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Effects of Weaning on Anthropometric Measurements of Children in two Communities of Akure North Local Government Area of Ondo State Nigeria

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Abstract: ***This project was a descriptive survey designed to study the weaning practices amongst mothers and the effects on the anthropometric measurements of their children in Iju/Ita-Ogbolu communities of Akure North Local Government Area of Ondo State Nigeria. A total of 200 mothers with children from birth to 24 months were randomly selected for the study. Hypotheses generated for the study were tented with chi-square (x2) at a level of significance of 0.05. Findings revealed that majority of the mothers had acceptable knowledge of weaning, were breast- feeding along with weaning diets, and used local weaning diets, more than commercially prepared complimentary foods. The mothers had a low practice of exclusive breastfeeding but breastfeed their children for as long as 24 months before the children are completely weaned from the breast. The relationships between the anthropometric measurements indicated that the children of the respondents had good nutritional statuses with minimal levels of deviations and malnourishment.***

Keywords: Weaning, Mothers, Children, Anthropometric Measurements

1. Introduction

Weaning is regarded as the process of introducing semi-solid and solid foods to breast or formula fed child so that those new foods contribute a substantial amount of child's energy and nutrient intake (Wharton 1989). Weaning also mean to accustom a child to the loss of mother's milk. According to this definition, the term has a dual meaning; to accustom an infant to the loss of mother's milk (gradual) or to detach him from mother's milk (abrupt). It also makes provision for detachment from maternal affection which is an integral part of the weaning process.

Child nutrition and weaning

It is inadequate to restrict the term weaning to mean "stopping breast-feeding"; rather it should include all the phenomena involved with the introduction of non-milk food. In pursuance of primary health care, component of promotion of food supply and proper nutrition, a lot of efforts have been made by the World Health Organisation (WHO) (1988) the Federal and State Governments in Nigeria to promote breast- feeding and weaning practices including promotion of food security and food fortification.

Impact of nutrition on child's growth and development

The World Health Organisation (WHO) and United Nations Children's Fund (UNICEF) (1988) meeting on Infant and Youth child affirms the need for sustained national and international action, and for active participation of families, and especially mothers in the elimination of malnutrition and promotion of health. Nutrition plays a vital role in the healthy development of the child. Various feeding practices are known to affect the child's nutritional status, and there have been concerted efforts to promote good nutrition for child growth and development by both national and international bodies.

Caine (1984) believes that nutrition is more important in infancy than at any other age because starvation may permanently; hamper both physical and mental development of a child, since undernourished infants are very susceptible to all types of infection.

Hence the child's nutritional needs are essential for the present, as well as building store for future use in terms of structure and food habits. Breast milk on its own is sufficient for most infants until six months of age. Some infants continue to grow satisfactorily for six months or even for a short time after that. Others apparently needing more energy and nutrients than the breast milk can provide, show signs of hunger and/or a slowing in weight gain around four months or earlier. However, most infants need additional foods by the age of six months. The purpose of these foods is to have enough energy, protein and other nutrients to grow normally. It is important that breastfeeding is continued for as many months as possible, (minimum of 24 months) as it provides useful amounts of energy and good-quality protein.

In the Western world a general awareness of the nutritional needs of the children together with the ability of the average family to provide the necessary foods, have helped to remove most of the dangers of the weaning period. In the peasant society, however, parents are generally unaware of the dietary needs of children, and several customs associated with weaning are likely to give rise to nutritional deficiencies.

Statement of problem

This is to determine weaning practices among mothers and the effects on the anthropometric measurement of their

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children in Iju/Itaogbolu communities of Akure North Local Government Area of Ondo State Nigeria.

Objectives of the study

While the broad objective of this study is to know the effects of weaning practices on the anthropometric measurements of children, the objectives of this study also include:

1) To find out the weaning practices among the mothers.
2) To determine what type(s) of weaning diets used by the mothers.
3) To obtain information on the use of local and complimentary weaning diets; and
4) To determine the composite nutritional status of the children through anthropometric measurements.

Significance of the study

The nutritional status or an African child is in the utilisation of local and home-made produced weaning foods, therefore knowledge of the locally available weaning used, and their nutritive value will aid in improving their nutritional status. It is imperative to study local weaning practices of infants coming off the breast, age of introduction of new foods, reasons for providing such weaning foods, foods that are locally available, how these are usually prepared and served, and effects on the anthropometric measurements of the children will usually suggest a number of options for improving weaning foods.

Information obtained will further our understanding of weaning practices and factors affecting them in the rural area in addition or as well as helping the health and nutrition educators in identifying problems encountered in weaning and ways of solving them through effective nutrition education.

Findings of this study will help in the formulation of multi-mix made up of locally eaten and available staple foods such as cereals, legumes and vegetables, which will form a basis for improving the already existing weaning foods made from local multi-mixes. Also, increased consumption of weaning diets that are low in nutrient will be discouraged or consumption of those weaning diets that are nutrient dense would be encouraged. In addition, the awareness of basic hygiene and sanitation existing locally will he used to determine the measures that can be reasonably taken to avoid or diminish contamination of infant and child diet for decreasing and eradicating the health hazards associated with weaning and enhance the nutritional status of children. (Cutting and Elliot, 1994).

2. Literature Review

This section review literature on some theoretical and conceptual frameworks, with empirical studies fundamental to this project in order to identify the premises and assumptions that are related to 'weaning and anthropometric measurements of children.

3. Theoretical Framework

Abraham Maslow's theory of needs

Human needs theorists view individuals, as integrated whole beings who are motivated by internal and external needs that create tension. To reduce this tension, an individual seeks to meet the specific needs through goal directed behaviour. Maslow (1970) classified human needs into seven categories of predominance and placed them in a hierarchy. This hierarchy of needs begins with basic fundamental needs of the individual that must be satisfied before proceeding to the next higher level. Throughout life, the individual strives to satisfy needs at a level, but at a particular period, needs within one or more categories may be predominant. The desire to gratify human needs at each level motivates the individual and strengthens goal directed behaviours.

Many of human behaviours are indication of internal needs or desire, though the link between needs and action may not be direct but there is a persisting force motivating an individual to behave in a particular way.

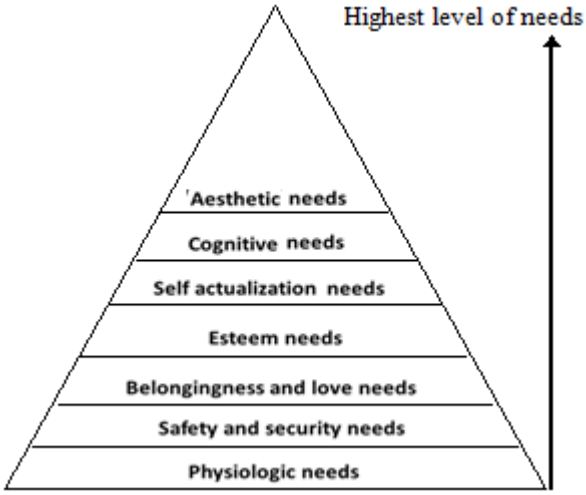

Figure 1
Adapted Maslow (1970) Hierarchy of Needs Pyramid

In relation to Maslow hierarchy of needs and this study, only the physiologic viewpoint will be examined. The physiologic need is the most basic need which must be satisfied to an extent before other higher needs are attended to. There are a variety of fundamental physiologic needs that have been identified, including food, air, sleep, fluid, exercise, rest, water, elimination, shelter and sex. For survival and satisfactory function, every individual must have these basic needs met. Some physiologic needs are constant and immediate. Any situation in which they are not met would be life-threatening. Because of their immediacy, when one of these needs is sufficiently met, a person is motivated to act on meeting this need and nothing else. The person will think of nothing, but this need and will focus all attention and energy in satisfying the need.

Furthermore, two approaches have emerged in relation to physiologic needs. These are the sociological and anthropological approaches. The sociological approach is seen as a facilitating activity. The establishment of goals provide the direction his/her activities will follow. It guides him/her to know what type of role performance or attitude is expected of him/her. The goals also influence the interaction pattern that develops with individuals around him/her in meeting the goals.

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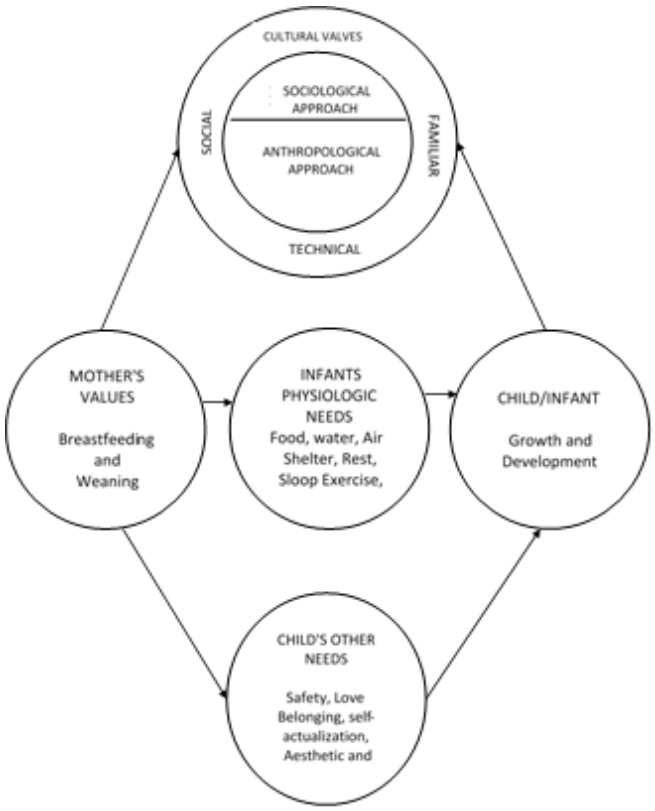

Figure 2: Maslow's Modified Theory of Need

The Physiologic Need Perspective

The anthropological approach perceives all the values and purposes of meeting the physiologic needs. It examines all the social, technical and familiar behaviours that are a part of the broad concept of "culture". In fact, the entire way in which an individual behaves, the priority of the physiologic needs he/she attempts to satisfy and the means he/she chooses to satisfy them are functions of his/ her culture.

Relevance of the theory of needs to the study

According to Maslow (1970), the most basic need is the physiologic need and food is one of the most important physiologic needs. There are other physiologic needs that are not of immediate nature but still necessary to maintain health. The infant's physiologic needs must be met and in line with the sociological and anthropological approaches, the mother is seen as one who establishes the objectives/goals which are directed towards meeting these needs.

The values women placed on breastfeeding and normal growth of their children will therefore affect their decision to breastfeed and wean; and the choice of diet/food to satisfy the physiologic needs all premise on the mother's role performance and the cultural values.

Hypotheses

1) Age of mother does not influence proper time of introducing foods other than breast milk to the child.
2) There is no significant relationship between the educational qualification of mother and proper time of introducing weaning diets to the child.
3) Occupation of mother does not influence introduction of weaning diets to the child.
4) Marital status of mother does not: influence proper introduction of weaning diets to the child.
5) Mothers who have better knowledge of weaning do not use local weaning diets more than commercially prepared complimentary diets.
6) Mothers' preparedness to start weaning at six months does not have any significant relationship on child's anthropometric measurement.

Concepts and theories or weaning and anthropometry

Weaning is a crucial event in the life of an infant. Pathological effects that; occur at weaning include both over nutrition and under nutrition. All these syndromes are caused by the use of weaning foods of inappropriate nutrient quality and quantity, use of foods too high in energy, protein, vitamin A or B - carotene, vitamin D, Iron, zinc can produce their respective under nutrition syndromes. Parents and health practitioners must be alert to the need for proper weaning foods at the correct time as well as the danger of badly formulated weaning diets (Wharton, 1989).

Brown, Black and Beakers (1982) defined weaning as, the introduction to the infant any solid, semi-solid or liquid other than breast milk. He observed that in developing countries, weaning may occur in the first several days of life when a thin gruel is provided because of discard of colostrum for certain cultures or in instance of maternal death or postpartum illness, when milk other than breast milk is provided. However, provision of milk directly from a human female other than biological mother does not mean weaning but if milk from another mammal is provided, it is considered weaning. Thus, infant who never received breast milk are considered weaned at birth with weaning defined as the point of complete bottle feeding. After the first six months when supplemental foods are introduced breastfeeding should precede supplemental feeding. Breast feed before offering other food, possibly, so that the infant's hunger is satisfied first by breast milk and secondly by other foods. This pattern will ensure that the nutrients contained in breast milk are consumed (Institute for Reproductive Health 1992). Some weaning foods used in developing countries are almost cereals fortified with milk powder or bournvita, been (soya) and nuts or fat. Most of the traditional weaning foods have a low nutrients density (these gruels usually have poor nutritional qualities and lack many benefits provided by weaning food specially designed for infants' nutritional needs (Jansen 1985). Johnson, Goyes and Ogbeide (1975) observed that all children are breast fed; the great majority receive artificial milk supplements, though this is frequently introduced at an early age. The majority of children receives milk feeds (either breast or artificial) until at least 18 months of age, food other than milk tends to be introduced at an early age, usually by four months. Observation shows that during weaning period the feeding patterns and practices are critical in determining whether a child will grow poorly or well.

Semi-solid foods are usually introduced into the baby's diet at around six months while breastfeeding continues up to nine months, breast milk is still the most important food in a baby's diet and one should offer it to as a part of each meal,

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as well as whenever the child demand for it. In the great majority of infants, there is no advantage in introducing solid foods before four months of age. Finely milled cereal and fruit purees should be introduced first. They must be given initially in small amount for example (1-2 mix) and after the milk feed is completed (WHO/UNICEF, 1988). When giving supplement foods, mothers should breastfeed first so that their babies will continue to receive the benefits of breast milk and the supply of milk will be maintained (Interagency working group on breastfeeding 1992).

It has been observed in studies on feeding practices in Nigeria, that infants were fed on breast up to 9-15 months of age among the rural mothers of Western Nigeria, (Omololu, 1975), while it is between 15-19 months of age among the Igbos of Eastern Nigeria (Kazimi and Kazimi , 1979) and between 12-18 months among the Hausas of Northern Nigeria (Osuhor, 1980). In a study of weaning food in developing countries, it was discovered that the first weaning food introduced is often, gruel of starchy paste with rice, maize, oatmeal, wheat crushed with plantain and or potato.

Weaning pattern in developed and developing countries

The age at the initiation of weaning varies substantially among societies. Social and anthropologic factors clearly are more important than physiologic ones in determining the age to wean. For simplicity, two main patterns can be described, with a fulcrum at approximately six months, those are early weaning pattern (at less than three months) and late weaning pattern (at six months and above). The weaning pattern in developed countries is largely an earlier one, that is, before six months. Weaning in developing countries may be earlier than that in developed countries.

Mudambi (1981) in his research titled breastfeeding practices of mothers from Midwestern Nigeria reported that literate mothers gave many reasons for early weaning, some had to go back to school, and others had to go back to work. Illiterate mothers were able to carry on breastfeeding for a long time because many of them could carry their babies on the back wherever they went, so it could be said that education and occupation tend to be influencing factors which also reflect in the socio-economic classes of the mothers.

Morley (1979) observed that in most rural societies, the mothers stopped nursing infant, because of another pregnancy, and in some, as in South America, this seems: to be true. Further information gathered show that the decision was taken, not by the mother or father, but by some older women in the household. This decision is made not according to the age of the child but according to its size and general nutritional state.

Weaning process and methods

It is inadequate to restrict the term weaning to mean "stopping breast-feeding" rather, it should include all the phenomena involved with the Introduction of non-milk foods regardless of whether given:

1) To a child who has never been breast fed;
2) To a child for who the gradual substitution of semi-solid (weaning foods as supplements) for mother's milk will sooner or later signify the end of breastfeeding and the introduction of a classical diversified diet or;
3) As in developing countries and for under privilege groups in industrialised countries, to babies who continue to be breastfed but whose inadequate growth clearly shows that their nutritional needs are not met.

Although practices differ among cultures and social groups, infants need other foods in addition to breast-milk between the ages of four to six months. Whenever possible, breastfeeding should be continued as the basic source of nutrition as long as possible, supplementary foods should be introduced gradually and to the extent possible after breast feeding (WHO, 1988). When to wean the infant from the breast is an individual decision. As solid food or supplementary bottles are introduced and the infants take less milk at the breast, the milk supply naturally decreases. If this is a gradual process, there should be no breast engorgement or discomfort. The small amount of milk present in the breast after the last breast feeding is reabsorbed.

Fasakin (1982) described weaning as a substitution of breast or bottle milk with solid food or special childhood food. Weaning means more than removing the child from the breast, it includes the long critical period when the child slowly adapts to other adult food. There are two methods used for weaning a child, abrupt and gradual weaning. The abrupt weaning means the unexpected or sudden stop of breastfeeding to a child. It is practiced in some cultures and is dangerous to infants psychologically if breastfeeding must be terminated abruptly. Harfouche (1970) and Taba (1970) reported the physical implications of abrupt weaning during neonatal period and early infancy to be much more serious than the physical implications of abrupt weaning in late infancy especially in the family who could not afford to purchase adequate milk for the infant or when sanitary conditions and maternal care are in such a poor state, makes bottle feeding a hazardous experience. Abrupt weaning in late infancy has more serious psychological implication than those of early infancy due to the infant degree of attachment to the mother as a base of security. While gradual weaning means deprivation of breastfeeding to a child, it is not as dangerous as abrupt weaning. Gradual weaning can be accomplished at any time, by substituting formula for every other breastfeeding. Complete weaning can be accomplished over a period of a few days to a week.

In these methods, mothers use different styles for the deprivation of the child sucking. At times, they use bitter leaf smear on the nipple of the breast, to make it bitter for the child. This will conclusively result to child refusing to suck. Softly mothers do use cotton wool soaked in iodine, by placing it on the nipple to deprive the child of sucking.

Reasons for weaning

Nutritional reasons are most important for the introduction and selection of supplementary food in the second half of infancy. Many children are weaned early because their mother goes out to work. Some mothers wish to preserve their figures. The rural mothers keep their children on the breast longer because they cannot afford the cost of alternative infant foods. One of the most common causes of weaning in the developing world is pregnancy because some

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women believe that the breast-milk of a pregnant woman is harmful to the infant. This leads to sudden weaning without getting the child used to other foods. Other minor causes of weaning are the belief that the child is too old or that either the child or the mother is ill. Some stop breast-feeding on the advice of friends and relatives.

Puerperal depression may have a harmful effect on breastfeeding, as the mother will lose all interest in breastfeeding her infant, and rapidly lose her breast milk. In several years of caring for many infants in West Africa the only occasion on which it was necessary to remove the baby from the breast was a baby over one and half years old, whose mother was suffering from several protein-calorie deficiency, oedema and other sign of kwashiorkor. Carcinoma of breast was another reason and a study of breastfeeding in the Gambia by Poskitt (1984) on total lactation failure occurred only once and that in a mother with severe and widespread tuberculosis from which she did not recover.

Breast milk is the best food for babies and it provides sufficient nutrients for growth, energy and prevention of disease. However, as baby starts to crawl, walk and run, his food needs increases. Foods like cereals, vegetables and staples would be included in his diet, by the age of six months, the infant has learned to bite and chew, showing that he is ready for food other than milk.

Factors affecting weaning practices

In developing countries Poskitt (1984) observed that maternal nutrition may be poor and milk output inadequate to meet the energy demands of the growing infant. Thus, there is temptation to introduced milk early to provide a higher energy intake, while in affluent socialites, women rarely suckle, their infants frequently enough to maintain lactation beyond 3-4 months. The perceived need to wean may be a real one, since "affluent" infant may have higher energy requirements, because of their larger size and greater freedom of activity Omololu (1975) and Brown (1978) saw that the age when solid foods are first introduced into the diet is historically based on local customs, food taboos, available foods, religious factors, advise of relatives and friends, economic as well as the health condition of the mother and the infant.

Culture

Food avoidances and food taboos also alter the weaning practice. Omololu (1975) noted that eggs are not given to children in some parts of Nigeria due to the belief that they will grow up to steal and become thieves. So also, meats, fish, milk that promote healthy growth during the early development age are avoided due to beliefs and taboos. The process and pattern of weaning basically depends on cultural background, certain cultural influences play a major role in determining when certain foods are introduced into the weaning diet and the first weaning food in developing countries is usually a local staple food. Brown (1978), culture and tradition might make it difficult for the mother to give an adequate share of the food to her child.

Socio-economic status

Socio-economic status determines the types of weaning food used and the weaning pattern adopted. This in turn reflects on the nutritional Hiatus of the weaned infants. The condition of living of underdeveloped countries leads to exclusion of proteins weaning foods from the weaning diet of the infant (Tripp 1982).

Religion

Buddhist avoids using animal milk whereas Hindu and Moslem have no objection (Brown, Black and Beakers 1978). Harfouche (1970) and Osuhor (1980) observed that religious beliefs alter food acceptability, because some foods are strictly adhered to while some are avoided for religious reasons, like okro/okra soup by Celestial church members.

Education

According to the studies of Coote (1980), the age of introduction of solid food was associated with the level of maternal education. Several studies indicate that lower level of education is a reflection of poor hygiene and sanitary practices that results in contamination and thus lead to infections like diarrhoea during weaning (Mata et al, 1978).

Urbanisation

Urbanisation has made a change from purely traditional practices to westernised type of weaning foods. In Nigeria many of these baby foods are becoming increasingly scarce and too expensive for many families especially those in the low socio-economic groups (Ketiku and Ayoku 1984). As a result of this, the formulated food is over diluted and thus increases the risk of early weaning which increases diarrhoea diseases, malnutrition and infant death.

Nutritional problems during weaning

During the protracted weaning process, there is a continuous exposure to infection and a progressive deterioration of the nutritional state (Mata et al, 1978)The type of nutritional deficiency with high prevalence in the weaning period are the severe types of protein calorie malnutrition (PCM), marasmus and kwashiorkor and a whole pattern of transitory forms between the reasonably well-defined extremes. (Taba 1970) Infants are at the greatest risk of having diarrhoea, when foods other than breast milk are first given. This is because during weaning, infants are being exposed to food-borne germs for the first time and they are losing the protection of breast milk, which has anti-infective properties. Feeding bottles and rubber teats which are particularly difficult to clean are often breeding grounds for germ, infants older than 6 months to receive more than just breast milk in order to grow well, balanced against the risk that this will result in diarrhoea, has been called "the weaning dilemma" (World Health Organization, 1988).

Furthermore, during the weaning period, children often suffer from infections like whooping cough, measles and diarrhoea. If their diet has been adequate the symptoms are usually less severe than those of undernourished children. Malnutrition is more common during transitional period than in the first 6 months of life, because families may not be aware of the special needs of the infant, may not know how to prepare weaning food from the foods that are available locally or may be too poor to provide sufficient nutritious

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foods. In many places, traditional child feeding habits that were reasonably satisfactory can no longer be followed, because of urbanisation, new pattern of family structure, higher prices of foods and changes in the pattern of women's work.

Introducing particular foods

Fruits and fruit juices:

They are sources of minerals and vitamins and very useful as additional sources of energy from the age of one month, and the fruit juice can be taken comfortably, and whole fruit can be introduced as soon as he can grasp and hold on to objects. Fruits like orange can he offered when the infant is able to drink from a cup usually at the age of 7 months. This is a nutritional need, for juice have adequate amount of vitamin C.

Vegetables

Vegetables are more difficult to digest but are useful sources of minerals, vitamins and sometimes proteins. It helps to soften the fibres and so make them more digestible. Infants who cannot digest vegetables pass them out unaltered in the stool, if this happens it is better to take vegetables out of the weaning diet for a couple of weeks.

Developing recipes for weaning diets

The foods chosen for the weaning diet recipes should be easily available from gardens or local markets, low in cost, and used frequently in most households.

The most popular and suitable recipes are those which have been developed by local mothers with the help of a community health worker, and after developing simple recipes, they are tested on few children in one or two meals daily to know how they like the recipes, and whether they tolerate it without any reaction noticed, and if any, to discontinue the recipes.

The simplest recipes for weaning diet are one which has only two ingredients, for example tubers mixed with legumes. This is called basic mix; however other foods must be added to make a complete meal. Recipes that are more suitable for the weaning period and for feeding later are called multi mixes.

A multi-mix has four basic ingredients.

a) A staple as the main ingredient preferably cereal.
b) A protein supplement from a plant or animal food like beans, groundnut, meat and fish.
c) A vitamin and mineral supplement vegetables and fruits.
d) An energy supplement, fat, oil or sugar to increase the energy concentration of the mix.

When these four ingredients are used together in suitable proportions, they form a complete meal. And this was illustrated as a "food square". The food square can be useful concept when teaching how to choose ingredients for weaning diets (Mitzner, Scrimshaw and Morgan 1985).

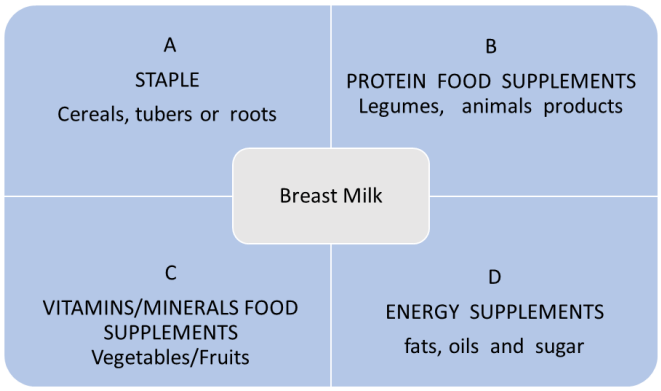

Figure 3: The food square table
Source: Cameron and Hofvander (1983).

The food square table has breast milk in the middle because it is a complete food. It is an important food during the weaning period and although after some time, the daily amount may not be large, it is a very valuable source of energy and nutrients. The square has four parts, one for the staple and one each for protein, vitamin/minerals and for energy supplements.

Review of methods used in physical assessment of children

The physical assessment of children can be carried out by the following methods:

a) Clinical examinations
b) Physical measurement (anthropometry)

i. Clinical examination:

Clinical examination involves physical examination from head to toes, to detect the presence or absence of any form of symptoms of nutritional deficiency diseases. Clinical signs have the disadvantages of being subjective, difficult to standardise and express quantitatively and are not constantly noticed especially in mild to moderate malnutrition. The clinical signs vary from one part of the world to another. Some signs of malnutrition are not specific to lack of one particular nutrient and can often be produced by various non-nutritional factors. The classify list of signs used in clinical examination are:

Hair - Lack of lustre, thinness and sparseness, flag sign and easy pluck ability.
Face - Moon face, diffuse depigmentation
Eyes - Pale conjunctiva, Bigots' spots, corneal xerosis and keratomalacia
Lips - Angular stomatitis, angular scar and cheilosis
Tongue - Oedema, anthropic papillae
Teeth - Mottled enamel
Gums - Spongy, to gums
Skin - Xerosis follicular hyperkeratosis (Adapted from Jelliffe 1966).

ii. Anthropometry

The anthropometric measurements deal with the measurements of the variation of the physical dimensions and the gross composition of the human body at different age level and degree of nutrition. Anthropometric indicator is an Index of nutritional status used to separate normally nourished children from malnourished, and to identify them

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as targets for preventive and therapeutic service (Jelliffe 1966). The common anthropometric measurements used for nutritional assessment are:

(i) Height
(ii) Weight
(iii) Mid upper arm circumference
(iv) Head circumference
(v) Chest circumference

These anthropometric measurements indicate the degree of malnutrition when considered the age of the infant, shows the parameters that could be compared with the recommended standard (Whitehead and Paul 1984). The recent WHO recommendation was based mainly on measurements of healthy children in Boston USA, which differ a little from similar measurement in Edinburgh and London UK. W H O (1983). recommends their worldwide use for measuring the nutritional status as standard.
The parameters are:

i. Height for age

This assessment was based on the height for age which indicate the past nutritional status, and weight for age which indicate the present nutritional status, thus, using these parameters the children are classified as normal or stunted if there is height deficit for age and wasted if there is weight deficit for age.
Stunting growth is graded as follows:

(a) Grade 1-90 - 95% of the reference value
(b) Grade 2-85 - 89% of the reference value
(c) Grade 3 - less than 85% of the reference value.

Waiting growth is graded as follows:
Grade 0 - Greater than 90% of reference value
Grade 1 - 80 - 90% of the reference value
Grade 2 - 70 - 79% of the reference value
Grade 3 - less than 70% of the reference value (Waterlow 1979).

The index of weight for height relates body mass to stature. Acute under nutrition is characterised by low weight for height and is called wasting. The index of height for age is a measure of linear growth. Waterlow classification using height for weight has the advantages of being used in places where ages of children are not verifiable.

ii. Weight for age and (iii.) Mid upper arm circumference

Weight has been generally accepted as the simplest indicator of growth retardation due to malnutrition (Morley 1979). Waterlow classification was based on the presence of absence of oedema as follows, children with:

a) 60 - 80% of expected weight for age with oedema as having kwashiorkor.
b) 60 - 80% of expected, weight for age without oedema as underweight.
c) Less than 60: of expected weight for age without oedema as nutritional dwarfing.
d) Less than 60% of expected weight for age with oedema as marasmic kwashiokor.

Based on the standard of weight for age:
76 - 90% - first degree or mild malnutrition
61 - 75% - second degree or moderate malnutrition
Below 60% is third degree or severe malnutrition. (Gomez et al. 1955).

iv. Head circumference and (v.) Chest circumference

The ratio of chest/head circumference is of great value in detecting protein energy malnutrition (PEM) in early children. In well-nourished children, the chest circumference becomes larger than the head after 6 months of life. In PEM, the chest does not develop well, thus the head is bigger resulting in chest/head ratio less than 1. (Whitehead and Paul, 1984).

Empirical studies related to weaning and anthropometrics

Anthropometry is widely used as a tool to estimate the nutritional status of populations and to monitor the growth and health of individuals. The collection of up-to-date information on overall and cause-specific mortality in children is becoming more and more important because of its usefulness to a wide variety of decision-makers. Many studies have been carried out on support of children's nutrition, weaning and anthropometrics.

Richardson (1976) tested Jamaican children with a history of severe malnutrition and stated that those with chronic under nutrition in addition to social deprivation had significant reduction in their anthropometrics and intelligent quotient scores (IQS). While looking into effects of socio-economic, environment and care on growth, Ebrahim (1983) stated that within a society birth weight tend to be higher in the upper socio-economic groups compared with low income group. UNICEF (1987) also reported a 38-40% reduction in growth retardation in Nigeria on improvement of quality, availability of water and sanitation.
In another study in Santiago involving 500 preschool children, Monckeberg (1969) noted the strong relationship between nutrition and development. In Guatemala, Russel (1976) noted that as birth rate spaced out, height increases especially in male children. This may be as a result of more care and time given to children as against much work on the parents and less breastfeeding when births are too close.

Marandi, Aftali and Hossaini (1993) interviewed 900 mothers in order to identify the reasons for early weaning in Teheran Iran and found out that the duration of breastfeeding was shortened by the following factors: use of supplementary formula, mothers' high level of education and husbands with well-paid jobs.

Having conducted studies on anthropometrics, Benefic (1980), Roche (1975) found that anthropometric data in spite of their limitations provide the most basic assessment of physical growth, body composition and general nutritional status that is feasible for use in screening programme and standard physical examination. Jellife (1966) after his studies on anthropometrics maintained that measurement vary greatly in number, complexity, accuracy and usefulness at different age group.

Kasongo (1983) project team approved anthropometric parameters as the most proper, in nutritional assessment of

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infants under emergency setting. Its values can be used to screen a population of children, in order to identify those who are especially at higher risk. This method of nutritional assessment has been extensively used in developing countries for the past several decades, to ascertain the nutritional status of large number of children who are malnourished (Shrestha, Tyson and Selenje 1990). However, Cole (1990) suggests that there should be a reference standard against which to compare values obtained from the population under study.

In the study carried out by Johnson, Goye and Ogbeide (1975) on nutritional status and weaning patterns of Benin City Nigeria infants, the children exhibited satisfactory height for age as compared with the Harvard Standards, weight for age was satisfactory for the first year but then dropped suddenly in the second year to approximately 85% of the Harvard Standard, in other words, children who had been weaned in what has been judged to be a satisfactory manner also tended to have a correspondingly satisfactory weight for age. Those who have been weaned in an unsatisfactory manner tended to be underweight for their ages.

Ali (1975) in nutritional status of pre-school children in Egypt joined the survey teams in the Nutrition Institute, Cairo Egypt, to investigate the nutritional status and the weaning practice of about 1000 infants and children not older than two years of age. The results of the study showed that the growth curve (Height) of the average Cairo infants in this group of population began to deviate from the derived pattern as early as the third month of life. By the end of the second year of life, the average weight was about three kilograms less and the average height was about 12 centimetres less than the normal western standards, because of poor weaning practices and lack of proper supplement in the diet of the growing child at their different state of life.

4. Research Design and Methodology

This study was purely a descriptive survey and the data was collected through the use of questionnaires.

Research setting
This study was carried out at Iju/Ita-ogbolu communities in Akure North Local Government Area of Ondo State Nigeria. The local government was created by the Federal Government of Nigeria on October 1, 1996. Iju/Ita-ogbolu has a population of about 389,000 according to 1963 census and a projection of 403,000 in 1991 census. The local government headquarter situated in-between the two communities.

The people of Iju/Ita-ogbolu were mainly Yoruba while the villages around these communities were also partly inhabited by the Igbiras. Their occupations are mainly farming, trading and a few are civil servants. The majority of these people are Christians; Muslims while a small proportion are involved in traditional religion. Iju/Ita-ogbolu communities have a basic health clinic, a dispensary, maternity centre and a comprehensive health centre which is situated in-between, serving the two communities, and the adjoining villages. Apart from these two health care facilities, traditional health care facilities are also available in form of herbal homes, spiritual healers and diviners.

Population
The target population consisted of children from birth to 24 months of age who live with their mothers.

Sample selection
Incidental sampling technique was carried out over a period of two weeks in Iju/Ita-ogbolu communities during infant welfare clinic and immunization clinic days where mothers were easily reached and selected for the study, contact addresses of mothers were taking for studies to be carried out at their homes.

Instruments
The instrument that was used for data collection was questionnaire. The question was constructed by the investigator after an extensive literature review into the research topic. The specific items that were measured in the study were sectionalised to:

a) Personal data or demographic variables of mothers.
b) Knowledge of weaning
c) Use of variety of local weaning diets versus complementary diets.
d) A Child's anthropometric measurements, growth and development.
e) Mother's desired-ness to wean and her perceived effects on their children)

Psychometric properties of the instrument's validity of the instrument
Face and content validity was used to validate the instruments by going through some series of testing before the final administration of the instrument.

The questionnaire was administered to ten mothers of children who are from birth to 24 months that brought their children to infant welfare clinic at Arakale Comprehensive Health Centre in Akure South Local Government Area of Ondo State. These were collected same day and their addresses were collected for re-administration of questionnaires for re-tent 2 weeks later in their homes, this was successfully carried out.

Reliability of the instrument
A pilot study was carried out using 20 mothers and their children within the ages of 0 to 24 months at Akure South Local Government Area, and same repeated after two weeks because Akure North Local Government was carved out from Akure South Local Government on the first of October 1996. The test-retest reliability was established using inter-rate scores of the former and later pilot studies with calculated agreement between 78 per cent and 84 per cent respectively.

Administration of instrument
A letter of introduction was obtained from the Department of Nursing; University of Ibadan Ibadan Nigeria to the Chairman of Akure North Local Government at Iju/Itaogbolu, permission was also obtained from the health

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workers for data collection. A brief introduction note that explains the purpose of the study and assuring the respondents of the confidentiality and anonymity of their participation was written in the questionnaire. Instructions on how to fill the questionnaire was clearly written at the beginning of each section and the administration of the instruments were done by the investigator and some health workers who were tutored on the procedure.

Method of data analysis

The data obtained on each item in the questionnaire was analysed by using a desk calculator to determine the mean score for each category of responses. The mean scores of all the responses were calculated and inferential statistics was used to test the generated hypotheses.

Testing of research hypotheses

The data collected from the respondents was analysed using descriptive and inferential statistics, that is the frequencies, percentages and mean of all the respondents were computed. In order, to accept or reject the research hypotheses, chi-square (x2) was used to test the hypotheses at level of significance of 0.05.

5. Research Findings

Descriptive and inferential statistics were used in analysing the findings of the study.

210 mothers with children between birthday and 24 months were selected using incidental sampling procedure. 200 of these respondents were used for data analysis because 10 of the respondents gave incongruent information which rendered their data unfit for analysis.

The hypotheses were tested using no- parametric test (x2) to test for relationships that existed in the stated hypotheses at a level of significance of 0.05 (i.e. 5%).

Table: 4.1: Ages of respondent in percentages

Age in years	*Frequency*	*Percentage*
16 - 20	18	9
21 – 25	16	8
26 - 30	48	24
31 – 35	40	20
36 – 40	46	23
41 – 45	21	10.5
46 - 50	11	5.5
Total	200	100

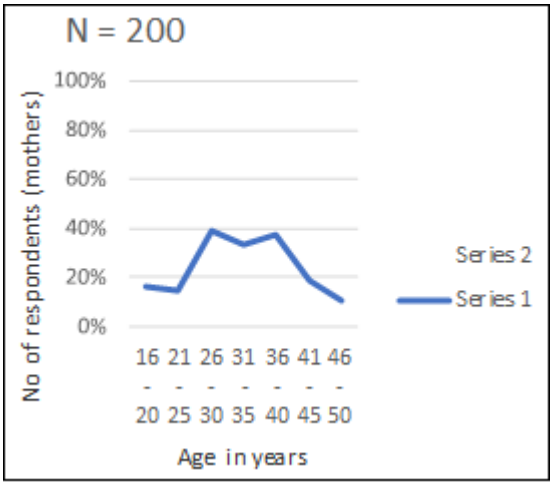

Figure 4: Frequency Polygon showing age distribution of respondents

Frequency Polygon showing age distribution of respondents

From table 4.1, 18 (9%) of the respondents were within the age of 16-20 years; 16 (8%) were within 21-25 years; 48 (24%) were within 26-30 years; 40 (2 0%) were within 31-35 years; 46 (24%) were within 36-40 years; 21 (10.5%) were within 41-45 years; while 11 (5.5%) were within 46-50 years of age. The table also showed that majority of the mothers 134 (67%) were between the ages of 26-40 years.

Table 4.2: Educational qualifications of the respondents in percentages

Level of education	*Frequency*	*Percentage*
None/No formal education	42	21
Primary school education	72	36
Secondary school education	64	32
Post-Secondary school education	22	11
Total	200	100

This table showed that 42 (21%) of the respondents had no formal education, 72 (36%) had only primary school education, 64 (32%) had secondary school education, and 22 (11%) had post-secondary school education. Majority of the respondents, 136 (68%) had either primary or secondary schools' education or both. Generally, 158 (79%) of the respondents went to school and had several of educational qualification.

Table 4.3: Occupation of the respondents in percentages

0ccupation	*Frequency*	*Percentage*
Housewives	51	25.5
Civil servant	28	14
Farming	67	33.5
Trading	54	27
Total	200	100

The table showed that 51 (25.5%) of the respondents were housewives; 28 (14%) were civil servants; 67 (33.5%) were farmers and 54 (27%) were traders.

From the data, homemaking, farming and trading were the main occupations of the mothers while a few of them were civil servants.

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Table 4.4: Religious Practices of the respondents in percentages

Religion	*Frequency*	*Percentage*
Christianity	69	34.5
Islam	104	52
Traditional	27	13.5
Total	200	100

This table showed that 69 (34.5%) of the respondents were Christians, 104 (52%) were Muslims, while 27 (13.5%) were traditional religionists. Majority of the mothers were Muslims.

Table 4.5: Marital status of respondents in Percentages

Marital Status	*Frequency*	*Percentage*
Single	18	9
Married	156	78
Widowed	11	5.5
Divorced	6	3
Separated	9	4.5
Total	200	100

This table showed that majority of the respondents 156 (78%) were married, 18 (9%) were single, 11 (5.5%) widowed, 9 (4.5%) were separated, and 6 (3%) were divorced.

Table 4.6: Incidence of mothers on breastfeeding practices

Mother's Age Range	*F*	*No. of Mothers breastfeeding presently*	*No. of children breastfed*	*No. of children not breasted*
16 – 20	18	8	26	2
21 – 25	16	12	42	13
26 – 30	48	37	71	19
31 – 35	40	48	121	24
36 – 40	46	39	174	32
41 – 45	21	10	104	27
46 – 50	11	-	57	22
Total	200	154	595	139

This table showed that 154 of the respondents were breastfeeding presently and 46 were not. There was a total of 734 children born to the 200 respondents out of which 595 (81.06%) were breast fed and 139 (18.94%) were not breast fed for various reasons ranging from mother's ill health to conditions or problems with the children at birth.

Table 4.7: Respondents earliest time of introducing foods other than breast milk

Age of child	*Frequency*	*Percentage*
1 -2 months	68	34
3 months	21	10.5
4 months	38	19
5 months	25	12.5
6 months	35	17.5
7 months	9	4.5
8 months	4	2
Total	200	100

The earliest time of introducing foods other than breast milk to the children was two months by 68 (34%) respondents. At three 21 (10.5%) respondents gave their children other foods; at four months 38 (19%) respondents; at five months 25 (12.5%) respondents, at six months 35 (17.5%) respondents, at seven months 9 (4.5%) respondents, and at eight months 4 (2%) respondents introduce other foods to their children. The above table shows that the practice of exclusive breastfeeding by mothers is very low as 152 (76%) of the respondents introduced foods other than breast milk to their children between two and six months of age.

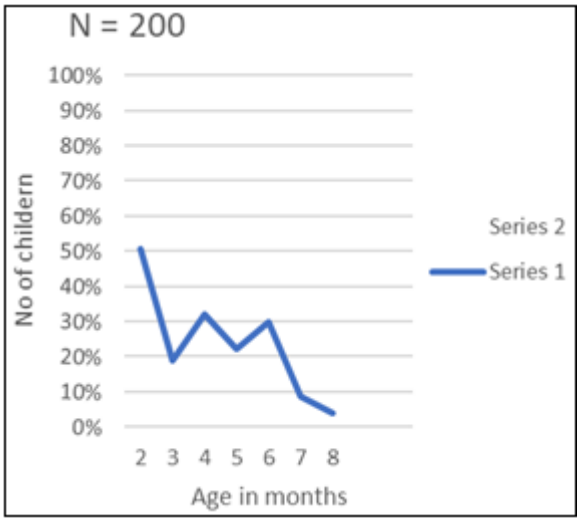

Figure 4: Frequency polygon - showing time of introducing weaning diets

Table 4.8: Type(s) of first weaning diet(s) given to the child

Types	*Frequency*	*Percentage*
Pap only	31	15.5
Pap with artificial milk	73	36.5
Pap with soup/moin-moin	22	11
Mashed rice with fish soup	18	9
Mashed potato/yam with soup	11	5.5
Commercially prepared		
Complementary foods	45	22.5
Total	200	100

The table shows that pap with artificial milk is the first weaning diet most mothers gave to their children. 73 (36.5%) of the respondents give this recipe, while 45 (22.5%) of the respondents gave commercially prepared complementary foods, 31 (15.5%) gave pap only, 22 (11%) gave pap with soup or moin-moin, 18 (9%) gave mashed rice with fish soup, and 11 (5.5%) gave mashed potato or yam with soup.

Table 4.9: Act of giving local or commercial complementary food to children

Types	*Frequency*	*Percentage*
Locally prepared	126	63
Commercially prepared	74	37
Total	200	100

Most of the mothers 126 (63%) preferred locally pre-pared complementary foods, while 74 (37%) preferred commercially prepared complementary foods.

However, not all mothers that preferred commercially prepared complementary food gave it to their children (see Table 8) as only 45 (22.5%) gave this to their children.

Table 4.10: Respondents' practice of breastfeeding a long with weaning diets

	Frequency	*Percentage*

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Yes	177	88.5
No	23	11.5
Total	200	100

Majority of the mothers 177 (88.5%) gave their children along with weaning diets while only 23 (11.5%) of the respondents did not give breast milk to their children, weaning diets were introduced.

Table 4.11: Anthropometric measurement of the children

Age in Months	Frequency	Birth Weight in Kg		Present Weight in KG		Present Height in CM		** Mean Mid- Upper Arm Circumference in CM	Chest Circumference in CM	Head Circumference in CM	
		Average Birth Wt	Mean Dev	Average Birth Wt	Mean Dev	Average Birth HT	Mean Dev		Average Chest Circumference	Average Chest CIR	
1 – 4	47	3.0	0.1	4.10	0.4	61.5	1.5	10.80	36.6	37	5.0
4 – 8	57	2.98	0.12	5.73	0.77	70.2	1.80	11.90	39.6	40.51	5.49
9 – 12	61	3.02	0.08	8.02	-0.02	74.82	3.18	12.00	41.7	43.20	4.80
13 – 16	19	3.06	0.04	8.15	0.35	80.50	2.50	12.81	43.1	48.10	0.90
17 – 20	23	3.12	-0.02	8.20	0.80	84.38	1.62	13.31	46.0	48.90	0.60
21 - 24	21	3.01	0.09	9.52	0.48	88.61	1.39	14.94	47.1	49.20	0.89

The values are expressed as percentages of the Harvard Standard. (Stuart and Sterenson, 1959)
** Cut-off = 12.5cm at 1 year
Jelliffe (1966) Ref.Standard.

This table combined the anthropometric measurement of 228 children of the 200 respondents (mothers) of the study.
The sexes of the children were combined 47 children were within the age of 1-4 months. Their mean birth weight was 3.0kg while their mean present weight was 4.10kg, their mean present height was 61.5cm, mean chest circumference was 36.6cm, mean head circumference was 37cm, and the arm circumference (MUAC) was 10.80cm.

57 children who were within 5-8 months of age had mean birth weight of 2.98kg, mean present weight of 5.73kg, mean present height of 70.2cm, mean chest circumference of 39.6cm, mean head circumference of 40.57cm, and mean mid-upper arm circumference of 11.9cm.

61 children who were also within 9-12 months of age had mean birth weight of 3.02kg, mean present weight of 3.02kg mean present weight of 8.02kg mean present heights 74.82cm, mean chest circumference of 41.7cm, mean head circumference of 43.20cm and mean mid-upper arm circumference of 12.00cm.

19 children were within the age of 13-16 months. They had mean birth weight of 3.06kg, mean present weight of 8.15kg, mean present height of 80.5cm, mean chest circumference of 43.1cm, mean head circumference of 48.1cm, and mean mid-upper arm circumference of 12.81 cm.

23 children were also within the age of 17-20 months with mean birth weight of 3.12kg, mean present weight of 8.2kg, mean present height of 84.38cm, mean chest circumference of 46.0cm, mean head circumference of 48.90cm, and mean mid-upper arm circumference of 13.31cm.

21 children were within the age of 21-24 months with mean birth weight of 3.01kg, mean present weight of 9.52kg, mean present height of 88.61cm, mean chest circumference of 47.1cm, mean head circumference of 49.2cm and mean mid-upper arm circumference of 14.94cm.

Hypotheses testing
Hypothesis 1

Table 4.12: Age of mother does not influence proper time of introducing foods other than breast milk to the child.

Age of mothers	*Proper*	*Improper*	*Total*
16 – 20	7	11	18
21 – 25	9	7	16
26 – 30	28	20	48
31 – 35	29	11	40
36 – 40	27	19	46
41 – 45	12	9	21
46 – 50	5	6	11
Total	200	83	200

df = 6, alpha = 0.05
Calculated x2 = 6.828
Tabulated x2 = 12.59
Calculated x2 is less than tabulated x2 therefore, Ho is not rejected

Hypothesis 2

Table 4.13: There is no significant relationship between the educational qualification of mother and proper time of introducing weaning diets to the child.

Education qualification	*Proper*	*Improper*	*Total*
No formal education	12	30	42
Primary school education	39	33	72
Secondary school education	52	12	64
Post-Secondary education	14	8	22
Total	117	83	200

df = 3, alpha = 0.05
Calculated x2 = 29.90
Tabulated x2 = 7.82

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Calculated x2 is greater than tabulated x2 therefore, Ho is not rejected.

Hypothesis 3

Table 4.14: Occupation of mother does not influence introduction of weaning diets to the child.

Occupation	*Proper*	*Improper*	*Total*
Housewife	25	26	51
Civil servant	16	12	28
Farming	43	24	67
Trading	33	21	54
Total	117	83	200

df = 3, alpha = 0.05
Calculated x2 = 2.87
Tabulated x2 = 7.82
Calculated x2 is less than tabulated x2 therefore, Ho is not rejected.

Hypothesis 4

Table 4.15: Marital status of mother does not influence proper introduction of weaning diets to the child.

Marital status	*Proper*	*improper*	*Total*
Single	5	13	18
Married	97	59	156
Widowed	8	3	11
Divorced	4	2	6
Separated	3	6	9
Total	117	83	200

df = 4, alpha = 0.05
Calculated x2 = 11.37
Tabulated x2 = 9.49
Calculated x2 is greater than tabulated x2 therefore, Ho is not rejected.

Hypothesis 5

Table 4.16: Mothers, who have better knowledge of weaning, do not use local weaning diets more than commercially prepared complimentary diets.

Mother	*Used local weaning diets*	*Used commercially prepared complimentary diets*	*Total*
Better knowledge of weaning	108	35	143
Poor knowledge of weaning	18	39	57
Total	126	74	200

df = 1, alpha = 0.05
Calculated x2 = 33.75
Tabulated x2 = 3.84
Calculated x2 is greater than tabulated x2 therefore, Ho is not rejected.

Hypothesis 6

Table 4.17: Mothers' preparedness to start weaning at six months does not have any significant relationship on child's anthropometric measurement.

Mother	*Normal*	*Not Normal*	*Total*
Start weaning not earlier than 6 months	34	14	48
Start weaning before 6 months	104	48	152
Total	138	62	200

df = 1, alpha = 0.05
Calculated x2 = 0.098
Tabulated x2 = 3.38
Calculated x2 is less than tabulated x2 therefore, Ho is not rejected.

6. Discussion

The main objective of this study is to know the weaning practices amongst mothers and the effects on the anthropometric measurements of their children. Weaning according to this study, has been defined as the introduction to the infants any solid, semi-solid or liquid other than breast milk. On the other hand, anthropometry is a basic tool of nutrition assessment and is commonly used, in studies of nutritional status of young children.

Measurements of anthropometry used in this study were weight, height, arm circumference, chest circumference, and head circumference. The data collected from these measurements are presented as indices - height for age, weight for age, arm circumference for age, and chest/head ratio.

From the findings, the setting of the study was a rural community where majority of the mothers had none or low education and were mainly farmers, petty traders or housewives. Majority of the mothers were breastfeeding their children as at the time of collecting the data but with poor practice of exclusive breastfeeding which showed that weaning practices were commenced earlier than six months.

These mothers combined breastfeeding with giving of various weaning diets (gruels) with higher preference for use of locally prepared weaning diets fortified with fruits and vegetables. These findings agree with Cameron and Hofvander, 1983; Brown, 1978 and Osuhor, 1980 that cereals made into gruels are the most common first weaning foods in developing countries.

Majority of the mothers had a better knowledge of weaning; they could give acceptable definitions of weaning as they described the weaning practices they were involved in. However, during weaning period, the feeding patterns and practices differ.

Weight for age

Majority of the children had normal range of birth weights as there was insignificant mean deviation in the weight distribution. Majority of them (72%) were within the 75th and 90th percentiles while a few of them (28%) were below the 50th percentile. The latter group of children had weight deficits and consequent problems of growth failure. This could be explained to be the result of incidences of illnesses reported and observed on the children, and inability to meet the international references on weight for age due to inadequate energy and nutrient intake. This on the other hand is traceable to weaning practices of some of the mothers who introduced weaning diets to their children as early as the

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second month of life and general poor practice of exclusive breast feeding.

Height for age

This is an indicator of long-term nutritional adequacy and less sensitive to variations than weight measurement. The height for age of the children was within the range of the reference standards. 69.5% of the children were within the 75th percentile. However, those children (30.5%) below this percentile were within the age range of 9 to 12 months. This pattern of height deficit was however not commensurate with the age percentile which indicated that the deficit could be attributed to catabolism of the tissue protein to maintain metabolism functions, growth and fight diseases when required amount was deficient. This finding was in line with Waterlow et al, (1977) using height for age as a parameter to classify children as either normal or stunted if there is height deficit. As height for age is a long-term nutritional adequacy, the manifestation of height deficit within age 9 to 12 months showed the mothers' poor practice of exclusive breastfeeding and inappropriate introduction of weaning foods by 75% of the mothers before their children were 6 months old.

Arm circumference for age

This measures the degree of muscle and fat present in children. It serves as general index off nutritional status and useful when chronological age is not specifically known. In the study, none of the children attained the Jellife (1966) reference standard of mean arm circumference. Nevertheless, the measurements tend to approach normal as the age approach 16 months. The deficit in the arm circumference is also attributable to inadequate nutrient and energy intake and ill health which may probably add to poor body fat reserve since the children do not have enough energy.

Chest /head circumference

There was a normal chest/head ratio in age group 1 to 8 months. There was abnormal chest/head ratio observed in age group 13 to 24 months Whitehead and Paul (1985) concluded that the chest should become larger than the head after 6 months of life and that in protein energy malnutrition, the chest does not develop well, thus the head is bigger resulting in chest/head ratio of the children within the age group 13 to 24 months was 0.96, an indication of slight nutritional deficit. This could be attributed to deficient carbohydrate and protein ratio in the weaning diets, exposure of the children to stress by the mothers and ill health of the children. However, generally the relationship between the anthropometric parameters indicated that the children of the respondents had good nutritional status with minimal level of malnourishment.

From the hypotheses testing, the null hypothesis 1 was not rejected, thus implying that the age of the mother does not influence proper time of Introducing weaning diets to the child. This agreed with the findings of Coote (1980), and Mata et al, (1978) that once mothers have higher knowledge of weaning in terms of diets to use, the appropriate time to introduce the diets relate significantly with each other. Knowledge brings a change in behaviour, the chronological age notwithstanding, though other factors may interfere in this relationship.

Hypotheses 2 (null form) was rejected which revealed that there is significant relationship between the educational qualification of mother and proper time of introducing weaning diets to the child. Those mothers with post-secondary and secondary educational qualifications had better knowledge of the proper time to introduce weaning diets to their children, while mothers without formal education and primary education had low knowledge of when to introduce weaning diets to their children. Those mothers who have better knowledge of when to introduce weaning diets practiced exclusive breast feeding while those mothers who did not know the proper time to introduce the weaning diets were found to combine weaning diets with breastfeeding till their children were between 16 to 24 months.

Mothers' occupation does not influence introduction of weaning diets to the child. This premised on the publicity by health authorities that whatever a mother's occupation, this does not disturb her breastfeeding practices. More so, with weaning, mothers now have varied ways of food preservation and as use of feeding bottles is now becoming obsolete. Mothers can prepare gruels anytime without the fear of contamination and time wasting.

However, hypothesis 4 revealed that marital status of mother influence proper introduction of weaning diets. It also showed that married women know when to introduce weaning diets to their children. This premised on experience mothers have had on previous child rearing practices and probable support from their spouses financially and society.

Majority of the mothers who had better knowledge of weaning, use local weaning diets, while use of commercially prepared complimentary diets, was more embraced by mothers who had low knowledge of weaning. This agreed with Omololu (1975), Brown (1978) Mudambi, (1981), and Fasakin, (1982) that mothers tend to use local weaning diets because of availability of ingredients and no need to be involved in technical measurement of recipe and keeping in view preparation guidelines.

Local weaning diets are easier to prepare and are within what adults can also consume, therefore, any leftover can be consumed by the adult, hence, there is no room for wastage.

Hypothesis (null) 5 revealed that a mother`s preparedness to start weaning does not have significant relationship on child's anthropometric measurement. Effects of breastfeeding and weaning diets will then depend on the practices of the mothers and the qualities of the breast milk and weaning diets. The mother's preparedness to wean may enhance provision of weaning diet recipes but her knowledge, socio-economic status, education, marital status and disease condition are factors that could have influence on the child's anthropometric measurements.

On the whole, mothers in the setting continue to breastfeed for a long time along with weaning diets because many of them could carry their babies wherever they go. Introducing weaning diets to children earlier than 6 months indicates

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poor practice of exclusive breastfeeding. It had been the cultural practice to breastfeed a child until a mother was ready for another pregnancy when the child is then weaned completely from the breast.

Implication for nursing

Nursing is a multidimensional profession that relates with the consumers of the professionals in the community and in the health facilities. Nurses meet with mothers in the antenatal, intranasal, postnatal and maternal and child health welfare centres. It is imperative that nurses possess qualitative first-class information in order to educate the people in the community on the cost effectiveness of breastfeeding, advantages of breastfeeding, and weaning practices that are beneficial to the child and family.

Breastfeeding and weaning have long term effects on growth and development of the child. Nurses, though their professional practice can enhance mother knowledge and practice of weaning, enhance multi sectorial approach of child rearing practices and the resultant improvement in the child's milestone.

7. Recommendations

In light of the findings of this study, the followings are therefore recommended that:

All channels of communication, including religious leaders, schoolteachers, community opinion leaders and voluntary associations particularly women organisations should be actively involved, together with health services and other sectors, in encouraging and supporting breastfeeding and sensitising the community to the value of infant and young child feeding practices and the needs of the mother and baby.

Cultural practices that enhance prolonged breastfeeding and improved weaning practices should be encouraged while the use of local ingredients for weaning practices should be supported in order to enhance the economic involvement of feeding the baby and cost-utility of weaning diets.

Health care providers should pursue relentlessly the child survival strategies, while the government should embark on a long-term policy supporting monitoring of growth and development of infants in each stage of their milestone.

Nurses in particular must be sensitive to mothers' reaction to issues of infant nutrition, their knowledge and cultural influences that negate improvement in nutritional status and health of children. Education of mothers should also be linked with other sectorial aspects of the society in order to affect composite care complex of infants in the society.

Children as much as they are part of the vulnerable groups are also the wealth of tomorrow, systematic epidemiological research on care of infants should be encouraged and such research reports utilised.

Finally, this project was carried out on a small scale in a small setting, an elaborate replica of this study will elicit more information and findings that will improve health care services and give better suggestions to health policy makers.

Limitations of the study

A strong limitation of this study is the restricting expense of the setting to Iju/Ita-Ogbolu communities reducing the sample unit and therefore limiting generalisation of the findings.

Method of data collection, utilising clerical and mechanical tools brought, a lot of extraneous variables intervening with the study. More so, sampling mothers in this type of non-institutionalised study requires enough time to collect data. Assistants' training also requires concerted efforts, time and financial resources which all contributed to limitations of the study.

The setting was a rural community which was just given a new local government as at time of collection of data for the study. A lot of disruption limited the study due to boundary adjustment and administration readjustments in the local government.

8. Conclusion

Weaning is the gradual introduction to the infant, any solid, semi-solid or liquid diet other than breast milk. The descriptive survey studied the weaning practices amongst mothers and the effects on the anthropometric measurements of their children in Iju/ita-ogbolu communities Akure North Local Government Area of Ondo state Nigeria.

A total of 200 mothers, with children 0 to 20 months were selected as the data generating population. Findings revealed that majority of the mothers had knowledge of weaning, were breastfeeding along with weaning diet and used local weaning diets more than commercially prepared complimentary foods. The mothers had a low practice of exclusive breastfeeding but breastfeed for as much as 24 months before the children are completely weaned from the breast.

Various anthropometric measurements weight for age, height for age, mid-arm circumference, chest circumference, and head circumference were observed on the children of the respondents. The relationship between these anthropometric parameters indicated that the children of the respondents had good nutritional statues with minimal levels of deviations and suggested malnourishment.

The study was able to determine that low level education, cultural factors, lack of knowledge, and mother's readiness for another pregnancy were among the factors that influence weaning practices. Adapting from the findings and discussion to the findings, recommendations were made for improved weaning practices and effects on the anthropometric measurements of children.

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