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Research about

IMPACT OF EXCLUSIVE BREASTFEEDING ON INFANT HEALTH AND PHYSICAL GROWTH

A Study Submitted in requirements for fulfillment of PhD in pediatrics Nursing

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الآية

قال تعالي

(وَالْوَالِدَاتُ يُرْضِعْنَ أَوْلَادَهُنَّ حَوْلَيْنِ كَامِلَيْنِ لِمَنْ أَرَادَ أَنْ يُتِمَّ الرَّضَاعَةَ) صدق الله العظيم

الآية (223) سورة البقرة

DEDICATION

To my mother,

My father,

My brothers and sisters ,

To Mohamed, my husband and our sons,

for their encouragement and support

throughout my study

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Chapter Three

3.Materials & Methods

AKNOWLEDGEMENTS

Almighty Allah with whose permission I live and with whose countless favors I continue to

remain grateful. Verily, you are the all-sustainer and all-provider for mankind

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Abstract

This study was carried out in the primary health care center in shendi city ,River Nile state ,Sudan. From December 2011 to December 2014 in order to study the impact of exclusive breast feeding on infant health and growth .A number of 150 mothers and their infants were selected non randomly . Infants selected were from birth to 1year age .

The mother age and level of education had a significant effect on practicing exclusive breast feeding. Almost old mothers and highly educated mothers practice breast feeding more than younger and those with lower level of education.High socioeconomic status was associated with a less practice of EBF . Main barriers of EBF were habits and cultures of the family, working mothers and lack of information about breast feeding . some mothers think water is an important item for their infants .

At the start exclusive breastfeeding was found to promote infant health as it protects infants from illnesses like diarrhea ,otitis media ,UTI, allergic diseases ,pneumonia and PEM .Infants with EBF have better growth with their weight in the normal range . (6.4%) of non exclusive breast fed infants were failing to thrive and (19.1 %) were overweight . The height of infants was significantly affected by the practice of breast feeding . (10 %) of non exclusive breastfeeding became short. No significant effect on the head circumferences .

We recommend breast feeding education for all mothers through health education in form of lectures through mass media like radio and television . Also formation of public and social agencies to promote and care about mothers and infants health care. Nursing places

should be established in each work place to help working mothers to nurse their infants during working hours .

ملخص البحث

أجريت هذه الدراسة بالسودان بولاية نهر النيل مدينة شندي في مركز الرعاية الصحية الأولية في الفترة من ديسمبر2011 حتى ديسمبر 2014م. و ذلك لدراسة تأثير الرضاعة الطبيعية المطلقة على صحة ونمو الأطفال .استهدفت هده الدراسة الأطفال من الولادة إلى عمر سنة . تمت الدراسة علي 150 طفل مع أمهاتهم .

تم جمع المعلومات عن طريق تصميم استبيان قياسي مغلق الأسئلة للأمهات وقياسات الوزن للأطفال وقورنت هده القياسات بواسطة مخططات النمو .

تم تحليل البيانات باستخدام برنامج التحليل ألحزمي للبيانات الحيوية بالحاسوب و توصلت الدراسة إلي عدة نتائج أهمها ,المستوي التعليمي والعمر وحالة الأم الاقتصادية لها دور مهم في ممارسة الرضاعة المطلقة . وهنالك عدة معوقات منعت بعض الأمهات من ممارسة الرضاعة المطلقة أهمها عادات وتقاليد الأسرة ,قلة المعلومات عن الرضاعة المطلقة ,عمل الأم, وبعض الأمهات كان تبريرهن أن الماء هي أساس الحياة .

وجدت الدراسة إن الرضاعة الطبيعية المطلقة تلعب دور مهم في صحة الطفل وحمايته من الأمراض ,كما لها دور مهم أيضا في نمو الطفل ,كل الأطفال الدين رضعوا رضاعة طبيعية مطلقة كان وزنهم وطولهم في المدى الطبيعي عندما قورنوا بمخطط النمو ,أما الدين رضعوا غير مطلق جزء منهم وجد عندهم خفق في الازدهار أي في النمو , وجزء منهم طولهم اقل من الطول الطبيعي , أما بالنسبة لمحيط الرأس وجدت الدراسة إن الرضاعة الطبيعية المطلقة لا توثر فيه .

و توصلت الدراسة إلي عدة توصيات تمثلت في ضرورة نشر الوعي عن الرضاعة الطبيعية المطلقة وفوائدها لكل الأمهات عن طريق المحاضرات وجميع وسائل الإعلام مثل الراديو والتلفاز , تشكيل وكالات عامة واجتماعية للاهتمام بالرعية الصحية للام والطفل مع إنشاء حضانات في كل موقع عمل لمساعدة الأمهات على رعاية أطفالهم أثناء ساعات العمل .

LIST OF ABBREVIATIONS

EBF	Exclusive breastfeeding
WHO	World Health Organization
BFHI Initiative	Baby Friendly Hospital
UNICEF Fund	United Nations Children's
H.I.V Virus	Human Immunodeficiency
AAP Pediatrics	American Academy of
USA	United States of America
IgA	Immunoglobulin A
CDC	Centers for Disease Control
UTI	Urinary tract infections
PEM	Protein energy malnutrition
FTT	Failure to Thrive
EBM	Expressed breast milk
EBCLCs lactation consultants	International board certified
WHA	World Health Assembly
FMLA	Family Medical Leave Act

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1.1 Introduction

The health, growth and development of children are influenced by a range of complex factors, including genetic, immunological, socio-cultural, psychological, nutritional, environmental, economic and political influences[1] .

Breastfeeding is the process of feeding the infant with mother's milk, either by direct nipple-baby mouth contact or by expressed breast milk. Breast milk is the best natural food and drink created by God for newborn babies. Newborn babies do not need any form of other food or drink, not even water or fruit juice. It provides all the energy and nutrients that the infant needs for the first months of life, and it continues to provide half or more of a child's nutritional needs during the second half of the first year and up to one-third during the second year of life [2] . Breast milk starts with colostrum which is the initial yellowish and sticky milk produced from 37 weeks of gestation to about seven days after delivery, and mature milk which is whitish in color and is effectively produced from the 10th day after delivery[2] .

Exclusive breast feeding is the practice of feeding the infant for the first six months of life on breast milk only, without any other type of food, not even water. EBF is recommended as the best feeding practice for infants up to six months with a reduction on mortality and morbidity. Colostrum is important for the baby as it contains more protein (10% compared to 1% in mature milk), immunoglobulin's , lactoferrin , white blood cells, vitamin A, zinc and less fat[3] .

EBF is associated with many advantages to both the infant and mother. On the infant's side, there is acquisition of passive immunity against infection, nutrients for physical and mental development,

emotional security and closeness to the mother. Being a dynamic and physiologically sensitive process, breast milk production is adjusted to suit the infant's requirement according to environmental changes, for example, breast milk contain more fat during cold seasons [(2)] .

Prevention of chronic diseases in later life could be guaranteed through exclusive breastfeeding in the first six months of life [(4)] .

The current World Health Organization (WHO) recommendations on breastfeeding stipulate that breastfeeding should start immediately after delivery of the baby to get colostrums. The infant should thereafter be exclusively breastfed for up to six months of life, day and night on child's demand. However, there is a room for giving oral medication to the infant should he/she fall sick. Breastfeeding should continue till the child is two years of age[(5)] .

Globally, there is a declining trend of breastfeeding. Reasons for declining breastfeeding include lack of confidence that the child is getting enough, increased number of working mothers so they are separated from their babies for longer hours, decline in social support, discomfort on breastfeeding in public and intense promotion of commercial milk formulae [(5)] .

Globally, there are new initiatives to encourage EBF. These include the International Code of Marketing Breast milk Substitutes and Baby Friendly Hospital Initiative (BFHI). Mothers can obtain information about EBF when they are attending antenatal clinic and following hospital delivery. Mass media like radio and television are also helpful in disseminating public education on breastfeeding [(5)] .

Justifications

- Approximately 1.5 million young infants die each year as a result of lack of knowledge about exclusive breastfeeding benefits and improper infant and young child feeding practices.

- The World Health Organization (WHO), United Nations Children's Fund (UNICEF) and other organizations promote exclusive breastfeeding as one of the key effective low-cost interventions to enhance child survival.

- Numerous awareness campaigns have been launched by national governments, multilateral organizations, and non-governmental and private sector organizations across the globe to educate mothers and families about the benefits of exclusive breastfeeding and with the aim to encourage the practice .

- Wrong infant feeding practices may lead to malnutrition that could contribute to poor immune system development which eventually leads to increased morbidity and mortality, which in turn leads to growth faltering among infants.

- Most studies in the field of infant feeding and the occurrence of morbidity looked at these issues. However, this study looked at the impact of exclusive breastfeeding on infant health and physical growth in Shendi town.

Objectives

General objective:-

To assess the impact of exclusive breastfeeding on infant health and growth

Specific objectives:-

1. To evaluate the knowledge of the mothers about exclusive breast feeding.
2. To determine the barriers of exclusive breast feeding .

3- To see the effect of exclusive breast feeding in preventing infections.

4- To determine the impact of exclusive breast feeding in preventing allergic diseases .

5- To assess the impact of exclusive breast feeding on infants growth

2.Literature Review

2.1. Breast milk

Breast milk produced by the breasts (or mammary glands) of a human female for her infant . Milk is the primary source of nutrition for newborns before they are able to eat and digest other foods, older infants and toddlers may continue to be breastfed[6].

2.1.1composition of breast milk

Breast milk is made from nutrients in the mother's blood stream and bodily stores. Breast milk has just the right amount of fat, sugar, water, and protein that is needed for a infant's growth and development [7]. Because breastfeeding uses an average of 500 calories a day, it helps the mother lose weight after giving birth[8]. Breast milk is low in protein but high in lactose (milk sugar) to provide energy for the brain to develop. It also contains antibodies, enzymes and hormones to promote good health in an infant. for about three days after the birth of an infant, the breast will produce colostrums, which is richer in protein, lower in sugar and has a laxative effect that helps to clear the digestive tract of the infant [8]. It is identified as an important source of antibodies that helps to protect infant's body against various diseases until he or she begins to develop his or her own antibodies . Human breast milk it is the most healthful form of milk for human infants, although there are a few exceptions as noted by him which include situations where the mother is taking certain drugs or is infected with tuberculosis or H.I.V. The composition of breast milk changes depending on how long the infant nurses at each session, as well as on the age of the infant. The quality of a mother's breast milk may be compromised by smoking, alcoholic beverages, caffeinated drinks, marijuana, methamphetamine, heroin, and methadone[9]. The American

Academy of Pediatrics states that "Tobacco smoking by mothers is not a contraindication to breastfeeding . In addition, the AAP states that while breastfeeding mothers "should avoid the use of alcoholic beverages," an "occasional celebratory single, small alcoholic drink is acceptable, but breastfeeding should be avoided for 2 hours after the drink[9].

2.1.2. Stages of breast milk :

2.1.2.1. Colostrum

Colostrum is the first stage of breast milk that occurs during pregnancy and lasts for several days after the birth of the infant. It is either yellowish or creamy in color. It is also much thicker than the milk that is produced later in breastfeeding. Colostrum is high in protein, fat-soluble vitamins, minerals, and immunoglobulin. Immunoglobulin are antibodies that pass from the mother to the infant and provide passive immunity for the infant.Passive immunity protects the infant from a wide variety of bacterial and viral illnesses. Two to four days after birth, colostrums will be replaced by transitional milk[1].

2.1.2.2. Transitional Milk

Transitional milk occurs after colostrums and lasts for approximately two weeks. The content of transitional milincludes high levels of fat, lactose, water-soluble vitamins, and contains more calories than colostrums [2].

2.1.2.3. Mature Milk

Mature milk is the final milk that is produced. 90% is water, which is necessary to maintain hydration of the infant. The other 10% is comprised of carbohydrates, proteins, and fats which are

necessary for both growth and energy. There are two types of mature milk: foremilk and hind-milk[2].

a. Foremilk:

This type of milk is found during the beginning of the feeding and contains water, vitamins, and protein[3].

b. **Hind-milk**:

This type of milk occurs after the initial release of milk and contains higher levels of fat, and is necessary for weight gain. Both foremilk and hind-milk is necessary when breastfeeding to ensure the infant is receiving adequate nutrition and will grow and develop properly. You might alos be interested in taking a supplement that helps deliver vitamins, minerals, and nutrients that are important for healthy and plentiful breast milk production[6].

2.2. Breastfeeding

Breastfeeding is the fundamental component of the infant -survival strategy**,** it is the feeding of an infant or young child with breast milk directly or expressed from female human breasts rather than using infant formula from a infant bottle or other container. Infants have a sucking reflex that enables them to suck and swallow milk[10].

Breast feeding has been increasingly recognized as a prerequisite for healthy child growth and development .Although the advantages of breast feeding are considerable, the incidence and duration of breast feeding varies widely[11].`

2.2.1. History of breastfeeding

In the Egyptian, Greek and Roman empires, women usually fed only their own children. However, breastfeeding began to be seen as something too common to be done by royalty, and wet nurses were employed to breastfeed the children of the royal families. This extended over time, particularly in western Europe, where noble women often made use of wet nurses. But lower class women breastfed their infants and used a wet nurse only if they were unable to feed their own infant. Attempts were made in 15th-century Europe to use cow or goat milk, but these attempts were not successful. In the 18th century, flour or cereal mixed with broth were introduced as substitutes for breastfeeding, but this did not have a favorable outcome either[12] .

During the early 1900s breastfeeding started to be viewed negatively by Western societies, especially in Canada and the USA. These societies considered it a low class and uncultured practice, viewing it with a certain degree of disgust. This coincided with the appearance of improved infant formulas in the mid 19th century and its increased use, which accelerated after second World War. From the 1960s onwards, breastfeeding experienced a revival which continues to the 2000s, though negative attitudes towards the practice were still entrenched up to 1990s.

Breastfeeding declined significantly from 1900 to 1960, due to improved sanitation, nutritional technologies, and increasingly negative social attitudes towards the practice[12].

Experts agree that breastfeeding is beneficial and have concerns about the effects of artificial formulas. Artificial feeding is associated with more deaths from diarrhea in infants in both developing and developed countries.[13] There are few exceptions, such as when the

mother is taking certain drugs, has active untreated tuberculosis or is infected [9] .

The World Health Organization recommends that national authorities in each country decide which infant feeding practice should be promoted and supported by their maternal and child health services to best avoid HIV infection transmission from mother to child[14].

2.2.2. Organizational endorsements

2.2.2.1 World Health Organization

The vast majority of mothers can and should breastfeed, just as the vast majority of infants can and should be breastfed. Only under exceptional circumstances can a mother's milk be considered unsuitable for her infant. For those few health situations where infants cannot, or should not, be breastfed, the choice of the best alternative–expressed breast milk from an infant's own mother, breast milk from a healthy wet-nurse or a human-milk bank, or a breast-milk substitute fed with a cup, which is a safer method than a feeding bottle and teat–depends on individual circumstances[15] .

The WHO recommends exclusive breastfeeding for the first six months of life, after which "infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues up to two years of age or beyond[15] .

2.2.2.2. American Academy of Pediatrics

Extensive research using improved epidemiologic methods and modern laboratory techniques documents diverse and compelling advantages for infants, mothers, families, and society from breastfeeding and use of human milk for infant feeding. These advantages include

health, nutritional, immunologic, developmental, psycho logic, social, economic, and environmental benefits. The AAP recommends exclusive breastfeeding for the first six months of life[10] .

2.2.2.3 United States Centers for Disease Control and Prevention

One of the most highly effective preventive measures a mother can take to protect the health of her infant is to breastfeed.

According to the CDC, "The success rate among mothers who want to breastfeed can be greatly improved through active support from their families, friends, communities, clinicians, health care leaders, employers, and policymakers. Given the importance of breastfeeding for the health and well-being of mothers and children, it is critical that we take action across the country to support breastfeeding[16] .

2.2.3. Methods and considerations

2.2.3.1. Early breastfeeding

In the half hour after birth, the infant's suckling reflex is strongest, and the infant is more alert, so it is the ideal time to start breastfeeding[17]. Breastfeeding also releases hormones that contract the uterus to reduce post-partum bleeding[18].Early breastfeeding is associated with fewer nighttime feeding problems . The 1984-86 Nutrition Survey of Pakistan indicated that 99.3% mother's breast feed at birth. However, in recent studies the rate has dropped to(90.8%)[19].

In other study in Pakistan, initiation of breast feeding may also be delayed or accompanied by giving pre lacteal feeds and discarding colostrums. Only (25%) mothers initiate breast feeding on the first day and give colostrums to the infant [19].

A Cochrane review found that early skin-to-skin contact between mother and infant (placing the baby at the mother's breast before dressing the baby) and helps women breastfeed successfully and for a longer period of time [5].

2.2.3.2. Time and place for breastfeeding:

Feeding a infant "on demand" (sometimes referred to as "on cue"), means feeding when the infant shows signs of hunger. Newborn infants usually express demand for feeding every 1 to 3 hours per 24 hours (resulting in 8-12 times in 24 hours) for the first two to four weeks[20] . Experienced breastfeeding mothers learn that the sucking patterns and needs of infants vary. While some infants' sucking needs are met primarily during feedings, other infants may need additional sucking at the breast soon after a feeding even though they are not really hungry. Infants may also nurse when they are lonely, frightened or in pain [20] . Comforting and meeting sucking needs at the breast is nature's original design. Pacifiers (dummies, soothers) are a substitute for the mother when she cannot be available. Other reasons to pacify a infant primarily at the breast include superior oral-facial development, prolonged lactation amenorrhea, avoidance of nipple confusion, and stimulation of an adequate milk supply to ensure higher rates of breastfeeding success [21] .

Most US states now have laws that allow a mother to breastfeed her infant anywhere she is allowed to be. In hospitals, rooming-in care permits the infant to stay with the mother and improves the ease of breastfeeding. Some commercial establishments provide breastfeeding rooms, although laws generally specify that mothers may breastfeed anywhere, without requiring them to go to a special area [22] .

2.2.3.3. Latching on, feeding, and positioning

Correct positioning and technique for latching on are necessary to prevent nipple soreness and allow the infant to obtain enough milk [23,24] . The "rooting reflex" is the infant's natural tendency to turn towards the breast with the mouth open wide, mothers sometimes make use of this by gently stroking the infant's cheek or lips with their nipple to induce the infant to move into position for a breastfeeding session, then quickly moving the infant onto the breast while its mouth is wide open[25] .

To prevent nipple soreness and allow the infant to get enough milk, a large part of the breast and areola need to enter the infant's mouth [26] . Failure to latch on is one of the main reasons for ineffective feeding and can lead to infant health concerns[27] .

2.2.3.4. Duration of each session

During the newborn period, most breastfeeding sessions will take from 20 to 45 minutes. After the finishing of a breast, the mother may offer the other breast[28].

2.2.3.5. Exclusive breastfeeding

Exclusive breastfeeding is defined as "an infant's consumption of human milk with no supplementation of any type (no water, no juice, and no foods) except for vitamins, minerals, and medications [1] . National and international guidelines recommend that all infants be breastfed exclusively for the first six months of life. Breastfeeding may continue with the addition of appropriate foods, for two years or more [29] .

Exclusively breastfed infants do not need additional water , breast milk is 88% water and supplies all the fluids that infant needs. Even in the first few days after birth, before breast milk has “come in” ,colostrum

is all that is needed to keep infant well hydrated (assuming infant is nursing effectively [30].

Exclusively breastfed infants do not require additional water even when it is very hot outside, as long as infant is allowed to nurse as needed. Even in extremely hot, dry weather the infant can get all the liquids needed via breast milk. A number of research studies investigating the need for water in exclusively breastfed infants were done in various locations (both humid and dry) at temperatures ranging from 22-41°C (71.6-105.8°F) and 9-96% relative humidity ,these studies concluded that exclusive breastfeeding provides all the fluids needed. Formula fed infants also do not routinely need extra water [31] .

The Academy of Breastfeeding Medicine advises that , Supplementation in the first few days interferes with the normal frequency of breastfeeding .If the supplement is water or glucose water, the infant is at increased risk for increased bilirubin, excess weight loss, longer hospital stay, and potential water intoxication Supplements (water, glucose water, formula, and other fluids) should not be given to breastfeeding newborn infants unless ordered by a physician when a medical indication exists . During the first 6 months of age, even in hot climates, water and juice are unnecessary for breastfed infants and may introduce contaminants or allergens. Exclusive breastfeeding has dramatically reduced infant deaths in developing countries by reducing diarrhea and infectious diseases. It has also been shown to reduce HIV transmission from mother to child, compared to mixed feeding [29, 31] .

2.2.3.5.1 Benefits of exclusive breastfeeding

According to the American Academy of Pediatrics, research shows that exclusive breast feeding provides advantages with regard to general health, growth, and development. Non exclusive breastfeeding significantly increases risk for a large number of acute and chronic diseases including lower respiratory infection, ear infections, bacterial meningitis, botulism, urinary tract infection, and necrotizing enter colitis [(16)]. They state that there are a number of studies that show a possible protective effect of breast milk feeding against sudden infant death syndrome, insulin dependent diabetes mellitus, Crohn's disease, ulcerative colitis, lymphoma, allergic diseases, digestive diseases, and a possible enhancement of cognitive development[(21)] .

a. Impact on infant survival

Exclusive breastfeeding is the single most effective intervention for preventing child deaths, yet less than (40 %) of infants under 6 months old receive the benefits of exclusive breastfeeding. Diarrhea and pneumonia are the leading causes of death among infants in developing countries. Infants under 2 months old who are not breastfed are six times more likely to die from diarrhea or acute respiratory infections than those who are breastfed. Approximately 1.3 million deaths could be prevented each year if exclusive breastfeeding rates increased to (90 %) [(32)] .

b. Infections

Regarding to protects against illness, especially the colostrum contains anti-bacterial and anti-viral agents and high levels of vitamin A that protect infants against disease. Promotes recovery of the sick child. Breastfeeding provides a nutritious, easily digestible food when a sick child loses his or her appetite for other foods. Continued breastfeeding during diarrhea reduces dehydration, the severity and duration of diarrhea, and the risk of malnutrition[33] .Among the studies showing that non-breastfed infants have a higher risk of infection than breastfed infants are University of Texas Medical Branch study, a longer period of breastfeeding was associated with a shorter duration of some middle ear infections (otitis media with effusion) in the first two years of life[34]. The 2007 review found that exclusive breastfeeding reduced the risk of acute otitis media, non-specific gastroenteritis, and severe lower respiratory tract infections [35]. A 2005 study of 87 infants found that breastfed infants had half the incidence of diarrheal illness, 19% fewer cases of any otitis media infection, and 80% fewer prolonged cases of otitis media than formula fed babies in the first twelve months of life [36].

Breastfeeding appeared to reduce symptoms of upper respiratory tract infections in premature infants up to seven months after release from hospital in a 2002 study of 39 infants[37] .

A 2004 case-control study found that exclusive breastfeeding reduced the risk of acquiring urinary tract infections in infants up to seven months of age, with the protection strongest immediately after birth [27] .

A prospective case-control study among 556 children aged 0-6 years in Sweden has found that ongoing exclusive breastfeeding gave a

significantly lower risk of urinary tract infection. A longer duration of breastfeeding gave a lower risk of infection after weaning, indicating a long-term mechanism. The protective role of breastfeeding was strongest directly after birth, then decreased until 7 months of age, after which age no effect was demonstrated [38] .

There was a significant risk reduction for asthma related to partial breast feeding for six months or more. Five possible allergic disorders : asthma, suspected allergic rhinitis, atopic dermatitis, food allergy related symptoms, and suspected allergic respiratory symptoms after exposure to pets or pollen were studied. Exclusive breastfeeding prevented children from having multiple allergic disease during the first two years of life. The authors concluded that exclusive breastfeeding seems to have a preventive effect on the early development of allergic disease, including multiple allergic disease, up to 2 years of age[39] .The use of human milk was associated with a significantly-reduced incidence of allergic disease, particularly eczema at 18 months in those with a family history of atopic disease. In those without a family history there was no effect[40] .

C. Immunity

During breastfeeding, approximately 0.25-0.5 grams per day of secretory IgA antibodies pass to the baby via the milk [18] . This is one of the most important features of colostrum, the breast milk created for newborns[18] .The main target for these antibodies is probably microorganisms in the infant intestine. There is some uptake of IgA to the rest of the body, but this amount is relatively small[41]. Also, breast milk contains several anti-infective factors such as bile salt stimulated lipase (protecting against amoebic infections) and lactoferrin (which binds to iron and inhibits the growth of intestinal bacteria [42] .

d. Impact on child nutrition

Provides total food security. Breast milk is a hygienic source of food with the right amount of energy, protein, fat, vitamins, and other nutrients for infants in the first six months. It cannot be duplicated. Breast milk is the only safe and reliable source of food for infants in an emergency. Meets all water requirements. Studies show that healthy, exclusively breastfed infants under 6 months old do not need additional fluids, even in countries with extremely high temperatures and low humidity. Offering water before 6 months of age reduces breast milk intake, interferes with full absorption of breast milk nutrients, and increases the risk of illness from contaminated water and feeding bottles[43] .

e. Economic and environmental benefits

Families save money that would have been spent to treat illnesses due to contaminated and inadequate breast milk substitutes. Exclusive breastfeeding eliminates dependence on costly breast milk substitutes, feeding equipment, and fuel for preparation [37] .

The American Academy of Pediatrics states that breastfeeding also has economic health benefits because breastfeeding results in reduced health care costs. The significantly lower incidence of illness in the breastfed infant also allows the parents more time for attention to siblings and other family duties and reduces parental absence from work and lost income. During the first 6 weeks of lactation, maternal caloric intake is no greater for the breastfeeding mother than for the no lactating mother. After that period, food and fluid intakes are greater, but the cost of the increased caloric intake is about half the cost of purchasing

formula[43] . About protects the environment, breast milk is a naturally renewable, sustainable resource that requires no fuel for preparation, packaging, shipping, or disposal [37] .

f. Bonding

According to some authorities, there is a growing body of evidence that suggests that early skin-to-skin contact (also called kangaroo care) of mother and infant stimulates breast feeding behavior in the infant [44] .Immediately placed on their mother's skin have a natural instinct to latch on to the breast and start nursing, typically within one hour of being born. It is thought that immediate skin-to-skin contact provides a form of imprinting that makes subsequent feeding significantly easier[44] .

The World Health Organization reports that in addition to more successful breastfeeding, skin-to-skin contact between a mother and her newborn immediately after delivery also reduces crying, improves mother to infant interaction, and keeps baby warm. According to studies quoted by UNICEF, infants have been observed to naturally follow a unique process which leads to a first breastfeed. After birth, infants who are placed skin to skin on their mother's chest will:

- Initially infants cry briefly – a very distinctive birth cry[45] .
- Then they will enter a stage of relaxation, recovering from the birth .
- Then the baby will start to wake up[45] .
- Then begin to move, initially little movements, perhaps of the

arms, shoulders and head .

- As these movements increase he will actually start to crawl towards the breast .

- Once he has found the breast and therefore his food source, he will tend to rest for a little while. Often this can be mistaken as the infant is not hungry or wanting to feed .

- However after his rest he will start to familiarize himself with the breast, perhaps by nuzzling, smelling and licking before he finally attaches [46] .

- Once he has suckled for a period of time, he will come off the breast and fall asleep. Providing that there are no interruptions, all infants are said to follow this process and it is suggested that trying to rush the process or interruptions such as removing the infant to weigh him/her is counter-productive and may lead to problems at subsequent breastfeeds [45] .

Hormones released during breastfeeding help to strengthen the maternal bond[15] . Teaching partners how to manage common difficulties is associated with higher breastfeeding rates. Support for a mother while breastfeeding can assist in familial bonds and help build a paternal bond between father and child[45] .

If the mother is away, an alternative caregiver may be able to feed the infant with breast milk expressed with a breast pump .Whilst skin-to-skin contact is becoming part of normal practice in the UK, in some areas separation of mother and baby immediately following birth and practices such as swaddling remain common practice [46] .

A study was undertaken in Russia, where separation and swaddling are routine, to compare possible long term effects on mother-infant interaction[46] .

A total of 176 mother-infant pairs were randomized into four groups: Group I infants were placed skin-to-skin with their mothers after birth, and had rooming-in while in the maternity ward. Group II infants were dressed and placed in their mothers' arms after birth, and roomed in with their mothers in the maternity ward. Group III infants were kept in the nursery both after birth and throughout their mothers stay in the maternity ward. Group IV infants were kept in the nursery after birth, but roomed-in with their mothers in the maternity ward. Whether the baby suckled early in the delivery room was noted [46] .At one year of age, interaction between mother and infant was videotaped and assessed using a validated assessment tool. The researchers found that skin-to-skin contact, early suckling, or both during the first two hours after birth when compared with separation between the mothers and their infants positively affected the outcomes of infant's self-regulation, and dyadic mutuality and reciprocity at one year and the mother showed greater interaction and interest in the infant and greater reciprocity compared with the controls. he negative effect of a two-hour separation after birth was not compensated for by the practice of rooming-in. The researchers argue that these findings support the presence of an early "sensitive" period after the birth during which close contact between mother and infant may induce long-term positive effect on mother-infant interaction[46] .

2.2.3.5.2. Challenges of Exclusive Breastfeeding

Though breastfeeding is a natural human activity, it does not thrive without its own challenges, these challenges are as follows:

a. Sore Nipple:

This refers to a sour, cracked or even bleeding nipple, which occurs when the infant is not properly latched on. It always very painful and obstructs exclusive breastfeeding[47].

b. Blocked Ducts:

These are tender lumps on the breast which are caused by milk building up. This could as well be caused by a temporary obstruction by bra-strap or the way the infant is lying to feed[48].

c. Mastitis:

This refers to the red patch signals of an inflammation of the breast which makes the woman feel like she has influenza and it is caused by an infection in the milk ducts or breast tissue[49]. Besides, mastitis could be referred to as breast abscess, which is an accumulation of pus walled off within the breast causing a lot of pain [50].

If develop mastitis the mothers should continue to feed from the affected breast. This helps the milk to continue flowing and stops the breast from becoming engorged and making things worse. After each feed, try to express any remaining milk from the affected breast. Feeding from an infected breast does not harm the infant . If the infant swallows bacteria from an infected breast, the bacteria will be killed by the acid in the infant's stomach. The doctor will choose an antibiotic that is safe to give to breast-feeding women and which will not harm the infant[51].

simple painkillers (such as paracetamol or ibuprofen) to ease pain and reduce fever. Cold packs can also be quite soothing when placed on the breast [52].

A breast-feeding infant may refuse to feed from the affected breast, as the taste of the milk may change a little. If this occurs, feed from the other breast. Do remember to express the milk from the affected breast. This will stop the breast swelling and becoming more painful. It will also keep up the demand for milk, so production does not slow down[53].

d. Eczema and Impetigo:

These are challenges encountered by a nursing mother during breastfeeding. Eczema can appear on the nipple making the area burn, itch, flake, ooze or crust, while Impetigo can continually slough off the skin if not quickly [53]

2.2.3.6. Expressing breast milk:

When direct breastfeeding is not possible, a mother can express (artificially remove and store) her milk. With manual massage or by using a breast pump, a woman can express her milk and store it. It can be stored in freezer storage bags and containers made specifically for breast milk, a supplemental, or a bottle ready for use. Breast milk may be kept at room temperature for up to six hours, refrigerated for up to eight days or frozen for up to six to twelve months[54] . Research suggests that the antioxidant activity in expressed breast milk decreases over time but it still remains at higher levels than in infant formula [55] . Expressing breast milk can maintain a mother's milk supply when she and her child are apart. If a sick infant is unable to feed, expressed milk can be fed through a nasal gastric tube. Expressed milk

can also be used when a mother is having trouble breastfeeding. "Exclusively expressing", "exclusively pumping" are terms for a mother who feeds her infant exclusively her breast milk while not physically breastfeeding. This may arise because her infant is unable or unwilling to latch on to the breast. With good pumping habits, particularly in the first 12 weeks when the milk supply is being established, it is possible to produce enough milk to feed the baby for as long as the mother wishes. It is generally advised to delay using a bottle to feed expressed breast milk until the baby is 4–6 weeks old and is good at sucking directly from the breast [(56)] .

As sucking from a bottle takes less effort, infants can lose their desire to suck from the breast. This is called nursing strike or nipple confusion. To avoid this when feeding expressed breast milk (EBM) before 4–6 weeks of age, it is recommended that breast milk be given by other means such as feeding spoons or feeding cups. Also, EBM should be given by someone other than the breastfeeding mother (or wet nurse), so that the infant can learn to associate direct feeding with the mother (or wet nurse) and associate bottle feeding with other people. With the improvements in breast pumps, many women are able to return to work while exclusively feeding their infants breast milk because of their ability to express milk at work. Women can also leave their infants in the care of others for vacation or other extended trips, while maintaining a supply of breast milk. This can be very convenient to the mother [(56)] .

Some women donate their expressed breast milk (EBM) to others, either directly or through a milk bank. Though historically the use of wet nurses was common, some women dislike the idea of feeding their own child with another woman's milk, others appreciate being able to give their infant the benefits of breast milk. Feeding expressed breast milk—

either from donors or the infant's own mother—is the feeding method of choice for premature babies .The transmission of some viral diseases through breastfeeding can be prevented by expressing breast milk and subjecting it to Holder pasteurization [56] .

2.2.3.7. Mixed feeding:

Predominant or mixed breastfeeding means feeding breast milk along with infant formula, infant food and even water, depending on the age of the child. infants feed differently with artificial nipples than from a breast. With the breast, the infant's tongue massages the milk out rather than sucking, and the nipple does not go as far into the mouth; with an artificial nipple, an infant must suck harder and the milk may come in more rapidly. Therefore, mixing breastfeeding and bottle-feeding (or using a pacifier) before the infant is used to feeding from its mother can result in the infant preferring the bottle to the breast. Some mothers supplement feed with a small syringe or flexible cup to reduce the risk of artificial nipple preference[1] .

2.2.3.8. Tandem nursing:

Feeding two children at the same time who are not twins or multiples is called tandem nursing. As the appetite and feeding habits of each infant may not be the same, this could mean feeding each according to their own individual needs and can also include breastfeeding them together, one on each breast. In cases of triplets or more, it is a challenge for a mother to organize feeding around the appetites of all the infants. Breasts can respond to the demand and produce large quantities of milk; mothers have been able to breastfeed triplets successfully[57] .

Tandem nursing occurs when a woman has a infant while breastfeeding an older child. During the late stages of pregnancy, the milk will change to colostrums , and some older nurslings will continue to

feed even with this change, while others may wean due to the change in taste or drop in supply. Breastfeeding a child while being pregnant with another can also be considered a form of tandem feeding for the nursing mother, as she also provides the nutrition for two[58] .

2.2.3.9. Shared breastfeeding:

It used to be common worldwide, and still is in some developing nations such as those found in Africa, for more than one woman to breastfeed a child. Shared breastfeeding has now been found to be a risk factor for HIV infection in infants [59] . A woman who is engaged to breastfeed another's infant is known as a wet nurse. Shared breastfeeding can sometimes incur negative reactions in the Anglo sphere . American feminist activist Jennifer Baumgartner has written about her experiences in New York with this issue [50] .

2.2.3.10. Duration of breastfeeding:

The World Health Organization recommends exclusive breastfeeding for the infant's first 6 months of life, and continued breastfeeding complemented with appropriate foods up to two years old and beyond[60] .

According to a study conducted by the Centers for Disease Control and Prevention, the results of which were published in the journal Pediatrics, as of 2013 in the United States reliance on out-dated recommendations and considerations of convenience and cost sometimes resulted in inappropriate earlier attempts to switch to solid food [61] .

In many Western countries, however, breastfeeding beyond the age of 1 year old is considered "extended breastfeeding". These movements in the West towards earlier weaning, however, are recent. Breastfeeding

beyond the age of 1 year old was at one time a very common practice worldwide [62] .

About Extended Breastfeeding in a Toddler that "The discussion about extended nursing is similar to that of co-sleeping. They are both characteristics of child rearing that are closely linked to time and place. In most cultures before the 20th century, both practices were the norm. Changes in social, economic, and sexual expectations altered our views of the meaning of breastfeeding and bed sharing." Extended breastfeeding was encouraged in Ancient Greek, Hebrew, and Muslim cultures. The Koran, the Talmud, and the writings of Aristotle all recommend breastfeeding for 2 to 3 years [63] .

In breastfeeding beyond 6 months, mothers' perceptions of the negative and positive consequences, Dr. S. B. Reamer states that "Over the past 100 years of American history, the acceptance of unrestricted nursing decreased and the age acceptable for weaning dropped dramatically, until the average weaning age was 3 months in the 1970s."

In reaction to the move in the West towards earlier weaning, several organizations have been founded in Western countries to support mothers who practice extended breastfeeding. These organizations include the International Childbirth Education Association and La Leche League International[64] .

The US CDC recommends exclusive breastfeeding till six months of age. Their latest figures (2008) show that 76.9% US women had ever breastfed but only 47.2% were still breastfeeding at six months and 25.5% at twelve months. Figures for exclusive breastfeeding at three months were 36% and at six months only 16.3 % [65] .

2.2.3.11.Diet during breastfeeding

Women who are breastfeeding need to be careful about what they eat and drink, since things can be passed to the baby through the breast milk. Just like during pregnancy [66] .

If a woman ingests alcohol, a small amount can be passed to the infant through breast milk. Alcohol-containing breast milk has been shown to have a detrimental effect on motor development [67] .

Caffeine intake should be kept to no more than 300 milligrams (about one to three cups of regular coffee) per day for breastfeeding women, as excess caffeine in breast milk can cause irritability and restlessness in infants. When consumed in normal, everyday amounts, caffeine is considered to be compatible with breastfeeding by the American Academy of Pediatrics [68] .

Nursing mothers concerned about the chemical bisphenol A, which has been shown to affect infant health, should be aware that it can be passed to their infant though breast milk; they may want to limit their dietary intake of certain foods and adjust their shopping habits to avoid as much exposure as possible [68] .

2.2.3.12. Weaning:

Weaning is the process of introducing the infant to other food and reducing the supply of breast milk. The infant is fully weaned when it no longer receives any breast milk. Most mammals stop producing the enzyme lactase at the end of weaning, and become lactose intolerant. Humans often have a mutation, with frequency depending primarily on ethnic background, that allows the production of lactase throughout life so they can drink milk — usually cow or goat milk — well beyond infancy[69] .

In humans, the psychological factors involved in the weaning process are crucial for both mother and infant as issues of closeness and separation are very prominent during this stage. In the past bromocriptine was in some countries frequently used to reduce the engorgement experienced by many women during weaning. This is now done only in exceptional cases as it causes frequent side effects, offers very little advantage over non-medical management and the possibility of serious side effects cannot be ruled out. Other medications such as cabergoline, lisurideor birth control pills may occasionally be used as lactation suppressants[70] .

2.2.3.13 Extended Breastfeeding

Extended breast feeding, also called sustained breastfeeding is the type of breastfeeding that exceeds two years. Supporters of extended breastfeeding believe that all the benefits of human milk, nutritional, immunological and emotional , continue for as long as the child nurses often the older child will nurse frequently or sporadically as a way of bonding with the mother [71] .

2.2.4. Healthy infant growth

Infant growth patterns vary substantially as a function of several factors comprising determinants such as nutritional, cultural, environmental and social conditions, as well as biological and genetic factors. In the first 6 months of life, the most important source of nutrients is breast milk. As a consequence, it is important to know how breastfeeding duration influences the increase in body weight and length in infants [72].

The effect of breastfeeding on infant growth has been studied by several authors [73] . Several researchers have verified that breastfed infants show a higher growth rate early in life when compared to formula-

fed infants**.** Other studies have reported that the rate of weight gain in formula-fed infants becomes greater than that of breastfed infants at some point during the first few months of growth[73,74]. There is still an undergoing debate on the issue, especially after the release in 2006 of the World Health Organization (WHO) new standards to assess the growth and development of children under 5 years[75] .The most common anthropometric measurements to assess infant growth are body weight and length[76] .

The average breastfed infant doubles its birth weight in 5–6 months. By one year, a typical breastfed baby will weigh about 2½ times its birth weight. At one year, breastfed infants tend to be leaner than formula fed infants, which is healthier, especially in the long-run. A general guide to the growth of breastfed infants is the following:

Weight gain of 4–7 ounces (112–200 grams) a week during the first month .An average of 1–2 pounds (1/2 to 1 kilogram) per month for the first six months. An average of one pound (1/2 kilogram) per month from six months to one year. Babies usually grow in length by about an inch a month (2.5 cm) during the first six months, and around one-half inch a month from six months to one year [77] .

2.2.5. Failure to Thrive and exclusive breastfeeding:

The words "failure to thrive" are used to describe a infant who is growing more slowly than others the same age. Best defined as inadequate physical growth . Diagnosed by observation of growth over time using standard growth charts. Preferred growth charts are from the National Center for Health Statistics (NCHS), weight and height less than 3rd percentile for age , head circumference important, but not part of FTT entity [78].

There could be many reasons. Perhaps the infant not getting enough to eat ,may not be feeding for long enough or often enough, or may be having trouble weaning her on to solid food .Failure to thrive can also be caused by: Minor illness. Infants lose their appetite when they're unwell, just like we do, heartburn, or reflux, and vomiting, which can make infant reluctant to feed ,infections in her mouth or throat that may make sucking painful, excessive vomiting or diarrhea, caused by an illness and problems with mealtimes [79] .

Some infants have a higher risk. For example, if the infant has a cleft lip or palate, feeding is probably more difficult for her than for other infants. In some cases there is a problem in the relationship between a parent and infant, which has an effect on feeding habits. There is sometimes a link between postnatal depression in mums and failure to thrive in their infants [79] .

In some families, mealtimes are not regular, or there are worries about stretching the household budget for food and infant milk. If you are worried about routines, the best diet for child, or being able to afford healthy food[80] .

Sometimes, failure to thrive is a sign that your infant could have a more serious underlying illness. This is one reason why your health visitor or doctor will want to find out the cause[80] .

2.2.6. Breastfeeding difficulties

International board certified lactation consultants (IBCLCs) are an excellent source of assistance for breastfeeding mothers. IBCLCs are health care professionals certified in lactation management. They work with mothers to solve breastfeeding problems and educate families and health care professionals about the benefits of breastfeeding. Research

shows that rates of exclusive breastfeeding and of any breastfeeding are higher among women who have had infants in hospitals with IBCLCs on staff [81,82] .

2.2.6.1 Physiological constraints to breastfeeding

While breastfeeding is a natural human activity, difficulties and complications are not uncommon. Putting the infant to the breast as soon as possible after the birth helps to avoid many problems, including mastitis[83] .

The AAP breastfeeding policy says: "Delay weighing, measuring, bathing, needle-sticks, and eye prophylaxis until after the first feeding is completed .Many breastfeeding difficulties can be resolved with proper hospital procedures, properly trained midwives, doctors and hospital staff, and lactation consultants[84,85] .

There are some situations in which breastfeeding may be harmful to the infant, including infection with HIVand acute poisoning by environmental contaminants such as lead. The Institute of Medicine has reported that breast surgery, including breast implants or breast reduction surgery, reduces the chances that a woman will have sufficient milk to breast feed[86] .

2.2.6.2. Social-cultural constraints to breastfeeding

Women often stop breastfeeding because they return to work. Many aren’t provided with paid maternity leave or time and a private place to breastfeed or express their breast milk. Legislation around maternity leave and policies that provide time, space, and support for breastfeeding in the workplace could reduce this barrier. For mothers who work in farming or the informal sector, family and community support can help them to continue breastfeeding, even after returning to work.

Also many countries need better laws and enforcement to protect women from persecution or harassment for breastfeeding [4] .

2.2.6.3. Barriers of exclusive breastfeeding

The majority of mothers intend to breastfeed when their infant is born. There are many things that happen that disrupt or intervene in this plan. Here are just a few of the barriers that women face when attempting to breastfeed [87] .

2.2.6.3.1. Birth procedures :

Routine separation of the baby from the mother, delayed breastfeeding initiation, vigorous routine suctioning, medications and mode of delivery all interfere with breastfeeding. A "substantial" number of hospital and facilities implemented procedures and policies that were not evidenced based and that were known to interfere with lactation[88] .

2.2.6.3.2. Nursery policies :

Additional separation, rooming in policies, routine bottles and pacifiers can also prevent the baby from learning to latch and establishing a supply. About a quarter of all breastfeeding infants receive formula supplementation in the first two days of life [89] .

2.2.6.3.3. Ignorance :

lack of information about exclusive breastfeeding[90] .

2.2.6.3.4. Personal :

Breastfeeding is the biologic norm but in absence of watching others nurse their infants, it is a lost art as well. Classes, books and

personal counseling (professional or lay) can be beneficial. Some women do not want to breastfeed because they fear that breastfeeding will negatively impact the look of their breasts, although medical evidence attributes the actual causes of breast appearance changes to pregnancy, aging, and smoking habits. Jae Ireland reports "the idea that breastfeeding causes saggier, smaller breasts is a myth, as proven by a 2008 study published in the Aesthetic Surgery Journal The study found that while breastfeeding had no effect on a woman's breasts, other factors did contribute to sagginess, such as a mother's advanced age, her number of pregnancies and whether or not she smoked. All three factors can result in altered breasts, but breastfeeding was not identified as a marker for a change in overall breast appearance [91].

2.2.6.3.5. Partner :

Partners also lack basic breastfeeding knowledge and are typically unsure of their role in breastfeeding[90] .

2.2.6.3.6. Practitioner:

Physicians and nurses have surprisingly little training in lactation and lactation support. One of the main action items in The Surgeon General's Call to Action to Support Breastfeeding is to help educate practitioners about exclusive breastfeeding and breastfeeding issues[88] .

2.2.6.3.7. Workforce :

Returning to work is the most common cited reason for discontinuing exclusive breastfeeding [91] .Maternity leave in the US varies widely despite the Family Medical Leave Act (FMLA), which provides most working mothers up to 12 weeks. Many mothers are forced

to take unpaid time off from their job and the majority do not use FMLA for the full twelve weeks. Fathers are also allowed to use FMLA for the birth or adoption of the infant. Maternity leave varies widely by state [92] .

2.2.6.3.8. Poor latch :

Pain caused from miss-positioning the infant on the breast or a tongue-tie in the infant can cause great pain in the mother and therefore discourage her from breastfeeding. These problems are generally easy to correct (by re-positioning or clipping the tongue-tie). Women whose pregnancies are unintended are less likely to breast feed their infants[92]

2.2.6.3.9. low milk supply

Low milk supply is the one of the most common reasons given for early weaning, therefore it is imperative the condition is diagnosed accurately and if confirmed, managed appropriately. Undersupply may be real, or perceived. Mothers may perceive their infant's need for frequent feeding and comfort as a problem with milk supply. Awareness of normal feeding patterns and growth and the developmental stages of infants can help mothers to be more reassured about their own infant's feeding behavior[93, 94] .

low milk supply me be related to Insufficient removal of milk from the breasts leading to a reduction in milk production is the most likely[95] . This cause of low supply is associated with poor attachment, insufficient breastfeeding and restricting breastfeeds, Sleepy infant **,** mother-infant separation**,** unresolved engorgement, use of infant formula, teats and dummies/pacifiers ,ankyloglossia (tongue-tie)and other infant oral cavity abnormalities[96,97] .

There is other reported causes of low milk supply may include Insufficient glandular tissue- either primary – e.g. hypo plastic breasts or secondary – e.g. surgery such as reduction mammoplasty, maternal medical problems e.g. retained products, severe postpartum hemorrhage, serious maternal illness, severe anemia, maternal diabetes, obesity, maternal medications, hypothyroidism, polycystic ovary syndrome, Sheehan's syndrome, hormonal imbalance, inverted nipples, maternal smoking ,maternal alcohol consumption may slow the milk ejection reflex thus reducing breast drainage and milk production, use of combined oral contraceptive medications , excessive exercise, infant medical problems interfering with breastfeeding ,e.g. congenital abnormalities, cardiac problems, prematurity, illness, or motor dysfunction, menstruation and/or subsequent pregnancy – some women perceive a reduction in milk supply during menstruation or early pregnancy and early introduction of solids [98] .

Low supply may be indicated by the following clinical signs[99] . However, a careful history and examination is necessary, as the presence of some of these may not necessarily indicate low supply [100] .Fewer than 3 wet nappies/24 hours by day 3 , fewer than 5-6 heavy wet nappies/24 hours after day 5 ,concentrated urine ,no change to normal breast milk stools by day 3-4 and scant stools thereafter ,dry mucous membranes ,weight loss greater than 10% birth weight ,further weight loss after day 3-4, less than 20 gm weight gain/day after day 3-4, failure to regain birth weight by 2 weeks of age ,limited evidence of milk transfer during feeds , prolonged or continuous feeding with little evidence of satiety, persistent jaundice , persistently sleepy or lethargic infant ,excessive crying, weak cry, infant appears unwell, no signs of lacto genesis II on day 3-4 (breast

fullness and heaviness),breasts remain soft in between feeds (normal after around 3 weeks) [101].

a. General management

Once the cause has been identified, a plan of management should be prepared to ensure the infant remains hydrated and nourished whilst implementing strategies to increase mother's milk supply[102] .

o Correct positioning and attachment, and management of any nipple trauma

o Increase the number of breastfeeds: wake the infant more often and/or offer the breast for comfort instead of using a dummy/pacifier

o Educate the mother regarding infant hunger and satiety cues and the signs of effective milk transfer

o Decrease non-medically prescribed or unnecessary use of artificial infant formula

o Implement 'switch feeding' if infant is sleepy: change the infant from one breast to the other several times during a feed to keep the infant alert during the feed while milk supply is low

o Increase skin-to-skin contact

o Breast compression during feeds may increase milk transfer

o Additional breast stimulation and drainage through regular expressing after or between breastfeeds

o Good maternal nutrition, rest, relaxation and domestic support and reduce smoking, caffeine and use of alcohol [103] .

b Specific management

Consider referral to a lactation consultant for specialized lactation management, particularly if there are associated maternal or infant medical conditions[103] .

2.2.6.4. Sociological factors

Researchers have found several social factors that correlate with differences in initiation, frequency, and duration of breastfeeding practices of mothers. Race, ethnic differences and socioeconomic status and other factors have been shown to affect a mother's choice whether or not to breastfeed, and how long she breastfeeds her child. A recent study found that on average women that breastfed their infants had higher levels of education, were older, and were more likely to be white [88] .

The reasons for the persistently lower rates of breastfeeding among African American women are not well understood, but employment may play a role. African American women tend to return to work earlier after childbirth than white women, and they are more likely to work in environments that do not support breastfeeding. Although research has shown that returning to work is associated with early discontinuation of breastfeeding, a supportive work environment may make a difference in whether mothers are able to continue breastfeeding [89] .

Other research found that women and children who qualify for WIC, Special Supplemental Nutrition Program for Women, Infants, and Children were among those who were least likely to initiate breastfeeding. Income level can also contribute to women discontinuing

breastfeeding early. More highly educated women are more likely to have access to information regarding difficulties with breastfeeding, allowing them to continue breastfeeding through difficulty rather than weaning early. Women in higher status jobs are more likely to have access to a lactation room and suffer less social stigma from having to breastfeed or express breast milk at work. In addition, women who are unable to take an extended leave from work following the birth of their child are less likely to continue breastfeeding when they return to work. Low income women are more likely to have unintended pregnancies and women whose pregnancies are unintended are less likely to breast feed their infants [(104)] .

Other research found that (60%)of women from a high socioeconomic group supplement the infant with fresh milk or infant formulas[(13)].

2.2.6.5. Breastfeeding in public

Breastfeeding in public is forbidden in some jurisdictions, not addressed by law in others, and a granted legal right in public and the workplace in yet others. Where it is a legal right, some mothers may nevertheless be reluctant to breastfeed, and some people may object to the practice [(104)] .

There have been incidents of owners of premises, or people present, objecting to or forbidding breastfeeding. In some cases the mothers have left; in others, where a law guaranteeing the right to breastfeed has been broken, there has been legal action [(105,106)] .

2.3. Role of marketing:

Controversy has arisen over the marketing of breast milk vs. formula. particularly how it affects the education of mothers in third world countries and their comprehension (or lack thereof) of the

health benefits of breastfeeding .The most famous example being the Nestlé boycott, which arose in the 1970s and continues to be supported by high-profile stars and international groups to this day [11] .

In 1981, the World Health Assembly (WHA) adopted Resolution WHA34.22 which includes the International Code of Marketing of Breast-milk Substitutes [106] .

3. Materials and Methods

3.1 Research Design:

Cross sectional retrospective community based study.

3.2 Study area:

This study was carried out in Shendi town ,which is 176km north to Khartoum and 110 km south to Eldamer, the capital of River Nile State. Shendi town lies on the eastern bank of the River Nile.

It occupies an area of about 14596 square kilometers. The total population of Shendi town is about 80876 where most of them are farmers. Shendi University was established in the early 1990s and stands as a landmark institution in higher education.

3.3 Study duration:

From December 2011 to December 2014.

3.4 Setting:

The study was carried out in a primary health care center (Maternity and child care center) .This center was established in 1963, firstly started to provide reproductive health services and then the immunization program introduced in 1976. The center started to provide regular cervices in1983. In 2005 started the nutritional services and growth follow up .It is staffed by a number of immunization personnel and midwives. This center provides services to the city of Shendi and the surrounding villages **.**

3.5 Study Population

The population include infants with exclusive and nonexclusive breastfeeding who attended the maternity and child care center.

3.6 Sample size and Sample Technique

The sample size selected was (150) infants. Using the non random sampling technique-purposive sampling (criteria sample)

3.7 Age determination:

Age determined from center records which depends on birth certificate ,the age was divided into four groups start from (0-3) months up to (9-12)months .The youngest age included was 42 days .

3.8 Inclusion criteria

1. Residents of Shendi town.
2. Coming to the immunization center.
3. Healthy infants (no dysmorphic features or congenital malformation)

3.9 Exclusion criteria

1. Non healthy infants
2. Refusal to participate.

3.10. Research team:

All the measurements were done by the researcher except the length done with an assistant.

3.11. Research tools

Three tools used to collect the necessary data to achieve the aim of the study :

1- Structured Interview Sheet

2- Growth measurement tools . These tools of measurement include:

a. Plastic flexible, non stretchable measuring tape, for both head circumference measurements and length measurements of infants.

b. infants horizontal(Secca) scale for weight measurements.

3 - Growth charts for comparison.

1- Structured Interview Sheet:

A structured interview sheet was developed by the researcher. It included 5 sections.

Section A is related to mother and infant personal data.

Section B is about knowledge of mothers about exclusive breast feeding.

Section C is about practice of mothers regarding exclusive breast feeding .

Section D is about impact of exclusive breast feeding on infants health .

Section E is about impact of exclusive breast feeding on infants growth .

Section A

The first part was used to collect data about socio-demographic characteristics of the studied subjects such as personal data of mothers including age, educational level, duration of marriage, economic status and personal data of their infants including age, sex , order of infant in the family, infant maturity at birth and infant birth weight.

Section B

The second part was developed to collect data about knowledge of mothers regarding exclusive breast feeding such as definition, benefits, frequency of breast feeding, how to a resolve the problem if breast feeding is insufficient**.**

Section C

The third part was developed to collect data about Practice of mothers regarding exclusive breastfeeding such as initiation of breast feeding, frequency of breast feeding of their infants, time of supplementary feeding, reason for giving water early and barriers of exclusive breast feeding.

Section D

This part was developed to collect data about impact of exclusive breastfeeding on Infant health such as history of hospitalization and illnesses like cough, diarrhea, otitis media, urinary tract infection, pneumonia, protein energy malnutrition, type of allergies and constipation.

Section E

This part was developed to collect data about impact of exclusive breastfeeding on Infant growth, the weight, height, and head circumferences that measured by the researcher.

3.12. Study technique:

The researcher visited the mothers of infants in the immunization centre .They were sampled for the study. The questionnaires was administered to the responders .The research was conducted during the work day: from 8am to 12 pm . The questionnaire was completed by the researcher after their consent and the objectives of the study explained to them. The respondents were allowed enough time to respond to the questionnaire items. This method of administration was adopted to ensure high response rate

Detailed clinical examination was made, with concentration on the nutritional status . All the measuring equipments were checked and calibrated periodically.

Anthropometric measurement technique:

1- Weight: The horizontal scale(Secca) was checked for balance by setting it to the zero, and noting if the balance registers exactly in the middle of the mark.

2- length: The infant length was made with the use of a hard surface and tape, then compared with the growth chart.

3- **Head circumference**:

It was measured using the tape , the recorded and compared to the CDC growth chart .

3.14.Pilot Study

A pilot study was carried out after the development of the study and before embarking on the actual study (data collection). It was conducted during March 2012 in order to test applicability of the tools of data collection, and to estimate the time required for filling the required forms. It was carried out on 10 infants, from the immunization center to evaluate the content of tools to determine whether or not the items were understood by the mother.

3.15 Field Work:

The data were collected in the year 2012, started from December 2012 and extended to march 2013. Before conducting the study, the nursing mothers were assured that the data collected from the questionnaire will remain confidential and that no personal identification was needed by any means.

3.16 Administrative Design:

Written permission was taken from the Dean of the Faculty of Nursing, Shendi University.

3.17 Statistical analysis :

SPSS (statistical package for social science) was used for tabulation and analysis , chi square test (x^2) was used to 95% significance level .

4.1. Socio demographic characteristics of mothers and their infants.

(39.3%) of the mothers their age was between 36 and 45years and (60.7%) were below 35 years . (32%) of the studied mothers were university graduate , illiterate mothers were (10.0%) and (6%) with postgraduate education . The Duration of Marriage in (18 %) was (11 - 20) years , and almost half of them (45.3%) duration of marriage was between (6 – 10) years._ Table (1)

(38.0%) of the study group have low socio- economic status (less than 500 SDG) and (26.7%) of the study group have high socio-economic(more than 2000 SDG) . Table (2)

Most of infant age was between (6-9) months (32.0%) and age (9-12) constituted (20%) .Most of study group were males (59.3 %) .(48%) of infants were blow 6moth age .Table (3)

Most (26%) of infants were the second in order and very few infants were in the tenth order (1.3%) .(63.3%) were in the 1st thre orders .(Table 4)

Almost all of study group (95.3%) were born term and only (4.7%) were premature . The majority of the study group had normal birth weight (85.3%). Only (9.3% and 5.3%) are low birth weight and large birth weight respectively. –Table (5)

Table (1): Socio-demographic characteristic of mothers (age, level of education and Duration of Marriage)

Mothers characteristic	NO	%
Mothers age		
≤ 25 years	43	28.7%
26-35 year	48	32.0%
36-45 year	59	39.3%
≥ 45 years	0	0.0%
Mothers education		
Illiterate	15	10.0%
primary education	35	23.3%
Secondary education	43	28.7%
University	48	32 %
Postgraduate	9	6.0%
Duration of Marriage		
≤ 5 years	45	30%
6 - 10 years	68	45.3%
11 - 20 years	27	18%
≥ 20 years	10	6.7%
Total	150	100.0%

Table (2): Socio- economic statues

Family in come	NO	%
less than 500 SDG	57	38.0%
500-1000SDG	28	18.7%
1000-2000SDG	25	16.7%
more than 2000SDG	40	26.7%
Total	150	100%

Table (3) : Socio-demographic characteristic of infants (Infant age and Gender)

Infants characteristic	NO	%
Infant age		
(0-3)months	29	19.3%
(3-6) months	43	28.7%
(6-9) months	48	32.0%
(9-12) months	30	20.0%
Gender		
Male	89	59.3%
Female	61	40.7%
Total	150	100%

Table (4) : Socio-demographic characteristic of infants (order of infants in the family)

Order of infants in the family	NO	%
1st	24	16.0%
2nd	39	26.0%
3th	32	21.3%
4th	20	13.3%
5th	16	10.7%
6th	5	3.3%
7th	6	4.0%
8th	3	2.0%
9th	3	2.0%
10th	2	1.3%
Total	150	100%

Table (5) : Socio-demographic characteristic of infants(Infant maturity at birth , Infants birth weight)

Infants characteristic	NO	%
Infant maturity at birth		
Term	143	95.3%
Preterm	7	4.7%
Infants birth weight		
Normal birth weight	128	85.3%
Low birth weight	14	9.3%
Large birth weight	8	5.3%
Total	150	100%

The impact of mother age on practice of exclusive breast feeding is shown in table (6) . There is a strong association between breastfeeding and the age of the mother with a P value of (0.00) . Older mothers are more likely to exclusively breastfeed than younger mothers.

The level of education of the mothers showed significant differences in the practice of exclusive breast feeding P value 0.00 (table7) .Mothers who have university level of education showed more practice of exclusive breast feeding (41.7%) followed by secondary educated (29.1%) and only (1%) for illiterate mothers. The nonexclusive practice is higher for illiterate mothers (29.8%). The practice of exclusive breast feeding increase with the level of education .

Impact of income on exclusive breast feeding is shown in table (8) the higher the income the less will be the exclusive breast feeding ,with significant effect p:value (0.00).

Table No (9) showed the age of infants under study . The infants in the range (3-6) months showed the higher infants exclusive breast fed (31.1%).The differences between the groups were not significant. Like the exclusive breast feeding the non exclusive showed the same trend with the (6-9)months group have the highest values.

The gender of the infants in the study showed no significant differences either in the exclusive or non exclusive breast fed infants shown in table (10) .

Table(11) showed the impact of infant maturity at birth on the practice of exclusive breast feeding .The term infants showed higher values whether exclusive or non exclusive breast feeding compared to the preterm infants. There is no significant differences between exclusive or non exclusive breast feeding in term or preterm infants .

The infant birth weight is shown in table (12) .The normal birth weight showed higher values whether exclusive or non exclusive breast fed infants compared to the abnormal weight either low or large birth weight . The normal birth weight showed higher exclusive breast

feeding than non exclusive (89.3%) and(85.1%)respectively , whereas the non exclusive breast feeding were higher in the abnormal infant birth weight .

Table (6) :The impact of mother age on practice of breast feeding

Mothers age	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
(≤ 25)years	6	5.8%	37	78.7%	43 28.7%	0000
(26-35) years	41	39.8%	7	14.9%	48 32.0%	
(36-45) years	56	54.4%	3	6.4%	59 39.3%	
(≥ 45) years	0	0.0%	0	0.0%	0 0.0%	
Total	103	100%	47	100%	150 100%	

Table (7) : The impact of mother educational level on practice of breast feeding .

Mothers education	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
Illiterate	1	1.0%	14	29.8%	15 10.0%	0.00
Primary education	23	22.3%	12	25.5%	35 23.3%	
Secondary education	30	29.1%	13	27.7%	43 28.7%	
University	43	41.7%	5	10.6%	48 32.0%	
Postgraduate	6	5.8%	3	6.4%	9 6.0%	
Total	103	100%	47	100%	150 100%	

Table (8): The impact of economic status on practice of breast feeding

economic status	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
Less than 500	57	55.3%	0	0.0%	57 38.0%	0.00
500-1000	26	25.2%	2	4.3%	28 18.7%	
1000-2000	17	16.5%	8	17.0%	25 16.7%	
More than 2000	3	2.9%	37	78.7%	40 26.7%	
Total	103	100%	47	100%	150 100%	

Table (9): The impact of infant's age on exclusive breast feeding

infant's age	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
(0-3) months	17	16.5%	12	25.5%	29 19.3%	.318
(3-6)months	32	31.1%	11	23.4%	43 28.7%	
(6-9) months	30	29.1%	18	38.3%	48 32.0%	
(9-12) months	24	23.3%	6	12.7%	30 20%	
Total	103	100%	47	100%	150 100%	

Table (10): The impact of gender of infant's on exclusive breast feeding

gender of infant's	Exclusive		None exclusive		Total	P.value
	NO	%	NO	%		
Male	62	60.2%	27	57.4%	89 59.3%	.751
Female	41	39.8%	20	42.6%	61 40.7%	
Total	103	100%	47	100%	150 100%	

Table (11): The impact of the infant maturity at birth on practice of breast feeding .

Infant maturity	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
Term	99	96.1%	44	93.6%	143 95.3%	0.50
Preterm	4	3.9%	3	6.4%	7 4.7%	
Total	103	100%	47	100%	150 100%	

Table (12): The impact of infant birth weight on practice of breast feeding

infant birth weight	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
Normal birth weight	92	89.3%	40	85.1%	132 88.0%	0.50
Low birth weight	7	6.8%	3	6.4%	10 6.7%	
Large for gestational age	4	3.9%	4	8.5%	8 5.3%	
Total	103	100%	47	100%	150 100%	

4.2. Knowledge of mothers about exclusive breast feeding

Table (13) show the mothers knowledge about exclusive breast feeding which is better in mothers who exclusively breast fed their infants (88.3%) compared to (57.4%) who did not exclusively fed their infants .Near third (29.8%) of mothers did not know the meaning of exclusive breast feeding . (79%) know the meaning of exclusive BF but still(23%) do not practice exclusive BF .

Table (14) show the knowledge of the mothers about the effect of exclusive breast feeding in prevention of infant's disease, like respiratory disease, diarrhea disease and malnutrition (90.3%) of the mothers who exclusively breast fed their infant have good knowledge about the benefits of breast feeding ($p = 0.00$) , while those who didn't exclusively breast fed quarter of the mothers (25.5%) they don't know and only (66.0%) know these benefits. (82.7%)of mothers knew the benefits of exclusive breast feeding on their babies .

Both groups of mothers know that breast feeding increases the bonding and attachment between infant and mother (99.0%)of mothers who exclusively breast fed infant and (93.6%) of mothers who practice non exclusively breast feeding ,as shown in table (15) .

The breast feeding also increase skin to skin contact between the infants and their mothers .this resulted in reducing the crying , improves mother- infant interaction , helps women breastfeed successfully and keep the baby warmer . Almost near all the mothers (91.3%) agree with this fact whether exclusive or non exclusive breast feeding, (Table 16) .

Table (17) showed the mothers knowledge about frequent breast feeding in relation to breast milk production, (93.2%) of mothers who exclusive breast fed infants agree with that it increase breast milk

production, and only (55.3%) of mothers who non exclusively breast fed infants.(27.7%) of mother whose infant non exclusively breast fed do not have any knowledge about the effect of frequent breast feeding on milk production .

Table (18) revealed that most of the study group(65%) have good knowledge about the options to resolve the insufficient breast milk production. (84.5%) of mothers who practice exclusive breast feeding show that increasing the frequency of breast milk ,drinking of fluids, and positioning and attachment resolve this problem, only (21.3%) of non exclusively breast feeding mothers have awareness about that. (29.8%)of non exclusive breast feeding mothers do not have any in formations about these options.(10%) of mothers do not know these benefits .

Table (19) shows the knowledge of the mothers about the supplementation of breast feeding with formula if infants do not regain their weight .Half the mothers under test indicate that formula supplementation is required to regain the weight, the other half do not agree, (67%)of mothers who practice exclusive breast feeding show that no need for any supplement to breast feeding with formula to regain the infant weight, unlike the mothers who practice non exclusive breast feeding show that supplementation with formula is required to regain the weight (87.2%).

The evidence of enough breast milk for the infant is shown in table (20) as absent of crying, passage of stool and well sleeping . Near or more than (80%) of the mothers either exclusive or non exclusive indicate that all the criteria is the good evidence of enough breast milk for the infant (.88.7%)know the criteria for enough breast milk .

Regarding the action of the mothers if developed mastitis shown in table (21) . (49.5%)of mothers who exclusively breast fed their infants have knowledge about action to be done, (59.6%)of nonexclusive breast feeding mothers do not have any in formations about their options with a significant different in their knowledge (p =0.00) .

(40%) of mothers continue feed on both sides if developed mastitis and (50%) continue on normal side .

Table (13): Distribution of Study group in relation to their knowledge about meaning of exclusive breast feeding

Meaning of exclusive breast feeding	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
no food no liquid other than breast milk	91	88.3%	27	57.4%	118 78.7%	0.00
Given the breast milk and water	3	2.9%	6	12.8%	9 6.0%	
Given the breast milk and other foods and liquids	0	0.0%	0	0.0%	0 0.0%	
Given artificial food only	0	0.0%	0	0.0%	0 0.0%	
Don't know	9	8.7%	14	29.8%	23 15.3%	
Total	103	100%	47	100%	150 100%	

Table (14): Distribution of study group in relation to their knowledge about benefit of exclusive breast feeding for infant

benefits of exclusive breast feeding for infant	Exclusive		None exclusive		Total	P.value
	NO	%	NO	%		
Prevent respiratory diseases	2	1.9%	1	2.1%	3 2.0%	0.00
Prevent malnutrition	6	5.8%	3	6.4%	9 6.0%	
Prevent diarrheal disease	0	0.0%	0	0.0%	0 0.0%	
All above	93	90.3%	31	66.0%	124 82.7%	
Don't know	2	1.9%	12	25.5%	14 9.3%	
Total	103	100%	47	100%	150 100%	

Table (15): Distribution of study group in relation to their knowledge about benefit of exclusive breast feeding in bonding and attachment between infants and mothers.

bonding and attachment	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
Increase	102	99.0%	44	93.6%	146 97.3%	0.56
Decrease	0	0.0%	0	0.0%	0 0.0%	
Don't know	1	1.0%	3	6.4%	4 2.7%	
Total	103	100%	47	100%	150 100%	

Table (16): Distribution of study group in relation to their knowledge about benefit of Skin-to-skin contact between mother and infant .

Skin-to-skin contact	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
Reduces crying	5	.9%	3	6.3%	8 5.3%	0.33
Improves mother- infant interaction	0	0.0%	0	0.0%	0 0.0%	
keeps the baby warmer	2	1.9%	3	6.4%	5 3.3%	
Helps women breastfeed successfully	0	0.0%	0	0.0%	0 0.0%	
all above	96	93.2%	41	87.2%	137 91.3%	
Total	103	100%	47	100%	150 100%	

Table (17) :Distribution of study group in relation to their knowledge about benefit of frequent breast feeding.

Frequent breast feeding	Exclusive		None exclusive		Total	P.value
	NO	%	NO	%		
increases breast milk production	96	93.2%	26	55.3%	122 81.4%	0.55
Decreases breast milk production	1	1.0%	1	2.1 %	2 1.3%	
does not affect breast milk production	1	1.0%	7	14.9%	8 5.3%	
I don't know	5	4.9%	13	27.7%	18 12.0%	
Total	103	100%	47	100%	150 100%	

Table (18): Distribution of study group in relation to their knowledge how to resolve the problem of breast milk insufficient .

resolve the problem if breast milk insufficient	Exclusive		Non exclusive			P.value
	NO	%	NO	%		
Increase frequency of breast milk feedings	12	11.7%	2	4.3%	14 9.3%	0.00
Top up each breastfeed with a bottle of formula	0	0.0%	13	27.7 %	13 8.7%	
Advise mother to drink more fluids	4	3.9%	8	17.0%	12 8.0%	
Seek expert assistance with positioning and attachment	0	0.0%	0	0.0%	0 0.0%	
A,C and D	87	84.5%	10	21.3%	97 64.7%	
don't know	0	0.0%	14	29.8%	14 9.3%	
Total	103	100%	47	100%	150 100%	

Table (19) : Distribution of study group in relation to their knowledge about supplementation with formula milk to regain weight .

Giving formula to regain weight	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
Yes	34	33.0%	41	87.2%	75 50.0%	0.00
No	69	67.0%	6	12.8%	75 100.0%	
Total	103	100%	47	100%	150 100%	

Table (20) :Distribution of study group in relation to their knowledge about evidence that breast milk is enough .

Evidence that breast milk is enough	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
Not cry	4	3.9%	6	12.8%	10 6.7%	0.34
Pass stool	0	0.0%	0	0.0%	0 00.0%	
Sleep well	3	2.9%	4	8.5%	7 4.6%	
All of the above.	96	93.2%	37	78.7%	133 88.7%	
Total	103	100%	47	100%	150 100%	

Table (21): Distribution of study group in relation to their knowledge about action to be taken if she developed mastitis

action done if she developed mastitis	Exclusive		None exclusive		Total	P.value
	NO	%	NO	%		
Continue to feed on both sides	51	49.5%	9	19.2%	60 40.0%	0.00
Stop feeding on the affected side	10	9.7%	5	10.6%	15 10.0%	
Stop feeding altogether	19	18.4%	5	10.6%	24 16.0%	
I don't know	23	22.4%	28	59.6%	51 34.0%	
Total	103	100%	47	100%	150 100%	

4.2. Practice of exclusive breast feeding .

Table (22) show that (77.7%) of mothers who exclusively breast fed their infant initiate breast feeding immediately after birth compared to (68.1%) of mother who did not exclusively breast fed their infant ,few mothers of non exclusively breast feeding groups practices it after one hour ,(75%) initiate exclusive BF after birth and(24%) after one hour .

The frequency of breast feeding is shown in table (23) near all the mothers in the exclusive breast feeding group (96.1%)give the breast feeding on demand, and the other group about (85.1%) ,indicating good knowledge about frequency of breast feeding on both groups,(92.7%) of mothers breast feed on demand .

The starting age of supplementation to infants is shown in table (24). In the exclusive breast fed infants supplementation started for the first 6 months in (73.8%) of them .Unlike the exclusive breast fed infants the non exclusive breast fed infants showed that the mothers start supplementation feeding earlier within the first two months of age (100%) .This indicate significant variation in their knowledge with a p value of (0.00) . (50%) of mothers started supplementary feeding before 6month of age .

Multiple barriers of exclusive breast feeding were studied it was found that habits and cultures of the family are the most common barrier (55.3%) of study population ,table (25) .

Table(26) showed that(57.4%) of study population their reasons for giving water early is their believe that it is necessary for life , (10.6%) quenches thirst and minority of them(2.1%) think that it is necessary to prevent and treat constipation .

Table (22): Distribution of Study group in relation to their practice about initiation of breast feeding

Initiation of breast feeding	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
Immediately after birth	80	77.7%	32	68.1%	112 74.6%	0.160
after one hour	23	22.3%	13	27.7%	36 24.0%	
After day	0	0.0%	1	2.1%	1 .7%	
After 3 days	0	0. 0%	0	0.0%	0 0.0%	
other	0	0.0%	1	2.1%	1 .7%	
Total	103	100%	47	100%	150 100%	

Table (23): Distribution of study group in relation to their practice about frequency of breast feeding

Frequency of breast feeding	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
On demand	99	96.1%	40	85.1%	139 92.7%	0.055
(1-5) times/day	2	1.9%	4	8.5%	6 4.0%	
(6-10) times/day	2	1.9%	3	6.4%	5 3.3%	
(11-15) times/day	0	0%	0	0%	0 100%	
Total	103	100%	47	100%	150 100%	

Table (24): Distribution of study group in relation to their practice about time of initiation of supplementary feeding .

Time of supplementary feeding	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
(≤ 2) months	0	0.0%	47	100%	46 31.3%	0.00
(2-4) months	0	.0%0	0	0.0%	0 0.0%	
(4-6) months	27	26.2%	0	0.0 %	27 18.0%	
(6) months	76	73.8%	0	0.0%	76 50.7%	
Total	103	100%	47	100%	150 100%	

Table (25): Distribution of mothers who practice non exclusive breastfeeding about barrier of exclusive breast feeding .

Barrier of exclusive breast feeding	NO	%
It takes long time	0	0.0%
Business workload	7	14.9%
Habits and cultures of the family	26	55.3%
Lack of information about BF	4	8.5%
Others	10	21.3%
Total	47	100%

Table 26: Distribution of mothers who Practice non exclusive breastfeeding about reasons for giving water early

Reason for giving water early	NO	%
Necessary for life	27	57.4%
Quenches thirst	5	10.6%
Relieves pain from colic or earache	0	0.0%
Prevents and treats constipation	1	2.1%
Prevents deafness	3	6.4%
All above	11	23.4%
Total	47	100%

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4.4. The impact of exclusive breast feeding on the infant health

Majority of the infants with exclusive breast feeding under study have no history of hospitalization (80.6%) and only (55.3%) of non exclusive breast fed infants with significant difference (p=0.00) .The presence of cough is the same in both group, most infants under study have no history of cough either in the exclusive or nonexclusive group, (84.5 %)and (74.5%) respectively.(P value =0.0145). Most of exclusive breast fed infants did not develop diarrhea (78.6%) , compared to (38.3%) of the non exclusive breast fed infants .Almost 62%of non breast fed infants developed diarrhea compared to(21%)in breast fed infants .This illustrates that exclusive breast feeding prevent diarrhea with a p value (0.00) . This is shown in table (27,28,29).

The history of otitis media among the infant is presented in table(30). (70.2%) of non exclusive breast fed infants developed otitis media compared to only (1.9%) of exclusive breast fed infants .Most of infants with non exclusive breast feeding (70.2%) have history of UTI compared to the other group were only(3.9) have history of UTI. Most of the infants with non exclusive breast feeding have history of pneumonia (74.5%) compared to those with exclusive breast feeding only in (28.2%). This is shown in table (30,31,32) .

All exclusively breast fed infants have no history of PEM (100%). (4.3%) of non exclusive breast fed infants have history of PEM . (94.2%) of infants who are exclusively breast fed have no history of constipation ,while only (36.2%)of non exclusive breast fed infants have no history of constipation . Table (33,34)

Table (35) show the presence of infant allergy in both groups. Almost all exclusively breast fed infants do not show any type of allergy (98.1%). (40.5%)of the non exclusive breast fed infants have allergic condition, atopic dermatitis (12.8%), food allergy (12.8%)and asthma (10.6%) .

Table:(27),(28) and (29) Impact of practice of breast feeding on history of hospitalization ,cough and diarrhea .

history of ill ness	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
history of hospitalization						
Yes	20	19.4%	21	44.7%	41 27.3%	0.00
No	83	80.6%	26	55.3%	109 72.7%	
History of cough						
Yes	16	15.5%	12	25.5%	28 18.7%	0.145
No	87	84.5%	35	74.5%	122 81.3%	
History of diarrhea.						
Not present	81	78.6%	18	38.3%	99 66.0%	0.00
Not frequent	20	19.4%	6	12.8%	26 17.3%	
Frequent	2	1.9%	23	48.9%	25 16.7%	
Total	103	100%	47	100%	150 100%	

Table :(30), (31) and (32) Impact of practice of breast feeding with regard to history of otitis media ,UTI and Pneumonia

history of ill nesses	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
History of Otitis media.						
Yes	2	1.9%	33	70.2%	35 23.3%	0.00
No	101	98.1%	14	29.8%	115 76.7%	
History of UTI						
Yes	4	3.9%	33	70.2%	37 24.7%	0.00
No	99	96.1%	14	29.8%	113 75.3%	
History of Pneumonia						
Yes	29	28.2%	35	74.5%	64 42.7%	0.00
No	74	71.8%	12	25.5%	86 57.3%	
Total	103	100%	47	100%	150 100%	

Table NO (33),(34): Impact of practice of breastfeeding with regard to history of PEM and constipation

history of ill ness	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
History of PEM						
Yes	0	0.0%	2	4.3%	2 1.3%	0.35
No	103	100%	45	95.7%	148 98.7%	
Total	103	100%	47	100%	150 100%	
History of constipation						
Yes	6	5.8%	30	63.8%	36 24.0%	0.00
No	97	94.2%	17	36.2%	114 76.0%	
Total	103	100%	47	100%	150 100%	

Table (35): Impact of practice of breast feeding with regard to presence of allergic conditions

Type of infant allergy	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
Food allergy	0	0.0%	6	12.8%	6 4.0%	0.00
Eczema	0	0.0%	2	4.3%	2 1.3%	
Asthma	2	1.9%	5	10.6%	7 4.7%	
atopic dermatitis	0	0.0%	6	12.8%	6 4.0%	
No allergy	101	98.1%	28	59.6%	129 89.0%	
Total	103	100%	47	100%	150 100%	

The impact of exclusive breastfeeding on physical growth

Table (36) show the percentage of infants weight compared to their age .It is for exclusive and non exclusive breast fed infants. All the exclusively breast fed infants weight in normal range between 10^{th} -90^{th} when compared with CDC growth , (36.1%) have abnormal weight, either low or large in non exclusively breast fed infants .

The length / height of the infants on the growth chart was shown in table (37) . The height of the infants was significantly affected by the breast feeding whether exclusive or non exclusive. All the exclusive breast fed infants were in normal length /height and very few were short (10.6%) .

Table (38) Show no significant effect of exclusive or non exclusive breast feeding on head circumferences.

Table (36) :The impact of practice of breast feeding on the infant weight

Weight of the infant on growth charts	Exclusive		None exclusive		Total	P.value
	NO	%	NO	%		
< 3rd	0	0%	3	6.4%	3 2.0%	0.00
3rd-10th	0	0.0%	5	10.6%	5 3.3%	
10th -25th	9	8.7%	12	25.5%	21 14.0%	
25th -50th	32	31.1%	16	34.0%	48 32.0%	
50th 75th	40	38.8%	1	2.1%	41 27.3%	
75th-90th	22	21.4%	1	2.1%	23 15.3%	
90th-95th	0	0.0%	4	8.5%	4 2.7%	
>97th	0	0.0%	5	10.6%	5 3.3%	
Total	103	100%	47	100%	150 100%	

Table (37): The impact of practice of breast feeding on the infant length .

Length-height of the infant on growth charts	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
< 3rd	0	0%	0	0.0%	0 0.0%	0.00
3rd-10th	0	0.0%	5	10.6%	5 3.3%	
10th -25th	1	1.0%	8	17.0%	9 6.0%	
25th -50th	33	32.0%	22	46.8%	55 36.7%	
50th 75th	54	52.4%	8	17.0%	62 41.3%	
75th-90th	15	14.6%	4	8.5%	19 12.7%	
90th-95th	0	0.0%	0	0.0%	0 0.0%	
>97th	0	0.0%	0	0.0%	0 0.0%	
Total	103	100%	47	100%	150 100%	

Table (38) :The impact of practice of breast feeding on head circumference of infants

head circumference on growth charts	Exclusive		Non exclusive		Total	P.value
	NO	%	NO	%		
< 3rd	0	0%	0	0.0%	0 0.0%	0.58
3rd-10th	0	0.0%	0	0.0%	0 0.0%	
10th -25th	0	0.0%	0	0.0%	0 0.0%	
25th -50th	42	40.8%	29	61.7%	71 47.3%	
50th 75th	46	44.7%	14	29.8%	60 40.0%	
75th-90th	15	14.5%	4	8.5%	19 12.7%	
90th-95th	0	0.0%	0	0.0%	0 0.0%	
>97th	0	0.0%	0	0.0%	0 0.0%	
Total	103	100%	47	100%	150 100%	

5.Discussion

This research was carried out to study the impact of exclusive breast feeding on infant health and growth. Data about socio demographic characteristics of mothers including age , educational level, duration of marriage, and economic status were studied .

Exclusive breastfeeding is of particular importance because it is fundamental for survival, growth, development, health, and nutrition of infants[(1)].

5.1. Socio demographic characteristics of mothers and their infants

The mother age showed a significant issue of practicing exclusive breast feeding. Almost older mothers >36 years practice it(54.4%) more than younger mothers (≤ 25years) do not seems to practice it like older mothers(5.8%) .

Likewise ,the level of education of the mother played a significant role in practicing breast feeding. Highly educated mothers practice exclusive breast feeding better than low levels of education . The result of this study agreed with that expressed by Banu b in Lagos who found that knowledge on breastfeeding was highly significant (good knowledge) for higher educated parents (mothers 63.6% and fathers 52.8%) as compared to illiterate or low educated parents ($P<0.001$)[(107)]. National Population Commission (NPC) advised that breast feeding education should be for all mothers particularly those are not decided to breast feed ,so this type of education should not be for non educated mothers only[(2)] .

Socioeconomic status of the family also play an important role in practicing exclusive breast feeding . Socioeconomic status had inverse association with EBF practice. Higher socioeconomic status was

associated with lessened rate of EBF practice .This correlates with Nagra S. A. et al in Pakistan who showed that high income was associated with supplementation of infants with fresh milk .In Pakistan (60%) of women from a high socio economic group supplement infants with fresh milk or infant formula[19]. This may be related to the notion of use of infant formula as a status symbol. One could also speculate that these mothers in the higher socioeconomic class, who are richer, but not necessarily better educated are able to afford and sustain infant formulas which are exorbitant in price. Furthermore, the occupation of mothers in this socioeconomic class would most likely interfere with the practice of EBF.

Generally, in recent years breast feeding declined significantly due to improved sanitation ,nutritional technologies and increasingly negative social attendees towards this practice[17] . However a national survey done in 2008 showed that EBF rates still remains very low (13%) in Nigeria[1] . This is thought to be because of several factors associated with the mothers' and the environments.

Biosocial status of the infants including their age ,sex, and their order in the family were studied . Regarding the infants age, sex and order in his family it seems that no significant differences and no direct effect of these parameters on the type of the feeding whether exclusive or non exclusive. Similarly, no previous data were found that studied the effect of these parameters .

The infant maturity at birth and his weight are two factors to study the practice of exclusive breast feeding on infant health and growth . The data obtained showed that mature infants with normal weight practice exclusive breast feeding ,as well as nonexclusive breast feeding .

Non exclusive breast feeding is the practice where the mother and the infant were apart due to certain conditions like the abnormal weight or unhealthy infant [17].

5.2. Knowledge of mothers about exclusive breast feeding

Knowledge of mothers about some facts of exclusive breast feeding such as definition, benefits , frequency, and how to resolve the problem when breast feeding is insufficient were studied . Olusegun S in (2006) reported that exclusive breastfeeding is defined as "an infant's consumption of human milk with no supplementation of any type (no water, no juice, and no foods) except for vitamins, minerals, and medications[1] .

Almost all the mothers in the study group who practice exclusive breast feeding have a good knowledge about this definition . Near half of mothers who practice non exclusive breast feeding do not know the exact meaning of exclusive breast feeding .(79%) of mothers know the meaning of exclusive BF but in spite of that(23%)of them do not practice exclusive BF .

On the other hand, (82.7%) have good knowledge about the benefits of exclusive breast feeding , specially prevention of the disease like respiratory diseases , malnutrition and diarrhea , and in spite of that only(69%) practice EBF. Quarter of the mothers who practice non exclusive breast feeding do not have any knowledge about the benefits of breast feeding .This group of mothers may be uneducated or have lesser education and need health education later .

The recommendations of WHO and AAP stated that the majority of mothers can and should breast feed, as well as the vast majority of infants can and should be breast feed[15].

Under certain circumstances the mother milk is insufficient for the infant ,this problem should be resolved by practicing other options for the infants .The study showed that almost all the mothers who practice exclusive breastfeeding have good knowledge about using other alternative to solve the insufficient breast milk , like drinking more water or increasing the frequency of breast milk feeding . Unlike mothers who practice non exclusive breast feeding who have poor knowledge about resolving the problem.

Regarding knowledge of the mothers about the supplementation of breast feeding with formula if infants do not regain their weight . The mothers who practice exclusive breast feeding stated that there is no need to do so, unlike the mothers who practice non exclusive breast feeding (87.2%) supplement with formula .

On other hand almost all the mother under test(97.3%) have good knowledge about benefit of bonding and skin to skin contact . World Health Organization reports that in addition to more successful breastfeeding, skin-to-skin contact between a mother and her newborn baby immediately after delivery also reduces crying, improves mother to infant interaction, and keeps baby warm [(45)].

The evidence that the infant has enough breast feeding could be recognized by many criteria like absent crying ,passing stool or well sleeping[(96)].There is good knowledge of the mothers in the study group whether practice exclusive or non exclusive breast feeding about the benefits of skin to skin contact during BF .

Previous studies and recommendations recognized that breast feeding is a prerequisite for healthy child growth and development[(105)] . Although the advantages of breast feeding are considerable ,sometimes

many barriers of exclusive breast feeding appears .The mother knowledge about these barriers should be committed . One of these barriers is mastitis which cause stopping of breast feeding on the affected side or both sides .In this study almost half the mothers with exclusive breastfeeding prefer to practice breast feeding on both sides and using the antibiotics. This is agreed with previous study advised to keep feed infant from the affected breast. Although this may be painful and miserable, it will make the mastitis worse if feeding was stopped from affected breast[51].

5.3. Practice of exclusive breast feeding .

From1960 onwards ,breast feeding experienced a revival which continued to the 2000s with the negative attitudes towards the practice still remain[12] .

Almost all the mothers under test(92.7%) practice exclusive breast feeding on demand which is recommended by WHO and AAP: Breast feeding should be day and night and on child demand [15].

Mothers who practice breast feeding either exclusive or non exclusive initiate breast feeding immediately after birth and almost(24%)of them after one hour which is a very good practice and we should encourage that . In Pakistan initiation of breast feeding may be delayed or accompanied by giving pre lactated feeds and discarding colostrums .Compared to the results of this study only 25% of Pakistanian mothers initiate breast feeding in the first day [19]. Breast feeding initiation immediately after birth is important to establish and maintain adequate milk flow and promote mother infant bonding [7] .

Generally , it is stated that earlier initiation of breast feeding has a nutritional and medical value for the infant . The breast milk ,for about

three days after the birth of an infant produce colostrums which is richer in protein ,lower in sugar and help to clear the digestive tract of the infant all well as it identified as an important source of antibiotics [18] . All the mothers in the study group whether, initiate breast feeding either immediately or one hour after birth.

About initiation of supplementary feeding about most of the mothers who exclusively breast fed their infant initiate supplementary feeding at the first 6 months (73.8%) on the other hand (50%) of mothers who practice non exclusive breast feeding started supplementary feeding before 6month of age which has a negative impact on the health of children and this practice should be reduced by proper health education. National and international guidelines recommend that all infants be breastfed exclusively for the first six months of life [5].

Habits and cultures are the most common barriers of exclusive BF.The commonest reason forgiving water early in life is that it is necessary for life. This belief should beexplained and encourage mothers to change it through health beducation.

5.4 The impact of exclusive breastfeeding on the Infants health

The impact of exclusive breastfeeding on infants health reflected by history of hospitalization ,cough, diarrhea ,otitis media ,UTI ,pneumonia ,PEM ,type of infant allergy and constipation which were studied here . The American Academy of Pediatrics showed that breastfeeding promotes infants general health, growth and development and decrease large number of acute and chronic diseases [16]. The present study showed that more than(80%) of exclusive breastfed infants have no history of hospitalization compared to (55.3%) of nonexclusive breastfed infants .This is consistent with the reports from

WHO and AAP who stated that breastfeeding promote the health of infants and that breast fed babies were able to cope with stresses later in their life[4] . No significant differences were found between infants who were exclusive or non exclusive breastfed regarding the history of cough . Although Blaymore B . et al (2002). found that breast feeding reduce symptoms of upper respiratory tract infection[32].

Diarrhea occurred frequently in infants who are nonexclusive breast fed, Almost(62%) of non breastfed infants developed diarrhea compare to only(21%) of breast fed infants .

Artificial feeding is associated with more death from diarrhea in infants in both developed and developing countries[16]. Arifeen S.et al (2001) show that EBF was associated with lower odds of diarrhea in infants[33] . Breastfeeding protects infants against diarrhea through reduced risk of bacteria from contaminated formula, other liquids and complementary foods, and the transfer of maternal antibodies through breast milk [106] .

Otitis media occur in the majority (70%) of non exclusive breastfed infants . The present results agreed with that found by Duncan B et al(2003) who found that 80% of otitis media was found in infants who were non exclusive breastfed[34].Also exclusive breastfed infants have reduced incidence of UTI, pneumonia, PEM and constipation. Breast feeding reduces the risk of acquiring urinary tract infection[38] ,and the incidence of constipation .[37]

Breastfeeding effectively protects nurslings from many life threatening respiratory infection. Studies have shown breastfed babies are less than half as likely to be hospitalized with pneumonia or bronchiolitis. According to a recent meta-analysis of studies from developed countries,

the risk of severe respiratory tract illness resulting in hospitalization is more than tripled among infants who are not breastfed, compared with those who are exclusively breastfed for four months.[36] All exclusive breast fed infants have no history PEM which is one of major advantage of exclusive breast feeding

None of the exclusive breast fed infants have any type of allergy where as almost half(40.5%) of those who were nonexclusive breast fed show a kind of allergy like food allergy ,asthma and atopic dermatitis . Non of breast fed infants have eczema where non breast fed have incidence of(4.3%) . Lucas A et al, 2009 reported that exclusively breastfed infants have fewer allergies than artificially fed infants. This is especially important if there is a family history of allergies. Many infants are allergic to cow's milk formulas. Some infants are even allergic to soy formulas. Breastfeeding protects against other allergies, such as atopic eczema, food allergies, and respiratory allergies[40].

A number of studies showed possible protective effect of breast milk feeding against sudden infant death due to many diseases[22]. Antibiotics are secreted during breast feeding also mother milk contains several anti- -infective factosr such as bile salt and lactiferrin[42], proteins and vitamins . The benefits of exclusive breast feeding correlates with the findings of this study.

5.5. Impact of exclusive breastfeeding on physical growth

Growth charts are usually used to help follow and assess infant growth. When weight of breast fed infants compared with CDC growth chart it was found to be in the normal range . (36.1%) of the non exclusive breast fed infants their weight was below the normal range (<10^{th} percentile) and above the normal range (>90^{th} percentile) . This

is compared with Seward JF, Serdula MK (2001) study who observed that formula-fed infants consume more milk and gain body weight more rapidly than breastfed infants, and they are prone to a higher risk of obesity[74]. Dewey K (2007), reported that blood insulin levels can be affected by feeding practices through protein intake.[8] Diaz Set al (2009) have explained the same process as occurring in reverse causality, that is, deficits on infant growth lead to changes in feeding patterns, favoring complementation or earlier cessation of breastfeeding[75] .(6.4%) of non exclusive breastfed infants were failing to thrive. Breastfeeding protects against weight loss due to diarrhea[28] .Also the infant length follow the same pattern where exclusive breastfeeding infants have normal growth and few(10.6%) of non exclusive breastfed infants have abnormal height with short stature. Breastfeeding helps prevent growth faltering and stunting, particularly as it reduces the risk of illnesses[27]. Karmer et al (2002)showed that prolonged and exclusive breast feeding may actually accelerate weight and length gain in the first few month, with no detectable deficit by12month age .The results obtained goes with the current WHO and UNICEF feeding recommendation[70]. In some studies children exclusively breastfed were shown to be less likely to be stunted[29] . Due to its large impact on reduction of infectious diseases, breastfeeding plays a role in reduction of stunting, as infectious diseases are important determinants of stunting[30] · However, breastfed children will still become stunted if they do not receive an adequate quantity and quality of complementary foods from the age of six months onwards[31] The American academy of pediatrics reported that breast feeding provides advantages with regard to general health and growth[8].Head circumference was not affected by breastfeeding either exclusive or not ,as there is no significant difference in both groups in our study.

Conclusion

1-Most of studied mothers (71.3%) were between 26 and 45 years age . only 28.7% were below 25 years age

2- Only(10%) of studied mothers were illiterate with almost 3rd (32%) at university level .

3- Almost half of mothers their duration of marriage was between 6and 10 years.

4- Almost(40%) of studied mothers were poor .

5- Male to female ratio of studied infants was 1.5:1 .

6- Studied infants <9month age were(48%)of total infants studied .

7-95.3%) of studied infants were term ,only(4.7%) were preterm .

8- Mothers 36-45 years age practice exclusive breast feeding better (54.4%) than mothers of ≤ 25years (only 5.4%) .

9- Illiterate mothers practice exclusive breast feeding less than educated ,only(1%) practice exclusive BF.

10- Practice of exclusive breast feeding is same in term and preterm infants .

11- 79% of mothers in the study group have a good knowledge and practice about exclusive breast.

12-(82.7%) of mothers knowledge the benefits of exclusive breast feeding on their babies , in spite of that only(69%) practice exclusive breast feeding . So health education is needed later .

13- There is good knowledge of mothers about the benefit of skin to skin contact during breast feeding (97%)

14-Main barrier of EBF were Habits and cultures of the family, workload and Lack of information about breast feeding .

15- The commonest cause of giving water early to breast feeding infants was that it is necessary for life (57.4%) and quenches thirst (10.6%) –so health education is needed .

16-(92.7%) of mothers practice BF on demand .

17- Almost (99%)of studied mothers practice or initiate BF either immediately or at first hour after birth (we should encourage that) .

18- Almost(62%) of non breast fed in infants developed diarrhea compared to only(21%) in BF infants .

19- No history of PEM in all infants with exclusive BF .

20-(50%) of mothers started supplementary feeding before 6months of age which has a negative impact on the health of children and this practice should be discouraged by proper health education .

21-(80%) of exclusively BF infants have no history of hospitalization which show the good effect of this practice on health of our infants .

22- Exclusive breastfeeding was found to promote infant health as it protects infants from hospitalization and illnesses like diarrhea ,otitis media ,UTI ,pneumonia and PEM .

23- There is lower risk of allergic disease like asthma in exclusively breast fed infants.

24- EBF infant have better growth their weight was in the normal range when compared with CDC growth charts .

25- The height of the infants was significantly affected by the negative practice of breast feeding because (10 %) of non exclusive breastfeeding were short.

26- No significant effect of exclusive breast feeding on the head circumferences of studied infants.

Recommendations

Although this study showed that most of the mothers under test practice exclusive breast feeding with varying knowledge about it is benefits , many issues should be highlighted to generalize this practice . The following points are recommended :

1-Promotion of breast feeding for all mothers by health education. through :Lectures and mass media like radio and television

2- Ensure all health care provider have knowledge and skills about exclusive breastfeeding at all levels from teaching hospitals, maternity homes, dispensaries to district hospitals to counsel mothers and women to promote breast feeding, even from early pregnancy .

3- Education about proper substitutes of mother milk when there are barriers for breast feeding .

4- formation of public and social agencies to promote and care about mothers and infants health care regarding breast feeding as important feeding for infants .

5- Nursing school should be established in each work place to help working mothers to nurse their infants during the work day.

6- Family and community support for mothers to help them to continue breastfeeding, even after returning to work.

7- better laws and enforcement should be implemented to protect women from persecution or harassment for breastfeeding .

8- Increasing evidence that exclusive breastfeeding to 6 months is particularly beneficial to health .

9-implementation of Baby Friendly Hospitals (BFH) for breast feeding in our country I

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