual framework.

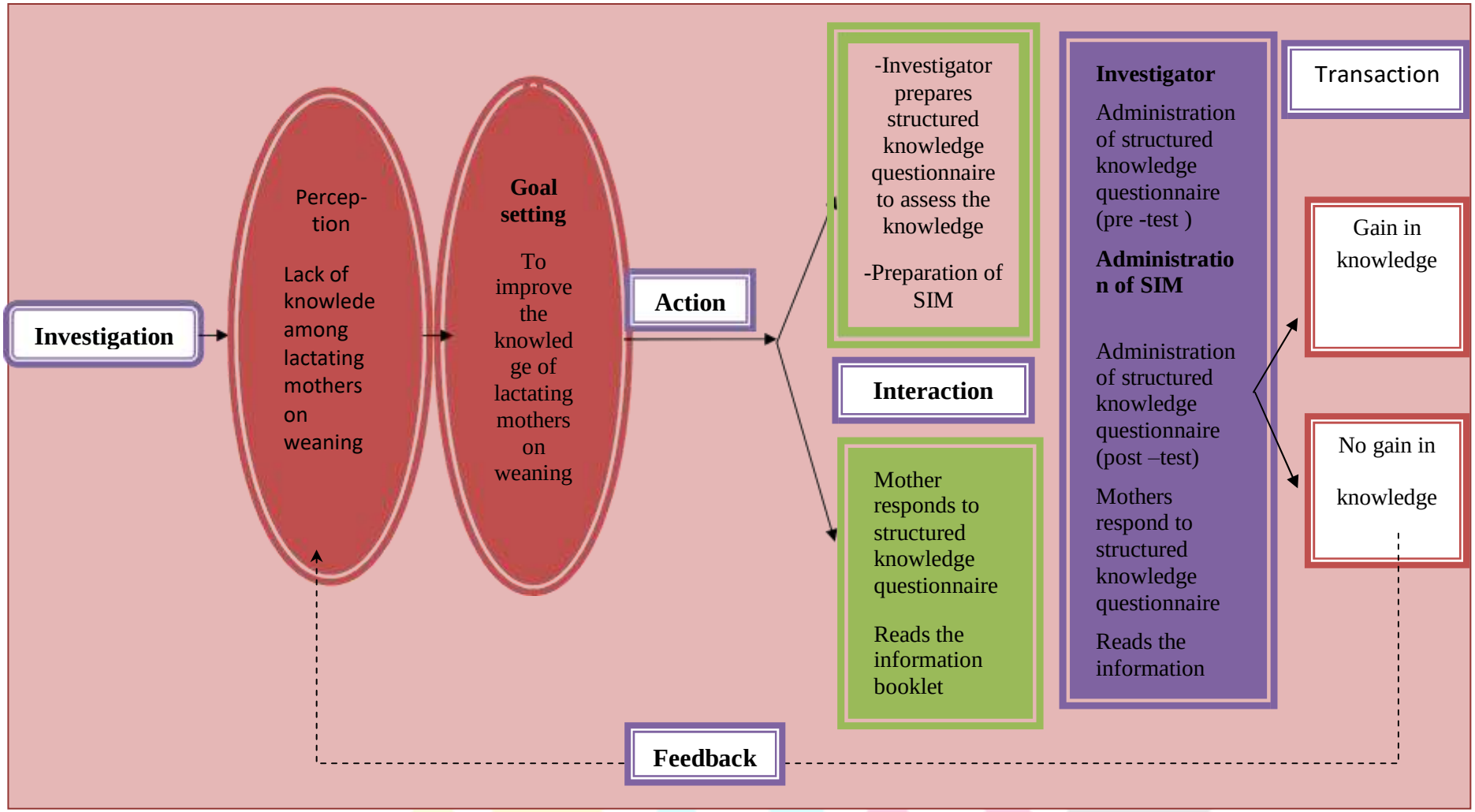

Fig 1: Conceptual framework based on Imogene King's Goal Attainment Model

3. REVIEW OF LITERATURE

Review of literature involves the systematic identification, location, scrutiny and survey of the written materials that contain information on research problem. It also refers to the activities involved in identifying and searching for information on a topic and developing a comprehensive picture of the state of knowledge on that topic.[17]

Review of literature is an essential task in the research process. It brings clarity and focus to the research problem, improves the methodology and broadens the knowledge base in the research area. Reviewing the literature helps to know what other researchers have found in regard to the same or similar questions, what theories have been put forward and what gap exist in the relevant body of knowledge.[18]

.In this study the **literature reviewed is presented under the followingheadings:**

- Reviews related to the prevalence of protein energy malnutrition among children.
- Reviews related to the knowledge of mothers regarding weaning.
- Reviews related to the effectiveness of self instructional module.
- Reviews related to timing and of type of weaning food
- Reviews related to knowledge of mothers regarding weaning in association with selected demographic variables.
- Reviews related to problems during weaning.

Reviews related to the prevalence of protein energy malnutrition among children

An exploratory study was conducted in Nigeria among children below 6 years to find the cause and effect of protein energy malnutrition. Protein energy malnutrition is still prevalent in Nigeria due to faulty weaning practices, poverty, poor sanitary conditions, minimal medical attention and endemic childhood infections. Study results revealed that insufficient food intake is one of the major causes of malnutrition and improper feeding practices such as non hygienic preparation of over diluted formula

which gives rise to early severe protein energy malnutrition. This study found that protein energy malnutrition was the second cause of death under six year's children.[19]

A comparative study was conducted by child and reproductive health group, Liverpool School, UK, to compare growth, morbidity incidence and risk factors for under nutrition in a poor rural Malawian community. A cohort of babies was enrolled at birth for follow-up to 12 months of age. Weight, length, morbidity and feeding patterns were recorded at 4 weekly intervals from birth to 52 weeks. Results revealed mean age of introduction of water was 2.5 months, complementary foods 3.4 months and solids 4.5 months. Over 40% of infants had received complementary foods by 2 months and 65% by 3 months. Infants with early complementary feeding had lower weight for age. Early complementary feeding was significantly associated with increased risk for respiratory infection and late complementary feeding was associated with reduced infant morbidity and improved growth.The study concluded that greater emphasis is required to improve complementary feeding practices.[20]

A standardized questionnaire was administered to 65 mothers attending the Nutrition Clinic of the Ahmadu Bellow University Kaduna, Northern Nigeria,

This study was designed toassess the weaning knowledge, attitudes, and practices. Here 55.4% introduced supplementary feeds to their babies between 4-6 months of life; 41.5% mothers introduced supplementary feeds when their children were between 7-9 months. The mean age of weaning was 17 months in this study. Even when protein is available, a child may be denied of protein because of socio cultural factors. The use of carbohydrate gruels among these low socioeconomic families coupled with socio cultural factors compounded the feeding problem, and consequently protein energy malnutrition was common during the weaning period. [21]

Reviews related to the knowledge of mothers regarding weaning

A descriptive study was conducted in rural community of Bangalore among 100 mothers of infants to assess the knowledge regarding weaning. Results revealed that mean knowledge score for weaning age was 17.34, for weaning food was 8.37 and care during weaning was 1.01. The study concluded that mothers of infants need more information on weaning.[6]

The study was conducted in Ilorin community, the capital of Kwara State of Nigeria to assess the knowledge regarding weaning among 516 mothers. Two hundred and twenty-eight mothers had commenced weaning by 3 months of age while 433 had done so by 6 months. Hunger, indicated by crying after a feed or demanding more frequent feeds, was the commonest reason for weaning. Fortification of food was positively influenced by a high family income and education. Diarrhea, associated with bottle feeding or cow-pea diet, was the major cause of morbidity reported during weaning among 55.8% infants. Ways of improving child health during the weaning period are suggested.[22]

A survey was carried out to investigate weaning practices in Kuwait among 2833 mothers of children less than three years old. The study revealed that 37.4% of the infants were weaned suddenly; the reasons for weaning were stated as: insufficient milk among 30.7%, new pregnancy among 14.7%, infant reaching weaning age among 12.3%, mothers' sickness among 12.0%, infant refusal among 10.6% and mothers' desire among 6.6% of samples. Study concluded that there is a need of nutritional education to the mother.[23]

A cross-sectional investigation was conducted in selected villages in Sonarpur Block of South 24-Parganas district of West Bengal was conducted from June 1, 1990, to July 31, 1990. About 57 breast feeding and weaning mothers were selected randomly. Although 52.6% of infants were offered sweet water and only 24.6% were offered breast milk as first feed, all 57 were put on breast milk within 24 hours of delivery. Maternal illness was primarily responsible for 8.8% of the infants being withdrawn from breast milk during the first 6 months of infancy.. Timely weaning, however, was neglected and offered to only 54.5% of infants. The introduction of artificial milk to young infants was culturally accepted and practiced in 35 cases. About 77.2% of these subjects received such milk before reaching 6 months of age. The study concluded that mothers of infants need more information on weaning.[24]

An infant feeding survey was carried out in 3 parishes in Cornwall County, Jamaica, in 1984, in an attempt to determine the feeding patterns of infants and beliefs of mothers About 41 Enumeration districts were randomly selected from 2 strata, urban and rural, out of which 614 households with children under 36 months of age The results showed that the infant formula was introduced very early, and only about 1/2 of the mothers introduced semi-solids and solids within a recommended time.

The most popular foods, identified as good foods, were also popular weaning foods. There is need for adequate training of both primary and secondary health-care staff, and reinforcement of nutrition messages by frontline health workers. [25]

A descriptive study was conducted in urban Baroda to assess the knowledge ofmothers regarding breast feeding and weaning. About 40 mothers were assessed usingpre-tested questionnaires. Results of the study revealed that half of the mother's breastfed their babies on the 1st day, breastfeeding was stopped when the child was 3- 6 months, and top feeding and solid supplements were introduced at 4-6 months. Mainly commercial baby foods were used for weaning. Most mothers avoid 'dals' for their children because it is believed to be difficult to digest and produce gas in the stomach. About 50% of mothers were not in favour of feeding a sick child with small frequent meals. This revealed inadequate knowledge of mothers regarding weaning. [26]

A descriptive study was conducted in 7 villages of Narayanganj district, Bangladesh among 242 mothers to assess their knowledge and attitude regarding breastfeeding and weaning using pre-tested questionnaires. Results revealed that most mothers did not have the correct knowledge about exclusive breastfeeding and the appropriate time for introduction of weaning foods; and only 3% of them knew how to prepare proper weaning foods. The mean score of knowledge score of the mothers was only 4±1.7 out of 10, indicating the need for nutrition education in this area.[27]

A descriptive study was conducted in outpatient department of Paediatrics in Moulana Bashani Medical hospital Uttara Dhaka to identify weaning knowledge of mothers and its related factors. Results of this study found that 59% mothers were found in high weaning knowledge category followed by 37% poor weaning knowledge category and 4% percent medium weaning knowledge category.

Literacy level, nutritional status of patient, economic status of family and startingtime of weaning food were significantly related with the weaning knowledge ofmothers. Study concluded that weaning knowledge of mothers was not up to the mark and it should be improved by the weaning education for the betterment of child s health.[28]

An exploratory qualitative study was done in Moretele district South Africa to determine the feeding and weaning practices, knowledge and attitudes towards nutrition of mothers /caregivers of

children up to 3 years old attending baby clinics. Qualitative data collection on six relevant nutrition topics was done using focus group interviews. The study found that breastfeeding was the choice feed and bottle feeding was only given when breastfeeding was impossible. Solid food was introduced early that is around 2-3 months and a mixed family diet at 7-9 months. Milk feeds were stopped completely from 18-24 months. The data analysis revealed that inadequate nutrition knowledge and adherence to cultural practices lead to poor-quality feeding practices.. Nutrition knowledge needs to be changed as a first step towards implementing improved feeding practices.[29]

Reviews related to the effectiveness of self instructional module:

A pre experimental study was conducted in two primary health centres of Udupi Taluk with a sample size of 50 mothers to assess the effectiveness of planned teaching program on knowledge about complementary feeding. The study showed that the mean post- test knowledge score was higher than mean pre-test knowledge score .The t-test computed to determine the significant difference of mean pre-test knowledge score of mothers on complementary feeding and selected variables like age of the youngest child in months, type of family and educational status.

This study also revealed that majority 80% expressed that planned teaching program was easy to understand. Hence the study found to be effective in meeting the objective.[30]

An intervention study was conducted to monitor weight gain in infants using a home based complementary food recipe and a hand blender under University of Kelaniya, Sri Lanka. Infants attending four child health welfare clinics in the Medical Officer of Health area were recruited at the age of 4 months. The intervention group received a specially designed hand blender, recipe and advice to prepare a weaning food. The control group received weaning foods without any intervention. They were followed up monthly up to the age of 12 months. Results revealed that infants in the intervention group gained significantly more weight than the control group. Study revealed that intervention was successful in improving knowledge of mothers there bypromoting weight gain in infants.[31]

A paper presented in Fortaleza, Brazil, described a methodology to design feasible interventions to improve weaning food hygiene practices of families living in extreme poverty. Combination of ethnographic, survey and observational methods, and integrating viewpoints and suggestions of

mothers and caretakers into the decision-making process were utilized. All initiated the advocated behaviors and most53-80% sustained the new behaviour sand practiced them every time during a one-month period. Of the four advocated behaviours, spoon-feeding was the most difficultto adopt wholly. The methodology was developed in response to the high priority given to reducing weaning food contamination for diarrhoeal disease control. This approach, recommended for future studies to design hygiene and other health education interventions in developing countries.[32]

Reviews related to timing and type of weaning food

A cross-sectional study was conducted on Complementary feeding patterns in a developing country under the University of Ottawa, Ontario, Canada, to analyse the timing and types of food introduced to infants. Study found that the majority of infants were introduced to solid foods at or after 4 months of age. A large number of infants were given liquids other than breast or formula milk earlier. Women in employment outside the home were almost twice as likely to introduce solid foods before age 4 months. The most common starting food was cereals. More than half the children consumed starchy foods and fruits every day, but not meats and fish. Study concluded that educational intervention is required for improving mother's knowledge[33]

Data from the Gates head Millennium Study was collected to define the range of ages at which infants reach out for and eat finger foods and related this to developmental status. Infants were recruited shortly after birth and followed those prospectively using postal questionnaires. Results revealed that of the 923 eligible children, 602 had data on when they first reached out for food, and 56% had done so before age 6 months, but 6% were still not reaching for food at age 8 months. For the 447 parents who completed a diary of the first five occasions when their child ate finger foods, the first finger food eaten was before age 6 months for 40% and before age 8 months for 90%; foods offered were mainly bread, rusks or biscuits. Baby-led weaning is probably feasible for a majority of infants, but could lead to nutritional problems for infants who are relatively developmentally delayed.[34]

A retrospective study was conducted to examine introduction of food during the first year in a representative sample of Swedish children. by deriving data.

Data was collected from 467 infants who visited child health centres in three different counties in

Sweden for health check-up at 12 months of age. The parents were asked to fill in a questionnaire. Results revealed that introduction of gluten-containing food were low; as many as 45% had avoided gluten until 6 mo of age, instead of introducing gluten between 4 and 6 months. Only 33% of parents with stated family hypersensitivity avoided giving their child fish and 23% avoided egg during the first year. Almost 50% of all mothers had avoided peanuts during pregnancy even though there was no such advice. Study concluded these results suggest that time of introduction of gluten was not in accordance with the current recommendation. The results imply that there is a need to follow up.[35]

A study was conducted at Monell Chemical Senses Centre; Philadelphia, USA to assess the acceptance of novel foods by formula-fed infants could be facilitated by providing the infants with a variety of flavours. The infants' acceptance of a novel vegetable specially puréed carrot and a novel meat, puréed chicken was evaluated after a 9-d exposure period in 3 groups of infants, some of whom had previously consumed fruit. During the home-exposure period, one group was fed only carrots, the target vegetable; a second group was fed only potatoes, a vegetable that differed in flavour from carrots; and a third group was fed a variety of vegetables that did not include carrots. Results concluded that infants fed either carrots or a variety of vegetables, but not those fed potatoes, ate significantly more of the carrots after the exposure period. Exposure to a variety of vegetables also facilitated the acceptance of the novel food, puréed chicken, and daily experience with fruit enhanced the infants' initial acceptance of carrots. Study concluded that findings are the first experimental evidence to indicate that exposure to a variety of flavours enhances acceptance of novel foods in human infants.[36]

A descriptive study was conducted in University of Milan, San Paolo Biomedical Institute, Italy to evaluate the opportunity to introduce fibre in the diet of weaning infants. Findings of the study revealed that whole cereals, non starchy vegetables, fruits, and legumes lower the caloric and protein density of meals, modulate nutrient and antigen absorption, and provide bulk material. They supply proteins of low biological value, minimal amounts of lipids, complex carbohydrates, and soluble fibre. Minerals, trace elements, and vitamins add to the value of fibre- containing foods in the diet. Study concluded that fibre-containing foods share unique characteristics with nutritional and metabolic implications for the weaning infant and daily intake of fibre should be gradually increased to 5 g/d during the second semesterof life.[37]

Reviews related to knowledge of mothers regarding weaning in association with selected demographic variables

A longitudinal study was conducted among South Indian infants of poor and middle class family. Children recruited for the study were between 6-22 weeks. Study revealed that at 22 weeks of age, 16% of the infants studied had been completely weaned from the breast and about 58% of the bottle-fed infants were initially given diluted cow's milk while 28% received diluted commercial milk substitute. Commercial weaning foods were preferred up to the 18th week; after that point, rice and rice products were provided. At 22 weeks, 50% of poor infants and 71% of middle-class infants were receiving food supplements. 72% of infants who had been completely weaned by 22 weeks were from middle class families and 28% were from poor families. There was no significant difference between poor and middle class families in terms of the duration of breastfeeding or mean caloric intake from artificial feeds.[38]

A study was conducted in Islamabad to examine the association between mother's education, complementary feeding practices and malnutrition amongst mothers attending outpatient clinics. About 500 mothers were pre-tested questionnaires on mother's educational status and complementary feeding practices. Results revealed positive relationship was found between the nutritional status of infants and educational status of mothers. The study revealed that the majority of infants with evidence of malnutrition belonged to the mothers with virtually no school education. A similar relationship was observed between the educational status of respondents and the introduction of complementary foods at an appropriate age that is 6 month. Study concluded that mother's education plays a vital role in increased receptivity to knowledge and awareness related to nutritional requirements of their infants[39].

A study was conducted to collected information on infant-feeding practices from birth on infants born to 279 mothers from 4 rural villages in Guatemala. They examined associations between maternal academic skills and indicators for the initiation of exclusive breastfeeding (EBF) and timely introduction of complementary foods. Mothers in the highest category of academic skills had greater odds of initiating EBF, but this association failed to remain significant after adjusting for schooling. Compared with mothers with <1 year of school, mothers with > 3 to <or= 6 years had greater odds of initiating EBF; mothers with > 6 years of school had greater odds of introducing CF early, while

mothers with >or= 1 to <or= 3 years had greater odds of introducing CF late. Unmeasured schooling-related factors influenced infant- feeding practices to a greater extent than academic skills.[40]

A comparative study was conducted in Brazil to assess the kind of complementary food provided at one year of life to children of adolescent mothersand adult mothers. A dual cohort was performed. This study consisted of 122 children born from adolescent mothers and 123 children born from adult mothers--full-term births, birth weight was 2,500 g or higher. When the children were one year old, the mothers were interviewed at home. The results were compared which revealed that meat intake by children of adolescent mothers was lower than that of children of adultmothers .With regard to egg intake, 11.5% vs. 19.5% of children of adolescentmothers and adult mothers did not eat egg but the results suggested that the egg intakeof children of adolescent mothers was higher. Study concluded that the complementary nutrition was similar, except for a lower intake of meat and a higher intake of eggs among the children of adolescent mothers.[41]

Study was conducted in Nigeria to identify the influence of mother's occupation and education on weaning in infants .Women in the study were aged 15-44years and had children aged 6-31 months. A pre-tested and validated standard questionnaire was used to collect data from 100 healthy randomly-selected mothers who regularly visited the post-natal health clinics in Makurdi. Study revealed that about 59% did not have more than a primary education. 12% had paid employment. Early weaning at 1 week to 4 months was predominant among 90% of women with a college education or secondary education 95% and. only 18%, of which many were college educated, introduced legumes as a first food. Many who did not feed their infants fruits or vegetables had no education or under a secondary school education. The result showed that occupation and education influenced the nutritional quality and the type of weaning food fed.[42]

Reviews related to problems associated with weaning

A study was conducted in UK to assess the independent effects of solids on the risk of hospitalization for infection in term, singleton infants in the Millennium Cohort Study .The monthly risk of hospitalization was not significantly higher in those who had received solids compared with those not on solids, and the risk did not vary significantly according to the age of starting solids.[43]

A study was conducted to determine the role of maternal diet on infant feeding and weaning practices, in the development of sensitization to food and food hypersensitivity. TheStudy revealed that weaning age >or=16 wk, did for sensitization at 1 yr. Food hypersensitivity and sensitization at 3 yr. Food hyper sensitivity by 3 yr influences the development of sensitization to food allergens or food hypersensitivity..Study concluded that not the maternal diet but weaning age may affect sensitization to foods and development of food hyper sensitivity.[44]

A cross-sectional survey was conducted in Meacham district, to determine the magnitude of nutritional problems in children aged 1-24 months, both of hill-tribe and Thai communities. About 359 children were recruited, 252 were hill-tribe and 107 were Thai children. Anthropometric measurements were taken and mothers were interviewed. In a group of hill-tribe children, the prevalence of malnutrition was 25.0 compared with 12.1 per cent for Thai children .The prevalence was highest in children aged between 12-24 months.. The prevalence of stunting in hill-tribe and Thai children was 25.4 and 12.1 per cent respectively.This study concluded that such ethnic minorities therefore should be considered as special cases in programs of healthand nutrition promotion. [45]

4. RESEARCH METHODOLOGY

Methodology of research organizes all the components of the study in a way that is most likely to lead to valid answers to the sub-problems that have been posed.[46]

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically[49]. The methodology of research indicates the general pattern of organizing the procedure for getting valid and reliable data for the problem under study. [17]

This chapter deals with the methodology that was selected by the investigator in order to evaluate the effectiveness of self instructional module It includes:

- Research approach
- Design

- variables
- Setting
- Population
- Sampling technique
- Development and description of the tool
- Development of SIM
- Pilot study
- Data collection procedures and plan for data analysis

RESEARCH APPROACH

Research approach tells the researchers from whom the data is to be collected, how to collect and how to analyse the data. It also suggests the possible conclusion and helps the researcher in answering specific research questions in the most accurate and efficient way possible.[47]

An evaluative research approach using the pre-test and post-test was adopted for the study. An evaluative research is an applied form of research that involves finding out how well a programme, practice, procedure, or policy is working. The main goal is to evaluate the success of the programme. Hence the evaluative research approach was considered most appropriate.[47]

In the present study, the investigator aimed at evaluating the effectiveness of a self instructional module on knowledge of lactating mothers regarding weaning in terms of gain in knowledge score.

RESEARCH DESIGN

Research design is the overall plan for obtaining answers to the questions being studied and handling some of the difficulties encountered during the research process.[48]

The research design selected for the study was **one group pre-test, post-test,pre experimental design.**

Table 1: One group pre-test, post-test, pre experimental design

Group	**Pre-test (x)** **Day 1**	**Treatment** **Day 1**	**Post-test (y)** **Day 7**
50 lactating mothers of infants between 6-12 months under Pudu PHC	**O_1** Structured knowledge questionnaire	**X** SIM	**O_2** Structured knowledge questionnaire

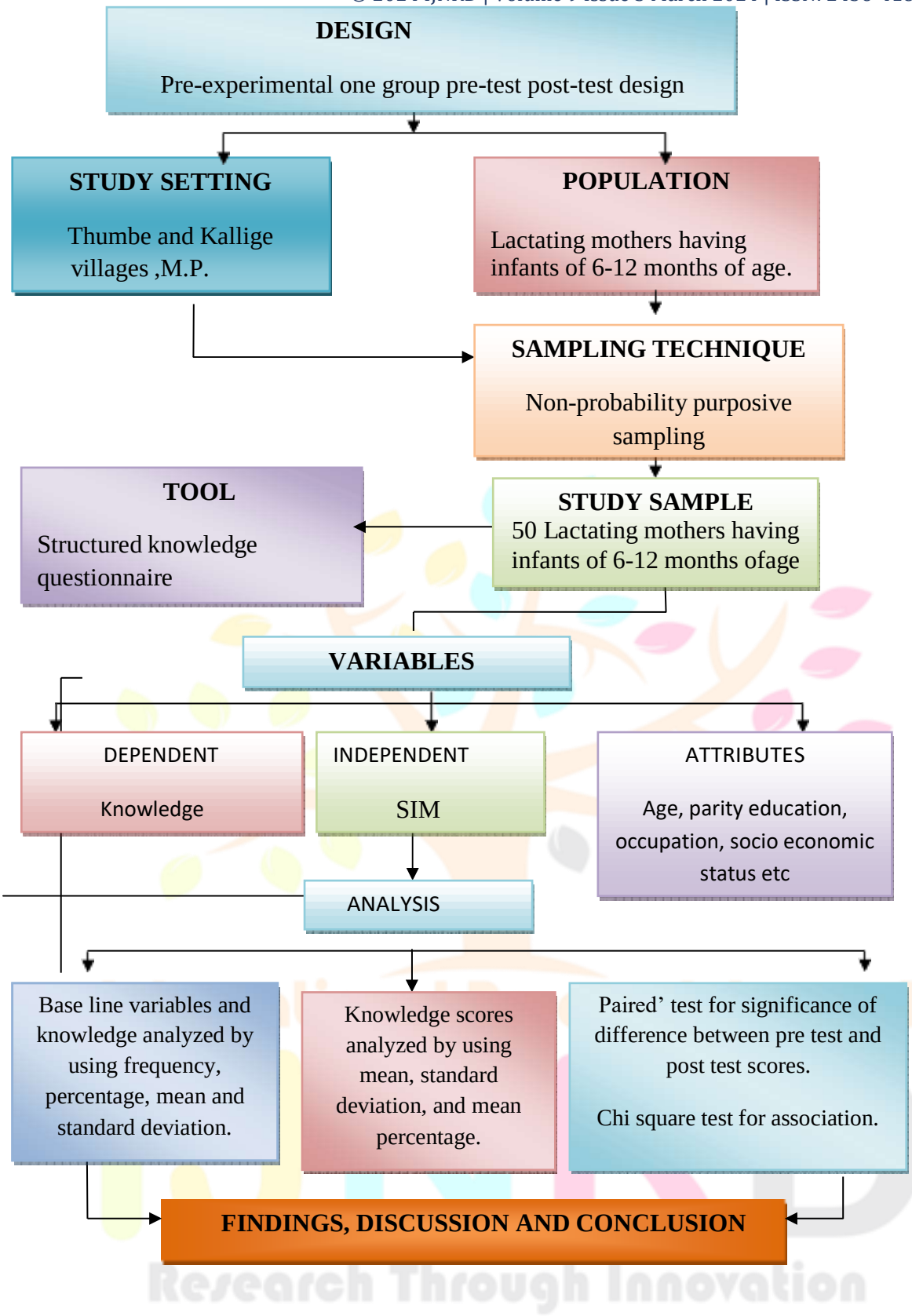

Fig 2: Schematic representation of research design

VARIABLES UNDER STUDY

Variables are qualities, properties, or characteristics of person, things or situation that change or vary. Variables are the concepts that have measurable changing attributes.[49]

Three types of variables are identified in this study. They are independent, dependent and attribute variables.

1. **Independent variable:** Independent variables are also called the manipulated or treatment variables.[48]

   In this study, Self-instructional module on weaning is an independent variable.

2. **Dependent variable:** Dependent variable is the outcome variable of interest, that the researcher is interested in understanding, explaining or predicting.[48]

   In this study knowledge gained by the participant on weaning as measured by a structured knowledge questionnaire is the dependent variable.

3. **Attribute variables:** Attribute variables are pre-existing characteristics of the study participants, which the researcher simply observes or measures to describe samples.[50]

   In this study age and weight of the infant, age of the mother, parity, religion, education of the mother, occupation of the mother, income, type of family, previous information, source of information problems identified, arethe attribute variables in the present study.

SETTING

Setting is the physical location and conditions in which data collection takes place in a study.[48] The present study was conducted in Thumbe and Kallige villages ofcommunity, Madhya Pradesh.

POPULATION

The population is any group of individuals that have one or more characteristics in common that are of interest to the researcher.[51]

The population for the present study comprised of lactating mothers of infants between the age

group of 6-12 months from villages of community, Madhya Pradesh.

SAMPLING PROCEDURE

A non probability purposive sampling procedure is used to collect the data.

SAMPLE AND SAMPLE SIZE

Sample is the subset of population selected to participate in research study. [52] The sample for the present study was 50 lactating mothers from Thumbe and Kallige villages of community, Madhya Pradesh, who met the criteria.

SAMPLING TECHNIQUE

Sampling is the process of selecting a group of people, events or portion of thepopulation to represent the entire population.[53]

Purposive sampling technique was adopted and where subjects are selected because of the purpose of study.

CRITERIA FOR SELECTION OF SAMPLE

Inclusion criteria for sampling

Lactating mothers:

- having infants of 6-12 months age
- who were willing to participate in the study.
- who can read and write Kannada or English.

Exclusion criteria for sampling

Lactating mothers:

- who were not available during the time of data collection.

- who were not willing to participate in the study.

DEVELOPMENT AND DISCRIPTION OF THE TOOL

A research instrument also callled research tool, are the devices used to collect the datawhich facilitates the observation and measurement of variabls.the following steps were adopted in the development of tool:

Development of the tool

A structured knowledge questionnaire with multiple choice questions was prepared to assess the knowledge of the lactating mothers regarding weaning

Steps involved in development of tool were:

- **Review of literature:** The literature from books, journals, periodicals,published and unpublished articles.
- **Development of blueprint:** A blueprint was prepared prior to preparing thequestionnaire to include questions to assess the knowledge regarding weaning.
- First draft of questionnaire was prepared and was sent for content validity tovarious experts including nursing experts.
- After the content validity, the final draft of the questionnaire was prepared andused in the study.

Preparation of blueprint

A blueprint of the structured knowledge questionnaire was prepared, one part of which was the knowledge assessment questionnaire. It depited the distribution of items according to the content areas in which first part the general concept of weaning(26.66%),second part was about types weaning foods (23.33%), third part was about storage and preparation of weaning food (10%) , fourth part techniques of weaning (26.66%), and fifth part was about weaning problems and their prevention (13.33%).[Annexer 11]

Description of the tool

In order to determine the existing knowledge and evaluate the effectiveness of SIM on weaning among lactating mothers, a structured questionnaire was constructed in two parts, with a total number of 30 items.

Section A: Demographic profile

Section B: Structured knowledge questionnaire

Section A: Demographic profile: It consisted of the following items, age of the babyin months, weight of the baby, age of the mother, parity, religion, education of the mother, occupation of the mother, income, type of family, previous information about weaning, sources of information and any nutritional problem during weaning.

Section B: Structured knowledge questionnaire: It consists of 30 questions with five sections, such as general concepts about weaning(8 items), types of weaning foods(7 items), storage and preparation of weaning foods (3 items), techniques of weaning(8 items), and problems of weaning and their prevention (4 items) .

The items were of multiple choice types with one correct answer and each carrying one score. The total maximum score would be 30 and the minimum score zero.

Content validity of the tool

The prepared instrument along with validity seeking letter, acceptance form, problem statement, objectives, hypothesis, operational definitions, blueprint, criteria checklist, and answer key were submitted to experts in the field of community health nursing, child health nursing, Suggestions and recommendations given by expertswere accepted and necessary corrections were done for modifying the tool. Later the tool was translated into Kannada which was then approved by language experts to rule out any distortions in original meaning.

Pre-testing of the tool

Pre-testing is the process of measuring the effectiveness of an instrument .The purpose is to verify the clarity and the adequacy of the items.[54]The tool was administered to 10 mothers. All the terms were clearly understood by the subjects. Nomodifications were done.

Reliability of the tool

The reliability of an instrument is the degree of consistency with which it measures the attribute it is supposed to be measuring[52]. The tool was tested for reliability in ten mothers. The reliability of the tool was established by using **split- half method,** which measure the coefficient of internal consistency.The reliability of the split of test was found by using karl pearson‘s co -relation formula. The reliability of the tool was found to be **r=0.70** which indicated that the tool was reliable. The results assured the practicability and feasibility of the study.

DEVELOPMENT OF THE SIM: The following steps were adopted for thedevelopment of the SIM:

1. Review of literature
2. Preparation and organization of the content of SIM
3. Development of criteria checklist
4. Ascertainment of content validity of the SIM
5. Editing of the module
6. Translating the module into Kannada
7. Preparation of final draft
8. Pre-testing of SIM

Literature review

The literature referred for the preparation of the content of SIM which is presented at the end part of SIM.

Organization of the content of SIM

The content of SIM is organized under 11 units such as meaning, importance, signsindicating, methods, schedule, and nutrients to be added, foods to avoid, types of weaning foods, storage and preparation, techniques of weaning, and problems of weaning and their prevention.

Development of criteria checklist

The two point criteria checklist was prepared by the investigator for assuring appropriateness, adequacy and accuracy of formulation of objective, selection and organization of content, language and feasibility.

Content validity of SIM

Content validity of the module was ascertained in consultation with experts form related fields. Suggestions and recommendations given by experts were accepted and necessary corrections were made for modifying the module.

Editing

The prepared module was edited by a professional editor.

Translation

Translation to local language was done by experts in Kannada language.

Preparation of the final draft of the SIM

The final draft of the SIM consists of 11 units such meaning, importance, signsindicating, methods, schedule, and nutrients to be added, foods to avoid types of weaning foods, storage and preparation of weaning foods, techniques of weaning, and problems of weaning and their prevention.

Pre-testing of SIM

The SIM was administered to 10 mothers to whom the pre-test was administered. Post-test was conducted after 7 days. The result showed that knowledgescore increased after administration of SIM.

PILOT STUDY

A pilot study is the small scale version or trial run of the major study. Its function is to obtain information of improving the project or for assessing feasibility. The principle focus is the assessment of adequacy of measurement. Pilot study was conducted from 1st November to 7th November to find out the feasibility of the study.The Meramajal village in Pudu community, Madhya Pradesh was selected for conducting pilot study. 10 lactating mothers who possess same characteristics as that of the sample for final study were selected by non-probability purposive sampling.Permission for the study was obtained from the Medical Officer of Pudu PHC.

The purpose of the study was explained to the sample and confidentiality was assured. Informed consent was taken from the sample. On the first day the tool was administered to 10 lactaing mothers who full filled the criteria for selection for pre- test and on the same day self instructional module was also administered. On the seventh day post test was conducted with the same tool to assess the gain in knowledge scores.

The data collected was analyzed using descriptive and inferential statistics.The significance of difference in pre test and post test was found by paired' test. The result showed that the structured teaching programme was effective in improving the knowledge regarding weaning.

DATA COLLECTION PROCEDURE

A formal written permission was obtained from concerned authorities to conduct the research study in Meramajal and Kallige village in Madhya Pradesh.

The investigator introduced her and the purpose of data collection was explained to the mothers in order to obtain maximum co-operation from them. Their willingness to participate in the study was ascertained. The respondents were assured of the anonymity and confidentiality of the information provided by them.

Pre-test was conducted in five days time from 12/11/2011 to 16/11/2011. The SIM on weaning was given on the same day following the pre-test. The post-test was conducted on the 7th day after the administration of sim with the same structured knowledge questionnaire. It was completed in five days

time from 22/11/2011 to 26/11/2011.

PLAN FOR ANALYSIS OF DATA

The data obtained in this study was planned to be analysed on the basis of objectives and hypotheses of the study. Distribution of subjects with respective variables was represented using frequencies and percentage. Mean, standard deviation and mean percentage were used to describe knowledge score such as poor (0-10), average (11-20), and good (21-30). One group pre-test (x) and post-test (y) pre- experiment design was used to evaluate the effectiveness (y – x) of SIM. Further statistical significance of the effectiveness of the SIM was analysed by paired‘t’ test. Data was presented in tables, graphs and diagrams.

SUMMARY

Research methodology gives a bird’s eye view of the entire process of tackling the research problem in a specific and systematic manner. This chapter has presented the research approach, design, population, sample, sampling technique, selection and development of tools, development of SIM and procedure for data collection and analysis.

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5. RESULTS

Analysis of the data involves the translation of information collected duringthe course of the research project into interpretable, convenient and descriptive terms and to draw inferences from them by using statistical methods. The purpose of analysis is to reduce data to an intelligible and interpretable form, so that the relations of research problems can be studied and tested.[52]

This chapter deals with the organization, analysis and interpretation of the data gathered from 50 mothers. Analysis is a process of organizing and synthesizing data in such a way that research questions can be answered and hypothesis tested. Interpreting the findings is the most challenging and structured step in the research findings which require the investigator to be creative.

The data were collected from the respondents before and after administering the SIM. Collected data was analyzed based on the objectives of the study using descriptive and inferential statistics.

OBJECTIVES OF THE STUDY

The objectives of the study were to:

1. prepare the self instructional module on weaning

2. determine the effectiveness of self instructional module in lactating mothersregarding weaning, in terms of gain in knowledge as measured by post test.

3. find the association of pre-test knowledge scores with selected demographicvariables.

RESEARCH HYPOTHESES

All the hypotheses were tested at 0.05level of significance.

H_1: The mean post- test knowledge of lactating mothers regarding weaning will be significantly higher than mean pre -test knowledge scores at 0.05 level of significance.

H_2: There will be significant association between pre-test knowledge score with selected demographic variables.

Null hypotheses are stated below for the statistical purpose.

H_{01}: There is no significant difference between the mean post- test and the mean pre-test knowledge scores of lactating mothers.

H_{02}: There will not be a significant association between the pre-test knowledge scores on weaning and the selected demographic variables.

ORGANIZATION AND PRESENTATION OF DATA

The obtained data were entered into the master sheet for tabulation and statistical processing. The analysis of data were organized and presented under the following parts and sections.

SECTION A: Description of demographic variables

SECTION B: Analysis of pre-test knowledge of lactating mothers regarding weaning.

Part I: Determine the level of pre-test knowledge of lactating mothersweaning

PartII: Area-wise analysis of pre-test knowledge scores of mothers regardingweaning.

SECTION C: Evaluation of the effectiveness of the self instructional module.

Part I: Determine the level of post-test knowledge of mothers regardingweaning.

Part II: Distribution of area-wise mean, standard deviation and meanpercentage of knowledge scores post- test

Part III: Area-wise Effectiveness of the SIM on knowledge of mothersregarding weaning.

Part IV: Comparison of pre-test and post-test knowledge scores of mothersregarding, weaning.

SECTION D: Association between the mean pre-test knowledge scores and theselected demographic variables regarding weaning.

SECTION A: Description of demographic variables of mothers

The entire sample comprised of 50 mothers. The sample characteristics are described under the sub headings of age of the infant, weight of the infant, age of the mother, parity, religion, education, occupation of the, income, type of family, previous information, source of information, occurrence nutritional problem during weaning.

Table 2: Description of demographic variables

N=50

Sl. No.	Demographic variables		Frequency	Percentage
1.	Age of the baby			
	a.	6-7 months	26	52
	b.	8-9 months	15	30
	c.	10-11 months	8	16
	d.	1 year	1	02
2.	Weight of the baby			
	a.	4-6 kg	26	52
	b.	7-9 kg	23	46
	c.	10-12 kg	1	2
3.	Age of the mother			
	a.	20-25	22	44
	b.	26-30	17	34
	c.	31-35	11	22
	d.	36-40	0	0
4.	Parity			
	a.	1	27	54
	b.	2	15	30
	c.	3	8	16
	d.	More than 3	0	0
5.	Religion			
	a.	Hindu	17	34
	b.	Muslim	21	42
	c.	Christian	12	24
	d.	Others	0	0

Sl. No.	Demographic variables		Frequency	Percentage
6.	Educational Status			
	a.	Primary	10	20
	b.	Secondary	15	30
	c.	PUC	16	32
	d.	Graduation	7	14
	e.	Post-graduation	2	4
7.	Occupation			
	a.	House Wife	22	44
	b.	Agriculture	9	18
	c.	Self Employment	3	6
	d.	Private Employment	11	22
	e.	Government Employment	5	10
8.	Income			
	a.	Rs. 3000-6000	2	4
	b.	Rs. 6001-9000	17	34
	c.	Rs. 9001-12000	23	46
	d.	Above Rs. 15000	8	16
9.	Type of family			
	a.	Nuclear family	36	72
	b.	Joint family	14	28
	c.	Extended family	0	0
10.	Previous information			
	a.	Yes	27	54
	b.	No	23	46

Sl. No.	Demographic variables	Frequency	Percentage
11.	Source of information		
	a. Mass media	18	36
	b. Family members	4	8
	c. Neighbours	27	54
	d. Health personnel	1	2
12.	Problem Identified during weaning		
	a. Yes	11	22
	b. No	39	78

Data presented in the Table 2 shows the descriptionof demographic characteristics ofthe sample. Distribution of demographic variables includes.

1. Age of the baby **N=50**

Fig 3: Bar diagram showing percentage distribution of respondents according toage of the baby

The data presented in fig 3 shows that, highest 52% were in the age group of 6-7months,30% were in the age group of 8-9 months, 16% were in the age group of10-11 months, whereas 2% children were of 1 year.

2. Weight of the baby **N=50**

Fig 4: Cylinder diagram showing percentage distribution of respondents according to weight of the baby

The data presented in fig 4 shows that, highest 52% infants were weighing between 4-6kg, 46% weighing between 7 -9 kg whereas 2% children were weighing between 10-12 kg .

3. Age of the mother **N=50**

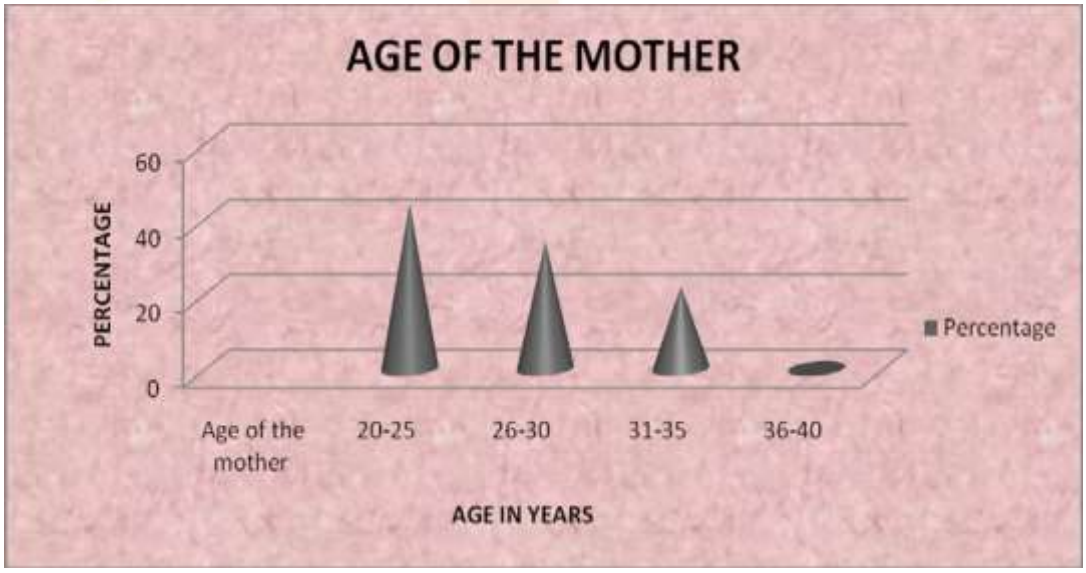

Fig 5: Cone diagram showing percentage distribution of respondents accordingto age of mother

The data presented in fig 5 shows that 44% of mothers were in the age group of 20-25years, 34% were in the age group of 26-30, 22% were in the age group of 31-35 years and none of the mothers were between the age group of 36-40 years

4. Parity **N=50**

Fig 6: Bar diagram showing percentage distribution of respondents according toparity

The data presented in fig 6 shows that 54% have one child ,30% have two children16% have three children, and 0% have more than three**.**

5. Religion **N=50**

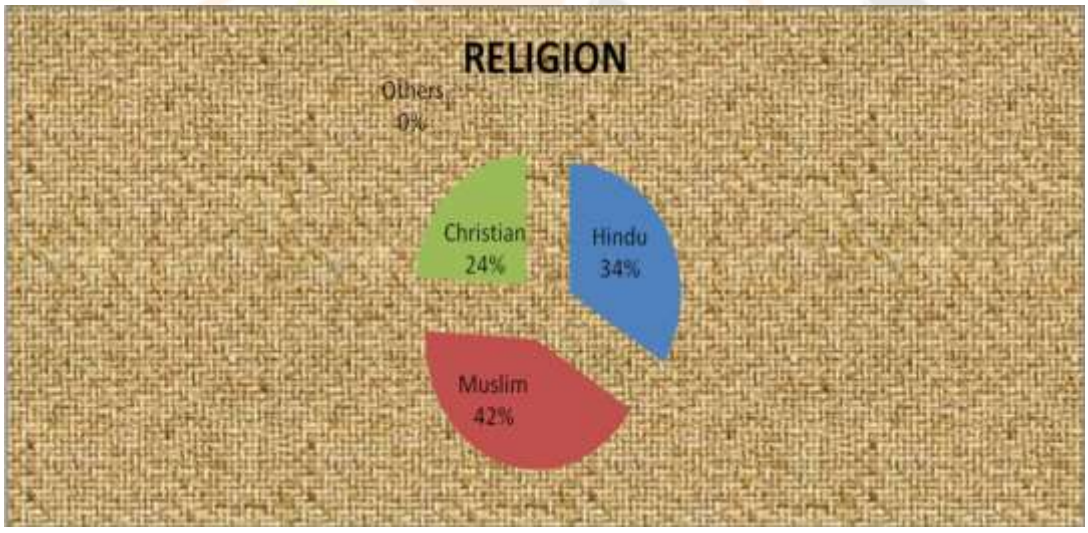

Fig 7: Pie diagram showing Percentage distribution of respondents according totheir religion

The data presented in fig7 shows that 42% of mothers were muslims ,34%were hindus and 24% were christians.

6. Educational status **N=50**

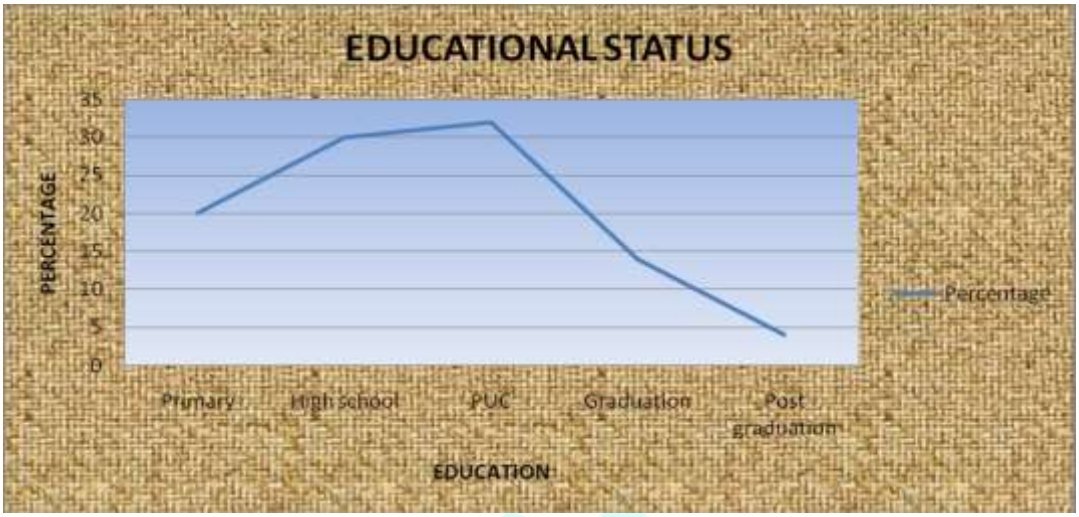

Fig 8: Line graph showing percentage distribution of respondents according totheir education

The data presented in fig 8 shows that 32% had PUC education, 30% had high school education, 20% primary education, 14% were graduates, whereas 4% were postgraduates.

7. Occupation **N=50**

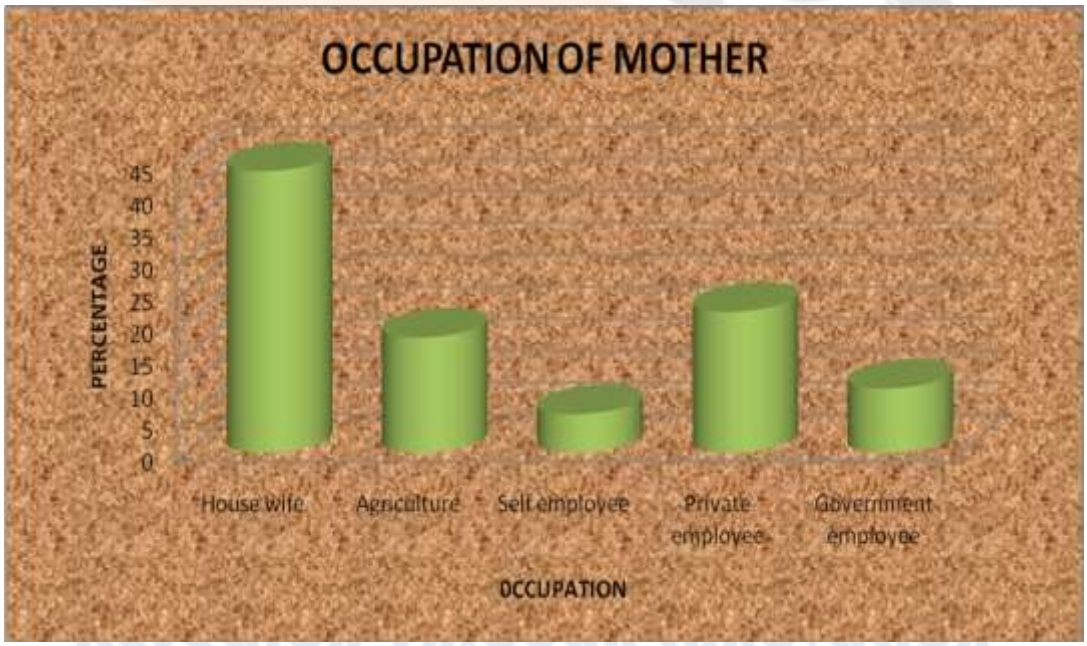

Fig9: Cylinder diagram showing percentage distribution of respondents according to occupation

The data presented in fig 9 shows that 44% were housewives, 22% were private employees, 18 % agricultual back ground, 10% were government employes and 6% were self employees.

8. Income of the family **N=50**

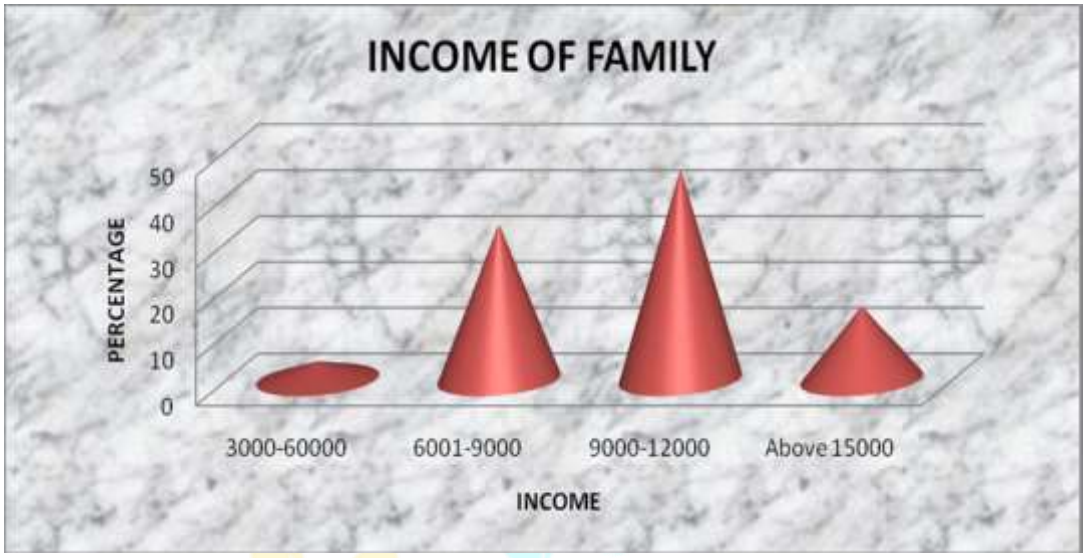

Fig 10: Cone diagram showing percentage distribution of respondents according to income per month.

The data presented in fig10 shows that 46% had income between Rs. 9001-12000, 34% had Rs. 6001-90000, 16% had above Rs. 15000 Rs and 4% had an income between Rs. 3000-6000.

9. Type of family **N=50**

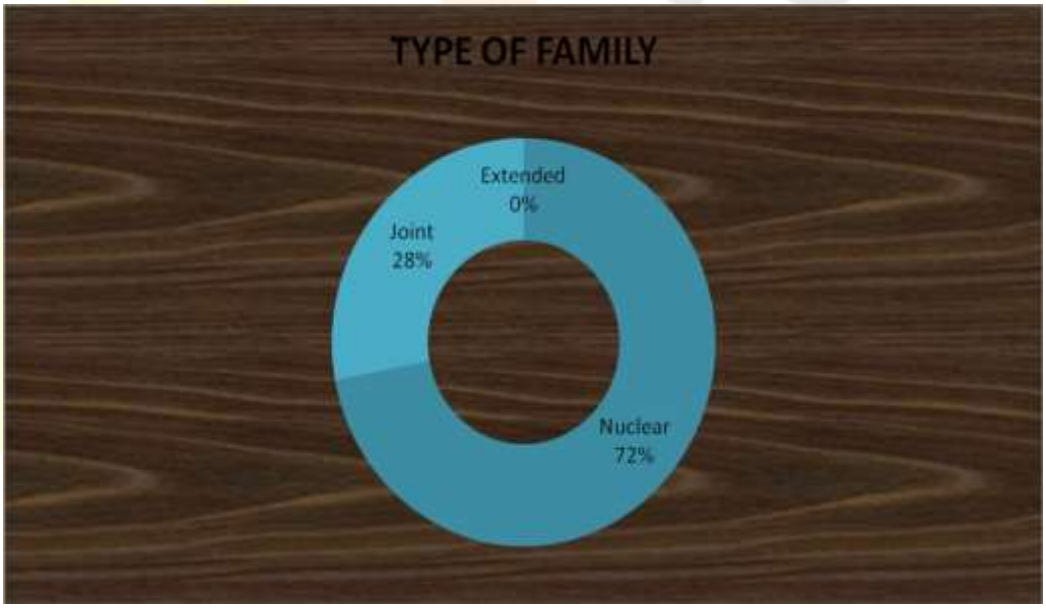

Fig 11: Doughnut graph showing percentage distribution of respondentsaccording the type of family

The data presented in fig. 11 shows that 72% belong to nuclear family, 28% tojoint family ,0% to extended family.

10. Previous information **N=50**

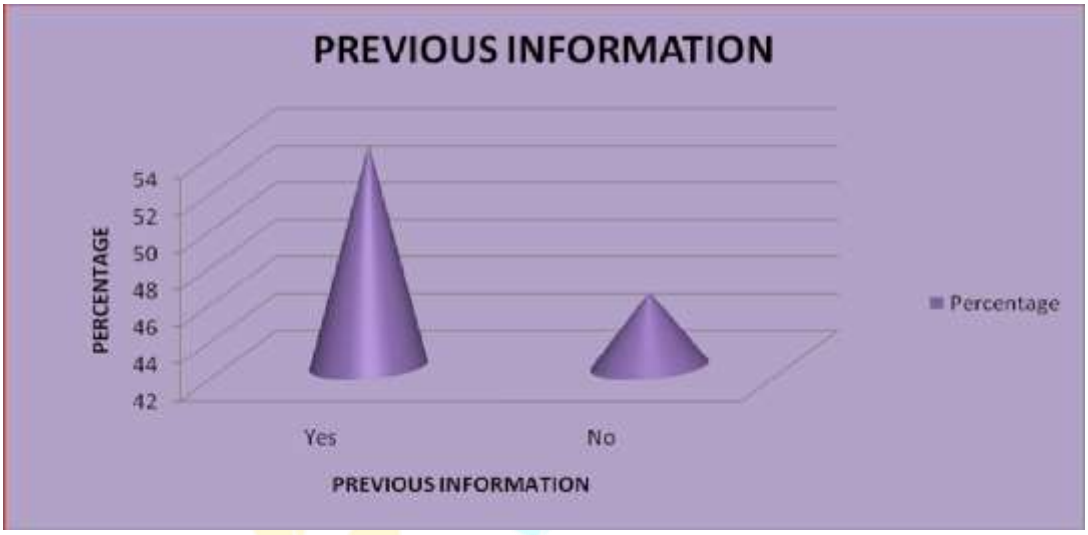

Fig12: Cone diagram showing percentage distribution of respondents accordingto their previous information

The data presented in fig 12 shows that 54% have some knowledge,46% haveno knowledge regarding weaning.

11. Sources of information **N=50**

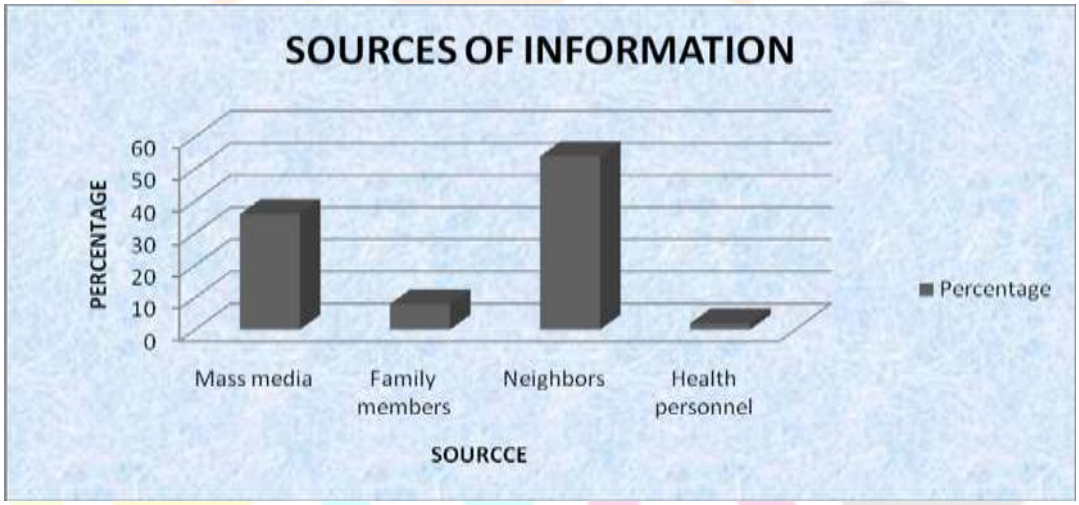

Fig13: Bar diagram showing percentage of respondents according to sources of information regarding weaning

The data presented in fig13 shows that 54% got information from neighbours ,36% from mass media, 8% from family members and 2% from health professionals.

12. Problem identified during weaning **N=50**

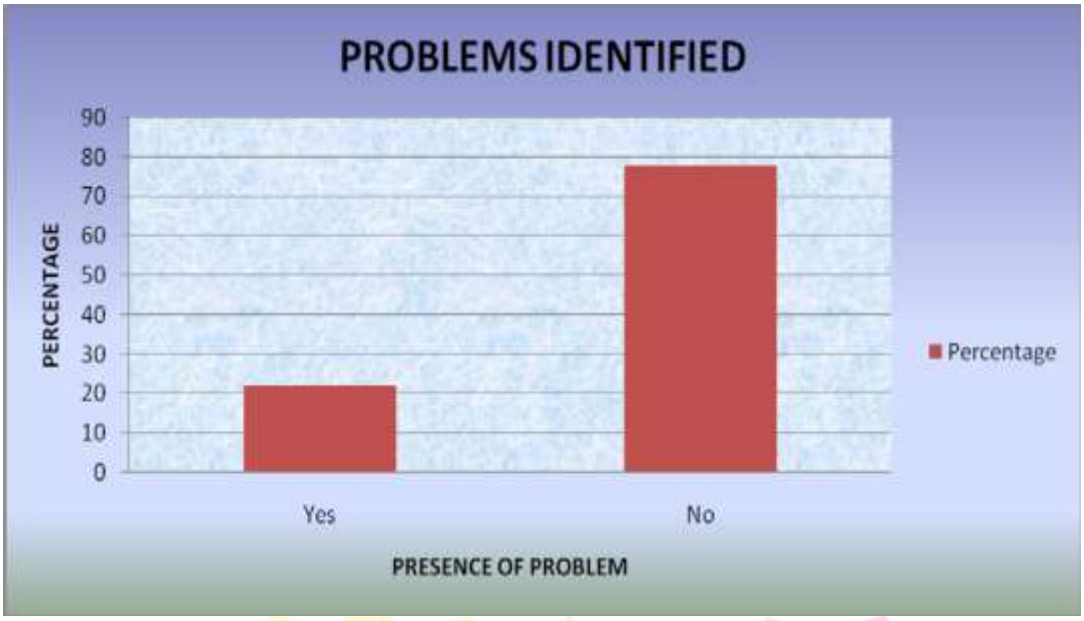

Fig14: Bar diagram showing percentage of respondents according to problem identified during weaning

The data presented in fig. 14 shows that 22% faced problems during weaningand 78 % have not faced problems.

SECTION B: Analysis of pre-test knowledge of lactating mothers regardingweaning

Part I: Determine the level of knowledge of lactating mothers regarding weaning

Table 3: Level of pre-test knowledge of mothers regarding weaning

N = 50

Level of knowledge	Range of scores	Percentage of score	Number of response	Percentage of response
Poor	0-10	0-33	3	6
Average	11-20	33-67	40	80
Good	21-30	67-100	7	14
Total			50	100

The above table shows that the highest percentage (80%) of the sample had an average level of knowledge whose score ranged between 11-20, 14% of the sample had good knowledge whose score ranged between 21-30 and 6% of the sample had poor knowledge whose score ranged between 0-10.

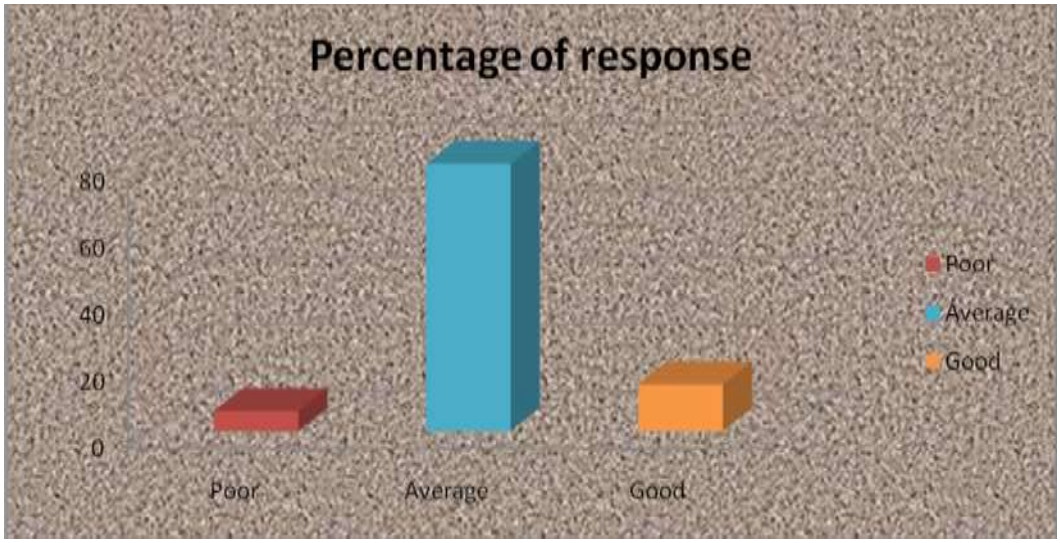

Fig 15: Bar diagram showing the percentage distribution of respondentsaccording to their level of pre-test knowledge

Part II: Area-wise analysis of knowledge scores of lactating mothers regarding weaning

Table 4: Distributions of area-wise mean standard deviation and meanpercentage of knowledge scores -pre-test

N=50

Knowledge areas	Max possible score	Mean score	SD	Mean percentage score
General concept about weaning	8	4.64	1.22	58.00
Types of weaning foods	7	2.24	1.17	32.00
Storage and preparation of weaning foods	3	2.42	0.57	81.00
Techniques of weaning	8	4.64	1.20	58.00
Weaning problems and their prevention	4	1.96	0.96	49.00
Total	**30**	**15.90**	**3.91**	**53.00**

The above table shows that the highest mean percentage (81%) of knowledge score was in the area of "Storage and preparation of weaning foods" which had a mean ± standard deviation as 2.42±0.57. The mean percentage in the area of "General concept about weaning" and "Techniques of weaning" was 58% with mean ± standard deviation as 4.64±1.22 and 4.64±1.20 respectively. The mean percentage in the area of "weaning problems and their prevention" was 49% with mean ± standard deviation as 1.96±0.96. The mean percentage in the area of "types of weaning foods" with mean ± standard deviation as 2.24±1.17.

However, the mean percentage of total knowledge score was 53% with mean ± standard deviation of 15.90±3.91.It revealed that the knowledge of mothers regarding weaning was good in the area of "Storage and preparation of weaning foods"

They had average knowledge in areas of "General concept about weaning", "Techniques of weaning", and "weaning problems and their prevention". Mothers hadpoor knowledge in the area of "types of weaning foods". However, the overall knowledge level of lactating mothers was average and needed to be educated further.

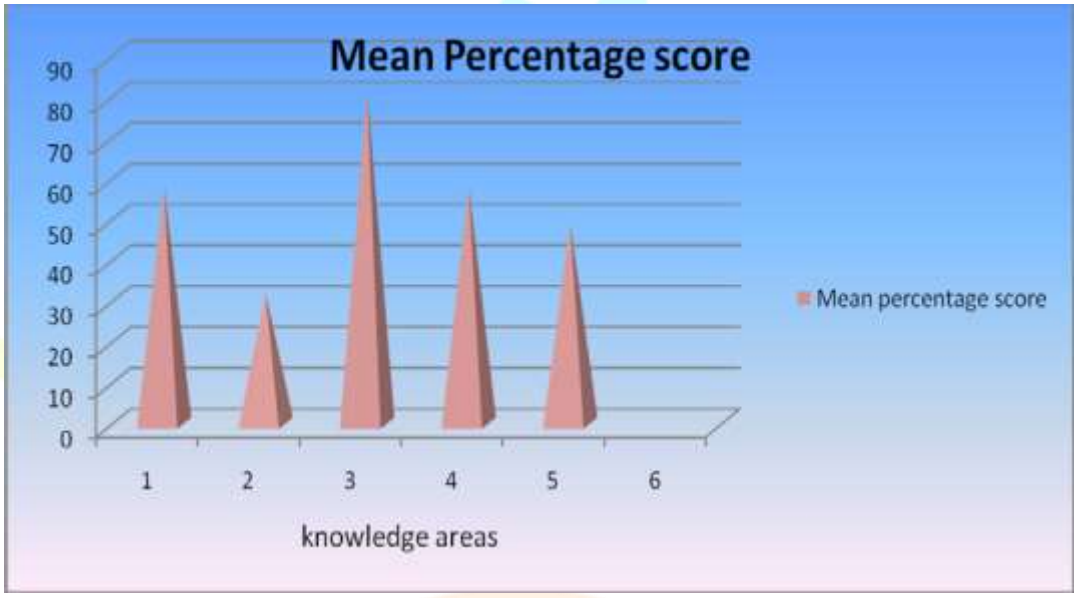

Fig 16: Pyramid diagram showing area-wise mean standard deviation and mean percentage of knowledge scores -pre-test

SECTION C: Evaluation of the effectiveness of the self instructional module. Part I:

Determine the level of post test knowledge of mothers regarding weaning

Table 5: Level of post- test knowledge of mothers regarding weaning

N=50

Level of knowledge	Range of scores	Percentage of score	Number of responses	Percentage of response
Poor	0-10	0-33	0	0
Average	11-20	33-67	31	62
Good	21-30	67-100	19	38
		Total	**50**	**100**

The above table shows that highest percentage (62%) of the sample had a good level of knowledge whose score ranged between 21-30,(38%) of them had average knowledge regarding weaning.

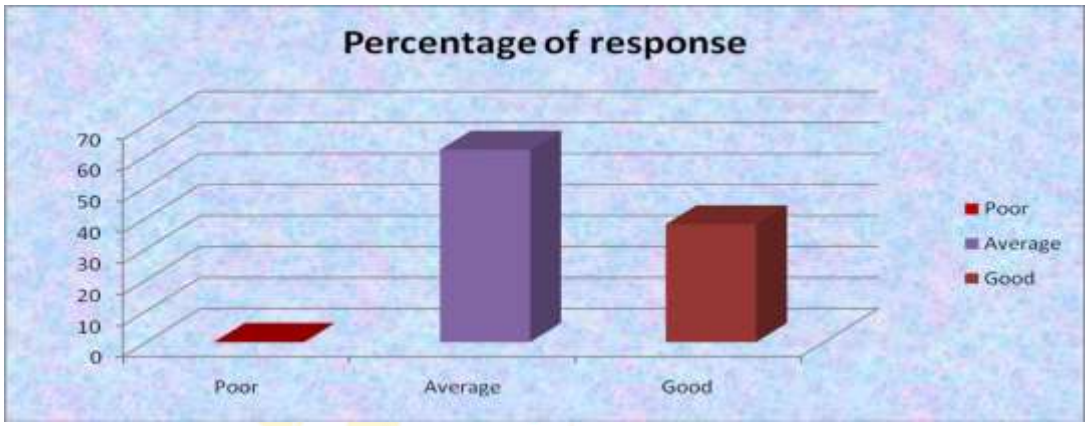

Figure 17: Bar diagram shows level of post test knowledge scores regarding weaning

Part II: Distribution of area wise mean and mean percentage of knowledgescores-post test

Table 6: Area-wise mean standard deviation and mean percentage of knowledge scores-post-test

N=50

Knowledge areas	Max possible score	Mean score	SD	Mean percentage score
General concept about weaning	8	5.32	1.21	67.00
Types of weaning foods	7	3.38	1.56	48.00
Storage and preparation of weaning foods	3	2.52	0.50	84.00
Techniques of weaning	8	5.48	1.33	69.00
Weaning problems and their prevention	4	2.22	0.88	56.00
Total	**30**	**18.92**	**4.12**	**63.06**

The above table shows that the highest mean percentage (84%) of knowledge score was in the area of "Storage and preparation of weaning foods" which had a mean ± standard deviation as 2.52±0.50. The mean percentage in the area of Techniques of weaning" was (69%) which had a mean ± standard deviation as 5.48±1.33. The mean percentage in the area of "General concept about weaning" was (67%) with mean ± standard deviation as 5.32±1.21. The mean percentage in the area of "weaning problems and their prevention" was

(56%) with mean ± standard deviation as 2.22±0.88. The mean percentage in the area of "types of weaning foods" with mean ± standard deviation as 3.38±1.56.

However, the mean percentage of total knowledge score was 63% with mean ± standard deviation of 18.92±4.12. The findings reveal that the knowledge of lactating mothers regarding weaning improved.

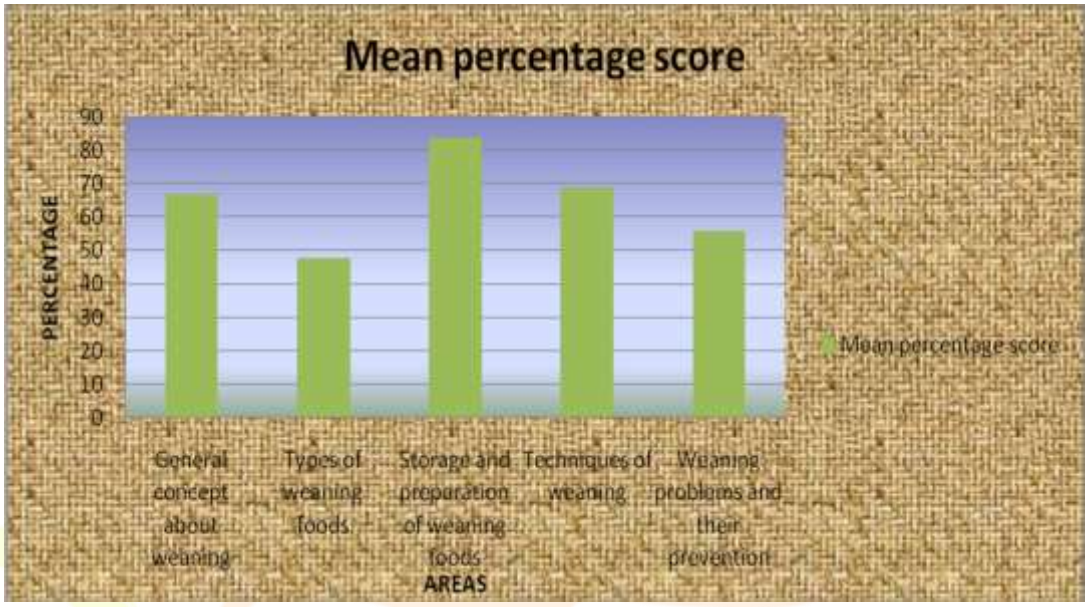

Fig18: Bar diagram showing percentage distribution of post- test knowledgescore of lactating mothers

Part III: Area-wise Effectiveness of the SIM on knowledge of lactating mothersregarding weaning

Table 7: Area-wise Effectiveness of the SIM on knowledge of lactating mothersregarding weaning

N = 50

Sl No.	Area of knowledge	Mean		Standard deviation		Mean (%)	Paired 't' value
		Pre-test	Post-test	Pre-test	Post-test		
1.	General concept about weaning	4.64	5.32	1.22	1.21	8.5%	7.36
2.	Types of weaning foods	2.24	3.38	1.17	1.56	16.3%	8.50
3.	Storage and preparation of weaning foods	2.42	2.52	0.57	0.50	36.6%	2.33
4.	Techniques of weaning	4.64	5.48	1.20	1.33	10.5%	9.61
5.	Weaning problems and their prevention	1.96	2.22	0.96	0.88	6.5%	3.77
	Total	**15.90**	**18.92**	**3.91**	**4.12**	**10.6%**	**23.35**

The data in above table shows that the area-wise mean post test knowledge score in all the areas were higher than the area-wise mean pre-test knowledge scores. Calculated' value in all areas (7.36, 8.50, 2.33, 9.61, 3.77) was greater than the table value (t_{49}=1.675 at 0.05 level).

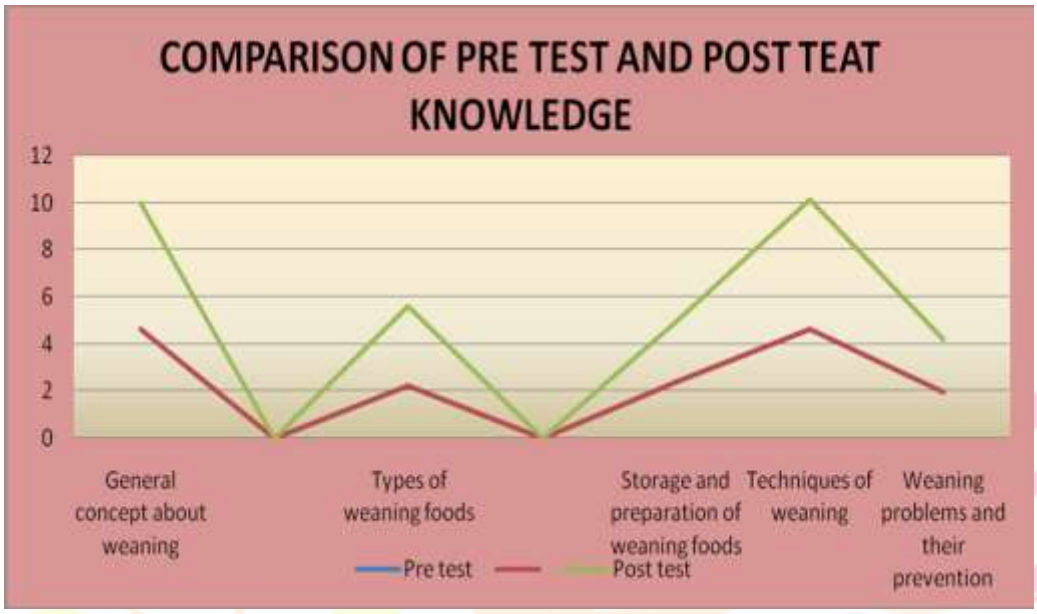

Fig 19: Line graph showing comparison of pre-test and post-test knowledge scores of lactating mothers

The data presented in the Fig shows that there is an increase in the knowledge scores of mothers after the administration of SIM. In the pre-test highest percentage (80%) of the sample had an average level of knowledge whose score ranged between 11-20, 14% of the sample had good knowledge whose score ranged between 21-30and 6% of the sample had poor knowledge whose score ranged between 0-10, whereas in the post test highest percentage (38%) of the sample had a good level of knowledge whose score ranged between 21-30, 62% of them had average knowledge regarding weaning. Hence the findings show that SIM was moderately effective.

Part IV: Comparison of pre-test and post-test knowledge scores of lactating mothers.

Table 8: Significance of the difference between pre-test and post-test knowledgescores

N=50

Knowledge score	Mean	Standard deviation	't' value	table value at 5%	p value	Inference
Pre-test	15.90	3.91	23.35	1.6755	P<0.05	*
Post-test	18.92	4.12				

*= significance

H_{01}: There is no significant difference between the mean post test and the mean pre-test knowledge scores of lactating mothers.

The above table revealed that the mean post test score of lactating mothers were significantly higher than their mean pre-test score. The calculated' value was greater than the table value at 5%. Hence the null hypothesis (statistical hypothesis) was rejected and research hypothesis was accepted indicating that the gain in knowledge was not by chance. Therefore, it is concluded that the gain in knowledge of mothers through the self instructional module on weaning was significant.

SECTION D: Association between the mean pre-test knowledge scores and the selected demographic variables regarding weaning.

This section deals with the association between the demographic variables and pre-test knowledge scores of subjects on weaning. In order to determine the association, a null hypothesis was formulated and chi-square test was used.

H_{02}: There will not be a significant association between the pre-test knowledge scores on weaning and the selected demographic variables.

Table 9: Chi-square value for selected demographic variables and mean pre-test knowledge scores

N=50

Sl. No.	Demographic variables	Chi-square value	df	Table value	p-value inference	
1.	Age of the baby	1.97	1	3.84	P>0.05	NS*
2.	Age of the mother	2.43	2	3.84	P>0.05	NS*
3.	Parity	0.29	1	3.84	P>0.05	NS*
4.	Education of the mother	46.15	2	3.84	P<0.05	S*
5.	Occupation of the mother	16.38	2	5.99	P<0.05	S*
6.	Income	3.31	1	3.84	P<0.05	S*
7.	Type of family	2.94	1	3.84	P<0.05	S*
8.	Previous information	5.26	1	3.84	P<0.05	S*

S*= Significant, NS*= Not significant The data presented in table 9 shows that there was a significant association

between the demographic variables such as education (χ^2=46.15), occupation (χ^2=16.38), income (χ^2=3.31), type of family (χ^2=2.94) and previous information (χ^2=5.26) about weaning and the pre-test knowledge scores at 0.05 level of significance. So null hypotheses is rejected for these variables.But the other demographic variables such as age of mother and baby, parity show no statistical association with level of knowledge regarding weaning. .

SUMMARY

This chapter has dealt with the analysis and interpretation of the study. The data gathered were summarized in the master sheet and both descriptive and inferential statistics were used for analysis. Sample characteristics were analyzed by using percentage.

In the present study observations revealed that the knowledge of the mothers in all areas had been average. Paired‘t’ test was used to analyze the effectiveness of the SIM regarding weaning. Findings revealed that the mean pre-test knowledge score was 15.90± 3.91, whereas post-test knowledge score was 18.92±4.12, indicating that there was significant increase in the post-test knowledge scores in all

areas. The chi square and Yates correction computed between pre-test knowledge scores and selected demographic variables showed that there was significant association between knowledge score and demographic variables such as education occupation, income, type of family and previous information about weaning.

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6. DISCUSSION

The present study was conducted to assess the effectiveness of the self- instructional module knowledge of lactating mothers regarding weaning at selected villages, Madhya Pradesh.

In order to achieve the objectives of the study, a one group pre-test, post-test, pre-experimental design was adopted. Non-probability purposive sampling technique was used to select the sample. The data were collected from 50 respondents beforeand after the administration of the SIM.

The major findings of the study are discussed under four sections:

SECTION A: Description of demographic variables of mothers.

SECTION B: Analysis of pre-test knowledge of lactating mothers regarding weaning.

SECTION C: Evaluation of the effectiveness of the SIM knowledge of lactating mothers regarding weaning.

SECTION D: Association between the mean pre-test knowledge scores and the selected demographic variables on knowledge of lactating mothers regarding weaning.

SECTION A: Description of demographic variables

Out of 50 infants, 52% of them were in the age group of 6-7 months, 30% were in the age group of 8-9 months 16% 0f them were in the age group of 10-11 months and only 2% in the age group of 1year. About 52% of them were having weight between 4-6kg, 46% 7-9kg and 2% 10-12kg.

Out of 50 lactating mothers 44% of them were between the age group of 20-25 years, 34% betwen26-30years , 22% of them between 31-35years .

About 54% of lactaing mothers belongs to the group of para one , 30% ofthem para two and 8% of them para three.

About 42% of them were muslims, 34% hindus and 24% were christians.

About 32% had PUC education,30% high school,20% primary 14% graduation , whereas 4% post graduation and 44% of them were house wives, 22% private employs, 18% were agricultural back ground,10government employs and 6% were self employs.

About 70% of them belongs to the middle class group, 16% high economic and 4% low economic group.

About 72% of them were living in a nuclear family, 28% in joint family.

Fifty-four percent of them had no information about weaning, whereas 46% had some knowledge. Out of these 54% got information from neighbours 36% from mass media, 8% from family members and 2% from health personnel.

About 78% infants did not get problems during weaning and 28% infants faced with problems.

Many studies conducted in India and other countries revealed that proper weaning is effective in preventing childhood malnutrition and helps in maintaining good health.

SECTION B: Analysis of pre-test knowledge of lactating mothers regardingweaning.

Part I: Determine the level of pre-test knowledge of lactating mothers regarding weaning

Findings show that highest percentage (80%) of the sample had an average level of knowledge, 14% of the sample had good knowledge and 6% of the samplehad poor knowledge regarding weaning.

Part II: Area-wise analysis of pre-test knowledge scores of mothers regarding weaning

The area wise analysis of pre-test knowledge score shows that mean percentage (81%) of knowledge score was in the area of “Storage and preparation of weaning foods” which had a mean ±

standard deviation as 2.42±0.57. The mean percentage in the area of "General concept about weaning" and "Techniques of weaning" was 58% with mean ± standard deviation as 4.64±1.22 and 4.64±1.20 respectively. The mean percentage in the area of "weaning problems and their prevention" was 49% with mean ± standard deviation as 1.96±0.96. The mean percentage in the area of "types of weaning foods" with mean ± standard deviation as 2.24±1.17. However, the mean percentage of total knowledge score was 53% with mean ± standard deviation of 15.90±3.91.

SECTION C: Evaluation of the effectiveness of the self-instructional module

Part I: Determine the level of post-test knowledge of lactating mothers regardingweaning

Findings show that highest percentage (62%) of the sample had a good level of knowledge whose score ranged between 21-30,(38)% of them had average knowledge regarding weaning knowledge after administrating SIM.

Part II: Area-wise analysis of post-test knowledge scores of mothers regarding weaning

The area-wise knowledge scores regarding weaning shows (84%) of knowledge score was in the area of "Storage and preparation of weaning foods" which had a mean ± standard deviation as 2.52±0.50. The mean percentage in the area of Techniques of weaning" was (69%)which had a mean ± standard deviation as 5.48±1.33. The mean percentage in the area of "General concept about weaning" was (67%) with mean ± standard deviation as 5.32±1.21. The mean percentage in the area of "weaning problems and their prevention" was (56%) with mean ± standard deviation as 2.22±0.88 The mean percentage in the area of "types of weaning foods" with mean ± standard deviation as 3.38±1.56. Mean percentage of total knowledge score was 63% with mean ± standard deviation of 18.92±4.12.

Part III: Area-wise Effectiveness of the SIM on weaning

Comparison of area wise mean and SD of the knowledge scores that in the area of" " storage and preparation of weaning food " the pre-test mean percentage was 81 where as the post test mean percentage was 84 showing an increasing of 36.6 in the mean knowledge score of the menopausal women.

The effectiveness of the SIM was 16.3% % in the area of "type of weaning food", 10.5% in the area of "techniques of weaning", 8.5% in the area of "general concept of weaning" 6.5%% in the area of "weaning problems and their prevention" respectively. However overall findings revealed that the mean percentage of post test knowledge score was higher compared to the pre-test knowledge score. Hence, it is observed that the SIM was effective in all the areas.

Part IV: Comparison of pre-test and post-test knowledge scores of lactatingmothers.

Paired 't' test was used to analyse the difference in knowledge score of mothers on weaning revealed that the mean post test score of lactating mothers were significantly higher than their mean pre-test score. The calculated' value was greater than the table value at 5%. Hence the null hypothesis (statistical hypothesis) was rejected and research hypothesis was accepted indicating that the gain in knowledge was not by chance. Therefore, it is concluded that the gain in knowledge of mothers through the self instructional module on weaning was significant.

SECTION D: Association between the mean pre-test knowledge scores and the selected demographic variables regarding weaning

The chi-square and Yates correction computed between pre-test knowledge and selected demographic variables showed that there was a significant association between the demographic variables such as education occupation, income, type of family and previous information about weaning and the pre- test knowledge scores at

0.05 level of significance. But the other demographic variables such as age of mother and baby, parity during weaning shows no statistical association with level of knowledge regarding weaning.

7. CONCLUSION

The purpose of this study was to evaluate the effectiveness of of self- instructional module on knowledge of lactating mothers regarding weaning at selectedvillages Madhya Pradesh.

The conceptual framework for the present study was based king 's goal attainment model.Review of literature and related studies helped the investigator to collect the appropriate and relevant information

to support the study design, methodology,conceptual frame work, development of the tool, planned teaching program and to planthe analysis of the collected data.

Research approach adopted for the study was an evaluative approach. Theresearcher used a pre-experimental one group pre-test post-test design. The study was conducted in the area under Pudu PHC and samples were selected by a non-probability purposive sampling technique. A structured knowledge questionnaire wasused to assess the knowledge of mothers regarding weaning under 5 sections whichincluded 30 questions.

The SIM and tool after reviewing the literature were validated by two experts from the field of medicine and six nursing experts. The reliability of the tool was established by using split –half technique with Karl Pearson's product moment correlation **(r=0.70).**

After which a pilot study was conducted for 10 patients from Meramajal sub- centre under Pudu PHC and analysis was made. It was followed with the data collection for the original study. On day one demographic data of subjects was collected followed by a pre – test with structured questionnaire on weaning to assess the knowledge regarding weaning .On the same day a SIM was distributed to the subjects. On the 7th day a post – test was conducted to assess the same. The collected data was analysed by using descriptive and inferential statistics and in terms of objectives and hypotheses of the study.

THE MAJOR FINDINGS OF THE STUDY

- In the pre-tes 80% of them had average knowledge, 14% of them had goodknowledge and remaining 6% had poor knowledge.
- In the pre-test the total knowledge score was 53% with mean± SD 15.90±3.91.
- In post-test the average knowledge was 62% and good knowledge was 38%.
- In post-test the total knowledge score was 63% with mean ± SD 18.92± 4.12.
- Findings indicated that there was a highly significant difference (t=23.35, P<0.005) between pre-test and post-test knowledge scores.

- Comparing the selected demographic variables with the mean pre-test knowledge score, there was no significant association between mean pre-test knowledge score and their religion, education, occupation, income, type of family and previous information.

NURSING IMPLICATION

The findings of the study have implications in various areas of nursing education, nursing practice, nursing research and nursing administration.

Nursing education

Nursing education programmes should prepare nurses to understand the importance of family-centred care, so that they will be able to plan best care for the children. The findings of the study serve as guidelines for the nurse educators for planning and conducting educational programmes for the students and mothers of children.

Malnutrition among under five children the major threat in the society. The main cause for this is improper weaning of children. The nursing students must beable to identify the knowledge of mothers of infants regarding weaning and try to helpthe mothers to wean infants properly with the suitable food at right time. Mass health education programs may be conducted in the community to educate the mothers and to prevent the threat of malnutrition in children. The outcome of this study is for the benefit for patients.

Nursing practice

In clinical practice, all nurses must assist the mothers to gain the knowledge and help them to assume greater responsibility for care of their own children. The gap between existing and expected level of knowledge and practice of the mothers indicates that there is an urgent need for education regarding weaning. Health education could be planned to improve the mother's knowledge regarding weaning. The information booklet can be further developed in the form of a teachingprogramme, pamphlets, audio and videotape.

In-service education should be given to all the health personnel to improvetheir knowledge on weaning.

Nursing research

Nurses need to be engaged in multidisciplinary research as well as evidenced based nursing, so that it would help them to improve their knowledge and skills in handling the daily problems related to health and illness. This would provide them information about various ways and means to improve the quality of life. Nurses should conduct projects and researches in the community, schools and hospitals which will help to improve the health of the people and especially the vulnerable groups. So similar studies on weaning could be conducted at community settings, such as video teaching programmes, structured planned teaching programmes with increasing number of samples and so on.

Nursing administration

Many rural areas in India have under developed health care facility .Therefore, the administrative departments of nursing service at the institutional, local, state and national level should focus their attention and educate the public regarding the health problems faced by them.Nurse administrators should have the vision to foresee the core educational needs of the health service personnel and equip them with the neededpreparation to initiate and implement a series of continuing education programmes which deals with weaning and prevention of mal nutrition among underfive children.

Health administration should make use of the educational departments andprovide awareness programme to the public through:

- Providing personnel to conduct the educational programmes.
- Utilising mass media to educate the public.
- Public awareness programmes as a part of community health extensionprogramme in the hospital.

LIMITATIONS

The study was limited to:

- Lactating mothers whose children are between the age group of 6-12 months.
- Only 50 lactating mothers.
- 4- 6 weeks of duration.
- Pre-experimental study research design.
- Evaluation of the effectiveness of SIM was delimited to the gain inknowledge.

RECOMMENDATIONS

1. Similar study can be undertaken with a larger sample to generalize thefindings.
2. A similar study can be undertaken with a control group design.
3. A study on the effect of knowledge, attitude and practice on weaning among lactating mothers can be done to find out inter- relationship between practice, knowledge and attitude.
4. A comparative study can be carried out on knowledge and practice regarding weaning among post natal mothers.
5. A similar study can be conducted using other strategies like structured teaching programme, video teaching programme.
6. A comparative study can be conducted for assessing the effectiveness of SIM and video teaching.
7. A comparative study can be undertaken on knowledge regarding weaning among urban and rural mothers.

SUMMARY

In this chapter the investigator dealt with the various implications of the study and the limitations which the investigator experienced in the study. The experience of the investigator during the study helped to give recommendations for further studies. The overall experience of conducting this study was a satisfying one, as there was good cooperation by the participants and the concerned authorities.

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8. SUMMARY

This chapter presents a summary of the study. The topic of the research study was

to assess the effectiveness of SIM on knowledge regarding weaning was developed for lactating mothers whose children were in the age group of 6-12 months, inselected villages Madhya Pradesh.

OBJECTIVES OF THE STUDY

The objectives of the study were:

1. To prepare the self instructional module on weaning.

2. To determine the effectiveness of self instructional module in lactating mothersregarding weaning, in terms of gain in knowledge as measured by post test.

3. To find the association of pre-test knowledge score with selected demographicvariables.

RESEARCH HYPOTHESES

The study attempted to test the following hypotheses at 0.05 level of significance.

H_1: The mean post- test knowledge of lactating mothers regarding weaning will be significantly higher than mean pre -test knowledge score at 0.05 level of significance.

H_2: There will be significant association between pre-test knowledge score with selected demographic variables.

The conceptual framework for the present study was based king ‘s goalattainment model.

The study was evaluative in nature with one group pre-test post-test design. Sample comprised of 50 lactaing mothers in selected villages Madhya Pradesh. Non- probability purposive sampling was used to select the sample. Data was collected using a structured knowledge questionnaire. SIM was administered after the pre-test. Post-test was conducted after 7 days of administration of SIM.

RESULTS:

The findings of the study proved that the patients have inadequate knowledge onselected aspects of weaning.The self instructional module by the investigator helped them to improve their knowledge. The effectiveness of SIMwas tested in the terms of gain in knowledge and the findings showed that the mean post-testknowledge score was significantly higher (18.92) than the mean pre-test knowledge score(15.90) and "t" value was (23.25). Hence the self instructional module was considered as an effective method to enhance the knowledge of the mothers regarding weaning.

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