ASSESSMENT OF FOOD INTAKE AND STRESS MANAGEMENT OF LACTATING MOTHERS PRACTICING EXCLUSIVE BREAST FEEDING IN SOKOTO METROPOLIS

BY

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A THESIS SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA.

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JUNE 2011

DECLARATION

I, Oguejiofor Helen, hereby declare that this Thesis entitled Assessment of food intake and stress management of lactating mothers practicing exclusive breastfeeding in Sokoto metropolis, is a product of my own research and has been written by me, in the Home Economics section Department of Vocational and Technical Education, Faculty of Education Ahmadu Bello University Zaria under the supervision of Dr. (Mrs) E. Ike, and Dr (Mrs) E.E. Adamu. All references have been acknowledged appropriately. It has not been presented for a higher or lower degree in any other university.

_____	_____	_____
Name of Student	Signature	Date

CERTIFICATION

This Thesis titled, "Assessment of food intake and stress management of lactating mothers practicing exclusive breastfeeding in Sokoto Metropolis written by Oguejiofor, Helen meets the regulations governing the award of degree of Masters in Education (M.Ed) Home Economics. (Family and child Development) Ahmadu Bello University, Zaria and is approved for its contribution to knowledge and literary presentation.

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DEDICATION

This research work is dedicated to my father Chief E.O. Oguejofor, who insisted that his daughter should attend to the highest level of her education. Daddy for your desire.

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ABSTRACT

The study critically assessed the food intake and stress management of lactating mothers practicing exclusive breastfeeding in Sokoto metropolis in Sokoto State. A survey research method was adopted for the study using a total number of four hundred and seventy seven as the population. A sample size of two hundred and fourteen was selected based on Krejcie and Morgan (1970) table of sample selection, from four selected hospitals in Sokoto metropolis. The sample size for each hospitals was done, using proportionate sampling technique because the population was not equal. Four (4) objectives were stated in study and four research questions while two null hypotheses were formulated. The instrument for data collection was questionnaire, which was validated and pilot study with a reliability index of 0.82. The research questions were analysed using Likert scale type of scores with mean of 2.5 as a decision point. Further, Pearson Product Moment Correlation Coefficient (PPMCC) was used to test the two null hypotheses. The result showed the computed calculated value and therefore the null hypotheses were rejected. The results showed that carbohydrate and protein mean intake were far below the recommended dietary allowance standard and cultural beliefs of the people affected the exclusive breastfeeding mothers' food intake. The results also showed that exclusive breastfeeding mothers experienced some stress among which were excessive fatigues, urge to sleep and lower back pain. Further, it showed that the stress management practiced by exclusive breastfeeding mothers included, relaxation of muscles, use of drugs and exercise and diet among others. Based on the findings, it was recommended that enlightenment programmes should be organised by health workers, Home Economics association of Nigeria, and other non-governmental organisations that have the interest of mothers at heat. This would go a long way, to improve, help minimize stress and well being of mothers maintained.

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ABREVIATIONS

Exclusive Breast Feeding	-	EBF
United Nations International Children's Education fund	-	UNICEF
World Health Organization	-	WHO
Baby Friendly Hospital Initiative	-	BFHI
Usman Danfodiyo University Teaching Hospital Sokoto	-	UDUTH
Women and Children Welfare Clinic	-	WCWC
Sokoto State Specialist Hospital	-	SSSH
United States Agency for International Development	-	USAID
International Body for Food Action Network	-	IBFAN
Maryam Abacha Female and Children Hospital	-	MAFCH
Recommended Dietary Allowances	-	RDA

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

The art of Breastfeeding is as old as mankind. It is a physiological act through which all mammals feed their young ones. The art of breastfeeding is also stated as a blend of biology and culture, and many variations work well for the nursing mothers and their babies. Lactation is defined as the secretion of milk from the mammary glands for the young, and the period of time that a mother produces the milk to feed the young (Wikipedia 2007). The process occurs in all female mammals and in human beings. It is commonly referred to as breastfeeding. It is also defined by United Nations International Children's Education Fund and World Health Organization (1992), as an unequalled way of providing ideal food for the health, growth and development of the infant and integral part of the reproductive process with important implications for the well being of mothers.

Labbok, (2002) defined exclusive breastfeeding as breast milk that the infant receives from the mother or a wet nurse or expressed breast milk and no other liquid, except drops of syrups consisting of vitamins, mineral supplements or medicine. In addition, Gulati (2004) stated that, exclusive breast feeding for the first six months means, the infant receives only breast milk and no other liquids, even water or complementary foods with the exception of undiluted vitamins/mineral drops or syrups and medicines. World Health Organization (1998) earlier states that Exclusive Breastfeeding is a method of breastfeeding in which an infant is fed with breast milk only on demand for at least 8 -12 times in 24 hours, day and night for up to six months of age. In addition The World Health Organisation and United Nations

International Children Education's Fund (1999) have recommended that children be exclusively breastfed until the age of six months.

But Labbok and Keenan (1992) in Oche, (2006) emphasized more on the benefits of Exclusive Breastfeeding and states that, Exclusive Breastfeeding provides low cost, complete nutrition for the infant, protects the infant against infections such as diarrhoea, and prolongs lactation amenorrhea thereby, increasing birth spacing. On the other hand, food is defined by Crouch(1984) as any substance which when taken will perform one or all of the following functions:

1. Provide energy
2. Build and replace worn-out tissues
3. Protect and regulate body processes

Booth, (1994) defined food as what is fed upon which goes to support life, being received within and assimilated by the organism either animal or plant for nourishment. Wardlaw and Kessel (2002) stated that, intake is an umbrella term that refers to the act of taking something in. Also, the term 'intake' is often used in relation to food and drink, to describe how much is ingested.

The worldnetweb.Princeton.edu/per/webwn (2009), defined intake as consumption, the process of taking food into the body through the mouth as by eating. In addition, Wardlaw and Kessel (2002) defined food intake as substance that provides both the energy and the materials needed to build and maintain all body cells, while nutrients are the nourishing substances needed to be obtained from food.

Further, it was stated that food supply is not only vitamins and minerals but also carbohydrates, proteins, fats and dietary fibres, thereby providing the needed energy and bulk for healthy growth. The nutrients only can not just describe the quality of food intake they have to be composed with the Recommended Dietary Allowance to establish the quality of food intake.

Recommended dietary allowance of any person or population is stated, for the lactation mothers is carbohydrate RDA is 210grams while protein is 71grams. It is for this that, Oche (2006) stated that exclusive breastfeeding mothers, need adequate diet. Home maker, probably has a job to cope with coupled with breastfeeding, could be quite challenging and could lead to stress. In recognition of this fact, it is necessary to look into stress experienced by this group of women and also their stress management techniques suitable during exclusive breastfeeding. Chambers learners English Dictionary (1980), defines stress as the worry or pressure experienced by a person in particular circumstances. To Masha and Ndubusisi (1993), stress is any action or situation which places special physical or psychological demands in a person and can create unbalance within him or her. Marvin, Dignan and Shirreffs (1984), defined stress as the physical and psychological reactions that human beings exhibit in response to marked changes in their environment.

Marvin, Dignan and Shirreffs (1984) went further to say, that, stress affects the body by inducing a fight and flight response; blood flow increases to the problem solving parts of the brain, the hypothalamus, the autonomic nervous system and the endocrine system. Further, that stress management means first monitoring one's own reactions to stress and then controlling them by means of such techniques as relaxation. Since stress is an inevitable aspect of human existence. It is therefore against this back ground that this study was intended to assess the food intake and stress management of exclusive breastfeeding mothers in Sokoto metropolis of Sokoto State.

Roles and expectations vary from place to place. What some people accept in a place are unacceptable behaviours or ideas are regarded as culture of a particular society. Culture according to Adeyinka (2001) defined culture as a complex set of

learned and share beliefs, customs, skill, knowledge, moral law and any other capabilities and habits common to the members of a society. Culture is fundamental and enabling, central to our very humanity. It is away of naming networks of shared ideas and perceptions, webs of shared meanings activity used by groups of persons to make sense of themselves, their circumstance experiences and their world. Generally, culture can be described as the sum total of human creation, the organized results of a group experience up to the present time.

Dana (1993) reported that some cultural beliefs have harmful effects on lactating mothers. Dana further affirmed that, mothers who are very distressed by the challenges that breastfeeding posse to their cultural beliefs. Furthermore, Goodmojab (1999) confirmed that culture always play a major role in the feeding of lactating mothers so long as the information given would not change a mother's belief of required food intake. With exclusive breastfeeding, there is need to change the lactating mother's approach to known traditional foods and this can result in confusion as they struggle to reconcile new behaviours with old beliefs.

1.2 Statement of the Problem

The superiority of breast milk compared to other types of milk for the nourishment of the human infant for better health benefits, has been established by various research publications, which attempted to achieve successful breastfeeding globally by the year 2020. The World Health Organization and United Nations International Children's Education Fund launched the Baby Friendly Hospital Initiative in 1991, involving 160 countries of the world which included Nigeria. These projects supported, promoted and protected Exclusive Breastfeeding and

recommended that infants be breastfed exclusively for six months and thereafter include supplementary feeding until 24 months (2 years).

It is because of this that the Nigerian Government earmarked six University Teaching Hospitals as BFHI centres. These are Universities of Benin, Enugu, Maiduguri, Lagos, Jos and Port Harcourt, with the objective of reducing infant malnutrition, morbidity and mortality, as well as promoting the well being of the mothers.

There is no doubt that a good number of Nigerian women generally and Sokoto state in particular, breastfeed their infant but only a handful of these women practice exclusive breastfeeding. Nature has endowed women with the privilege and the right to breastfeeding, but exclusive breastfeeding is more demanding on the lactating mother and even when there is available foods to be taken taboos, socio-cultural beliefs and practices within the cultural and traditional settings cause hindrance to better feeding habits.

Trustwell (1983) stated in the current guidelines published by National Advisory Bodies for nutrient intakes during lactation differ around the world, even between neighbouring countries with essentially similar populations, reflecting the inadequacy of knowledge about nutrient requirements in human reproduction. Lactation places nutritional demands on the mother for milk production (Specker 1994). An examination of studies on nutritional assessment, indicates the importance of recording food habits and nutrient intake in pregnant and lactating women and their effects on mothers and children. Musager (1996) mentioned that, Nutritional status relates to and varies with socio-economic, cultural and demographic factors. However nutrient intakes are generally compared with the United State National Academy of sciences recommended dietary allowance. Knowledge about the

nutritional status of lactating women in the northern part of Nigeria is minimal and inadequate. At present, there is little or no research work on dietary intakes and stress management of lactating mothers practicing exclusive breastfeeding. This is the gap this research work intend to fill. The study aimed at assessing the intake of essential nutrients (Carbohydrate and protein) and stress management of a representative proportionate sample of lactating mothers in Sokoto metropolis.

1.3 Objectives of the Study

The main objective of the study is to assess the adequacy of the food intake and stress management strategies of lactating mothers practicing exclusive breastfeeding in Sokoto metropolis, Sokoto State.

The specific objectives include to:

1. find the food intake of lactating mothers practicing exclusive breastfeeding in relation to recommended dietary allowance standard.
2. identify the effect of stressor on lactating mothers practicing exclusive breastfeeding.
3. assess stress management techniques employed by lactating mothers practicing exclusive breastfeeding.
4. identify the effects of cultural beliefs on food intake of exclusive breastfeeding mothers.

1.4 Research Questions

This researcher intends to seek answer to the following questions.

1. What is the difference between the food intake of lactating mother practicing exclusive breastfeeding and recommended dietary allowance standard?
2. What are the effects of stress experienced by lactating mothers practicing exclusive breastfeeding?

3. Which of the stress management techniques are practiced by lactating mothers practicing exclusive breastfeeding.
4. What are the effect of cultural beliefs on the food intake of lactating mothers practicing exclusive breastfeeding?

1.5 Hypotheses for the Study

The following Null hypothesis were used to guide the research study.

1. There is no significant difference between the food intake of exclusive breastfeeding mothers and recommended dietary allowance standard.
2. There is no significant relationship between cultural belief and food intake of exclusive breastfeeding mothers.

1.6 Significance of the Study

The outcome of this research would be significant to nutrition experts especially those interested in the food intake and stress management of lactating mothers practicing exclusive breastfeeding. It would also help to increase awareness of required nutrients needs of nursing mothers according to recommended dietary allowance standards. Furthermore, it would help Home Economics curriculum planners to include in the home economic content the recommended food intake of lactating mothers and how best they can manage stress. In addition, it would help to highlight why a lactating mother practicing exclusive breastfeeding needs added nutrients rather than feeding on the same family meals. This can undoubtedly contribute to strengthening of maternal feeding practices in Nigeria. Finally, the study would stimulate interest in other researchers to gather similar information from other Nigerian Societies or communities.

1.7 Assumptions of the Study

1. There is the tendency that the age of the lactating mother practicing exclusive breastfeeding would make a difference in their feeding habit.
2. It is assumed that stress would affect the food intake of exclusive breastfeeding mothers.
3. It could also be that most exclusive breastfeeding mothers would not know or notice the stress involved in lactation and thereby, never thought of its management while breastfeeding.
4. In addition, the feeling of headaches, paleness and discomforts, may be attributed to other ailments other than stress.
5. It is equally assumed that exclusive breastfeeding mothers would not know that poor stress management would cause hypertension leading to stroke during lactation.
6. There is also the assumption that most exclusive breastfeeding mothers would not know the actual recommended dietary allowance standard for lactating mothers and so will never compare the adequacy of their food intake with these standards.
7. Finally, it is assumed that the type of food selected for consumption in terms of adequacy and composition of nutrients would be influenced by age, stress management techniques, cultural beliefs and knowledge of recommended dietary allowance standards.
8. It is expected that cultural beliefs would be a contributing influence on food intake and eating conditions of exclusive breastfeeding mothers in the area of study.

1.8 Delimitation of the Study

This study was designed to assess the food intake and stress management of mothers practicing exclusive breastfeeding in Sokoto metropolis. The study population was delimited to only 477 exclusive breastfeeding mothers registered at antenatal clinics of the four hospitals selected in Sokoto metropolis. They were also expected to attend post-natal clinic at the course of this study. These hospitals are Usman Danfodiyo University Teaching Hospital. Women and children Welfare Clinic (WCWC), Maryam Abacha female and children Hospital, Sokoto State Specialist Hospital, which are all in Sokoto metropolis. The area is justified by the preliminary investigation that was carried out by the researcher (pilot study) showing the areas including the Baby Friendly Hospital Initiative in the State Capital, for antenatal and delivery.

CHAPTER TWO

Review of Related Literature

This chapter dealt with review of relevant literature on assessment of food intake and stress management of lactating mothers practicing exclusive breastfeeding. This chapter formed the following sub-headings.

2.1 Conceptual Framework of the Study

2.2 Concept of Breastfeeding

2.3 Physiology of Lactation

2.4 Recommended Dietary food Intake of Lactating mothers

2.5 Methods of Assessment/Evaluation of Nutritional Status.

2.6 Stress and Stress Management Techniques during exclusive Breastfeeding

2.6.1 Symptoms of stress

2.6.2 Source of Stress

2.6.3 Relaxation

2.6.4 Diet and Exercise versus drugs

2.7 Empirical Studies

2.8 Summary of Review.

2.1 Conceptual Frame Work of the Study

Many years, there were no agreed definitions of breastfeeding. What was meant by the word breastfeeding depends on who was speaking. This has led to much confusion in interpretation of research and programme experience. Perhaps the most generally used definition of breastfeeding in the 1960s and 1970s was that of the formula industry. The term Exclusive Breastfeeding meant that breastfeeding was the

infant's only source of milk, but other foods might be given in addition to breast milk (Labbok 2000).

Unfortunately, this definition continued to be used by occasional researcher or programme planners who have not reviewed recent discussion, clearly. This definition, which viewed breastfeeding only as a substitute for formula, not as a maternal or child health issue is to be avoided. More recently, the United States department of Agriculture's supplemental food programme for mothers and infants (USDA), defined a mother/infant pair as breastfeeding if they ever breastfed at all or breastfeeding at a special period of time.

On April 28, 1998, a meeting was held on definitions related to breastfeeding. The meeting was sponsored by the Interagency Group of Representative (IGR), United Nations International Children's Education Fund (UNICEF), and United States Agency for International Development (USAID) and World Health Organization (WHO). In addition to these organizations, the meeting was attended by International Lactation Consultants Association (ILCA) and International Body of Food Action Network (IBFAN). The purpose of bringing together these breadth and depth of experts was to ensure that any agreed definition of breastfeeding would serve research and programme needs, as well as be useful in physiology research on the mother and the child. The parameters agreed upon for a definition include that (a) definition only apply to a single point in time perhaps 24 hours (b) It defines only breastfeeding and does not define other forms of feeding (c) It differentiates breastfeeding from breast milk feeding (d) It encourages further description when the basic definitions are used.

The final report was completed and submitted for publication in October, WHO UNICEF (1989). These sets of definitions are now used by authors in several

journals, including the Journals of human lactation. The agreed definitions were: Exclusive Breastfeeding: No other liquid or solid from any other source enters the infant's mouth. The infant receives expressed breast milk in addition to breast feeding. Partial: mixed feeding, designated as high, medium, or low methods for classification, include percentage of calories from breastfeeding any feeding or expressed breast milk would fall under this category. Token: Minimal, occasional breastfeeds (for comfort or with less than 10 percent of nutrition thereby provided).

One year later, a related set of definitions of breastfeeding was developed by WHO/UNICEF) which in principle, built upon the earlier definitions. The definitions do not take into account; the impact of direct breastfeeding compared to maternal physiology and maintenance of milk supply. The following are the WHO/UNICEF definitions: (1999).

(a) Breastfeeding; the child has received breast milk directly from the mother's breast or expressed.

(b) Exclusive Breastfeeding; the infant has received only breast milk from the mother or a wet nurses expressed breast milk, and no other liquids or solids with the exception of drops, of syrups consisting of vitamins, mineral supplements or medicines.

(c) Predominant Breastfeeding; the infant's predominant source of nourishment has been breast milk. However, the infant may also have received water and water based drinks (sweetened and flavoured water, teas, infusions, fruit juice, oral rehydration salt solution (ORS), drops and syrup form of vitamins, minerals and medicines). No food based fluid is allowed under this definition except for fruit juice and sugar/water solution.

2.2 Concept of Breastfeeding

Breastfeeding is the easiest way of feed a baby. It may take a while for the mother to learn how to hold and handle the baby comfortably. But if the mother is patient and give herself time, she will give herself one of the greater and most satisfying experiences any women can have.

Burbig (2005) states that breast milk contains the kind of nutrients such as proteins, fats, lactose, vitamins, minerals, enzymes and water in amounts necessary for the growth of babies. Furthermore, breast milk is clean, free from bacteria and has anti-infective properties, which helps protect the child against chronic diseases, like diarrhoea and even diabetes and heart diseases. Nilsson (2005) added that breast milk fed babies are less prone to have asthma and other allergic disorders later in life because of certain immune factors which work as modifying agents.

According to the Baby-Friendly Initiative handbook publish by UNICEF (1994), Breastfeeding saves mother's lives: when suckling starts within the first hour after post-partum, there is an interrelationship between the nerves ending in the breast nipples. As the baby sucks on the nipple, it stimulate contractions of the uterus, the placenta is expelled faster and the risk of post-partum hemorrhage which can kill mother is reduced. There is no gain saying that nature is definitely not on the side of the nursing mother. Her breast produces Oxytocin during lactation and this help the uterus contracts to its pre-pregnant size, this is possible because urine contraction continues especially during the early months of exclusive breastfeeding. Hence the mother gain her shape back.

World Summit for Children (1991) in their assertion states that, exclusive breastfeeding substantially reduces the mother's risk if breast cancer and protects against ovarian cancer. This is a fact because nature has intended women to

breastfeed, when they by pass this natural function; their glands do not fulfill their intended purpose and may go haywire. A worldwide surveys of countries in which breastfeeding is common bears this out. In Asia, Africa, South America, Europe and where else women breastfeed, women have less breast cancer than those women in United State of America. Also Oche (2006) stated that, breastfed babies are said to have shown higher intelligent quotient (IQ), which is to say that breastfeeding enhances brain development, there is better visual sharpness leading to reading and learning readiness. He further stated that exclusive breastfeeding has protective effect against breast and ovarian cancer.

Gulati (2004) maintained that, breastfeeding increases the interval between births, which help both maternal and child health development. Exclusive breastfeeding helps the mother in child spacing because frequent suckling from birth maintains high levels of progesterone in the mother's body, which inhibits ovulation and therefore pregnancy. Exclusive breastfeeding offer the mother 98 percent protection against pregnancy during the first six months after birth. In many parts of the world, Asia in particular breastfeeding is used to prevent more unplanned pregnancies than all other methods combined.

In UNICEF handbook of (1994) Breastfeeding is seen as a forum to bond mother and child together. Although bonding between mother and child is a continuous process, the first hours of a baby's life are particularly important. Mother and baby imprint their feel, smell and visual image on each other, which has a positive, life long effect on their mutual relationship. The baby's instinct for protection and nurturing at this time is remarkably strong.

The American Academy of paediatrics (2005) stated that human milk is specific and all substitute feeding preparation differ markedly from it. They added

that exclusive breastfeeding is the reference or normative model against which all alternative feeding methods must be measured with regard to growth, health, development and all other short and long-term outcomes. Furthermore, breastfeeding is cheaper because families save by not purchasing infant formula and complementary baby foods. They spend less on hospital bills as breastfeeding babies do not get sick often (UNICEF 1994). There is saving of fuel (energy) as boiled water utensils are not required. It is easier because it is assessable and readily available at the right temperature. EBF is faster because you don't have to sterilized bottles of refrigerate formula. Mother can appease baby's hunger at once without bothering to mix or fix formula. Mothers don't have to take time out to test the milk or get up during the night to warm a bottle. Breast milk is also safer because there is no worry about human error. It is possible for mothers to make a mistake in formula preparation when she is rushing and under pressure. Breastfeeding time is a time of enjoyment for mother and the baby, mother can read or listen to radio. Also there a wonderful feeling that a mother get from watching her baby and seeing and hearing the purrs of pleasure as she nurses.

Gulati (2004) defined Exclusive breastfeeding as feeding the infant for the first six months only on breast milk and no other liquids, even water or complementary foods with the exception of undiluted vitamins mineral drops or syrups and medicines. Further, that water supplementation even in hot weather was unnecessary and leads to reduced desire to suckle and is a dangerous source of infection as well.

Breastfeeding draw all the members of the family into warm and loving circle. But it is the mother who is most involved. Breastfeeding changes life. There is nothing quite so fulfilling to a mother as breastfeeding her infant. It unites members

of the family in a bond of love, mothers are telling their baby "I love you" every time you breastfeed him/her. Every child needs to feel wanted (WHO 1999). It is through close body contact by touching, cuddling, caring for ones baby that he/ she will feel the mother's love flow into him/ her as the milk flows into his/ her mouth. Burbig (2005) pointed out that exclusive breastfeeding may lead to malnutrition in mothers if she does not eat a balanced diet meal.

Ene-bong (2001) numerated that lots of ant-infective factors like anti-bodies, leucocytes, tactoferrin, bidus factors are present in the breast milk, whereas in cow/formula milk there anti-infective substances are either not active or absent. A notable importance of exclusive breastfeeding is the different types of breast milk at different stages of lactation for instance colostrums, is a thick sticky and light yellowish in colour, which is produced during the first few days after delivery. (3-4 days).

Although small in quantity (30-90ml), it is sufficient to meet the caloric and antibodies needs of a normal new born in the few days of life. During the period of 1-2 weeks that follows the colostrums stage, the milk increases in quantity and changes in appearance and composition as per the baby's needs, protein contents decreases while fat and sugar content increases. This is the transmission milk.

2.3 Physiology of Lactation

Sylvia (1981) stated that after the baby is born, there is a change in the hormone increase in the blood supply to the breasts. Also the two hormones from the pituitary gland now influence the breast, they are:

1. Prolactin – which is responsible for changing blood into breast milk

2. Oxytocin – which is responsible for squeezing the milk into sacs or reservoirs behind the nipples? Here the milk is stored until the baby feeds. When the baby sucks, he empties the sacs and stimulates the release of Oxytocin, which in turn liberates Prolactin, and the whole process is repeated. In order to explain this, Glassier and Mcneilly (1990) stated that, the development of the human breast is dependent on the presence of ovaries steroids. The basic secretary units, the alveoli-continue to respond to steroids throughout the reproductive years. Lactogenesis is triggered by a rapid and drastic fall in progesterone at delivery and maintained by Prolactin while the actual expulsion of milk from the breast depends on Oxytocin. Further Glassier and McNelly (1990) explained that, normal changes in the female body during pregnancy prepare the breast to produce milk. When the baby first sucks on the mother's breast, the nerves in the areola (the coloured, central part around the nipple of the breast) stimulate the pituitary gland, located at the base of the brain, to release the hormones Prolactin and Oxytocin. Prolactin makes the lobules, or milk producing cells in the breast, to secrete milk, Oxytocin. Also Sylivia (1981) causes the smooth muscles surrounding the lobules to squeeze the milk into the breast ductal system. A response known as let down or milk ejection takes place and the dual system carries the milk to the nipple where the baby suckles, and the cycle continues (Sylvia, 1981).

2.4 Recommended Dietary Food Intake for Lactating Mothers

The recommended dietary allowances is defined as the levels of intake of essential nutrients considered in the judgment of the food and Nutrition board, on the basis of available scientific knowledge to be adequate to meet the needs of practically all healthy persons (Herper 2002). 210 grams and 71 grams were the recommended

dietary allowance standard for carbohydrate and protein intake for lactating mothers per day (Food and Nutrition Board Institute of Medicine 2002). The Recommended Dietary Allowance (RDA) for individuals has it that, the requirements of the lactating mothers are the highest of any period in a woman's life. Johnson (1997) mentioned that the quantity and quality of the mothers food must be as nutritious as possible since they provide not only for their own needs, but also those of fast growing infants. Furthermore, Jacobson and Haward (2000) noted that no other time is appropriate for a mother to maintain adequate nutrition than during pregnancy. This is because she will have little difficulty in nursing her baby after delivery if she maintains her previous feeding pattern.

They continued that the mother needs to include in her intake one quarter of milk (1/4) adequate servings of dark, green, deep yellow, vegetables, citrus fruits, whole grain cereals and breads including proteins in form of meat, eggs, fish and beans. Others to be added are 1 table spoon margarine or butter, liver and other organs and iodized salt. In addition, Onigbinde (2001) stated that an increase of 12-25grams of proteins is required by the lactating mother; and the protein is to be of high biological value. She observed that lactating woman who have less protein intake, have less protein in their breast milk. He adds that it is essential for the lactating mother to have a lot of fluid, fruits and vegetable as they provide fluid and extra vitamins and minerals. The SWISS Association of Nutrition (2003) stated that lactating mothers need to maintain the good eating habits they followed during pregnancy, since the basic approaches to eating during the two periods have much is common. The Association maintained that on average, a lactating mother produces 800ml per day. This takes energy, some of which is drawn from the fat reserves generated during pregnancy. The remainder, representing about 500 calories comes

from food. This means that mothers need to take an extra food in addition to the normal amount consumed prior to pregnancy. Furthermore, Riodan (2004) maintained that, the lactating mothers need not maintain a markedly higher caloric intake than that maintained prior to pregnancy, since in most cases, 400-500 calories in excess of the present is needed to maintain the mother's body weight.

Also Swinney (2005) stated that abstaining from alcohol is important while breastfeeding because alcohol enters breast milk and it can harm or irritate the baby and inhibit the body's ability to produce milk. Further more Oche (2006) stated that many constituent other than nutrients can be passed into milk; therefore excessive use of alcohol and sweetened products must be avoided during lactation. Even the use of drugs such as Aspirin, laxatives, sedatives except when prescribed by a physician.

Bonyata (2007) agreed that when exclusively nursing a young baby, it is very common to feel hungry most of the time and so an exclusive breastfeeding mother on average needs to take between 300-500 calories per day above what was needed to maintain pre-pregnancy weight. Also that since the recommended additional calories during the last two trimesters of pregnancy is 300 calories/day, an exclusive breastfeeding mother will typically need either the same amount of calories, she was getting at the end of pregnancy, or up to 200 additional calories per day. Finally she added that unless an exclusive breastfeeding mother is severely dehydrated, drinking extra fluids is not beneficial, but may cause discomfort and may not increase milk supply.

But that the signs for not getting enough fluids include concentrated urine which is darker, stronger smelling than usual and constipation which result to hard, dry stool. Further contended that breastfeeding mothers do not need to depend solely on only water when it comes to fluid intake, because the body can utilize water from

many sources including vegetables fruits, soup, milk, tea and other beverages (Americans Academy of Pediatrics 2005).

2.5 Methods of Assessment/Evaluation of Nutritional Status

The methods of nutritional assessment fall into four main groups.

1. Clinical observation
2. Biochemical techniques
3. Physical or anthropometric measurement
4. Dietary analysis.

Clinical observation has been stated in Cowell (1996) said that this involved an assessment of health conditions of these parts of the body that can be observed within a relatively short period. The most commonly observed parts are the eyes, the mucus membrane, skins, hair, mouth, tongue and thyroid glands. Also it is a quick method which requires no equipment but errors are common and can only be performed by medical personnel.

Okeke (1999) also stated that Biochemical involves the quantitative determination of nutrients in urine. Blood levels of the following nutrients- iron, ascorbic acid, protein, riboflavin and vitamin A are to be determined. It involves the use of laboratory equipment and trained skilled experts.

Simon (1999) stated that the physical or anthropometric measurement involves the measurement of height, weight, chest circumference; ankle circumference and skin fold thickness. Usually the anthropometric measurements are cheap, simple, convenient, objective and widely used. In addition, Jelleff, (1989) in Oche 2006) revealed that, the dietary Analysis may be direct or indirect. In the direct method that the nutrient intake of an individual, a family, or an institution can be evaluated using a 24-hour dietary recall. For more reliable information a 3-day dietary recall is usually used.

The intake of nutrients is thus compared to standards and observations can be made as to the nutritional status of the individual or family. While the indirect method involves obtaining information about the whole population from food balance sheets. This will involve keeping a record of the population. The total food intake produced is divided by the population and this gives a picture of the nutrient intake. This method is particularly unsuitable for Nigeria and other developing countries since no adequate data are available.

2.6 Stress and Stress Management Techniques during Exclusive Breast Feeding;

Stress is defined as pressure or worries resulting from mental or physical distress, difficult circumstances (Oxford Advanced learner's Dictionary, 2000), while the long man Dictionary of contemporary English (2003) stated that stress is a continuous feelings of worry about work or personal life that prevents the individual from relaxing. World Health Organization (WHO) defined stress as the non specific response of the organism to any demand made on it. In the human body, stress influences the immune system, contributing to infections, allergies and serious illnesses.

Mbaeru (1997) in Akuezuilo (1998) stated that the digestive system and related organs create conditions favourable to ulcers, colitis, constipation and diabetes. Also that stress can cause back aches, tension, headaches and arthritis. All of which can also make a person accident-prone. These are some of the complaint of nursing mothers commonly attributed to sitting position during breastfeeding especially during exclusive breastfeeding with long feeding periods. Due to the fact that infants are fed on demand and enough time is spent doing this. Mbaeru further

stated that over-working which leads to physical and mental stress no matter the type of work causes stress in lactating mothers.

The chambers learners English Dictionary (1980), defined stress as the worry or pressure experienced by a person in particular circumstances. However, Denga (1986), considered stress as the generalized non-specific response of the body to any demand made on it. This definition is similar to World Health Organization's definition. He explained that the non- specific response of the body is predicted by the assumption that when any change disturbs the homeostasis (or balance) of the body, it reacts internally by marshalling its resources for self protection. The body may fight the attack or flee from it. The nervous system stimulates the body organs to get ready for sudden, intense expenditure of energy at the expense of the long term body maintenance, lactation, not excluded.

Masha and Ndubuisi (1993) in Bello (1996) said that stress is any action or situation which places special demands on a person which can create imbalance within him. Noting the agreement in the definitions of stress by psychologists and sociologists, Yusuf (1993) in Bello (1996) concludes that stress is seen as involving the disruption of a person's emotional stability by inducing a state of disorganized personality and behaviour. Furthermore that they tend to view stress or stressful experience as involving profuse non-specific physiological reactions to an emotional experience. The definition of stress presented above may only give little understanding to the concept and may not show how the exclusive breastfeeding mother is involved, but stress is said to be a non specific response or reaction, the phenomenon could be better understood by its symptoms.

2.6.1 Symptoms of Stress

There are many symptoms of stress. Ikeotuonye (1988) stated that among these stress manifestations are, tension, headache, shifting aches and pains, feeling hot and uneasy, fear, nervousness, being upset, change in heart-beat, fast breathing, shortness of breath, fatigue or general body tiredness, increase in blood pressure, sleeplessness or restless sleep, disturbing thoughts, perspiration, intolerance and aggressive behaviour, poor performance or problem solving tasks, blurred vision. In addition Denga (1986) added, decreased digestive and sexual processes, onset of diseases such as common cold, back pain, diarrhea and compulsive eating not related to physiological hunger, forgetfulness, uncertainty about whom to trust, dissatisfaction and even loss of appetite are all symptoms of stress.

It is the opinion of the researcher that the above cited symptoms be termed as the symptoms of the short-term stress which could be managed through stress management strategies and techniques, on the other hand, the psychosomatic illness mentioned can be considered as the symptoms of long term stress which demand both medical treatment and stress management.

2.6.2 Sources of Stress

The sources of stress to human mind and body even during exclusive breastfeeding are as numerous as the life of man's experiences themselves. Iwuji (1990) categorized that man has unlimited sources of stress in both his internal and external environment also that each of man's five sense are stress provoking, and that the source of man's stress (stressor) could be physical such as the sight of a snake, or psychological such as a feeling of frustration, it could be internal like an attack of

virus or external like a loud noise or a strong offensive odour. Human experience, mild or serious, pleasant or aversive, are to some extent stress producing. People undergo stressful experiences at home, at work, at worship places, on the way or road and even at recreational places.

The present day economic difficulties coupled with high rate of inflation, unemployment and underemployment, job insecurity and unsatisfactory condition of services, increased rate of crimes resulting in feeling of insecurity and political, economic, social and judicial injustices are major sources of psychological stress to the modern women other important psychological stress are incidences of death of spouse, relation or beloved one, family disharmony, value conflict decision-making process and even waiting and expectations. Household chores coupled with child-bearing, breastfeeding child-rearing, office work are stress to the mind and body of the modern women. Technological and physical environment are also sources of stressful living to man. All these are just some but not all sources of stress as they are uncountable. Exclusive breastfeeding mother goes through one stressor or another.

2.6.3 Stress and stress management techniques for Exclusive Breastfeeding mothers.

Relaxation

Marvin, Dignan and sheriff (1984) started that, the better route to coping with stress, is to use one or more of a variety of stress management techniques developed by specialists in this area. In each of these techniques, individuals learn to monitor their own stress reactions and to control them through self regulated relaxation techniques. Some stress management techniques are briefly described below.

Furthermore Marvin, Dignan and sheriff (1984) described the relaxation break as potentially major tool in preventive health care. Relaxation methods are based on the principle of inhibition of anxiety. It is impossible to be relaxed and anxious at the same time. They range from simple exercises to complex systems that require extensive and expensive training. Jacobson in Marvin, Dignan and sheriff (1984) believed in what he called progressive relaxation, that in order to relax, the individual must first deliberately do (contract a group of muscles) and then not do (relax that muscle group). In this way, the individual can contrast the sensation of tension with that of letting go.

Another technique is deep breathing. This is used to reduce anxiety through deep, controlled, diaphragmatic breathing. This is done when the individual takes a breath then expanding the upper chest and raises the shoulders a little. In diaphragmatic breathing, the individual breathes air deep into the lungs, allowing the abdomen to expand while the chest and shoulders stay still meditation:- effective meditation produces a state of deep physiological and mental repose by reducing blood pressure, muscle tension, pulse rate. Benson (1976) described meditative practice that produces physiological changes precisely opposite to those brought forth by the fight or flight response. He further explains that during meditation the metabolism of the body slows markedly.

For instance, the heart and breathing rates decrease, blood flow to the muscles stabilizes and blood pressure fails. Benson stated that this technique consists of four basic elements; a quiet environment; a comfortable position; the repetition of a word; phrase or prayer; and a passive attitude free from thoughts. Cognitive reappraisal: - many effective coping response are not instinctive, they have to be learned. Cognitive

reappraisal teaches individuals to consciously alter their perception of a situation so that it becomes less stressful (Marvin, Dignan and sheriff (1984).

2.6.4 Diet and Exercise versus Drugs:

Pharmaceuticals are commonly used to relieve stress. Modern day medicine cabinets overflow with countless pills and portions. Akwezuilo (1998) stated that a pill that alleviates one problem may produce another, or it may deplete and contaminate the body, causing health to deteriorate in the long run. Also individuals who resort to mind altering drugs may eventually become dependent upon such external supports to produce an internal state of consciousness. But that instead of drugs, the simplest stress reducing technique is to maintain good physical condition through exercise and diet. This is because, not only can exercise dispel many specific forms of tension; it can also off set the effects of generalized stress including that of exclusive breastfeeding.

Those in good physical conditions also enhance their mental condition and can withstand such stress as over work in the home, domestic chores, a quarrel with boss, or even a virus more easily than some who are not. As for diet, she maintained that, in one sense, people are indeed what they eat. While Marvin, Dignan and sheriff (1984) stated that vitamin C helps maintain resistance in infection; when the body is under any major stress such as injury or illness, its supply of vitamin C is depleted more rapidly than usual and it is particularly important to keep the intake of vitamin C high at these times even during lactation.

Other techniques include broadening expectation, individual attitude, habit, belief, faith and detachment and finally effective time management, LaCrela (1985) discussed that one of the strategies of coping with stress is development of priorities.

This approach emphasizes the organization of time as an excellent attribute for controlling stress. A sense of priorities enables one to see pressure in perspective. This is important because Cameron and Hofvander (2000) stated that the let down reflex is easily affected by tiredness or stress.

2.7 Empirical Studies

In a Nigerian University a group of individuals namely Ogbonna, Okolo and Ezeogu (2000) carried out a research titled the factors that influence successful exclusive breastfeeding (EBF)". This was carried out by administering a structured interview questionnaire prospectively on three hundred and thirty three (333) nursing mothers attending family Health Clinic, Jos University Teaching Hospital from October 1997 to June 1998, 136 (40.9%) of their 333 babies were exclusively breast fed for six months from birth. Results showed that the mothers' literacy level of 75.6% had a statistically significant positive effect on the practice of EBF ($P<0.05$). A high percentage (97.6%) attended Ante-natal clinic, but 44% delivered at home.

Home delivery was found to have a statistically significant negative effect on the practice of EBF $P>0.001$. The drop out rate on Exclusive Breastfeeding for working nursing mothers was 58% (Discontinued EBF on resumption of duty from maternity leave). Students who had babies during school sessions also recorded a similar drop-out rate (57%) although there was no statistically significant association between mothers occupation and the practice of Exclusive Breastfeeding (full-time house wives practiced EBF least). The reason was attributed to environment (family influence). The study highlighted the need to get the mothers and mother-in-law of nursing mothers involved in the promotion of EBF. They were known to command

much respect and their opinions were well respected in the family when a new baby arrives.

The extension of maternity leave to six months for a working mother was very necessary in order to breast feed for six months and at the same time work to earn a living in an ailing economy.

The present study cited, similar with that exclusive breastfeeding was stopped not only for returning to work or school, but that it was tedious to cope with the two activities. It was stressful and demanding on the part of the lactating mother. It was expected that at the end of this study, lactating mothers practicing exclusive breastfeeding would be able to identify those stress and their management techniques, that would enable them cope with their families' job and EBF.

An extensive study carried out by Valeggia and Ellison (2003) - titled the effect of lactation on Average Maternal Anthropometric and Body Composition Measures with population of Toba women in Formosa, Argentina". This indigenous population was undergoing a continuing transition from a semi nomadic hunger gatherer lifestyle to a sedentary, peri-urban one. Using a mixed longitudinal design, they measured monthly maternal body mass index (BMI) body fat percentage and triceps and sub scapular skin fold thickness between birth and the 18^{th} month post partum in 113 breastfeeding women.

Result showed that the pattern of change in post partum body composition varied with maternal age. Adult women (20 years old and older) did not show significant changes in any of the anthropometric measures during the entire study. Older adult women (30 years old and older) consistently had the highest values in measures of BMI and percentage fat, and tended to retain weight post partum. Adolescent subjects (19 years old and younger) tended to lose weight during the first

6 months post partum. The same patterns were observed for changes in body fat percentage and in skin fold thickness. They concluded that in this population, the energetic stress of lactation does not pose a serious challenge to the maintenance of long term maternal energy balance or to short term energy balance in women over 20 years of age.

From a public health perspective, postpartum weight retention in older women may represent a more serious health threat. The low level of energetic stress associated with lactation may also contribute to the relatively short duration of lactational amenorrhea in this population despite a cultural pattern of intensive breastfeeding. The present study is similar for both had to do with stress in lactation Anthropometric and body composition measured had to do with food intake of these lactating mothers since food intake determined body weight which was being measured to find the body mass index (BMI). Food intake was the determinant factor which was the direction of this study.

Another study titled lactation initiation among mothers of very low birth weight infants (VLBW), this was carried out by Elsalah (2005). The purpose of the study was to examine whether mothers of VIBW infants who initially planned to formula feed were different in terms of their level of anxiety and maternal stress compared with mothers who had planned to exclusively breastfeed their infants. The aims of the study were to (1) determine whether counseling mothers of VLBW infants who had initially planned to formula feed on the benefits of breast milk would increase their stress and anxiety levels (2) assess whether mothers who initially had not planned to breastfeed changed their plans after counseling to provide breast milk and (3) measure the amount of breast milk expressed by mothers who initially planned to formula feed. Their results were compared with those of mothers of

VLBW infants who initially planned to breastfeed. The method initial plan to breastfeed (initial breastfeed group (IBG); n=115 or formula feed (initial formula feed (initial formula feed group (IFG), n=81) was determined before counseling. All participants received counseling on infant health benefits, collection and storage of breast milk and breast pump procurement. Maternal anxiety was measured using the state-trait Anxiety Inventory (STAI), which was administered to mothers before and after counseling and every 2weeks until infant discharge. Maternal stress was measured after counseling with the parental stressor scale: NICU.

Infant breast milk intake was measured throughout hospitalization; an exit questionnaire that pertained to the perceived benefits and efforts of expressing milk was administered close to the time of infant discharge. Results- After lactation counseling, 100% of the IBG and 85% of the IFG initiated breast milk expression (used the electric breast pump in the hospital) for a total lactation initiation rate of 94%. After adjustment for the mothers who initiated milk expression but did not provide any breast milk, the lactation initiation rate for the entire group was 84%. Non- Hispanic white mothers' initial milk expression at similarly high rates (95% v 93%).

Also, milk expression limitation was similar for low-income and non-low-income mothers (95% versus 92%). IFG and IBG STAI and parental stressor scale NICU scores were not significantly different, and there were no significant differences between groups in the change in anxiety after counseling. In addition, the mean difference scores (after counseling before counseling) for STAI anxiety "state" were not significantly different between groups, even when controlling for "trait" anxiety, state anxiety decline during the first 6 weeks of infant hospitalization in a

similar manner for both groups. Maternal trait, but not state anxiety scores were inversely correlated with total infant breast milk intake.

Breast milk intake (ml/kg per day) was greater in the infants of mothers in the IBG compared with the IFG at each week during the first month and for their entire hospital stay. Infant breast milk intake increased from weeks 1 to 3 in both groups and continued to rise in the fourth week for the IBG. However, breast milk intake declined at week 4 for the IFG, IBG infants received breast milk for 83% of the total fed hospital days (days that feedings were given) compared with 44% of total fed days for the IFG. The proportion of eternal intake that was breast milk was also greater for the IBG compared with IFG during the first 4 weeks and for the total hospitalization. However, the mothers in IFG were able to provide at least 50% of their infants, eternal intake for the first 3 weeks. 48.8% for the fourth week and 32.8% of the eternal intake for the entire hospitalization.

Infants of low-income women received significantly lower amounts of breast milk than did infants of non-low income mother. Race and income accounted for 36% of the variance in breast milk intake of the 184 mothers who initiated breast milk expression, 72 (39%) completed the exit questionnaire. Infant health benefits were the most common reasons cited by both groups for expressing milk. The most common reasons that both groups reported for ceasing milk expression were:

1. Low milk supply
2. Returning to work or school and
3. Inability to pump as often as needed.

Almost all the mothers reported that pumping was worth the effort (IBG 100%, IFG 87%), and 100% said that they were glad that the staff helped with milk expression. This study has been selected for its report on stress and lactation which

happen to be line with the present study which was titled assessment of food intake and stress management of lactating mothers practicing exclusive breastfeeding.

Salami (2000) in another study, investigated the barriers to the successful practice of exclusive breastfeeding among rural and urban nursing mothers in Edo State in Nigeria. The population of the study constituted all nursing mothers in the rural and urban areas of the state. The study adopted structured and in-depth interview procedure. Four hundred and ninety six (496) urban and rural nursing mothers constitute the sample of the structured interview. While 40 nursing mothers: 20 urban and 20 rural were involved in the in-depth interview.

The results revealed that 98% of both urban and rural nursing mothers started breastfeeding almost immediately after delivery. However, variations occurred in the duration of exclusive breastfeeding. The study also revealed that 16.7% of urban and 16.1% rural mothers introduced bottle feeding as early as 3 weeks. The reasons given by the urban mothers for bottle feeding supplementation were that the baby was not satisfied with breast milk only. 59.4% of urban mothers and 67.4% of rural mothers indicated this. Some others indicated that work affected breastfeeding adversely. 15.5% of urban mothers and 14% of rural mothers indicated this.

The feeding pattern for most mothers after maternity leave was the combination of breast and bottle-feeding. About 61.7% of urban mothers and 70.4% rural mothers agreed that they combined. The study revealed especially through in-depth interviews, that the major barriers that jeopardize the practice of breastfeeding exclusively are age-long myths and beliefs held about breast feeding and the nature of the mother's work. The study suggested a grass-root approach and counseling of exclusive breastfeeding mothers. Barriers were numerous hence the interest of this

researcher. The mother's work, food intake and stress could be barriers to exclusive breast feeding.

In another study conducted by Goldbery, Prentice, Davis, Murgatroyd, Sawyer, Ashpord and Black (1991) titled 'Longitudinal Assessment of the Components of the Energy via Balance in well nourished lactating women". A well structure questionnaire was used and a sample of 100 lactating mothers was involved. In the result, lactation performance was surprisingly independent of maternal body mass index. They also revealed that quantity or quality of milk production was not affected by BMI but could be as the nursing mother subsidizes her daily energy budget from her own adipose tissue stores. Similarity in terms of energy, food intake provides materials which the body uses to function in which energy is one of such functions.

In addition, a study titled "Nutritional Status and Dietary Intake of Lactating Yoruba Mothers in Nigeria" was conducted by Abakada and Hussaini (1980). The study used 75 rural and 25 urban Yoruba women from low socio-economic group using a structured questionnaire. The results of their findings revealed that mother who gave birth to singleton basis and fully breast fed their infants had energy inadequacy ranging from between 82-83% while protein inadequacy varied from 78-91%. Urban women were lower in both categories compared with the recommended allowance. The mean daily intake of iron, thiamine and calcium was found to be adequate and the intake of vitamin A were high, while mean energy, protein, Ribrofalvin and ascorbic acid intake were inadequate.

Most of the mothers were maintaining a satisfactory lactation performance. The present study cited is similar to that of Goldbery, Prentice, Davis, Murgatroyd, Sawyer, Ashpord and Black (1991) in the area of food intake, since the aim of this

study is to assess the food intake and stress management of lactating mothers practicing exclusive breast feeding. In a similar study by Ojo Feitimi, Esimal, Owolabi, Oluwabusi, Olaobaju and Olanuga (2000), they compared breastfeeding practice among mothers in urban and rural health centres. The population covered all mothers delivering in an urban baby Friendly Hospital Initiative designated Hospital with mothers delivering in a rural, non- BFHI health centre. Proportional sampling technique was employed and a sample size of 60 rural and 35 urban women were used. Both groups were mostly engaged in petty trading and office work.

The results of this study showed that 61% of mothers started breastfeeding within 30 minutes after birth in the BFHI facility while only 39% started within 30 minutes in the non-BFHI health centre. With regard to exclusive breastfeeding, three quarters (3/4) of the mothers from the BFHI facility exclusively breastfed as compared with 35% from the non BFHI health centre. The data in this study showed higher education of mothers and were associated with higher exclusive breastfeeding rates. 81% of the mothers in the BFHI facilities proved to be satisfied with exclusive breastfeeding. It was related to the area of study as the study used BFHI hospitals and other health centres.

In another study titled “Breastfeeding Beliefs and Practicing among Migrant Mothers in Slums of Diyarbakir, Turkey”, was carried out by Ozelei, Elmace, Ertem and Saka (2001). The background of the study indicated that a qualitative investigation and a population survey were conducted to explore the breastfeeding beliefs and practices of mother who were forced to migrate from their original villages and were currently living in the slums of Diyarbakir in Turkey. The methods used for the study was a qualitative data collection on breastfeeding beliefs conducted using in-depth interviews which were tape recorded.

Quantitative data on breastfeeding practices were collected using a structured questionnaire, from the results, mothers generally had a position attitude towards breastfeeding, but colostrums were perceived negatively. None of the women was found to feed her infant exclusively by breastfeeding. Only 9.9% of mothers initiated breastfeeding within the first hour of birth. Forty percent of mothers started solid foods before 4 months. Mother's education appeared as a significant factor influencing the introduction of colostrums to the newborn. There was also a belief that working under the sun decreased the quality of milk of a mother.

The study concluded that cultural beliefs had a significant influence on breastfeeding practice. The study used migrant mothers in slums of Turkey. In the present study, mothers were dwellers in Sokoto metropolis and the variables examined were mothers' food intake and stress management.

Another study titled "lactating Mothers and Adequate Nutrient Intake" was a survey conducted by Venkatacham (2000) used a structured questionnaire. Ten selected provinces of the country (India) where the Education of Childhood Development (ECD) Programme is being implemented. The selection was done purposively with a sample of 400 lactating mothers. From the result, it was found that lactating women had far from adequate nutrient intake. Their energy intake did not even reach 25% of their requirements. Vitamin A intake was below 70% and iron intake was below 50% of the recommended amount for lactating women. Cited that the low energy intake could be explained by the low intake of the energy dense fats and oils which contributed a merely 2% of total energy. Vitamin A intake was from green leafy and yellow vegetables rather than the preferred vitamin A from animal sources, while iron intake was mainly cereal products, particularly rice and lacking in meat and its products. The present study however included stress management which made it different from this cited study.

2.8 Summary of Review

The review carried out in two areas, may be summed up thus;

1. Researches on exclusive breastfeeding practices of lactating mothers or practices and patterns of mothers practicing exclusive breastfeeding. This gave an idea of various researches on the subject, which had been carried out. Most of these researches studies focused only on one aspect such as food intake of lactating mothers, factors influencing exclusive breastfeeding practices, unsuccessful exclusive breastfeeding, early introduction of water, solid or semi solid foods or breastfeeding and bottle feeding. Also these studies mainly are concerned with exclusive breastfeeding the infants and not the mothers' food intake, except for few.
2. Almost all the studies reviewed were carried out in foreign countries, but this present one is conducted in Nigeria.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter presents the procedure for collecting data for this study as well as the sampling techniques used. The Methodology used were organized under the following sub-headings.

3.1 Research Design

3.2 Population of the study

3.3 Sample size and sampling procedure

3.4 Instrument for data collection

3.4.1 Validation of instrument

3.4.2 Pilot study result.

3.4.3 Reliability of the instrument

3.5 Procedure for data collection

3.6 Procedure for data analysis

3.1 Research Design

A descriptive research design was used for this study using survey method. Gay (1992) stated that it was best suited for collecting information from fairly large population, which is located in different places of natural setting. Further more, that the design also attempted to document current condition of attitudes and described what existed at the moment. In the words of Best and khan (1989), descriptive research is used when the nature and degree of existing conditions are needed. The design also helped the researcher to obtain the opinions of the respondents in order to offer the perception of the entire population. In line with this, Salawu (1995) stated that the objectives of this design is to estimate precisely the attributes of a population,

and it is relatively less expensive and less time consuming. It was therefore considered appropriate to choose this type of design since the focus of this research was to assess the food intake and stress management of lactating mothers practicing exclusive breast feeding in Sokoto metropolis.

3.2 Population for the Study

The target population for the study was all registered lactating mothers who attended anti-natal clinics at Usman Danfodiyo University Teaching Hospital (UDUTH), Sokoto Specialist Hospital (SSH), Maryam Abacha Female and Children Hospital (MAFCH) and Women and Children Welfare Clinic (WCWC) all in Sokoto metropolis from 2009. The selection was made during their first post natal visits to the hospitals. The total population was four hundred and seventy seven (477). The population had relatively good access to health services, provided by the various hospitals which also offered pre and post-natal care.

The reason for restricting the population to only lactating mother's who attended post natal clinics was that they were easily found in the hospitals and were registered during their anti-natal clinics. Also on delivery, they practiced exclusive breastfeeding before leaving the hospitals. The researcher therefore believed they would respond meaningfully to the research questions that focused on the assessment of food intake and stress management of lactating mothers practicing exclusive breast feeding. The composition of the research population by months and hospital attended is presented in table 3.1.

Table 3.1: Population by months and Hospitals Attendance

Hospital	August	September	October	November	Total
UDUTH	55	43	40	38	176
SSH	43	35	37	38	154
MAFCH	22	33	17	15	87
WCWC	11	23	15	11	60
	131	134	109	103	477

3.3 Sample size and sampling procedure

Given the target size of the population it was not possible to cover the entire population, because of this, the table for determining sample size from a given population Krejcie and Morgan (1970) (see appendix A) was used to get the size that was appropriate for use in this study. The population of the study was 477 and going by Krejcie and Morgan (1971) the table of sample size was 214, proportionate sampling technique was used to determine sample size of each of the hospitals, and this is because proportionate sampling is the best in a situation where the samples are not having equal population.

Table 3.2 Sample size

Hospitals	Total population	Sample size
UDUTH	176	79
SSH	154	69
MAFCH	87	39
WCWC	60	27
Total	477	214

3.4 Instrument for Data Collection

A structured questionnaire titled Assessment of Food Intake and Stress Management of Lactating Mothers Practicing Exclusive Breastfeeding in Sokoto Metropolis was prepared and used to gather information from the exclusive breastfeeding mothers in the four selected hospitals. It was made up of 4-point Likert scale type questions with a twenty four hour dietary recall. A total of 24 Items were designed. The first section dealt with personal data, food taboo, responses to stress and stress management techniques. The 24-hour dietary recall was used to collect respondent's food intake. The items on the questionnaire were based on the objectives and research questions of the study. The questionnaire was made up of section A which covered questions on socio demographic information, section B- dietary recall section C, covered the stress, stress management techniques and food taboo for which the 4-point Likert type scale was used. Anonymity was ensured in order to encourage honesty and frankness. This is in agreement with Kerlinge (1973) and Olommolaiye (1984) who stated that respondents may refuse to write answers which may infringe on their right to confidentiality.

3.4.1 Validation of Instrument

The drafted copy of the questionnaire which was the instrument used for this study, was submitted to the two supervisors of this research study who were both experts in Home Economics and lecturers in the Vocational and Technical Department Home Economics section of the Ahmadu Bello university and a statistician. The questionnaire was subjected to thorough proof reading by the supervisors to ensure its content validity. This was in accordance with Kerlinger (1973) who stated that the standard procedure for validation of any research instrument is by giving it to a panel of experts to determine which item(s) can

actually elicit information intended to elicit. A final copy was then made, after making the necessary corrections.

3.4.2 Pilot Study Result

To further validate the instrument a pilot study was conducted using 20 exclusive breastfeeding mothers attending Post-Natal Clinic (PNC) at King Fahad Women and Children clinic and Daula hospital and maternity both in Zamfara State. The reason for choice of the hospitals was that they had similar characteristics with the area under study.

3.4.3 Reliability of the Instrument

A test – re test reliability method was used, a period of three weeks interval was given to ensure that the respondents did not exactly remember their previous responses and that the factors to be measured were relatively stable and constant. The scores of the first test were correlated with the scores of the second test using Pearson Product Moment Correlation Coefficient (r). The reliability index of 0.82 was obtained. This is in line with Mukherjee (1980) who stated that a reliability index of 0.82 was high enough to rate the instrument. The questionnaire was then considered high enough and rated as reliable.

3.5 Procedure for data Collection

The questionnaires were administered on the registered exclusive breastfeeding mothers during their post – natal visit at the various clinics in the selected hospitals. The completed questionnaires were retrieved on the spot. The researcher and four trained research assistants administered the 214 questionnaires at the clinics. All were completed and collected.

3.6 Procedure for data Analysis

The data collected were analyzed using various statistical tools. Socio – demographic data were analyzed using frequencies and percentages. A 4-point Likert scale was also used for data analysis. As explained by Ekeh (2003), for the items in the positive form, the score of 4 was assigned to strongly agree (SA) 3 to agree (A), 2 to disagree (D) and 1 to strongly disagree (SD). The weighted mean was calculated from the summated ratings. The weighted mean score for each item on the questionnaire was obtained. A criterion weighted mean was established by calculating the scores assigned to each response divided by the total number of possible responses

Thus; 4 + 3 + 2 + 1 = 10/4 = 2.5

Hence, the criterion weighted mean of 2.5 was used for taking decision on the variables studied. A variable was considered to have great influence on exclusive breastfeeding mothers if the weighted mean of the responses was equal to or greater than 2.5. A variable was considered to have little or no influence if the weighted mean was less than 2.5. The weighted mean was used to answer the research questions and to accept or reject the stated variables. The women were visited during their post-natal clinics at the selected Hospitals and given a face-to-face interview by four trained members of the research team. A structured questionnaire and a 24-hour dietary recall types, amounts of foods consumed.

The weights of foods consumed were calculated from the recall data in the case of complex dishes, quantities of ingredients were calculated from standard recipes of from this data the daily intake of carbohydrates and protein were estimated. These values were compared with the united states recommended dietary allowances standard. (USRDAS)

The Null hypothesis were analyzed using Pearson Product Moment Correlation Co-efficient ® at p=< 0.05 (5%) level of significance. were valued in gram and compared with the recommended dietary allowance standard for lactating mothers in terms of carbohydrate intake and proteins (see appendix E).

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

This chapter presented the results and discussions of the analysis of the data collected from the questionnaires returned. This study was undertaken to assess the food intake and stress management of lactating mothers practicing exclusive breastfeeding in Sokoto metropolis. A total number of two hundred and fourteen (214) copies of the questionnaire were administered and were all successfully completed and returned. These copies were used in the computation. Descriptive as well as 4-point likert type scale was used. In order to determine the frequencies of demographic variables and to test the Null hypotheses and answer research questions so as to realize the research objectives. The computer Statistical Package for Social Sciences was used (SPSS).

Analysis of Bio-Data

Information on the demographic variables of respondents were presented in the following.

Table 4.1. Respondents Age (in years)

Age of respondent	Frequency	Percentage
10-20	91	42.5
21-30	87	40.7
30 and above	36	16.8
Total	214	100

On the age of respondents Table 4.1.2 reveals that 91 (42.5%) of the respondents were aged 20 years or less, 87 (40.7%) were aged between 21 and 30 years, while only 36 (16.8%) were aged 30 years and above. This showed that most of

the lactating mothers practicing exclusive breastfeeding and attending post natal Clinic were young mothers aged 30years or less.

Table 4.1.2 Respondents' religion

Religion of respondent	Frequency	Percentage
Islam	127	59
Christianity	87	41
Total	214	100

On religion from Table 4.1.3, majority 127 (59%) of the respondents were Muslims, while 87 (41%) were Christians. This is expected since majority of the inhabitants in Sokoto are Muslims where as the settlers were the majority of the Christian population.

RESEARCH QUESTION ONE

To answer this research question, a section of the questionnaire was devoted for this, where the respondents were given a chart to fill in the type of meal they took for breakfast, lunch and supper. Table 4.2.1 showed the responses by lactating mothers against the type of food they took during exclusive breast feeding period.

What is the difference between the food intake of lactating mother practicing exclusive breastfeeding and recommended dietary allowance standard?

Table 4.2.1 Summary of Respondents food intake in Sokoto Metropolis

Food items	Breakfast		Lunch		Supper	
	Frequency	%	F	%	F	%
Bread tea milk	89	42	15	7	6	2.8
Plantain & pap	10	5	0	0	0	0
Pap & bean cake	58	27	0	0	0	0
Custard & chips	10	5	0	0	0	0
Eba, fish/beef soup	0	0	39	18	17	7.9
Jollof rice	0	0	47	22	11	5.1
Beans & rice	0	0	77	0	3	1.4
Tuwon Masara & Kuka beef soup	0	0	0	0	44	20.6
Tuwon Dawa & Okro soup	0	0	0	17	59	27.6
Yam pottage	0	0	36	17	0	0
Tuwon Shinkafa taushe soup	0	0	0	0	74	34.5
Left over Tuwo	47	21	0	0	0	0
Total	214	100	214	100	214	100

Table 4.2.1 showed that appreciable proportion 89 (42%) of the respondents took bread, tea and milk as breakfast, 58 (27%) took pap and bean cakes while 47(22%) of the respondents took left over tuwo popularly known as zazahe for their breakfast (table 4.2.1).

The main food items taken for lunch were rice and beans by 77(36%) of the respondents, Jollof rice by 47(22%) and eba, fish/beef soup by 39(18%) (Table 4.2.1) for the supper, a reasonable proportion 74(35%) took tuwon shinkafa and taushe soup, 50(27.6%) took tuwon dawa, okro soup, while 44(20.6%) took tuwon masara with kuka beef soup. Only 3(1.4%) of the respondents took rice and beans as supper.

As for the other food items, 0(0%) were recorded, as none of the respondents ate any of them either as breakfast, lunch or as supper.

What is the mean carbohydrate and protein intake per day and the RDAS?

Table 4.2.2 Mean Carbohydrate and Protein Intake per day and the RDAS

Nutrient per meal	Mean intake in gram	Recommended dietary values (grams)
Carbohydrate	130	210.00
protein	32	71.00

Table 4.2.2 showed that the mean carbohydrate intake per day was 130 while the RDAS for carbohydrate was 210grams also the mean protein intake per day by the respondents was 32 while the RDAS for protein was 71 grams per day. This indicated that for both carbohydrate and protein, the mean intake by the respondents was far below the recommended RDAS, (see Appendix F).

To answer this research question effectively, a wide range of physiological and psychological stress related symptoms often experienced by lactating mothers were outlined and the respondents were required to tick the appropriate ones they experience during exclusive breastfeeding. The responses to this research question are presented in the table 4.3.1

What are the effects of stress experienced by lactating mothers practicing exclusive breastfeeding?

Table 4.3.1 Respondents Stress Experiences during Breast-Feeding

Items	SA	A	D	SD	N	4	3	2	1	$\sum$	$\overline{\chi}$	Decision
Fatigue	89	47	33	45	214	356	131	66	45	592	2.8	Accepted
Urge to sleep	71	59	31	53	214	284	177	62	53	576	2.7	Accepted
back pain	81	69	41	23	214	324	207	82	23	636	2.9	Accepted
Headache	75	54	48	37	214	300	162	96	37	595	2.8	Accepted
Depression	97	61	28	31	214	388	183	50	31	652	3.1	Accepted
Sweating	15	21	63	115	214	60	63	126	115	364	1.7	Rejected
Hoggish	65	73	41	35	214	260	219	82	35	596	2.8	Accepted
Self Medication	91	83	21	19	214	364	249	42	19	674	3.2	Accepted

Table 4.3.1 shows that respondents responded on the eight symptoms and signs of stress included on the Likert scale. All the symptoms and signs of stress had very high scores and were accepted as important stress except sweating. This was further confirmed by the mean scores, as each of the eight items except sweating had a mean score of over 2.5 which is the baseline score for accepting or rejecting the item. Sweating as a symptom/sign of stressor had a mean score of 1.7 which is less than the baseline mean score of 2.5. This showed that while the seven items on the Likert scale were important symptoms and sign of stress experienced by lactating mothers practicing exclusive breastfeeding, sweating was not and therefore rejected.

In order to answer this research question three, the researcher administered a questionnaire which contained some variables as to some of the stress management techniques which can be adopted by a lactating mother practicing exclusive breastfeeding. The data gathered to answer this research question three were presented in the Table 4.4.1

What are the Stress Management Techniques for Lactating mother practicing exclusive breastfeeding?

Table 4.4.1 Respondents Stress Management techniques

Questionnaire items	SA	A	D	SD	N	4	3	2	1	∑	$\overline{\chi}$	Decision
Relaxation of muscles	81	62	48	23	214	324	186	96	23	629	2.9	Accepted
Deep breathing	18	30	117	49	214	72	90	234	49	445	2.1	Rejected
Quite Meditation	15	22	90	87	214	60	66	180	41	347	1.6	Rejected
Good food	32	21	111	50	214	128	63	222	50	463	2.2	Rejected
Medical attention	103	67	23	21	214	412	201	46	21	680	3.2	Accepted
Exercise and diet	105	63	27	19	214	420	189	54	19	582	2.7	Accepted

Table 4.4.1 showed that out of the six stress management techniques stated relaxation of muscles, medical attention, exercise and diet were the stress management techniques with mean of 2.5 or more which is the baseline score for accepting or rejecting the item. The other three techniques, deep breathing, quite meditation and good food with mean scores of less than 2.5 were rejected.

These responses were presented in the Table 4.5.1.

What are the effects of cultural belief on the food intake of lactating mothers practicing exclusive breastfeeding?

Table 4.5.1 Respondents response on the Effects of cultural beliefs on food intake of lactating mothers practicing exclusive breastfeeding.

Questionnaire items	SA	A	D	SD	N	4	3	2	1	$\sum$	$\overline{\chi}$	Decision
Breastfeeding mothers should not eat eggs	115	47	35	17	214	460	141	70	17	688	3.2	Accepted
Breastfeeding mothers should not drink Alcohol	157	41	9	7	214	628	123	18	7	776	3.6	Accepted
Too much pepper is not good during breastfeeding	67	57	49	41	214	268	171	98	41	578	2.7	Accepted
Breastfeeding mothers should not drink cold water from refrigerator.	87	79	19	29	214	348	237	38	29	652	3.1	Accepted
Nursing mothers should avoid foods containing protein	91	69	33	21	214	364	207	66	21	658	3.1	Accepted
Vegetable intake affects infant during breastfeeding	110	65	17	23	214	440	195	34	23	692	3.2	Accepted
Fruit intake is bad for nursing mothers	131	51	20	12	214	524	153	40	12	729	3.4	Accepted

Table 4.5 showed that the respondents strongly agreed with all the seven items, the mean score for all the seven items were above the baseline mean score of 2.5. This implied that in the area of study cultural belief affected the food intake of lactating mothers practicing exclusive breastfeeding.

4.1 Testing of Null Hypotheses

The following null hypotheses were tested using Pearson's Product Mom vent Correlation Coefficient (r) at 0.05 alpha levels.

Ho_1: There *is no significant difference between the food intake of exclusive breastfeeding mothers and recommended dietary allowance standard.*

What are the correlation between food intake and recommended dietary allowance standard of lactating mothers practicing exclusive breastfeeding?

Table 4.6.1: Correlation between food intake and recommended dietary allowance standard of lactating mothers practicing exclusive breastfeeding.

Variables	N	$\overline{X}$	SD	Df	Cal-r-value	Crit r-value	Decision
Food intake of exclusive breastfeeding mothers	214	2.50	1.121				
Recommended dietary allowance standard	214	2.56	1.074	149	24.00	0.242	Rejected

Significant level at 5%

In table, 4.6.1 it was observed that the correlation Coefficient r- calculated values 24.00 is greater than the r- critical values 0.242 (24.00>0.242) at 5% level of significance. Therefore, the null hypothesis was rejected. That is, there exist significant difference between the food intake of lactating mothers practicing exclusive and the recommended dietary allowance standard.

Ho_2. *There is no significant relationship between cultural belief and food intake of lactating mother practicing exclusive breastfeeding*

What are the correlation between the cultural belief of lactating mothers and their food intake?

Table 4.6.2: Correlation between the cultural belief of lactating mothers and their food intake

Variables	N	$\overline{X}$	SD	Df	Cal-r-value	Crit r-value	Decision
Cultural belief	214	12.23	2.958				
Food intake of exclusive breastfeed mother	214	3.00	1.417	149	63.00	0.243	Rejected

Significant level at 5%

In table 4.6.2, it was observed that the correlation Coefficient r- calculated values 63.00 is greater than the r- critical values 0.243 (63.00>0.243) at 5% level of significance, P<0.05. Therefore, the null hypothesis was rejected. That is, there is significant relationship between the cultural belief of lactating mothers and their food intake.

4.2 Discussion

This research study assessed the food intake and stress management of lactating mothers practicing exclusive breastfeeding in Sokoto metropolis. In order to achieve this objective four for research questions were stated. Two null hypotheses were and analyzed

Table 4.2.1 showed that an appreciated proportion 89(42) of the respondents took bread, tea and milk for breakfast, and the main food item taken for lunch were rice and beans which represent 77 (36) of the population while for the supper time a reasonable proportion of 74(34.5%) took Tuwon Shinkafa/Masara/Dawa with soup.

Furthermore, from the computed mean intake of carbohydrate and protein of lactating mothers practicing exclusive breastfeeding. The carbohydrate intake per day was 130grams and that of protein was 32grams, while the recommended dietary allowance standard for carbohydrate was 210grams and protein 71grams respectively (food and Nutrition board, Institute of medicine, National Academy). By implication this showed that lactating mothers carbohydrate and protein intake per day fell far below the required standard. This findings in line with Kramer (1993) who observed that women from developing countries especially those from poorer segments of the population subsist on diets which contained only 1200-1800 kcal per day and which were inadequate with respect to nutrients when compared with recommended dietary allowance for lactating mothers.

From the data so far analyzed it revealed that lactating mothers practicing exclusive breastfeeding some times experience different stress symptoms but these stress symptoms did not disturb them from breastfeeding their babies. Some commonly experienced stress symptoms were headache, depression which may be attributed to poor feeding habit, and illiteracy among the mothers, this was the view of Lacrela (1985). Lactating mothers also experienced depression which could be as a result of trying to cope with other family problems.

This was because some lactating mothers may have more than one child together with large family, especially those from extended family setting. In these large families, cooking could be tedious and demanding. In addition, work in offices or sales in the market in other to keep the family together, all these contribute to depression which may directly or indirectly affect the production of enough milk. This was line with Iwuji (1990) who maintained that lactating mothers experiencing

depression had low production of milk. Iwuji, further said that whatever stress been passed through always showed on the babies.

On the issue of management of stress experienced by lactating mothers, the research work showed that most of the lactating mothers resulted to the use of drugs anytime they experienced any form of stress. This was based on the level of ignorance of these mothers, who believed that the best way anybody could stop pain or stress been experienced was through drug taking. According to Iwuji (1990), the best way or method of coping with stress especially during breastfeeding was relaxation. This is because a relaxed mind is a healthy mind. No amount of drug taken can cure a mind that is disturbed.

By implication, it meant that lactating mothers should try as much as possible to avoid the use of drugs as solution to stress management. Also Masha and Ndubuisi (1993) good dietary intake coupled with relaxation of muscles were best ways of managing stress among women either during pregnancy or lactation. The cultural belief of the people especially lactating mothers practicing exclusive breastfeeding directly the feeding habit. Some culture believe that, there was certain food which must be eaten by lactating mothers and some were forbidden that should not be eaten.

Based on this, when a woman delivered a baby she was to be taken care of by her parent or any elderly woman of the family, the food given were prepared and served by these women. By implication lactating mother were be given or allowed to eat only what the culture of the people allowed. This was confirmed by majority of the respondents as it was shown from the table, where it was shown clearly that culture of the people prevented lactating mothers from eating food that were very rich in protein.

In Hausa community especially the area of the study, it is a common belief that lactating mothers were to take local herbs or mixture of leaves that were to provide their breasts with enough milk which was to make the babies very fat and this is not a healthy habit. Hence, herbal leaves, potash, "Tsamiya" were added to pap for consumption at this period. The Null hypothesis tested also affirmed to the fact that cultural belief of the people had serious effect of the food intakes by these women. Most of these women also fed on only pap (Kunun Kanwa) as a supplement to the leftover Tuwo with any type of soup. This was in contrary to the view of Kramar(1993) who maintained that there should be addition to the quality and quantity of the mother's food intake. Mothers' intake should be as nutritious as possible since they provided not only for their own needs, but also those of fast growing infants. In support of these Ene-Obong (2001) stated that lactating mothers practicing exclusive breastfeeding required additional energy during the first 6 months of lactation, about 500kcal energy per day, with a safe level of extra protein intake of about 10g per day and other nutrients include B-vitamins, calcium, phosphorus iodine, iron folic acid and zinc. These they needed to really take good care of themselves.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

This chapter presented the summary, conclusion of the study and recommendation was also based on the findings of the study. This is discussed under the following sub- headings

5.1 Summary

5.2 Conclusion

5.3 Recommendations

5.4 Limitation

5.5 Educational implication

5.6 Suggestions for further study

5.1 Summary

The study was carried out to assess the food intake and stress management of lactating mothers practicing exclusive breastfeeding in Sokoto metropolis. Based on this, four objectives were specifically stated, followed by four research questions and two null hypotheses were stated and tested. 214 respondents were selected as the sample size from the four selected hospitals, in Sokoto metropolis.

Demographic data were presented using simple frequencies and percentages.

The findings of the research revealed that;

1. The food intake of exclusive breastfeeding mothers were below the recommended Dietary Allowance Standard with carbohydrate mean intake of 130grams and protein intake of 32grams, while Recommended Dietary Allowance for carbohydrate was 210grams and 71grams for protein pre day.

2. On the issue of stress and stress management, the study showed that excessive fatigue, urge to sleep, lower back pain among others were some of the stress experienced by mothers practicing exclusive breastfeeding. This is because they were all above the baseline score of 2.5.
3. On the issue of stress management techniques, exclusive breastfeeding mothers adopted relaxation of muscles, taking of drugs and exercise/ diet as ways of managing stress. These techniques were found to be above the baseline score of 2.5.
4. The cultural belief of the people affected exclusive breastfeeding mothers' food intake.

The two (2) null hypotheses tested were rejected because the calculated values were greater then the critical values.

5.2 Conclusion

Based on the findings of this study, the researcher concluded that in Sokoto metropolis, lactating mothers practicing exclusive breastfeeding lacked knowledge of recommended dietary allowance of food nutrients especially carbohydrate and protein as required by lactating mothers. This explained why the low mean intake of these nutrients when compared with the daily requirement, which is as a result of cultural believe of lactating mothers.

Lactating mothers practicing exclusive breastfeeding always experienced stress such as headache, back pain among others.

It was found that lactating mothers practicing exclusive breastfeeding adopted some techniques as ways of managing stress which included relaxation of muscles, self medication and exercise/ diet.

5.3 Recommendations

Based on the findings the following recommendations were put forward:

i. Lactating mothers practicing exclusive breastfeeding need education in the area recommended dietary requirement, this is because education helps to make inform choice and right decisions that relate to their well being irrespective of cultural believes.

ii. More emphasis should be laid on the importance of adopting any stress management technique when the symptoms of stress are felt, for when the mother is stressed up, the baby will suffer seriously due to shortage of breast milk, therefore, there is need to cultivate positive attitude towards others and life generally.

iii. Enlightenment programme should be organized for mothers by health workers and Home Economics association of Nigeria through the annual conference and other home economics associations, for them to know that they need to adopt good stress management such as relaxation when they are stressed up and not to always resort to the use of drugs. This is because mental and physical relaxation of the body slow the heart beat reduces blood pressure and tension.

iv. Government should provide protein supplements and also assist lactating mothers with nutritive food through various hospitals and health centres, so that it will enable lactating mothers coupe with the demands of taking care of babies especially for those practicing exclusive breast feeding.

v. More so, the women need education for better knowledge and idea on how best to take care of themselves and their babies especially during lactation and how to manage time judiciously and lower stress seriously.

vi. Cooking should be done in methods that will help converse nutrients over cooking or vegetables should be avoided in other to retain their value. Food grains should not be over milled for cooking.

vii. Finally, lactating mothers practicing exclusive breastfeeding should engage in recreational activities by developing a hobby, as it gives pleasure and helps the mothers to forget worries.

5.4 Limitation of the study

The constraints met by the researcher in the execution of the study were:

a. Gaining assess to the hospitals because the head of Obstetrics and Gynecology had to be seen before the researcher was allowed to see the women on another clinic day therefore the exercise was rescheduled in all the hospitals.

b. Some of the respondents were not educated enough to English language thus, the questions were translated in the local language and written for the respondents.

5.5 Educational implication

By virtue of the findings, this research work will serve as additional literature to Nutritionist, health workers in the hospital in order to be able to attend to the needs of nursing mothers. It will also help the nation/ government in the achievement of reproductive Health Care (maternal and child care) as one of the items of the Millennium Development Goals (MDGs).

5.6 Suggestions for Further Research

Research is a continuous process and it cannot be carried once in a particular area. This is because there is innovations and changes every day of our existence, as such this researcher wish to suggest that further research should be carried out in the following areas

i. Vitamins requirement of lactating mothers.

ii. Improvement in the dietary content of lactating mothers

iii. Effect of stress for lactating mothers in Northern Nigeria.

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APPENDIX "A"

Educational and Psychological Measurement

Table 1: Table for determining sample size from a given population

N	S	N	S	N	S
10	10	220	140	1200	201
15	14	230	144	1300	207
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	323
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	337
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	382
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note: N is population size

S is sample size

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APPENDIX B

QUESTIONNAIRE

Department of Vocational and Technical Education,
Faculty of education
Ahmadu Belo University,
Zaria.

Dear Sir/Madam,

I am a postgraduate student carting out a research work titled "**ASSESSMENT OF FOOD INTAKE AND STRESS MANAGEMENT OF LACTATING MOTHERS PRACTICING EXCLUSIVE BREASTFEEDING IN SOKOTO METROPOLIS"**. The study is in partial fulfillment of the requirement for the award of Masters Degree in Home Economics (Family and Child Development) in faculty of Education, Ahmadu Bello University, Zaria.

In completing the questionnaire please answer all questions adequately and clearly as you can, based on your opinion and experience. Your answer would be treated confidentially. Please do not write your name in the questionnaire.

Thank you for your contribution and cooperation.

Yours sincerely

Oguejiofor H.
Postgraduate Student

APPENDIX C

QUESTIONNAIRE FOR EXCLUSIVE BREASTFEEDING MOTHERS IN SOKOTO METROPOLIS

Instruction: please tick (√) as appropriate

SECTION A: Background information;

1. Age between years (a) 10-20 ( ) (b) 21-30 ( )
   (c) 30and above ( )
2. Religion (a) Islam ( ) (b) Christianity ( ) Others ( )

SECTION B

24 Hour – Dietary Recall:

Please list all foods taken in the last 24 hours with their quantities in the space provided.

Break fast Qty	Lunch Qty	Supper Qty

SECTION C

Your Responses to Stress:

Stress experienced by lactating mothers practicing exclusive breastfeeding. Please tick only one box.

Experience this reaction

S/N	Symptom/Sign	SA	A	D	SD
1	Fatigue				
2	Urge to sleep				
3	Back pain				
4	Sweating				
5	Depression				
6	Hoggish				
7	Self medication				

Stress management technique practiced by lactating mothers practicing exclusive breastfeeding. Please indicate which of these stress management technique practice by you.

S/N	**Stress Management techniques**	**SA**	**A**	**D**	**SD**
1	Relaxation of muscles				
2.	Deep breathing				
3.	Quite meditation				
4.	Good food				
5.	Medical attention				
6.	Exercise and diet				

SECTION D

Influence of cultural belief on food intake of lactating mothers practicing exclusive breastfeeding. Please tick the appropriate one only.

S/N	Questions	SA	A	D	SD
1.	Breastfeeding mothers should not eat eggs				
2.	Breastfeeding mothers should not drink alcohol.				
3.	Too much pepper is not good during breastfeeding				
4.	Breastfeeding mothers should not drink cold water from refrigerator.				
5.	Nursing mothers should avoid foods that contain protein				
6.	Vegetable intake affects infant during breastfeeding				
7.	Fruits intake is bad for nursing mothers				

APPENDIX D

Recommended dietary allowance

APPENDIX E

Calculation of sampled size using proportionate sampling technique

P = numbers of respondents from each hospital multiple by sample size divided by the total numbers of respondents

P= $\frac{\text{N of Hospital x Sample size}}{\text{Total of Respondents samples}}$

Sample size = 214 from Kreyecie and Morgan (1971)

Total of respondents sampled = 477

Usmanu Danfodiyo University Sokoto = 176

$\frac{176}{477} \times 214$

= 79 Women from UDUTH

Sokoto State Specialist Hospital = 154

$\frac{154}{477} \times 214$

= 69 Women from SSH

Maryam Abacha Female and Children Hospital = 87

$\frac{87}{477} \times 214$ = 39 women from MAFCH

Women and Children Welfare Clinic = 60

$\frac{60}{477} \times 214$

= 27 women from WCWC

Total = 79 + 69 + 39 + 27 = 214

APPENDIX F

BREAK – FAST (NUTRIENTS AND QUANTITIES PER RESPONDENTS)

No. of Resp.	Food items	Quant. Per Resp.	No. of resp. Per Quant.	No. of Protein per Quant. In Gram	No. of CHO per Quant. In Gram	No. of protein Multiply by Quant.	No. of CHO Multiply by Quant.	Total Protein Per Food Item (GRAMS)	Total CHO Per Food Item (GRAMS)
89	Bread	2 slices 3 slices 4 slices	29 39 31	2 = 3 1 = 1.5x3 3 = 7.5x4	2 = 15 1 = 7.5 3=7.5x3 4=7.5x4	3 x 29 4.5 x 39 6 x 31	15 x 29 4.5 x 39 30 x 31	87 175.5 186	435 877.5 930
	Milk	¼ cup	89	1cup = 8 ¼ x 8 = 2	1cup=15 ¼ =15x ¼	2 x 89	3.75 x 89	178	33.75
58	Bean cake (kosai)	4 balls 3 balls 2 balls	31 16 11						
		4kw kosai Total number of kosai :. ½ cup=4kosai 4x = 0.5 x 194 4x = 97 X = 94 = 24.25 = 24 4 24 cups = 194 kosai	½ cup beans 31x4 =124 16x3 = 48 11x2 = 194	48 (1/2 cups protein = 48 x 3 = 144 CHO 48 x 15 = 750)					
	Pap	1 cup	58	½ = 3 1 cup = 30	½ = 15 1 cup = 30	6x58	30x58	348	1740
10	Plantains	1 ½ cups	10	½ cups = 3 1 ½ = 9	½ cup = 15 11/2 cup = 45	9 x 10	45 x 10	90	450
	Pap	1 cup	10	½ = 3	½ = 15	6 x 10	30 x 10	60	300

				1 cup = 6	1 = 30						
10	Chips	1 ½ cups	10	½ = 3	½ cup = 15	9 x 10	45 x 10	90	450		
				1 ½ = 9	1 ½ = 45						
	Pap	1 cup	10	1 cup = 6	1 = 30	6 x 10	30 x 10	60	300		
47	Left over tuwo	1 ½ cups	47	½ = 3	½ = 15	9 x 47	45447	423	2115		
				1 ½ = 9	1 ½ = 45	0.5447	1.25447	235	58.75		
				½ = 2	½ = 5						
				¼ 0.5	¼ = 1.25						
	Vegetables	¼ cup	47								
214								**2076.5**	**8710**	**9.703**	**40.701**

LUNCH (NUTRIENTS AND QUANTITIES PER RESPONDENTS

No. of Resp.	Food items	Quant. Per Resp.	No. of resp. Per Quant.	No. of Protein per Quant. In Gram	No. of CHO per Quant. In Gram	No. of protein Multiply by Quant.	No. of CHO Multiply by Quant.	Total Protein Per Food Item (GRAMS)	Total CHO Per Food Item (GRAMS)		
15	Bread	5 slices	9	2=3	2=15	1.5x45	7.5x45	67.5	337.5		
		6 slices	6	1=1.5	1=7.5	1.5x36	7.5x36	54	270		
	Milk	¼ cup	15	1 cup = 8 ¼ = 2	1 cup=15 ¼ = 3.75	2x15	3.75x15	30	56.25		
39	Eba	1 cup	39	½ = 3	½ = 15	6 x 39	15 x 39	234	585		
	Beef	¼ cup	39	1 cup = 6	1 cup = 30	1.75x39	-	68.25	-		
	Vegetable	½ cup	39	1 cup = 7	-						
				¼ = 1.75		2 x 39	5 x 39	78	195		
				½ = 2	5						
47	Jollof rice	1 cup	47	½ cup = 3	½ = 15	6 x 47	30 x 47	282	1410		
	Rice			1 cup = 6	1 cup = 30	2 x 47	5 x 47	94	235		
	Vegetable	½ cup	47	1 ½ = 2	½ = 5						
77	Bans	½ cup	77	½ = 3	½ = 15	3 x 77	15 x 77	231	1155		
	Rice	½ cup	77	1 = 6	1 cup = 30	6 x 77	30 x 77	462	2310		
36	Yam	1 ½ cup	36	½ = 3	½ = 15	9 x 36	45 x 36	324	1620		
	Pottage			1 ½ = 9	1 ½ = 45						
	Yam				½ = 5	2 x 36	5 x 36	72	180	9.330	39.036
	Vegetable	½	36	½ = 2							
214								**1996.75**	**8353.75**	**9.703**	**40.701**

SUPPER (NUTRIENTS AND QUANTTIES PER RESPONDENTS)

No. of Resp.	Food items	Quant. Per Resp.	No. of resp. Per Quant.	No. of Protein per Quant. In Gram	No. of CHO per Quant. In Gram	No. of protein Multiply by Quant.	No. of CHO Multiply by Quant.	Total Protein Per Food Item (GRAMS)	Total CHO Per Food Item (GRAMS)		
6	Bread	6	4	2 = 3	2=15	1.5x24	7.5x424	36	180		
		7	2	1 = 1.5	1=7.5	1.5x14	7.5x14	21	105		
	Milk	¼ CUP	6	1 cup = 8 ¼ = 2	1 cup=15 ¼ = 3.75	2x6	3.75x6	12	22.5		
17	Eba	1 ½ cup	17	½ = 3	½ = 15	9 x 17	45 x 17	153	765		
	Fish	¼ cup	8	1 ½ cup= 9	1½ cup=45				-		
	Beef	¼ up	9	1 cup = 7	-				-		
	Vegetable	½	17	¼ = 1.75	-	8 x 1.75	-	-	85		
				¼ = 1.75	-	9x 1.75	-	-			
				½ = 2	½ = 5	2 x 17	5 x 17	5 x 17			
11	Jollof rice										
	Rice	1½ cup	11	½ cup = 3 1½ cup = 9	½ = 15 1½ cup=45	9 x 11	45 x 11	99	495		
	Beef	¼ cup	11	¼ = 1.75	-	1.75 x 11	-	19.25	-		
	Vegetable	½ cup	11	½ = 2	½ = 5	2 x 11	5 x 11	22	55		
3	Bans &	½ cup	3	½ = 3	½ = 15	3 x 3	15 x 33	9	45		
	Rice	1 cup	3	½ = 3	½ cup = 15	6 x 3	30 x 3	18	90		
44	Tuwo masara	1 ½ cup	44	½ = 3	½ = 15	9 x 44	45 x 44	396	1980	9.330	39.036
	Beef	½ cup	44	1 ½ = 9	1 ½ = 45						
	Vegetable	½ cup	44	1 cup = 7 ¼ =1.75	-	1.75 x 44	-	77	-		
				½ = 2	½ = 5		2 x 44	88	220		
59	Tuwon pawa (Guinea	1½ cups	59	½ = 3	½ = 15	9 x 59	45x59	531	2655		

	corn)			1½ = 9	1 ½ = 45						
	Beef	¼ cup	59	1 cup = 7 ¼ = 1.75	-	1.74x59	-	103.25	-		
	Vegetable	½ cup	59	½ = 2	2 x 59	2459	5 x 59	118	295		
74	Tuwo shinkafa (mashed rice)	1 ½ cup	½ = 3 1 ½ = 9	3 x 74	3 x 4	45x74	666	3330			
	Beef	¼ cup	1 cup = 7	-	1.75x74	-	129.5	-			
	Vegetable	½ cup	¼ cup =1	½ = 5	2x74	5x74	148	370			
214								**2709.75**	**10692.5**	**12.662**	**49.965**