



# **The effect of Cabbage leaves on relief Breast Engorgement among Postpartum Women**

*Thesis*

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*By*

**Amany Ahmed Mohamed Masoud**

(B.ScIn nursing 2011)

Instructor of obstetrics and woman health nursing

*Under Supervision Of*

**Dr.Galal Ahmed El-Kholy**

Professor of obstetrics and gynecology

Faculty of medicine

Benha University

**Dr.Soad Abd-Elsalam Ramadan**

Assistent .proffessor. of Obstetrics and Gynecological Nursing

Faculty of Nursing

Benha University

**Dr. Amira Refaat Said Ahmed**

lecturer of Obstetrics and gynecological Nursing

*Faculty of Nursing*

*Benha University*

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# CONTENTS

Item	Page
• Introduction.....	1
• Aim of the study.....	5
• Review of literature.....	6
<b>Chapter (I): Anatomy of the breast and physiology of lactation</b>	<b>6</b>
<b>Chapter (II): Postpartum period and Breast Engorgement</b>	<b>29</b>
<b>Chapter (III): Cabbages</b>	<b>46</b>
<b>Chapter (IV): Nursing role regarding breast engorgement</b>	<b>50</b>
Subjects and methods.....	61
• Results.....	68
• Discussion.....	81
• Conclusion.....	96
• Recommendation.....	97
• Summary.....	98
• References.....	101
• Appendices .....	
• Arabic summary.....	1

## LIST OF TABLES OF RESULTS

Table	Title	Page
Table (1)	Frequency distribution of the studied subjects regarding their socio demographic data	69
Table (2)	Frequency distribution of the studied nurses regarding their family history	70
Table (3)	Frequency distribution of the studied nurses regarding their antenatal history	71
Table (4)	Frequency distribution of the studied nurses regarding their pain score of breast at pre-intervention phase	72
Table (5)	Frequency distribution of the studied nurses regarding to breast redness & edema at pre-intervention phase	73
Table (6)	Frequency distribution of the studied nurses regarding to breast tenderness & pain score at third day after intervention	75
Table (7)	Frequency distribution of the studied nurses regarding their breast redness & pain score at third day after intervention	76
Table (8)	Frequency distribution of the studied nurses regarding their breast tenderness & pain score at fifth day after intervention	78
Table (9)	Frequency distribution of the studied nurses regarding their breast redness & pain score at fifth day after intervention	79

## LIST OF FIGURES RELATED TO REVIEW

Figure	Item	Page
Fig. (1)	Anatomy of the breast	6
Fig. (2)	Anatomy of mammary gland	7
Fig. (3)	Surface anatomy of the breast	8
Fig. (4)	Lymphatic drainage of the breast	10
Fig. (5)	Adipose tissue of the breast	13
Fig. (6)	Lobule and milk duct of the breast	13
Fig. (7)	Lymph system of the breast	14
Fig. (8)	Position of breast feeding	25
Fig. (9)	Involution of the uterus& height of the uterine fundus	31
Fig. (10)	Amount of lochia	32
Fig. (11)	Cabbage leaves	51
Fig. (12)	The latch scoring table	56

## LIST OF FIGURES RELATED TO RESULTS

Figure	Description	Page
<b>Fig. (1)</b>	Percentage distribution of breast milk engorgement score at the pre-intervention among studied woman at both study & control group	74
<b>Fig.( 2)</b>	Percentage distribution of breast milk engorgement score after three days of intervention among studied woman at both study & control group	77
<b>Fig. (3)</b>	Percentage distribution of breast milk engorgement score after fifth days of intervention among studied woman at both study & control group	80

## **LIST OF APPENDICES**

<b>APPENDIX I</b>	Questionnaire
<b>APPENDIX II</b>	Protocol

## *Abstract*

### **BACKGROUND:**

Breast engorgement is a painful condition that affects postnatal women. It is associated with unsuccessful breastfeeding, mastitis, and breast inflammation. So, there is need to increase awareness regarding the importance of relief breast engorgement. **AIM:** The aim of the study was to assess the effect of cabbage leaves on relieving breast engorgement among postnatal women. **SETTING:** The study was conducted in Post-natal ward of Obstetrics and Gynecology department at Benha University Hospital. **DESIGN:** A quasi-experimental study design was utilized. **SAMPLING:** A purposive sample included 100mothers with breast engorgement were enrolled in the study. **TOOLS:** There four tools of data collection compromised **I:** structured self-administered questionnaire **II:** Six point breast engorgement scale were used to assess the severity of pain and engorgement level **III:** visual analogue pain rating scale and **IV:** reeda scale used to assess redness, edema of the breast. **RESULTS:** The mean age of the mothers was 25.8±5.5 years old. More than twenty percent of each group suffered from firm and tender breasts (22.2% & 28.9%). Also, there was a statistically significant difference between the pre and post symptoms of breast engorgement, levels of breast engorgement, pain score, and engorgement score for both groups ( $p < .05^*$ ). **CONCLUSION:** Application of cabbage leaves compresses is effective for relieving breast engorgement. **RECOMMENDATIONS:** Implementation of training programs regarding using cabbage leaves on reliving breast engorgement is recommended to improve women's perception regarding cabbage leaves. Nurses should be trained to apply cabbage leaves compresses for managing breast engorgement in their discharge teaching plan.

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**Key words:** Breast engorgement, Postnatal women, cabbage leaves, breast feeding

## Introduction

Postpartum period is the period beginning immediately after birth and extend for about six weeks. The major focus of postpartum care is ensuring that the mother is healthy and capable of taking care of her newborn, equipped with all the information she needs about breast feeding, reproductive health, contraception, and the imminent life adjustment. (*David V, 2014*).

The mammary gland is a milk producing gland which is composed largely of fat. It is a complex network of branching ducts & sac-like structure called lobules which produce milk. Breast tissue fluid drains through the lymphatic's into lymph nodes located in the axilla and behind the sternum. Breast engorgement and nipple trauma are complications associated with breast feeding and considered as the most significant factor impacting on breast feeding in the first weeks of motherhood (*Lesard l. 2013*).

Breastfeeding of a healthy infant occasionally turns into some challenges for the mother and her infant. Some of these challenge are predictable and another not predictable. They can hinder the lactation process and worsen the maternal anxieties and worries. They may appear immediately after delivery or anytime during lactation. Several studies regarding breast engorgement have reported that the incidence rate is 2%-3% for mastitis, and 25%-85% for breast engorgement with plugged ducts. (*Melton M, et al., 2012*).

During lactation, breast engorgement can cause pain and inadequate milk emptying. Worldwide, the incidence rate of breast engorgement that occurs between the third to fourth days of

postpartum period and more than two-thirds of women develop tenderness on the fifth day of postpartum but some develop it as late as nine to ten days postpartum. Approximately, two-thirds of women experience at least moderate symptoms of breast engorgement. (*WHO, 2013*).

Breast engorgement is painful congestion of the breasts with milk that can make it difficult for the baby to latch the mother breast properly. It is characterized by the painful swelling of the breasts associated with the sudden increase in milk volume, vascular congestion, and edema during the first two weeks after birth which may lead to decreased milk supply, mastitis, or inflammation of the breast and association with serious illness as breast infection. (*Finer & Zolna, 2014*).

The precipitating factors of breast engorgement include the poor latch, unsuccessful breastfeeds, decreased duration of breastfeeding, missing baby early feeding cues, giving formula supplements to the baby, using a breast pump without a clinical indication, and causing over flow breast engorgement can hinder the development of successful breastfeeding, lead to early breastfeeding cessation. (*Cleland, et al., 2012*).

Generally, the woman with breast engorgement may find that her breasts become larger and heavy, warmer and uncomfortable when milk 'comes in' usually from two to six days after the baby is born. The first signs of the engorgement are the swollen, firm and painful breasts. In more severe cases, the affected breast becomes very swollen, hard, shiny, and slightly lumpy when touched. In cases when the breast is greatly engorged, the nipple is likely to retract into the areola. Ordinarily, women experience loss of appetite, fatigue, weakness, and chills. (*Grossman, 2013*).

Fever may occur in fifteen percent of the mothers, but is typically less than 39°C and lasts for less than one day. Several approaches for the treatment of breast engorgement in breastfeeding women include: warm compresses before breastfeeding, cold therapy, cabbage leaves, breast massage, milk expression, and anti-inflammatory oral medications. By using Gua-Sha therapy, nurses can handle breast engorgement problems more effectively in primary care and help mothers both physically and psychologically. (*Cheng, et al, 2012*).

Cabbage is known to contain sinigrin rapine, mustard oil, magnesium, oxalate and sulphurheterosides. Cabbage has both anti-inflammatory and anti-irritant properties. Nurses contribute to the health and well-being of women, children, and family, by promoting skilled and specialized care in the clinical management of breastfeeding in their professional practice. Also, they should guide and demonstrate maneuvers to express milk to mothers so they can do when feeding their babies, and prevent the occurrence of breast engorgement. (*Hadley & Evans, 2013*).

The nurse should focus on prevention of breast engorgement by providing counseling to the mother about starting breastfeeding as soon as possible after the birth, to give the baby time to learn to breastfeed before the breasts become full and firm, avoid early use of bottles. Once the milk comes in the mother should breastfeed at least eight times in 24 hours to prevent over fullness and use hand expression or a breast pump to remove the remaining milk. Also, early postpartum care is necessary to diagnose and treat complications. (*Guilbert, et al., 2012*).

## **Aim of the Study**

This study aimed to assess the effect of cabbage leaves on the relief of breast engorgement among postnatal women.

### **Research Hypothesis:-**

Cabbage Leaves compress will be relief breast engorgement for postnatal women.

## **Out line:-**

**Chapter I: Anatomy of the breast & physiology of lactation**

**Chapter II: Postpartum period & Breast engorgement**

**Chapter III: Cabbage Leaves**

**Chapter IV: Role of nurse regarding breast engorgement**

## Anatomy of the breast and physiology of lactation

Anatomy of the Breast Mammary gland (*glandulamammaria s. mamma*) is a pair organ, which relates to the type of the apocrine glands of the skin. It mostly occurs at the base on the large breast muscle (*m. pectoralis major*), partially on the front of ridge-shaped muscle (*m. serratus anterior*) and crossing the free edge of breast muscle, adjoins by its small section to the side of breast wall.

In the average the base of gland reaches the external edge of sternum. The mammary gland is usually located at the level of the III to (VI) VII ribs, and from all sides (except the nipple and areola) is surrounded by fatty tissue. Between both mammary glands there is a deepening called cavity (*sinus mammarum*). (*Olaitan., 2011*).

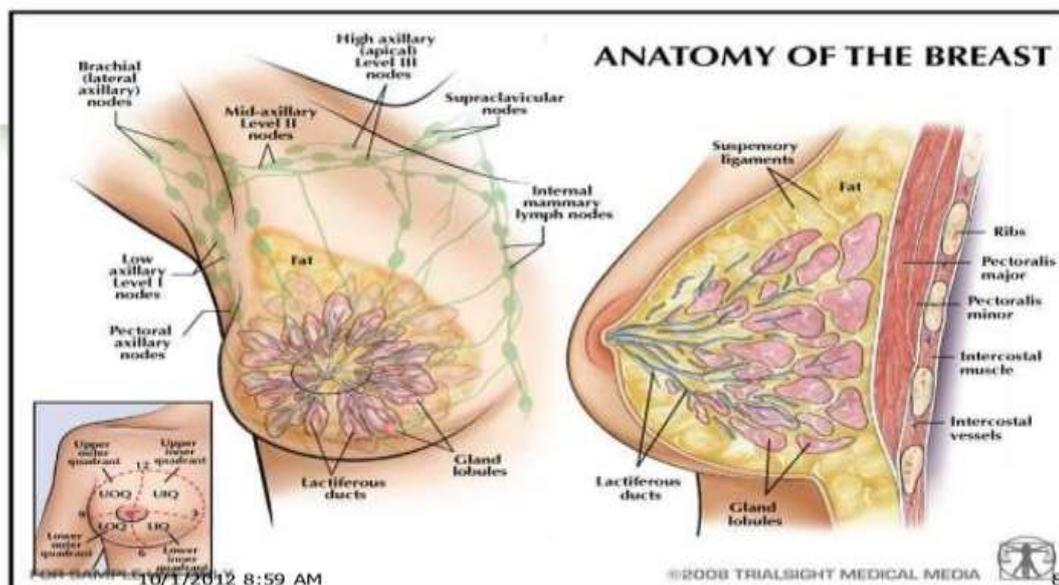
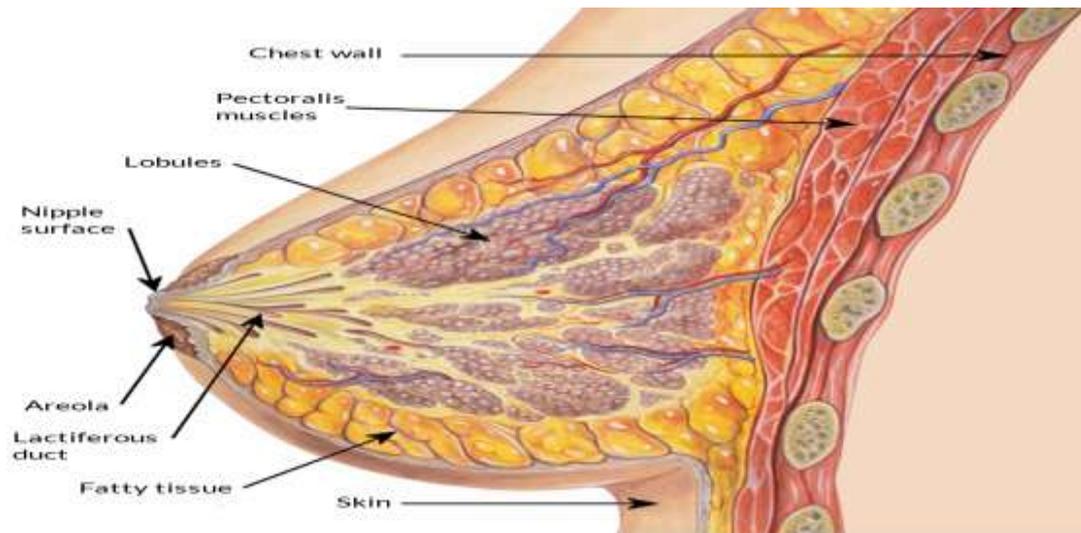


Figure 1: Anatomy of the breast

Available at :(*Jacob A, 2012*)

Out of the period of lactation the mammary gland has in average 10-12 cm in the diameter, with the thickness of 2-3 cm. The weight of the gland varies in girls in the limits of 150,200 g in the period of lactation 300,900 g.. In the majority of the young of the healthy women the gland is elastic. (*Finer & Zolna, 2014*).



**Figure 2: Anatomy of mammary gland**

*Available at: Jacob A, (2012)*

Approximately in the center of the most convex part of the gland, which corresponds, to the level of the 5<sup>th</sup> rib pigmented section of the skin field of areola (areola mammae) surrounding the nipple, with a diameter 3-5 cm, in an oval, circular or amorphous shape, in center of which comes out the nipple of mammary gland (papilla mammae). of the pigment of the areola are vestiges of sweat and sebaceous glands (Montgomery glands, about 15) which function during lactation. (*Moreland, et al., 2012*).

**Surface Anatomy:** The breast is located on the anterior thoracic wall. It extends horizontally from the lateral border of the sternum to the mid-axillaries line. Vertically, it spans between the 2<sup>nd</sup> and 6<sup>th</sup> intercostals cartilages. It lies superficially to the pectorals major and serrate anterior muscles (*Littleton L., 2012*)

The breast can be considered to be composed of two regions. Circular body – largest and most prominent part of the breast. Axillary tail – smaller part runs along the inferior lateral edge of the pectoral's major towards the axillary fossa. At the centre of the breast is the nipple, composed mostly of smooth muscle fibers. Surrounding the nipple is a pigmented area of skin termed the areola. There are numerous sebaceous glands within the areola – these enlarge during pregnancy, secreting an oily substance that acts as a protective lubricant for the nipple. (*Cleland, et al., 2012*).



**Figure 3:**Surface anatomy of the breast

. Available at: *Littleton L.Y, and, Engebretson J.C, (2013)*

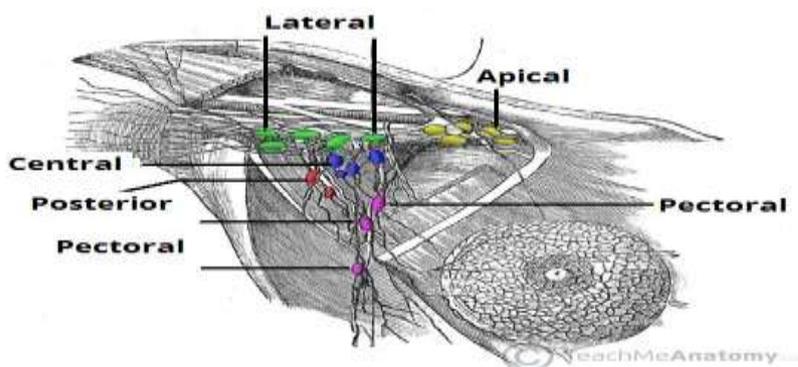
**Anatomical Structure:** The breast is composed of mammary glands surrounded by a connective tissue stroma. The mammary glands are modified sweat glands. They consist of a series of ducts and secretory lobules (15-20). Each lobule consists of many alveoli drained by a single lactiferous duct. These ducts converge at the nipple like spokes of a wheel; **Connective Tissue Stroma.** The connective tissue stroma is a supporting structure which surrounds the mammary glands. It has a fibrous and a fatty component. (*WHO, 2013*).

The fibrous stroma condenses to form suspensor ligaments (of Cooper). These ligaments have two main functions: Attach and secure the breast to the dermis and underlying pectoral fascia, Separate the secretory lobules of the breast. (*Rossier, et al., 2014*).

The base of the breast lies on the **pectoral fascia** – a flat sheet of connective tissue associated with the pectoral's major muscle. It acts as an attachment point for the suspensor ligaments. There is a layer of loose connective tissue between the breast and pectoral fascia – known as the **retro mammary space**. This is a potential space, often used in reconstructive plastic surgery. (*Melton, et al., 2012*).

**Vasculature:** Arterial supply to the medial aspect of the breast is via the internal thoracic artery, a branch of the subclavian artery. The lateral part of the breast receives blood from four vessels: Lateral thoracic and thoracicacromial branches – originate from the axillary artery, Lateral mammary branches – originate from the posterior intercostals arteries (derived from the aorta). They supply the lateral aspect of the breast in the 2<sup>nd</sup> 3<sup>rd</sup> and 4<sup>th</sup> intercostal spaces, mammary branch – originates from the anterior intercostals artery. The veins of the breast correspond with the arteries, draining into the axillary and internal thoracic veins. (*Blanchard, 2012*).

**Lymphatics:** The lymphatic drainage of the breast is of great clinical importance due to its role in the metastasis of breast cancer cells. There are three groups of lymph nodes that receive lymph from breast tissue – the axillary nodes (75%), parasternal nodes (20%) and posterior-intercostals nodes (5%). The skin of the breast also receives lymphatic drainage Skin – drains to the axillary, inferior deep cervical and infra-clavicular nodes. Nipple and areola – drains to the subareolar lymphatic plexus. (*Grossman, 2013*).



**Figure 4:**Lymphatic drainage of the breast

Available at: *Littleton L.Y, and, Engebretson J.C, (2013)*

Shape, texture, and support:-The morphologic variations in the size, shape, volume, tissue density, pectoral locale, and spacing of the breasts determine their natural shape, appearance, and position on a woman's chest. Breast size and other characteristics do not predict the fat-to-milk-gland ratio or the potential for the woman to nurse an infant. (*Rahman, et al., 2014*).

The size and the shape of the breasts are influenced by normal-life hormonal changes (menstruation, pregnancy, and menopause) and medical conditions (e.g. virginal breast hypertrophy). The shape of the breasts is naturally determined by the support of the suspensor Cooper's ligaments, the underlying muscle and bone structures of the chest, and by the skin envelope. (*Tajure& Pharm, 2011*).

The suspensory ligaments sustain the breast from the clavicle (collarbone) and the clavico-pectoral fascia (collarbone and chest) by traversing and encompassing the fat and milk-gland tissues. The breast is positioned, affixed to, and supported upon the chest wall, while its shape is established and maintained by the skin envelope. In most women, one breast is slightly larger than the other. More obvious and persistent asymmetry in breast size occurs in up to 25% of women. While it has been a common belief that breastfeeding causes breasts to sag, researchers have found that a woman's breasts sag due to four key factors: cigarette smoking, number of pregnancies, gravity, and weight loss or gain. (*Cheng, et al., 2012*).

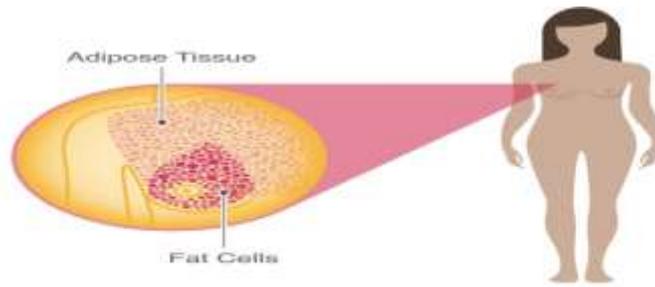
The base of each breast is attached to the chest by the deep fascia over the pectoral's major muscles. The space between the breast and the pectoral's major muscle, called retro mammary space, gives mobility to the breast. The chest (thoracic cavity) progressively slopes outwards from the thoracic inlet (atop the breastbone) and above to the lowest ribs that support the breasts. The inframammary fold, where the lower portion of the breast meets the

chest, is an anatomic feature created by the adherence of the breast skin and the underlying connective tissues of the chest; the IMF is the lower-most extent of the anatomic breast. Normal breast tissue typically has a texture that feels nodular or granular, to an extent that varies considerably from woman to woman. (*Aksu, et al., 2011*).

The Evolution of the Human Breast (2011) proposed that the rounded shape of a woman's breast evolved to prevent the sucking infant offspring from suffocating while feeding; that is, because of the human infant's small jaw, which did not project from the face to reach the nipple, he or she might block the nostrils against the mother's breast if it were of a flatter form (chimpanzee). Theoretically, as the human jaw receded into the face, the woman's body compensated with round breasts. (*WHO, 2012*).

Mammary gland is covered with soft skin. The skin, which covers the nipple and areola, is characterized by special softness and has the large number of small folds, in a form which resembles wrinkles. The color of the skin is various: it can be pink or brown intensity of the pigmentation of the areola and the nipple of mammary gland is strengthened during the pregnancy. (*David v, 2014*).

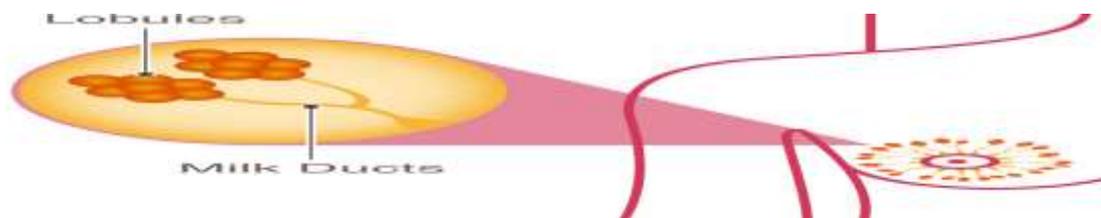
**Adipose Tissue:-**The female breast is mostly made up of a collection of fat cells called adipose tissue. This tissue extends from the collarbone down to the underarm and across to the middle of the ribcage. (*Cheng, et al, 2012*).



**Figure 5:**Adipose tissue of the breast

Available at: *Littleton L.Y, and, Engebretson J.C, (2013)*

Lobes, Lobules, and Milk Ducts: A healthy female breast is made up of 12–20 sections called lobes. Each of these lobes is made up of many smaller lobules, the gland that produces milk in nursing women. Both the lobes and lobules are connected by milk ducts, which act as stems or tubes to carry the milk to the nipple. These breast structures are generally where the cancer begins to form.(*Fine et al., 2012*).

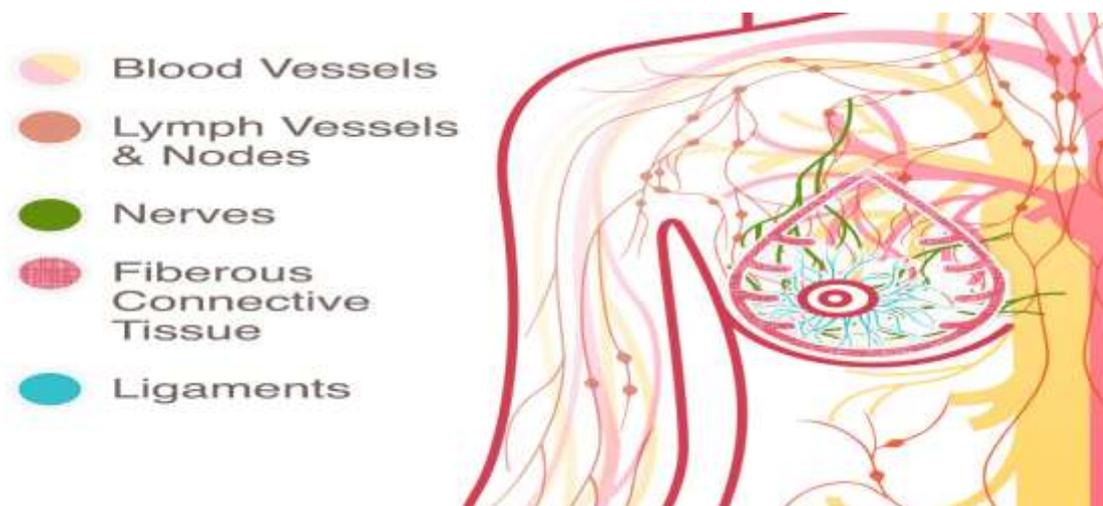


**Figure 6:**Lobule and milk duct of the breast

Available at: *Littleton L.Y, and, Engebretson J.C, (2013):*

The Lymph System:-Within the adipose tissue is a network of ligaments, fibrous connective tissue, nerves, lymph vessels, lymph nodes, and blood vessels. The lymph system, which is part of the immune system, is a network of lymph vessels and lymph nodes running throughout the entire body. Similar to how the blood circulatory system distributes elements throughout the body, the lymph system transports disease-fighting cells. (Cleland, et al., 2012).

Clusters of bean-shaped lymph nodes are fixed in areas throughout the lymph system and act as filters by carrying abnormal cells away from healthy tissue. The type of breast cancer is generally determined by the origin of the growth of cancer cells, which is almost always in the lobes, lobules, or ducts. When cancer is found in the nearby lymph nodes, it helps doctors identify just how far the cancer has spread. If the nearest nodes contain cancer, additional nodes are usually examined for the presence or absence of cancer cells to understand how far the disease has progressed. (McKay & Gilbert, 2014)



**Figure 7:**Lymph system of the breast

Available at: *Littleton L.Y, and, Engebretson J.C, (2013)*

At the end of the period of lactation the gland decreases in volume as a result of the reverse development of the component elements of its glandular part, but not to the extent, which was prior to the pregnancy (*David v, 2014*)

The morphological structure of the human breast is identical in males and females until puberty. For pubescent girls in (the breast-development stage), the female sex hormones (principally estrogens) in conjunction with growth hormone promote the sprouting, growth, and development of the breasts. During this time, the mammary glands grow in size and volume and begin resting on the chest. These development stages of secondary sex characteristics (breasts, pubic hair, etc.) are illustrated in the five-stage Tanner Scale. (*FSRH; 2011*).

Development of breasts is sometimes of unequal size, and usually the left breast is slightly larger. This condition of asymmetry is transitory and statistically normal in female physical and sexual development. Medical conditions can cause overdevelopment (e.g., virginal breast hypertrophy, macromastia) or underdevelopment (e.g., tuberous breast deformity, micromastia) in girls and women. (*Brache et al., 2011*).

Approximately two years after the onset of puberty (a girl's first menstrual cycle), estrogen and growth hormone stimulate the development and growth of the glandular fat and suspensor tissues that compose the breast. This continues for approximately four years until the final shape of the breast (size, volume, density) is established at about the age of Mammoplastia (breast enlargement) in girls begins at puberty, unlike all other primates in which breasts enlarge only during lactation. (*Jadav & Parmar, 2012*).

## **Breast Feeding**

Health organizations, including the World Health Organization (WHO), recommend breastfeeding exclusively for six months. This means that no other foods or drinks other than possibly vitamin D are typically given. After the introduction of foods at six months of age, recommendations include continued breastfeeding until at least one to two years of age. Globally about 38% of infants are only breastfed during their first six months of life. In the United States, about 75% of women begin breastfeeding and about 13% only breastfeed until the age of six months. Medical conditions that do not allow breastfeeding are rare. Mothers who take certain recreational drugs and medications should not breastfeed. Smoking, limited amounts of alcohol or coffee are not reasons to avoid breastfeeding. *(EMA, 2014)*.

Breast feeding is the feeding of babies and young children with milk from a woman's breast. Health professionals recommend that breastfeeding begin within the first hour of a baby's life and continue as often and as much as the baby wants. The duration of a feeding is usually ten to fifteen minutes on each breast. Mothers may pump milk so that it can be used later when breastfeeding is not possible. Breastfeeding has a number of benefits to both mother and baby, which infant formula lacks. *(Elizabeth, et al., 2015)*.

Deaths of an estimated 820,000 children under the age of five could be prevented globally every year with increased breastfeeding. Breastfeeding decreases the risk of respiratory tract infections and diarrhea, both in developing and developed countries. Other benefits include lower risks of asthma, food allergies, celiac disease, type 1 diabetes, and leukemia. Breastfeeding may also improve cognitive development and decrease the risk of obesity in adulthood. *(Alastair et al., 2012)*.

Mothers may feel pressure to breastfeed, but in the developed world children generally grow up normally when bottle fed, Benefits for the mother include less blood loss following delivery, better uterus shrinkage, and less postpartum depression. Breastfeeding delays the return of menstruation and fertility, a phenomenon known as lactation amenorrhea . Long term benefits for the mother include decreased risk of breast cancer, cardiovascular disease, and rheumatoid arthritis . Breastfeeding is less expensive than infant formula. (*Glazier, 2013*).

Early pregnancy Changes prepare the breast for lactation. Pre-birth hormone levels become altered after the birth and stimulate the production of milk. From around halfway through pregnancy, the breasts begin to produce colostrums'. (*Healthy Canadians, 2014*).

Colostrum, a thick yellowish fluid rich in protein, continues to be produced for the first few days after delivery. Around 30 to 40 hours after delivery, the composition of milk changes to mature milk and milk volume becomes copious, an event known as the milk "coming in". (*Kapp, et al., 2014*).

Sucking causes the pituitary to release oxytocin that causes to the contraction of the uterus. Progesterone is the hormone that influences the growth of breast tissue before the birth. The postpartum changes that occur in the endocrine system after the birth shift from hormones that prevent lactation to hormones that trigger milk production This can be felt by the mother in the breasts. The crying of the infant can induce the release of oxytocin from the pituitary gland. (*Harper, et al., 2012*).

Not all of breast milk's properties are understood, but its nutrient content is relatively consistent. Breast milk is made from nutrients in the mother's bloodstream and bodily stores. Breast milk has an optimal balance of fat, sugar, water, and protein that is needed for a baby's growth and development. *(Clement & Mansour, 2014)*.

Breastfeeding triggers biochemical reactions which allows for the enzymes, hormones, growth factors and immunologic substances to effectively defend against infectious diseases for the infant. The breast milk also has long-chain polyunsaturated fatty acids which help with normal retinal and neural development. *(Cleland et al., 2012)*.

The composition of breast milk changes depending on how long the baby nurses at each session, as well as on the child's age. The first type, produced during the first days after childbirth, is called colostrums'. Colostrums' is easy to digest although it is more concentrated than mature milk. *(Elizabeth, et al., 2015)*.

It has a laxative effect that helps the infant to pass early stools, aiding in the excretion of excess bilirubin, which helps to prevent jaundice. It also helps to seal the infant's gastrointestinal tract from foreign substances, which may sensitize the baby to foods that the mother has eaten. Although the baby has received some antibodies through the placenta, colostrums' contains a substance which is new to the newborn, secretory immunoglobulin A (IgA). IgA works to attack germs in the mucous membranes of the throat, lungs, and intestines, which are most likely to come under attack from germs. *(Cheng, et al., 2012)*.

Breasts begin producing mature milk around the third or fourth day after birth. Early in a nursing session, the breasts produce foremilk,

thinner milk containing many proteins and vitamins. If the baby keeps nursing, then hind milk is produced. Hind milk has a creamier color and texture because it contains more fat. (*Jadav&Parmar, 2012*).

Breastfeeding can begin immediately after birth. The baby is placed on the mother and feeding starts as soon as the baby shows interest. According to some authorities, increasing evidence suggests that early skin-to-skin contact (also called kangaroo care) between mother and baby stimulates breastfeeding behavior in the baby. Newborns that are 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 birth. Immediate skin-to-skin contact may provide a form of imprinting that makes subsequent feeding significantly easier. (*FSRH,2011*).

In addition to more successful breastfeeding and bonding, immediate skin-to-skin contact reduces crying and warms the baby. According to studies cited by UNICEF, babies naturally follow a process which leads to a first breastfeed. Initially after birth the baby cries with its first breaths. Shortly after, it relaxes and makes small movements of the arms, shoulders and head. The baby crawls towards the breast and begins to feed. After feeding, it is normal for a baby to remain latched to the breast while resting. (*Harper, et al., 2012*).

This is sometimes mistaken for lack of appetite. Absent interruptions, all babies follow this process. Rushing or interrupting the process, such as removing the baby to weigh him/her, may complicate subsequent feeding. Activities such as weighing, measuring, bathing, needle-sticks, and eye prophylaxis wait until after the first feeding. (*Piaggio et al., 2011*).

Children who are born preterm have difficulty in initiating breast feeds immediately after birth. By convention, such children are often fed on expressed breast milk or other supplementary feeds through tubes or bottles until they develop satisfactory ability to suck breast milk. Tube feeding, though commonly used, is not supported by scientific evidence as of October 2016. It has also been reported in the same systematic review that by avoiding bottles and using cups instead to provide supplementary feeds to preterm children, a greater extent of breast feeding for a longer duration can subsequently be achieved. (*Gunardi& Fernando, 2013*).

Newborn babies typically express demand for feeding every one to three hours (8–12 times in 24 hours) for the first two to four weeks. A newborn has a very small stomach capacity. At one-day old it is 5–7 ml, about the size of a marble; at day three it is 22–30 ml, about the size of a "shooter" marble; and at day seven it is 45–60 ml, or about the size of a ping-pong ball. The amount of breast milk that is produced is timed to meet the infant's needs in that the first milk, colostrums, is concentrated but produced in only very small amounts, gradually increasing in volume to meet the expanding size of the infant's stomach capacity. (*Richardson,2012*)

According to La Lecher League (2012) International, "Experienced breastfeeding mothers learn that the sucking patterns and needs of babies vary. While some infants' sucking needs are met primarily during feedings, other babies may need additional sucking at the breast soon after a feeding even though they are not really hungry. Babies may also nurse when they are lonely, frightened or in pain....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. (*Ibrahim et al., 2013*).

Other reasons to pacify a baby primarily at the breast include superior oral-facial development, prolonged lactation amenorrhea, avoidance of nipple , and stimulation of an adequate milk supply to ensure higher rates of breastfeeding success. During the newborn period, most breastfeeding sessions take from 20 to 45 minutes. After one breast is empty, the mother may offer the other breast.*(Grossman, 2013).*

Duration and exclusivity [Health organization recommend exclusive breastfeeding for six months following birth. Exclusive breastfeeding is defined as "an infant's consumption of human milk with no supplementation of any type (no water, no juice, no non-human milk and no foods) except for vitamins, minerals and medications." In some countries, including the United States, UK, and Canada, daily vitamin D supplementation is recommended for all breastfed infants.*(Shaaban, et al., 2011).*

Hormonal control of breastfeeding hormones plays a key role in breastfeeding. Four key hormones involved in lactation are estrogen, progesterone, prolactin and oxytocin. The increase in estrogen and progesterone levels during pregnancy stimulates the ductules, alveoli and lobes to grow. Prolactin adds to the growth of breast tissue.*(Omron, 2012).*

After delivery, estrogen levels drop and remain low in the first several months of breastfeeding. Prolactin levels rise during feedings as the nipple is stimulated. As prolactin is released from the brain into the mother's bloodstream during breastfeeding, alveolar cells respond by producing milk, oxytocin is the hormone responsible for let-down, or milk-ejection to occur.*(Gemzell-Danielsson&Meng, 2011).*

It stimulates the alveoli cells to contract so the milk can be pushed down into the ducts. Oxytocin also contracts the muscle of the uterus during

and after birth, which helps the uterus to get back to its original size and lessens any bleeding a woman may have after giving birth. The release of both prolactin and oxytocin may be responsible in part for a mother's intense maternal feeling and desire to bond with her baby. **(Richardson, 2012)**

Composition of breast milk depending on the age of the infant, different types of milk is produced, to most adequately meet the nutritional demands of the growing infant. Colostrums, or the first milk, is a thick yellow substance, rich in immunoglobulin and has a laxative effect on the gut, aiding the passage of newborn meconium. Compared with mature milk, colostrums is smaller in volume but is higher in protein. Transitional Milk follows the production of colostrums. It is more voluminous than colostrums, and lasts from seven to ten days. **(Harper, et al., 2012).**

Mature milk is produced after lactogenesis stage, and is comprised of foremilk and hind milk : ( Foremilk: Is the thinner milk that is released at the beginning of the feed and satisfies the baby's thirst. , Hind milk: Is the richer, creamier milk that follows after the foremilk and is high in fat and calories. It is thus important to ensure that the baby remains on one breast long enough to remove the foremilk and ingest the thick, creamy hind milk that follows in order to achieve good weight gain. **(Walker, 2015)**

Presence of colostrums during the latter part of pregnancy, colostrums' is produced by the breasts, which is a thick, yellow, rich precursor of mature milk, packed with nutrients and protective maternal antibodies. Although it is low in volume, it is high in concentrated nutrients and contains high levels of carbohydrates, proteins and environment-specific antibodies. **(Ibrahim et al., 2013).**

Colostrums' also has a laxative effect on an infant, and assists with the passing of early stools, which aids in the excretion of excess bilirubin and helps prevent jaundice. Colostrums is easily digested, is the ideal nutrition for the infants and helps to protect the infant against disease. The milk supply will increase and the color will change to a bluish-white color during the next few days after the baby's birth. (*LilletonL., 2014*).

**Benefits of Breastfeeding** There are many benefits to breastfeeding, even if a mother is only able to nurse for a short time. Benefits include maternal physical and psychological advantages; optimal infant nutrition and growth potential; and several economic, family and environmental advantages.

**Maternal Health Benefits** **Weight loss:** Nursing uses up extra calories, making it easier to lose the pounds of pregnancy. Breastfeeding helps women return to pre-pregnant weight and shape quicker than formula feeding. **Decreased postpartum bleeding:** High levels of circulating oxytocin promote the rapid involution of the uterus, resulting in less postpartum bleeding, and the uterus returns to its original size sooner. **Lowered risk of cancer:** Breastfeeding lowers the risk of breast and ovarian cancers, and possibly decreases the risk of hip fractures and osteoporosis in the postmenopausal period. (*Walker, 2015*).

**Economical and timely:** Breastfeeding saves time and money. There is no need to purchase, measure, and mix formula. There are no bottles to sterilize. Human milk straight from the breast is always sterile. A mother can give her baby immediate satisfaction by providing her breast milk when the baby is hungry. (*Myers, 2016*).

Natural child spacing. Attributable to lactation amenorrhea, with exclusive breastfeeding. Promotion of bonding and relaxation: Breastfeeding requires a mother to take some quiet relaxed time for herself and her baby. Breastfeeding mothers may have increased self-confidence, feelings of closeness, and bonding with their infants. Positive feelings: Physical contact is important to a newborn and can help them feel more secure, and warm and comforted. (*Finer & Zolna, 2011*).

Infant nutrition and growth: Breast milk is the most complete form of nutrition for infants. A mother's milk has the right amount of fat, sugar, water, and protein that is needed for a baby's growth and development and it changes to meet the nutritional needs of the baby at any given time (*Beaumont Women's Health, 2014*).

Most babies find it easier to digest breast milk than they do formula. Breastfed infants tend to gain less unnecessary weight and tend to be leaner. This may result in being less overweight later in life (Studies have shown that breastfed children have greater brain development than non-breastfed children, due to the presence of long chain polyunsaturated fats present in human milk. Longer duration of breast feeding is associated with increased scores in cognitive, language and motor development at 18 months of age. (*Leventakou et al., 2015*).

Positions for successful breastfeeding, Cross Cradle Hold: this are the most commonly used position that is comfortable for most mothers. The mother holds the baby with the head on her forearm and the whole body facing the mother. This is also an excellent position for a mother who has had a cesarean section or has very large breasts. It also works very well with premature infants and babies who are having problems latching on. (*Lilliton L, 2014*).



Football Hold



Side-Lying Position



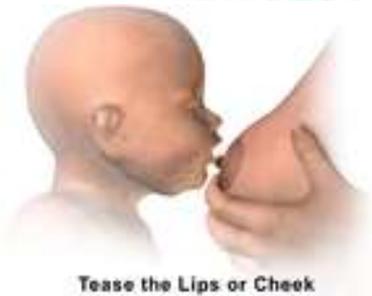
Semi-reclining Position



Incorrect Latch-On  
(Lower Lip is Tucked In)



Correct Latch-On



Tease the Lips or Cheek



Cradle Hold



Cross Cradle Position



Cross-cradle Position



**Figure 8: Position of breast feeding**

<http://www.ijmr.org.in/article.asp?issn=0971-5916;year=2014;volume=140;issue=7;spage=45;epage=52;aulast=Mittal>

The infant is held along the opposite arm from the breast the baby will nurse from. Have the mother support baby's head with the palm of her hand at the base of the neck. This may look similar to the Cradle hold, but the opposite arm is supporting the baby. This is an effective position as the mother is using her hand, rather than her elbow, to guide the baby's head to the breast. (*Harper, et al., 2012*).

**Clutch or Football Hold** This is an easy and comfortable position for most women, and is especially good for mothers with large breasts or inverted nipples. Position the baby at the mother's side, with the baby lying on the side, with the head at the level of the nipple. The infant's ear, shoulder and hip should be in a straight line. Support baby's head with the palm of the hand at the base of the baby's head. Never force a baby to latch by pushing on the back or top of the head. By supporting the neck rather than the head, the infant will be able to push away from the **breast** when satiated. (*Ahmed, et al., 2015*).

**Side-Lying Position:** this allows mother to rest while the baby nurses, and can be a good position for mothers who had a Cesarean birth. The mother lies on her side with the baby on his side, facing her. She pulls the

baby close and guides the baby's mouth to her nipple, by using a C-shaped hold to support under the breast. (*Leventakou et al., 2015*).

Breastfeeding can be a wonderful experience for mother and baby. It is important for the mother not to become frustrated if there are problems with the mechanics of breastfeeding since what works for one mother and baby may not work for another. It is also important to help the new mother to focus on finding comfortable positions that facilitate feeding. Establishing a routine that works for the new mother and baby is essential. (*Peipert et al., 2016*).

Guidelines for successful latching, when latching the baby to the breast, the following guidelines should be taught to the mother: Always ensure that the mother is in a comfortable position with adequate support for her back, neck, forearms and elbows. If sitting, her legs should be elevated off the ground slightly, to release the abdominal muscles. The use of a feeding pillow is recommended to bring the baby up to the height of the breast. The mother should remain in this supported position and the baby positioned around her, and brought up to the breast, rather than her leaning forward and bringing the breast down to the baby. (*Myers, 2016*).

The infant's body should remain in alignment so that the neck is not turned to reach the breast. A breast feeding pillow can be used to support the weight of the infant and relieve shoulder and wrist tension in the mother. The pillow should be angled along the side that the infant will nurse on. The pillow supports the baby as he or she latches, and provides support for the infant's back as well as for the mother's elbow and wrist. (*McKay & Gilbert, 2014*).

Achieving a Wide open mouth ,encourage a wide open mouth before latching the baby, by expressing a drop of colostrums or breast milk onto the nipple Support the back of the baby’s neck, rather than the head and aim to latch the baby with the nipple pointing to the roof of his mouth and his head tilted back slightly, The chin and lower jaw touch breast first, and the lower lip should cover part of the areola under the nipple, as far away from the base of the nipple as possible, so the tongue draws lots of breast into mouth, Once latched, the top lip will be well flanged against the breast, and the chin will be close against breast. (*Cleland, et al., 2016*).

Facilitating a deep latch before latching:, a wide gaping mouth is needed in order to achieve a deep latch that will initiate letdown and provide comfort to both mother and baby: When a comfortable position is achieved for the nursing dyad, move the baby toward the breast, touching his top lip against the nipple lightly before moving his mouth away slightly. Repeat until baby opens wide and has his tongue thrust forward. Alternatively, run the nipple along the baby’s upper lip, from one corner to the other, lightly, until baby opens wide. (*WHO, 2014*).

## **Postpartum period & breast engorgement**

Puerperium is defined as the time from the delivery of the placenta through the first few weeks after the delivery. This period is usually considered to be 6 weeks in duration. By 6 weeks after delivery, most of the changes of pregnancy, labor, and delivery have resolved and the body has reverted to the non-pregnant state. (*Finer & Zolna, 2014*)

After the fourth stage of labor the uterus can be palpated at the level of the navel (belly button). The uterus continues to contract and shrink in size so that two weeks postpartum, it again resides in the pelvis. The tissue lining the uterus begins to regenerate and by day seven postpartum the endometrial glands are restored. By day sixteen, the endometrial lining has been completely restored except at the site of placental attachment. This site within the uterus undergoes changes that include contractions of vascular smooth muscles and myometrium. This encourages homeostasis. (*Tsui, et al., 2010*).

Immediately after delivery, a large amount of red blood flows from the uterus until the contraction phase occurs. Thereafter, the volume of lochia (postpartum vaginal discharge, containing blood, mucus, and uterine tissue) rapidly decreases. The duration of this discharge, known as lochia rubra, is variable. The red discharge progressively changes to brownish red, with a more watery consistency (lochia serosa). Over a period of weeks, the discharge continues to decrease in amount and color and eventually changes to yellow (lochia alba). The period of time the lochia can last varies, although it averages approximately 5 weeks. (*Moreland, et al., 2012*).

The major focus of postpartum care is ensuring that the mother is healthy and capable of taking care of her newborn, equipped with all the information she needs about breastfeeding, reproductive health and contraception, and the imminent life adjustment. (*Mosher & Jones, 2011*).

In some cases, this adjustment is not made easily, and women may suffer from postpartum depression, posttraumatic stress disorder or even puerperal psychosis. Postpartum mental illness can affect both mothers and fathers, and is not uncommon. Early detection and adequate treatment is required. Approximately 25% – 85% of postpartum women will experience the "blues" for a few days. Between 7% and 17% may experience clinical depression, with a higher risk among those women with a history of clinical depression. (*Ricci, 2013*).

Postpartum psychosis (also known as puerperal psychosis) is a more severe form of mental illness than postpartum depression. Rarely, in 1 in 1,000 cases, women experience a psychotic episode, again with a higher risk among those women with pre-existing mental illness. Despite the widespread of hormonal involvement, repeated studies have not linked hormonal changes with postpartum psychological symptoms. Rather, these are symptoms of a pre-existing mental illness, exacerbated by fatigue, changes in schedule and other common parenting stressors. (*Briggs, et al., 2013*).

An overview of the relevant anatomy and physiology in the postpartum period follows, **Uterus:** the pregnant term uterus (not including baby, placenta, fluids, etc) weighs approximately 1000 g, In the 6 weeks following delivery, the uterus recedes to a weight of 50-100 g. (*Hassan M ., 2012*).

Immediate postpartum period occurs most often in the hospital setting, where the majority of women remain in the hospital approximately 2 days after a vaginal delivery and 3-5 days after a cesarean section. During this time, women are recovering from their delivery, as well as beginning to care for the newborn. This period is used both to make sure the mother is stable and to educate her in the care of her baby, especially the first-time mother. While still in the hospital, the mother is monitored for blood loss, signs of infection, abnormal blood pressure, contraction of the uterus, and the ability to void. (Halpern et al, 2013).

The uterine fund is palpable at or near the level of the maternal umbilicus. Thereafter, most of the reduction in size and weight occurs in the first 2 weeks, at which time the uterus has shrunk enough to return to the true pelvis. Over the next several weeks, the uterus slowly returns to its non-pregnant state, although the overall uterine size remains larger than prior to gestation. (Graven R., 2012).

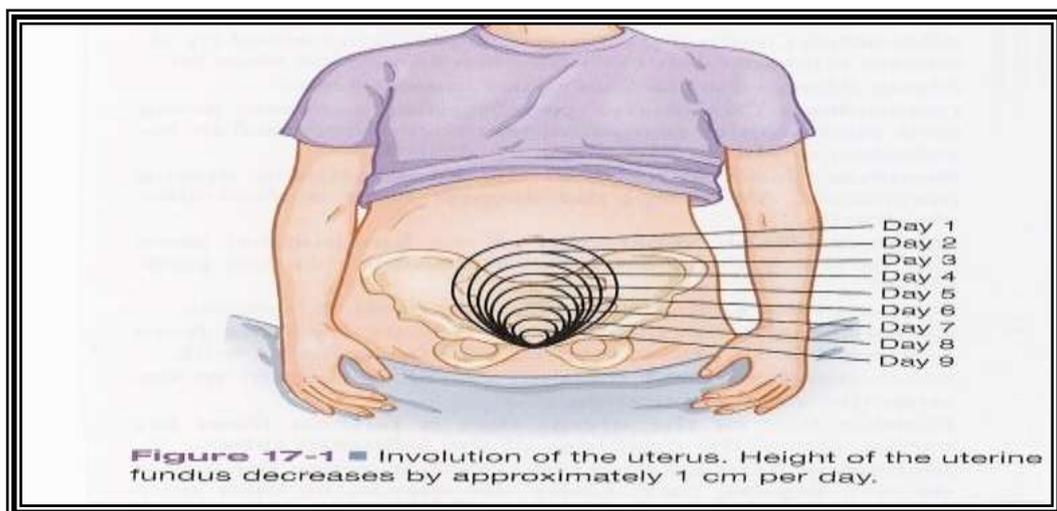
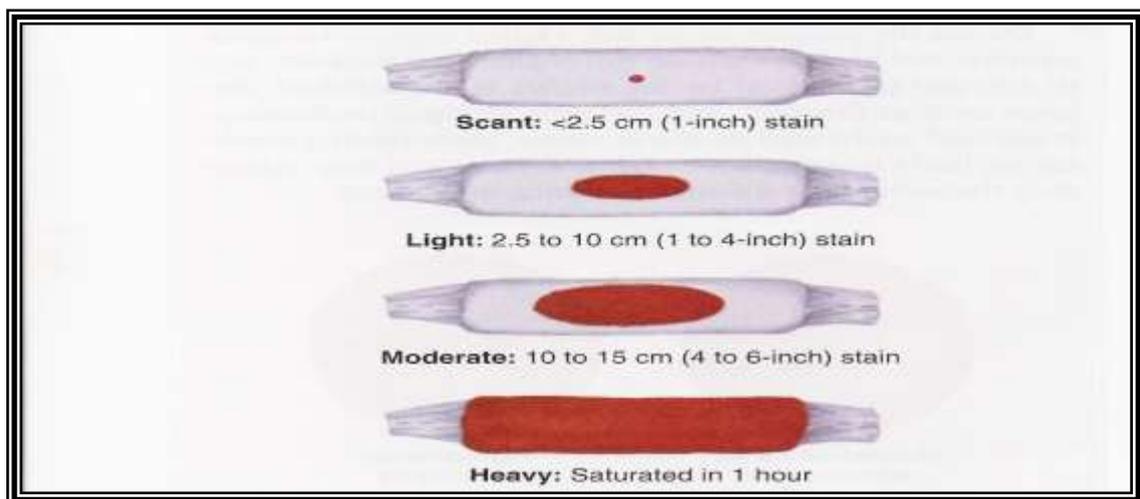


Figure 9: Involution of the uterus & height of the uterine fundus

Tindall B, (2012)

The placental site undergoes a series of changes in the postpartum period. Immediately after delivery, the contractions of the arterial smooth muscle and compression of the vessels by contraction of the myometrium ("physiologic ligatures") result in homeostasis. The size of the placental site decreases by half, and the changes in the placental bed result in the quantity and quality of the lochia that is experienced. a large amount of red blood flows from the uterus until the contraction phase occurs.(*Manders, et al., 2014*).

The period of time the lochia can last varies, although it averages approximately 5 weeks. The amount of flow and color of the lochia can vary considerably. Fifteen percent of women continue to have lochia 6 weeks or more postpartum. Often, women experience an increase in the amount of bleeding at 7-14 days secondary to the sloughing on the placental site. This is the classic time for delayed postpartum hemorrhages to occur. Thereafter, the volume of vaginal discharge (lochia) rapidly decreases. (*Bullring E.,2015*).



*Figure 10:Amount of lochia*

Available at: Jacob A, (2012): A Comprehensive Textbook of Midwifery & Gynecological Nursing, 3<sup>rd</sup>ed, Jaypee Brothers Medical Publishers(P) Ltd, New Delhi, India

The cervix also begins to rapidly revert to a non-pregnant state, but it never returns to the nulliparous state. By the end of the first week, the external os closes such that a finger cannot be easily introduced. (*Lawrence Rm., 2015*).

The vagina also regresses but it does not completely return to its prepregnant size. Resolution of the increased vascularity and edema occurs by 3 weeks, and the rugae of the vagina begin to reappear in women who are not breastfeeding. At this time, the vaginal epithelium appears atrophic on smear. This is restored by weeks 6-10; however, it is further delayed in breastfeeding mothers because of persistently decreased estrogen levels. (*GravenR., 2015*).

The perineum has been stretched and traumatized, and sometimes torn or cut, during the process of labor and delivery. The swollen and engorged vulva rapidly resolves within 1-2 weeks. Most of the muscle tone is regained by 6 weeks, with more improvement over the following few months. The muscle tone may or may not return to normal, depending on the extent of injury to muscle, nerve, and connecting tissues. (*William S, 2014*).

The abdominal wall remains soft and poorly toned for many weeks. The return to a prepregnant state depends greatly on maternal exercise. The resumption of normal function by the ovaries is highly variable and is greatly influenced by breastfeeding the infant. The woman who breastfeeds her infant has a longer period of amenorrhea and anovulation than the mother who chooses to use formula. The mother who does not breastfeed may ovulate as early as 27 days after delivery. Most women have a menstrual period by 12 weeks; the mean time to first menses is 7-9 weeks. (*Auerbach K., 2012*).

In the breastfeeding woman, the resumption of menses is highly variable and depends on a number of factors, including how much and how often the baby is fed and whether the baby's food is supplemented with formula. The delay in the return to normal ovarian function in the lactating mother is caused by the suppression of ovulation due to the elevation in prolactin. Half to three fourths of women who breastfeed return to periods within 36 weeks of delivery. (*chiJay. ,2013*)

The changes to the breasts that prepare the body for breastfeeding occur throughout pregnancy. Lacto genesis, which is the development of the ability to secrete milk, occurs as early as 16 weeks gestation. The placenta supplies high levels of circulating progesterone which activates mature alveolar cells in the breast to secrete small amounts of milk. After delivery of the placenta, there is a rapid decline in progesterone which triggers the onset of milk production and subsequent swelling, or engorgement, of breasts in the postpartum period. (*Littleton L., 2013*).

The colostrums is the liquid that is initially released by the breasts during the first 2-4 days after delivery. High in protein content and antibody rich, this liquid is protective for the newborn. The colostrums, which the baby receives in the first few days postpartum, is already present in the breasts, and suckling by the newborn triggers its release. (*Engebretson J., 2013*).

The process, which begins as an endocrine process, switches to an autocrine process; the removal of milk from the breast stimulates more milk production. Over the first 7 days, the milk matures and contains all necessary nutrients in the neonatal period. The milk continues to change throughout the period of breastfeeding to meet the changing nutritional demands of the baby. (*Woodhams & Gilliam, 2014*).

Vital signs do not change much under normal circumstances, Temperature may raise slightly during first 24 hours, due to dehydration during labor; hormone changes, Encourage fluids to rehydrate .Pulse decreases to pre-pregnancy rate by 8-10 weeks. Respiration rate decreases to normal prebirthrange by 6-8 weeks. Blood pressure usually not altered; orthostatic, hypotension may occur during first 48 hours.(*Susilo A ., 2013*).

It is customary to check the blood type of the baby and to administer the RhoGAM vaccine to the Rh-negative mother if her baby, blood type is Rh positive. Usually, the mother has at least her hematocrit level checked on the first postpartum day. Women are encouraged to ambulate and to eat a regular diet.(*Barral& Gold, 2014*).

After a vaginal delivery, most women experience swelling of their perineum and pain. This is intensified if the woman has had an episiotomy or a laceration. Routine care of this area includes ice applied to the perineum to reduce the swelling and help with pain relief. Conventional treatment is to use ice for the first 24 hours after delivery and then switch to warm sitz baths. However, there is little evidence to support this method over other methods of treatment of the postpartum perineum. Pain medications are very helpful both systemically as no steroidal anti-inflammatory (NSAIDs) or narcotics, as well as local anesthetic spray to the perineum.(*Grimes, et al., 2013*).

Another postpartum issue that is likely to affect the women who have vaginal deliveries is hemorrhoids. Symptomatic relief is the best treatment during this immediate postpartum period, because often the hemorrhoids will resolve as the perineum recovers. This can be achieved

by the use of corticosteroid creams, witch hazel compresses, and local anesthetics. (*Lidegaard, et al., 2012*).

Tampon use can be resumed when the patient is comfortable inserting the tampon and it is comfortable to wear. This will take longer for the woman who has had an episiotomy or a laceration than for one who has not. The vagina and perineum should be fully healed, which takes about 3 weeks. It also is important to change the tampons frequently to prevent infection. (*Blanco-Molinaa, et al., 2012*).

The woman who has had a cesarean section does not usually have the pain and discomfort from her perineum, but rather from her abdominal incision. This, too, can be treated with ice to the incision, as well as with the use of systemic pain medication. Often, women who have had a cesarean section are slower to begin ambulating, eating, and voiding. However, they should be encouraged to resume these and other normal activities quickly. (*Zieman, 2014*).

Sexual intercourse may resume when there is no bright red bleeding, the vagina and vulva are healed, and the woman is physically comfortable, as well as emotionally ready. The physical readiness usually takes about 3 weeks. Birth control is important to protect against pregnancy, as the first ovulation is very unpredictable. (*Bonnema, et al., 2013*).

Substantial education takes place during the hospital stay, especially for the mother who has just had her first child. The mother, and often the father, is taught routine care of the baby, feeding, diapering, and bathing, as well as what can be expected from the baby in terms of sleep, urination, bowel movements, and eating. (*Zieman, 2014*).

The mother who is breastfeeding should receive education, support, and guidance with the breastfeeding. Breastfeeding is neither easy nor automatic. It requires much effort on the part of the mother and her support team. Breastfeeding should be initiated as soon after delivery as possible; in a normal, uncomplicated vaginal delivery this can be done almost immediately after the birth. The mother should be encouraged to feed the baby every 2-3 hours (at least while she is awake during the day) to stimulate milk production. Feedings do not need to be long, but they should be frequent. The milk production should be well established by 36-96 hours. (*Wieder&Pattimakiel., 2011*).

In women who choose not to breastfeed, the care of the breasts is quite different. Care should be taken not to stimulate the breasts in any way to try to prevent milk production. Ice packs applied to the breasts and the use of a tight bra or a binder also can help to prevent breast engorgement. Acetaminophen or NSAIDs can help with the symptoms of breast engorgement (eg, tenderness, swelling, fever) if it does occur. At one time, bromocriptine was administered to suppress milk production. However, its use has diminished because it requires 2 weeks of administration, does not always work, and can produce adverse reactions. (*Santiago, et al., 2014*).

It is important to give the mother discharge instructions. The most important information is who and where to call if she has problems or questions. She also needs details about resuming her normal activity. Instructions vary, depending on whether the mother has had a vaginal delivery or a cesarean section. (*Nelson, 2011*).

The woman who had a vaginal delivery may resume all physical activity as long as she is comfortable and without pain or discomfort with

the activity. This includes using stairs, riding in a car, driving a car, or doing muscle-toning exercises. The caveat to resuming normal activity is not to overdo activity on one day to the point that the mother is completely exhausted the next day. Pregnancy, labor, and delivery, as well as care for the newborn, are strenuous and stressful, and the mother needs sufficient rest to recover. The woman who has had a cesarean section needs to be more careful about resuming some of her activities. It is important for her to prevent overuse of her abdomen until her incision is well healed to prevent an early dehiscence or a hernia later on. *(DMPA) (Roy, 2012).*

Women conventionally return for their postpartum visit at about 6 weeks after delivery. There is no sound reason for this; the time probably has become the standard so those women who are returning to work can be medically cleared to return. There is nothing that should be or needs to be done at a postpartum visit that cannot be done earlier or later than 6 weeks. Often, an earlier visit can aid a new mother in resolving problems she may be having or provide a time to answer questions that she might have. *(Bonnema, et al., 2013).*

It is very important to counsel the mother about birth control options before she leaves the hospital. She may not be ready to decide about a method, but she needs to know what her options are. Her decision will be based on a number of factors, including her motivation in using a particular method, how many children she has, and whether she is breastfeeding. There are many available options. Natural methods can be used in highly motivated couples. This includes the use of monitoring the basal body temperature and the quality and quantity of the cervical mucus to determine what phase of the menstrual cycle the

woman is in and if it is safe to have intercourse. (*Espey & Pasternack, 2014*).

There are many complications that can occur in the postpartum period as breast engorgement means your breasts are painfully overfull of milk. This usually occurs when a mother makes more milk than her baby uses. Breasts may become firm and swollen, which can make it hard for baby to breastfeed. Engorged breasts can be treated at home. (*McKay & Glibert, 2014*).

Breast care client teaching: If making good that lead to prevent any problem occur in the breast as following: Shower daily but no soap on nipples; use lanolin cream after nursing, Air dry nipples to prevent excess moisture; use bra pads to absorb leaking milk. Change frequently to prevent infection, Heat/massage should be used just before feeding to increase milk flow, Feed on demand. No time limitation. Not necessary to have infant nurse on both sides with each feeding. (*Auerbach K., 2014*).

## **Breast Engorgement**

Breast Engorgement may happen, when milk first comes in, during the first few days after birth. When you have a regular breast feeding but can't feed or pump as much as usual and stop breast feedings suddenly this may lead to breast engorgement, where the baby suddenly starts breastfeeding less than usual. This may happen when the baby is starting or increasing solid foods or when the baby is ill and has poor appetite. Breasts start making milk about 2 to 5 days after the baby is born. (*Auerbach K., 2014*)

Before that, they make colostrum's, which contains important nutrients that baby needs right after birth. It's normal for breasts to feel heavy, warm, and swollen when milk "comes in." This early breast fullness is from the milk you make and extra blood and fluids in your breasts. Body uses the extra fluids to make more breast milk for baby. This normal breast fullness will probably go away in a few days as breastfeed and body adjusts to baby's needs. (*Engbreton J., 2013*)

Breast engorgement occurs in the mammary glands due to expansion and pressure exerted by the synthesis and storage of breast milk. It is also a main factor in altering the ability of the infant to latch-on. Engorgement changes the shape and curvature of the nipple region by making the breast inflexible, flat, hard, and swollen. The nipples on an engorged breast are flat. (*Winner, et al., 2012*).

Engorgement usually happens when the breasts switch from colostrum's to mature milk (often referred to as when the milk "comes in"). However, engorgement can also happen later if lactating women miss several breastfeed and not enough milk is expressed from

the breasts. It can be exacerbated by insufficient breastfeeding and/or blocked milk ducts. When engorged the breasts may swell, throb, and cause mild to extreme pain. (*Espey & Pasternack, 2014*).

Engorgement may lead to mastitis (inflammation of the breast) and untreated engorgement puts pressure on the milk ducts, often causing a plugged duct. The woman will often feel a lump in one part of the breast, and the skin in that area may be red and/or warm. If it continues unchecked, the plugged duct can become a breast infection, at which point she may have a fever or flu-like symptoms. (*Fraser, 2010*).

Causes of breast engorgement include: Failure to remove breast milk, especially in the first few days after delivery when the milk comes in and fills the breast, and at the same time blood flow to the breasts increases, causing congestion. The common reasons why milk is not removed adequately are delayed initiation of breastfeeding, infrequent feeds, poor attachment, ineffective suckling, a sudden change in breastfeeding routine, suddenly stopping breastfeeding, or if the baby suddenly starts breastfeeding less than usual. (*Hubacher, et al., 2011*).

Breasts may become painfully engorged when stop breastfeeding the baby often or if the feedings don't empty breasts. Breasts will be engorged for several days if don't or can't breastfeed after the baby is born. This will gradually go away if breasts are not stimulated to make milk. At present, there is no approved medicine to "dry up" milk supply and prevent engorgement. (*WHO, 2013*),

Symptoms of engorged breasts include: Swollen, firm, and painful breasts. If the breasts are severely engorged, they are very swollen, hard, shiny, warm, and slightly lumpy to the touch. Flattened nipples. The dark

area around the nipple, the areola, may be very firm. This makes it hard for your baby to latch on. A slight fever of around 100.4°F (38°C). Slightly swollen and tender lymph nodes in your armpits. (*Erlenwein, et al., 2015*). As a result: baby may not get enough milk for the breast may not empty completely. The nipples may become sore and cracked. This may cause breastfeed less, and that makes the engorgement worse. Severe engorgement can lead to blocked milk ducts and breast infection, which is called mastitis. Mastitis is infection of the breast due to block milk duct/break in tissue. Antibiotics, moist heat, analgesics and continued breastfeeding are required to be treated. (*Guardia&Fernando, 2013*)

If engorgement is making it hard to breastfeed, use the following steps, to relieve symptoms and keep milk flowing, Soften the breast before feedings. Apply a warm compress for a couple of minutes before breastfeed. Or use hands or use a pump to let out (express) a small amount of milk from both breasts, Try to breastfeed more often, Pump the breast if the baby won't breastfeed. (*Thomas S., 2012*).

**Treatment:** The mother must remove the breast milk. If the baby can attach well and suckle, then she should breastfeed as frequently as the baby is willing. If the baby is not able to attach and suckle effectively, she should express her milk by hand or with a pump a few times until the breasts are softer, so that the baby can attach better, and then get them to breastfeed frequently. She can apply warm compresses to the breast or take a warm shower before expressing, which helps the milk to flow. She can use cold compresses after feeding or expressing, which helps to reduce the edema. (*Pandit & Patel, 2013*).

Engorgement occurs less often in baby-friendly hospitals which practice the Ten Steps and which help mothers to start breastfeeding soon

after delivery. Regular breastfeeding can be continued. The treatment for breast engorgement can be divided into non-medical and medical methods. The non-medical methods include hot/cold packs, Gua-Sha (scraping therapy), acupuncture and cabbage leaves whereas medical methods and subcutaneous oxytocin. Evidence from published clinical trials on the effectiveness of treatment options is of weak quality and is not strong enough to justify a clinical recommendation. (*Mckinney, et al., 2013*).

Take care to empty breast each time Take ibuprofen (such as Advil or Motrin) to reduce pain and swelling. Ibuprofen is safe for breastfeeding woman when taken as directed. But it's a good idea to check with doctor before you take any kind of medicine while breastfeeding. (*Thomas & Cameron, 2013*).

If breast still feel uncomfortable after breastfeed, try a cold compress to reduce swelling. You can use a frozen wet towel, a cold pack, or a bag of frozen vegetables. Apply it to breast for 15 minutes at a time every hour as needed. To prevent damage to skin, place a thin cloth between breast and the cold pack& cabbage leaves. (*McKay & Schunmann, 2015*).

If not breastfeeding, use one or more of these steps to relieve discomfort: Do not pump or remove a lot of milk from breasts. If breasts are very painful, it's okay to remove just a little bit to make you more comfortable. Apply a cold pack to breast for 15 minutes at a time every hour as needed. To prevent damage to skin, place a thin cloth between your breast and the cold pack. Take ibuprofen (such as Advil or Motrin) in addition to using non-medicine treatments. Be safe with ibuprofen.

Read and follow all instructions on the label, wear a bra that fits well and provides good support. (*Rosier, et al., 2014*).

## Cabbage

Along with frequent breastfeed or pumping, may breast feeding advocates suggest using cabbage leaves to reduce swelling when mother experiences moderate to severe engorgement (*Susilo A., 2011*). Using cabbage leaves is a very old remedy and has been used by lactation specialists for the last few years. (*Littleton L, Engebretson J., 2011*). Research data is sparse, but published studies and anecdotal reports support the value of cabbage compress in reducing breast engorgement. The common green cabbage (*Brassica capitata*) is used for engorgement therapy. (*Andrews J., 2012*)

Cabbage is known to contain sinigrin , rapine, mustard oil, magnesium , oxylate and sulphurheterosides . Herbalists believe that cabbage has both antibiotic and anti-irritant properties (*Davis M., 2013*) Local engorgement for specific areas (for example those horrible armpit lumps without other areas of engorgement), Milk engorgement and venous engorgement. (*Bullring E., 2011*)

Scientific Sources state that green, ordinary (not Japanese, etc .) cabbage is preferable .There might be a strong odor of cooked cabbage leaves .Remove the core and gently peel individual leaves away from the center of the head pulling outward .Try to avoid tearing the leaves , but it is ok if they shared a little thoroughly wash the leaves (*Lindh, et al., 2011*).

Leaves can be chilled in the refrigerator for extra benefits .cool compress tend to relive swelling more effectively than warm compress. Some women find that crushed ice placed over the cabbage leaves also helps. Just before use, crush the veins in the leaf with a rolling pin (or similar object), or slice off the tops of the veins with a sharp knife .Drape

several leaves over each breast. Use enough to cover all the engorged tissue, including any swollen tissue under your arms. (*Smith M ., 2013*)

If the leaves are too firm, and do not fit close to your breasts, you can place them very shortly into lukewarm water to soften them up. Make sure the leaves cool down before you place them on your breasts .Put your bra on top of the leaves to keep them in place. To soak up leaking milk, use cotton pads between the leaves and the bra (not the leaves and the breasts) (*Andrew J., 2011*)

Leave the compress on until the leaves become wilted, about 20 to 30 minutes. Change leaves and throw them out as soon as they start to wilt. Do not reuse leaf. Repeat application of cabbage leaves three or four times (about every 4 to 6 hours), per 24 hours , until engorgement subsides (usually in 1 or 2 days )If the engorgement is sever, compresses can be used as often as needed(*Godfrey, et al., 2013*).

Check to see how breast is responding with each change and stop using the leaves once engorgement is reduced. Prolonged use after engorgement has subsided carries the risk of suppressing milk production. (*Gadducci, et al., 2011*).

Note that cabbage is not recommended for anyone allergic to sulfa or cabbage (or broccoli,cauliflower, or Brussels sprouts for that matter. In addition , cabbage should not be used if the skin is broken , such as in the case of cracked , bleeding or blistered nipples .that is place the cabbage around the breast without covering irritated skin (*Ballering E ., 2012* )

Put fresh cabbage leaves on after each feeding and leave them on until the next feed. Discontinue use when the leave is no longer coming off the breast limp with beads of water on them. Do not worry that the cabbage leaves will reduce your milk supply they act on the fluid in the interstitial spaces (or the spaces between the cells where the swelling actually is) and does not affect the milk in the ducts. As long as woman continues regular milk removal by feeding or pumping she will continue to make milk. (*Davis M., 2013*)

Not every postpartum woman experiences engorgement. Some women's breasts become only slightly full, but others find their breasts grow astonishingly big and hard. Here are some things can reduce the chance of becoming engorged: Breastfeed within two hours after birth if possible. (Labor and delivery team should be able to help with this. (*Gierisch, et al., 2013*).

Breast feed frequently – between eight and 12 times a day after the first 24 hours. (The breast should offer frequently during the first day as well, but the baby may not breastfeed eight times.) Look for baby hunger cues. Keeping baby snuggled with her skin against mother skin helps encourage her to breastfeed. Wake the baby if more than three hours go by from the start of one feeding session to the start of the next. (*Gai, et al., 2011*).

Let baby finish feeding on one breast before switching to other. This will typically take between ten and 20 minutes. (If the baby won't feed for at least ten minutes, ask a lactation consultant whether you should pump until the baby breast feed longer.) Baby may not breastfeed on the other side. If she doesn't, just start on that breast next time. (*Harel, et al., 2013*).

Avoid introducing a bottle or pacifier in the first month unless there is a medical reason to do so. The muscles used to suck on a bottle or pacifier is different than those used to breastfeed and baby may have a hard time to breastfeed after she's learned how to get milk from a bottle. If you do supplement with formula, make sure you hand express or pump each time the formula is given. If a feeding is skipped or your baby doesn't nurse well, hand express or use a breast pump to get the milk out. (*French & Cowan, 2013*).

## Role of nurse regarding breast engorgement

To prevent or minimize engorgement. Nurse early and often – at least 10 times per 24 hours. Don't skip feedings (even at night). Nurse on baby's cues ("on demand"). *If* baby is very sleepy: wake baby to nurse every 2-3 hours, allowing one longer stretch of 4-5 hours at night. Allow baby to finish the first breast before offering the other side. Switch sides when baby pulls off or falls asleep. Don't limit baby's time at the breast. Ensure correct latch and positioning so that baby is nursing well and sufficiently softening the breasts. If baby is not nursing well, express your milk regularly and frequently to maintain milk supply and minimize engorgement. (*Parker, et al., 2014*).

Before breastfeeding:- Gentle breast massage from the chest wall toward the nipple area., Cool compresses for up to 20 minutes before breastfeed., Moist warmth for a few minutes may help the milk begin to flow (but will not help with the edema/swelling of engorgement). Some suggest standing in a warm shower right before breastfeed (with shower hitting back rather than breasts) and hand expressing some milk, or immersing the breasts in a bowl or sink filled with warm water.(*Ricci, 2013*).

Avoid using warmth for more than a few minutes as the warmth can increase swelling and inflammation If baby is having difficulty latching due to engorgement, the following things can soften the areola to aid latching, Reverse pressure softening (directions in the link), Hand expression, If the two things are not effective, try pumping for a few minutes with a hand, electric (low setting) or "juice-jar" breast pump.( *Hadley &Evans, 2013*).

While breastfeed:- Gentle breast compressions and massage during the nursing session can reduce engorgement., After breastfeedfor a few minutes to

soften the breast, it may be possible to obtain a better latch by removing baby. *(Parker, et al., 2014)*.

Between feedings:- If the breast is uncomfortably full at the end of a feeding or between feedings, then express milk to comfort so that the breasts do not become overfull., Hand expression may be most helpful (though obviously second to breastfeeding) as this drains the milk ducts better. , woman might also use a hand pump or a quality electric pump on a low setting for no more than 10 minutes (engorged breast tissue is more susceptible to damage). *(Mishell, 2011)*.

A “juice-jar” pump may also be used) Massaging the breast (from the chest wall toward the nipple area) is helpful prior to and during milk expression. It’s not good to let the breasts get too full, but also don’t want to overdo the pumping, as too much pumping will encourage overproduction. If they need to express milk for comfort, that is need to express will likely decrease gradually over time; if it does not, try gradually to decrease the amount of express. *(Hadley & Evans, 2013)*.



**Figure 11:**Cabbage leaves

Available at: *Littleton L.Y, and, Engebretson J.C, (2013)*

Use cold compresses (ice packs over a layer of cloth) between feedings; 20 minutes on, 20 minutes off; repeat as needed. Cabbage leaf compresses can also be helpful. Many women are most comfortable wearing a well-fitting, supportive bra. Avoid tight/ill-fitting bras, as they can lead to plugged ducts and mastitis. Talk to health care provider about using a non-steroidal anti-inflammatory such as ibuprofen (approved by the American Academy of Pediatrics for use in breastfeeding mothers) to relieve pain and inflammation. (Guilberta, et al., 2012).

**AVOID:** Excess stimulation (for example, don't direct a shower spray directly on the breasts). Application of heat to the breasts between feedings. This can increase swelling and inflammation. If use heat to help with milk flow, limit to a few minutes only. Restricting fluids not reduce engorgement. (Bonnema et al., 2013).

Applying cabbage leaf compresses to the breast can be helpful for moderate to severe engorgement. There is little research on this treatment thus far, but there is some evidence that cabbage may work more quickly than ice packs or other treatments, and moms tend to prefer cabbage to ice packs. (Devine, 2012).

Cabbage compresses used for Engorgement. , Extreme cases of oversupply, when the usual measures for decreasing supply (adjusting nursing pattern, nursing "uphill," etc.) are not working during weaning, to reduce women discomfort and decrease milk supply. (Madden, et al., 2013).

Using Cabbage Leaves on the breasts for engorgement or weaning before use cabbage leaves for engorged breasts, that may be cold or at room temperature. Use green or red cabbage. But red cabbage is more likely to leave stains or discoloration behind on nursing bra and breastfeeding clothing., Peel

off the outer layer of leaves. And throw them away. Then, pull off two of the inner leaves and place the head of cabbage back into the refrigerator, so it will be ready the next time you need it. In the sink, use cold water to rinse off the two leaves just removed. They are mainly sure to be clean and free from dirt. (Shih, et al., 2014).

Pesticides and residue. After rinse the leaves, carefully cut out the stem from the center of each leaf without cutting it into two pieces. Keep it as one piece with a slit down the middle. Once remove the stem and cut the slit, the leaves will be able to fit nicely over the breast without covering nipple. Next, place the clean, cabbage leaves on the breast. (Dawson, et al., 2014).

Wrap each leaf around each breast, but leave nipples exposed. By keeping the cabbage off of the nipples, the skin around nipples will stay dry and intact hold the cabbage leaves in place on breast the same way when hold a cold compress. Or, wear a bra to keep the leaves in place of the breast. (Burrows, et al., 2012).

If worried about leaking, put a clean, dry breast pad over nipple on top of the cabbage leaf to soak up the breast milk. Leave the cabbage leaves on breasts for approximately 20 minutes or until they become warm. Then, remove them from breasts. Throw away the wilted leaves and use fresh ones the next time. Repeat this process until begin to get some relief and feel better. (Dawson, et al., 2014).

When to stop using the cabbage leaves, still Breastfeeding or pumping for the child, and just want to use cabbage leaves to help decrease breast swelling and relieve breast engorgement, be careful not to overdo it. Once notice breast are feeling better, and the swelling has gone down, stop using the cabbage on the breast. (Wallwiener, et al., 2012).

While the use of cold compresses or cabbage leaves does help to lessen breast swelling and engorgement, it can also lower milk supply. If continue to use cabbage leaves on the breast after relieve the swelling and engorgement, it's possible to end up with a greater decrease in breast milk supply than were expecting. (*Gardner et al., 2013*).

### **Nursing role in promoting successful lactation & overcome breast engorgement**

Sometimes nurse midwives may engage in the role of managing health service and exercise administrative direction toward the accomplishment of defined goal .In this respect the nurse midwives engage in four basic factor that make up the management process and incorporates a series of problem solving activities or function that include :Planning, organization , and controlling , evaluating . (*WHO. 2011*).

Planning include define goals and objective,determining the strategy for reaching them, and designing a coordinate set of activities for implementing and evaluating them. While in the process of organization the midwives provides a framework for the various aspect of service so that each will run smoothly and accomplish its purpose midwives also act as leader who motivate worker , direct activities , ensure effective two way communication ,resolve conflict and coordinate the plan. (*SpradlyB., 2012*).

Controlling and evaluating the project or programs are one of the most important role of the manger .As controller the midwives monitors the plan and ensure that it stays on course .At the same time she must compare and judge performance and outcomes against previously set goals and standards. (*SpradleyB .&Alleender J., 2012*).

Supervisory function of nursing personal in the postnatal clinic include teaching, counseling, guiding and supporting the staff for those they are responsible. It also include organizing, supervising and evaluating the practical experience of student .More over it include assessing the need of the staff, equipment and supplies. Mother from many culture used galactagogues (breast milk stimulator), and nurse should be aware of these practice, beer, rice , gruel , tea and sesame tea are commonly used postpartum . The mother eating garlic to prevent newborn illness will flavor her breast milk, but will not harm to the newborn. Cultural practices should be respected (*LeiferG ., 2012 and Ayers J., 2011* ).

One of those duties of the nurses in labor unit is to provide uninterrupted unhurried contact between mother and unwrapped baby during the first hour after birth (*UNICEF /WHO.2011*).Emphasize the obligation community and work place as well to empower and support mother to breast feed their babies the first hour following birth is critical, when mother and infant are most alert to one another.(*Mc Lachlan Z ., Milne E ., (2012)* stated that a maternity nurse plays crucial role in providing physical , psychological emotional support and necessary information to women . The nurse midwives should design collaborative for breastfeeding women.

During the birthing unit stay, the nurse must carefully monitor the progress of the breast feeding. A systematic assessment of several breast feeding episode to provide the opportunity to teach the new mother about lactation and breast feeding process , provide anticipatory guidance , and evaluate the need follow up care after discharge . Criteria for evaluating a breast feeding session include maternal &infant cues , latch on , position and let down , nipple condition , infant response , and maternal response . The literature provide previous tool to guide the assessment and documentation of the feeding efforts (*OrshanS ., 2013* ).

**The Latch Scoring Table**

item	0	1	2
<b>L latch</b>	Too sleepy or reluctant No latch achieved	Repeated attempt Hold nipple in mouth Stimulation to suck	Grasp breast Tongue down Lips flanged
<b>An Audible sound</b>	non	A few with stimulation	Spontaneous &intermittent<24 Spontaneous &intermittent>24
<b>T type of nipple</b>	inverted	flat	Soft/ no tender
<b>C comfort (breast nipple)</b>	Engorged , cracked , bleeding, sever discomfort	Filling/reddens/ Small blister Mild /moderate discomfort	No assist from staff Mother able to position &hold infant
<b>H hold (position)</b>	Full assist (staff hold in Infant at breast)	Minimal assist Teach one side Mother does	

**Figure (12):(Littleton L., 2013)**

The nurse can assess the parent ability to identify infant feeding cues Assessment of the mother ability to perceive infant satiety cues. Nurse should evaluate the women patters of rest to ensure that she is getting sufficient sleep to facilitate milk production. This can be difficult because the women are adjuster to the erratic sleep cycle of the newborn. Nurse should remind breast feeding mother to get appropriate rest , which often means sleeping when the infant is sleeping (*Orshan S ., 2012*).

The nurse should perform a detailed nutritional history and assess of the client dietary behaviors to ensure adequate intake and to correct any problem. During the first 6 months of lactation, women 14 to 50 years require

approximately 330 calories / day more than lactating women of the same age .Estimating energy requirement for lactating women in her 7 to 12 months of breast feeding are approximately 400 calories / day more than non-lactatingwomen. A lactating women recommended in dietary allowance for protein is that of anon pregnant,non-lactating women plus 25 g/day of protein. This equals to approximately 71 g/ day of protein. (*NAS, 2012 and Trumbo P., 2013*).

The nurse should review the client fluid intake .Breast feeding mothers should drink 64 to 80 fluid/ day (the same as any other healthy adult). One of the body chemical responses to breast feeding is thirst. A women who is nursing will likely find it essential to have something to drink available while breast feeding to quench the sometimes overwhelming need to drink carrying a container of water at all times can be helpful (*Spicer K., 2012*).

Although the nurse should tailor care to be appropriate for the specific client circumstance, the following section explain appropriate general intervention for various issue related to breast feeding (*OrshanS.,2011*).According to *AAP (2012)* criteria , the infant weight should remain within 10% of his birth weight and the infant should feed at least 8to 10 times per day by the 4 day of life . Infant with a weight loss of more than 7% or inadequate output require more than extensive evaluation of breast.

Feeding correct is a potential problem. The nurse can assist the couplet experiencing at 7% to 9% infant weight loss with technique to increase milk production and promote better milk transfer. The nurse will provide assistance with breast feeding every 2 hours for the next 24 hours and may recheck the new born weight in the next day (*Davidson M.,2014*).

The nurse should assist with breast feeding by helping secure privacy for the family by pulling the privacy curtain or closing the door to the room . She should assist the women find a comfortable breast feeding position (*OrshanS .,2013*).

New born frequently require assistance in awakening to feed at least 8 times a day during 1 week of life . Although the quiet alert state is ideal for latch on many newborn do not have the ability to transition to this state independent at this point. The nurse can utilize knowledge of new born behavior states as recommended by (*KarelK ., 2014*) TO assist the mother with technique to awaken a sleepy baby , calm a crying infant , or calm an over stimulated infant who infant who has close down to additional stimuli.

Technique that are helpful in arousing baby to the quiet state include undressing, cleaning the dipper, lightly touching, speaking, turning on light , and placing the baby skin to skin on the mother chest .Vestibular stimulation may be used where the mother support the baby buttock in one hand and the baby neck in the other and gently rock the new born up and down from lying to sitting and facing the mother (*Karl D ., 2014*).

Over aroused new born that are crying or who exhibit closed down behavior such as furrowed eyebrow , tightly closed eyes , and tensed muscle require calming technique to bring them to a quiet alert state . Calming technique include lowering the light and noise level. Talking or singing soft massage, and wrapping the baby snugly in a flexed position with the hand near the mouth. Vestibular stimulation and skin to skin contact are frequently helpful in this situation as well. Once the baby is calm and awake, the mother can position the baby at the breast and encourage nursing (*KarelD ., 2014&Davidson M .,2014*).

The health care provider support breast feeding that provided by sustained by their knowledge, skill, and commitment. This will be a part of society commitment to appropriate feeding of infant and young children. Since nurses are begin a close contact with puerperal women and her family, they have a great chance for the educational aspect. The nurse should give the puerperal women the appropriate health education and necessary information about puerperium. Therefore, proper preparation, education and care during puerperium as well as fetal wellbeing (*Churchill H., 2014*).

Effective health education requires not only enough knowledge about puerperium and its management, but also communication skills understanding, sensitivity and objectivity on the part of the nurse. *Glasson e al.*, added that nurses should plan the educational activities best suited to a given situation, using appropriate language and terminology for mother. She should also use teaching aids as charts, models, poster, pamphlets and film to illustrate teaching (*Hassan M., 2012*).

Nurses play a major role in breast feeding education and support for new born parents. Nurses often work with lactation consultants in hospitals, physician office or community setting. Although the vast majority are registered nurses, lactation consultant come from a variety of educational background such as nutrition, physical, and educational therapy, home economics, psychology, social work, education or the basic sciences (*Wilson W., Lowdermilk P. 2015*).

Nurse in prenatal and postnatal setting plays a crucial role in educate the mother about exclusive breast feeding, advantage of breast feeding for baby mother & society, breast feeding position & latching, infant hunger cues, infant satiety cues, breast & breast feeding problem and how to avoid & overcome them.

Contribution in a research is very essential for both the nurse and midwives. It involved participating in different types of project related to child bearing as a member of research team. In addition they are expected to be engaged socio -culture research for the purpose of solving problem related to pregnancy and child birth (**Spradley B &Alleender J 2012**)

## Materials and Method

### **Study design:-**

A quasi-experimental (equivalent pre-posttest group) study design was adopted in the current study.

**Setting of the study:** - The study carried out at postnatal-unit affiliated in Obstetrics and Gynecology department at Benha university hospital that presented a comprehensive medical treatment, support & follow up to achieve health and wellbeing for women.

### **Sampling:**

**Type of sample:-**A purposive sample.

**Size and technique of sample:** - A total 100 postnatal women. Who delivered five days ago and are recruited after their acceptance to participate in the study. They were randomly assigned into two groups (50 for each). The first 50 women were recruited firstly as a control group to avoid bias of sampling, they had routine care group, and then the next 50 women were included in the cabbage leaves (study group). The postnatal women with breast engorgement were enrolled based on the inclusion and exclusion criteria.

**Inclusion criteria:** Postnatal mothers within 5 days of post-natal period with the complaints of breast engorgement and willingness to participate in the study.

**Exclusion criteria:** women who had breast abscess, mastitis, infection in the breast.

**Tools for data collection:-**

Four tools were developed to collect data:

**Tool (1): structured interviewing questionnaire sheet:**

This tool was developed by the researcher after extensive literature review and it includes two parts.

**First part:**

Contained questions related to socio-demographic characteristics e.g. (age, residence and educational qualification etc.....,)

**Second part:**

Contained data related to signs and symptoms of breast engorgement.

**Tool(2) : Six-point engorgement scale**

Six-point engorgement scale is used to assess the degree of breast engorgement with scoring ranges from 1 to 6. Postnatal women response to the following questions, score as: (1) for soft and no changes in breast, score (2) for slight changes in the breast, score (3) for firm and no tender breast, score (4) for firm, and beginning tenderness in breast, score (5) for firm and tender of the breast, and score (6) for very firm and very tender. (*Engbretson J.C., 2011*)

**Tool(3): visual analogue rating scale:**

Is a numeric rating scale of the intensity of the pain rating from (0-3) according to (*Lafoy&Geden .,2000*) the score zero (0) indicates no pain and the top score (3) indicates the worst possible pain. It is used by the researcher to evaluate pain associated with breast engorgement; it was scored as:

No pain-----0

Mild pain score ----- (1)

Moderate pain score ----- (2)

Sever pain ----- (3).

**Tool(4): Breast redness and edema around areola assessment scale :**

Was used by the researcher to evaluate redness and edema, associated with breast engorgement; It was scored as

**Redness scoring:**

No redness-----0

Mild -----Redness reach around areola by 1cm.

Moderate ----- Redness reach around areola by 2cm.

Sever ----- Redness reach around areola more than2cm.

**Edema scoring:**

No redness-----0

Mild -----edema reach around areola by 1cm.

Moderate -----edema reach around areola by 2cm.

Sever -----edema reach around areola more than2cm.

**Ethical considerations:** - An official permission was taken from the postnatal women who met the inclusion criteria and informed them about the aim of the current study in order to obtain their acceptance to share in the study. An oral consent was obtained from postnatal women willing to participate in the study. Confidentiality and anonymity were assured through coding the data.

**Reliability and validity of the tool:** - The tools designed by the researcher and revised by a panel of (3) experts in the field of maternity health nursing to content validity. Regarding maternal structured interviewing questionnaire, modifications were carried out according to the panel judgment on clarity of the sentences and appropriateness of the content. Reliability test was assessed by applying the questionnaire .reliability was done using cronbach's alpha test ( $r=0.864$ ).

**Pilot study;-**

Was done on 10% of the sample (100) women to assess the feasibility and clarity of the tools and determine the needed time to answer the questions. The postnatal women were informed about the aim of the study before the intervention. It revealed that, the average length of time needed to complete the maternal structured interview schedule; was approximately 30 minutes with each postnatal woman. Based on its result changes were carried out. The women included in the pilot study were excluded from the study sample according the necessary modifications were done in the form of adding or mission of some questions.

**Procedure;-**

The study was conducted from a period of six months from the beginning of January 2017 to the end of June 2017. A written permission from the authority of Benha university hospital was obtained before conducting the study. After that, acceptance of women who participated in the study was obtained. The researcher introduced herself to postnatal women who met the inclusion criteria and informed them about the purpose of the research obtain their acceptance to participate in the research and to have their cooperation. The researcher was

constructed and prepared of the different data collection tools. Data collection was carried out through three phases:

Interviewing and assessment phase: implementation phase, and evaluation phase.

**Interviewing and assessment phase:** In this phase, data were collected in the postnatal ward from 9 AM to 2 PM, three days per week. The postnatal women were enrolled based on the inclusion and exclusion criteria. The identification data and obstetric characteristics of each subject were recorded in a validated subject data sheet. This interview and assessment phase took about 30minutes for each woman; the postnatal women were asked in a simple Arabic language and documented her answer in the tools utilized.

**Implementation phase:** In this phase, the selected women were randomly assigned into two groups (50 for each). As during first three months all women with previous mentioned criteria was included in the control group. While in the second three months all women with previous mentioned criteria was included in the study group.

For control group: they had the routine care and health education provided by nurses.

Study group were encouraged to administer cabbage leaves treatment for reducing breast engorgement. Cabbage leaves rinsed carefully before use. It was done by applying a small piece of cabbage leaf on the skin to test sensitivity you mean (patch test) before starting the treatment. Cabbage leaves were refrigerated in the freezer for approximately 20-30 minutes before application or cabbage may be applied warm in room temperature. Cabbage leaves applied directly to breasts, wearing them inside the bra. Cabbage leaves were placed inside the women bra for 15-20 minutes. Remove wilted leaves and reapply

fresh leaves. The duration of each intervention was 15-20 minutes. If the baby is unable to feed frequently enough, then fully drain the breasts once or twice daily with an effective breast pump until engorgement disappears. Evaluation phase: In this phase, all postnatal women in the study group were evaluated for the levels of breast engorgement, symptoms, pain, and the post-test consumed about 15-20 min for each woman. Also direct telephone contact between the researcher and women was carried out to determine exact appointment for measuring post-test at post-natal clinic. All postnatal women are permitted to ask questions to clarify any statement that she did not understand. The researcher also recorded any complaints or needs, and offered referral to obstetric department.

### **Evaluation phase:**

For both study and control group pain score, redness and edema were evaluated for different three times: Firstly at the pre-intervention phase, secondary, after three days of intervention and, finally after five days of intervention

### **Administrative design**

Official permission to conduct the study was obtained from responsible authorities after explanation of the purpose study.

### **Statistical Design**

The data were collected computerized, revised, categorized, tabulated, analyzed and presented in descriptive and associated statistical by using the statistical software spss version. The necessary tables were then prepared and statistical formulas were used.

The following statistical measures were used:

Descriptive measures include: percentage, stander deviation

Statistical test: - t test for analysis of quantitate variables

Graphical presentation: - include Bar-chart

The level of significance selected for this study was p equal to or less than 0.05

### **Limitation of the study**

The timing ofSession argument was difficult due to difference of attendance of cases.

Some women refused to communicate because of fearing and anxiety from pain and were skipped from the study.

## RESULTS

The study findings are presented in the following parts:

**PART I**            Socio demographic data and family history of the sample (table 1,2)

**PART II.**        Distribution of antenatal history of the studied sample ( table 3)

**PART III.**      Distribution of pain score ,redness & edema of breast at pre-  
intervention phase among study & control groups (table 4,5)& figure  
(1)

**Part IV**        Distribution of pain score , redness & edema of breast at third day after  
intervention among study & control groups (table 6,7) & figure (2)

**Part V**        Distribution of pain score , redness & edema of breast at fifth day after  
intervention among study & control groups (table 8,9)& figure (3)

**Table (1): Distribution of the studied sample according to socio-demographic data (n=100).**

General characteristics	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Age (years)</b>						
18-22	18	36.0%	14	28.0%	1.04	>0.05
23-27	25	50.0%	26	52.0%		
28-32	7	14.0%	10	20.0%		
<b>Mean ±SD</b>	25.89±5.56		26.03±5.98			
<b>Educational qualification</b>						
Illiterate	6	12.0%	6	12.0%	0.063	>0.05
Read and write	10	20.0%	10	20.0%		
Secondary	21	42.0%	22	44.0%		
University	13	26.0%	12	24.0%		
<b>Residence</b>						
Rural	18	36.0%	17	34.0%	0.044	>0.05
Urban	32	64.0%	33	66.0%		
<b>Occupation</b>						
Yes	26	52.0%	21	42.0%	1.004	>0.05
No	24	48.0%	29	58.0%		
<b>Age at marriage (years )</b>						
Less than 18	25	50.0%	24	48.0%	0.730	>0.05
18-25	20	40.0%	23	46.0%		
25-27	5	10.0%	3	6.0%		
<b>Parity</b>						
Prime	30	63%	27	60%	0.044	>0.05
Multi	20	37%	23	40%		
<b>Mean ±SD</b>	1.51±0.6		1.8±0.9			

Significance,  $p>0.05$ 

**Table (1):** illustrates no statistical significant difference between study and control groups regarding age, educational qualification, residence, occupation, and their age at marriage ( $p>0.05$ ).

**Table (2): Distribution of studied sample according to family history (n=100).**

Family history	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Type of family</b>						
Nuclear	25	50.0%	23	46.0%	0.160	>0.05
Extended	25	50.0%	27	54.0%		
<b>Number of family members</b>						
<b>1-3</b>	18	36.0%	13	26.0%	1.19	>0.05
<b>3-5</b>	21	42.0%	25	50.0%		
<b>&gt;5</b>	11	22.0%	12	24.0%		
<b>Family income</b>						
Enough	15	30.0%	14	28.0%	0.049	>0.05
Not enough	35	70.0%	36	72.0%		

Significance,  $p > 0.05$

**Table (2):** shows no statistical significant difference between study and control groups regarding type of family, number of family and ,family income ( $p > 0.05$ ).

**Table (3): Distribution of studied sample according to antenatal history (n=100).**

Antenatal history	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Number of antenatal visit</b>						
No	6	12.0%	4	8.0%	3.33	>0.05
1-2 times	22	44.0%	19	38.0%		
3-4 times	16	32.0%	14	28.0%		
>4 times	6	12.0%	13	26.0%		
<b>Breast feeding education</b>						
Yes	29	58.0%	21	42.0%	2.56	>0.05
No	21	42.0%	29	58.0%		
<b>Breast care education</b>						
Yes	29	58.0%	21	42.0%	0.040	>0.05
No	21	42.0%	29	58.0%		
<b>Complication of Breast feeding education</b>						
Yes	22	44.0%	21	42.0%	0.041	>0.05
No	28	56.0%	29	58.0%		
<b>Antenatal preparation for breast feeding</b>						
Yes	19	38.0%	18	36.0%	0.043	>0.05
No	31	62.0%	32	64.0%		

Significance,  $p > 0.05$

**Table (3):** shows no statistical significant difference between study and control groups regarding number of antenatal visits, antenatal preparation for breast feeding ( $p > 0.05$ ).

**Table (4): Distribution of breast pain score at pre-intervention phase among study and control groups (n=100).**

	Study group		Control group		Chi square test	P value
	N=50		N=50			
	No	%	No	%		
<b>Pain</b>						
No	0	0.00	0	0.0	1.33	>0.05
Mild	8	16.0%	7	14.0%		
Moderate	5	10.0%	9	18.0%		
Sever	37	74.0%	34	68.0%		

**Significance,  $p > 0.05$**

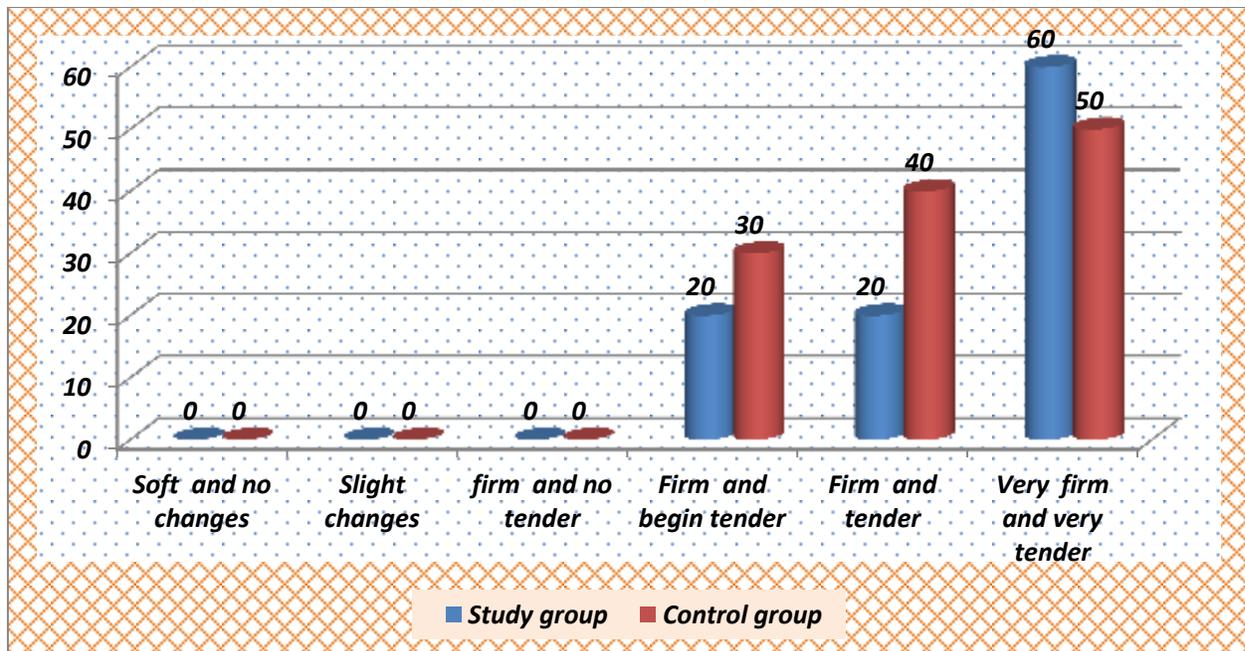
**Table (4):** indicates no statistical significant difference between study and control groups regarding breast pain score at pre-intervention phase ( $p > 0.05$ ).

**Table (5): Distribution of breast redness and edema at pre-intervention phase among study and control groups (n=100).**

	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Breast redness</b>						
No	0	0.00	0	0.0	3.84	>0.05
Mild	1	2.0%	6	12.0%		
Moderate	11	22.0%	10	20.0%		
Sever	38	76.0%	34	68.0%		
<b>Breast edema</b>						
No	0	0.00	0	0.0	0.382	>0.05
Mild	7	14.0%	5	10.0%		
Moderate	16	32.0%	17	34.0%		
sever	27	54.0%	28	56.0%		

Significance,  $p>0.05$

**Table (5):** indicates no statistical significant difference between study and control group regarding their breast redness and edema at pre-intervention phase ( $p>0.05$ ).



**Figure (1): percentage distribution of breast milk engorgement score at the pre-intervention among studied women of study and control groups.**

**Table (6): Distribution of breast tenderness and pain score at the third day after-intervention among study and control groups(n=100).**

	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Pain</b>						
No	25	50.0%	6	12.0%	17.98	<0.001**
Mild	17	34.0%	24	48.0%		
Moderate	8	16.0%	20	40.0%		
Sever	0	0.0	0	0.0		

Significance,  $p < 0.001$

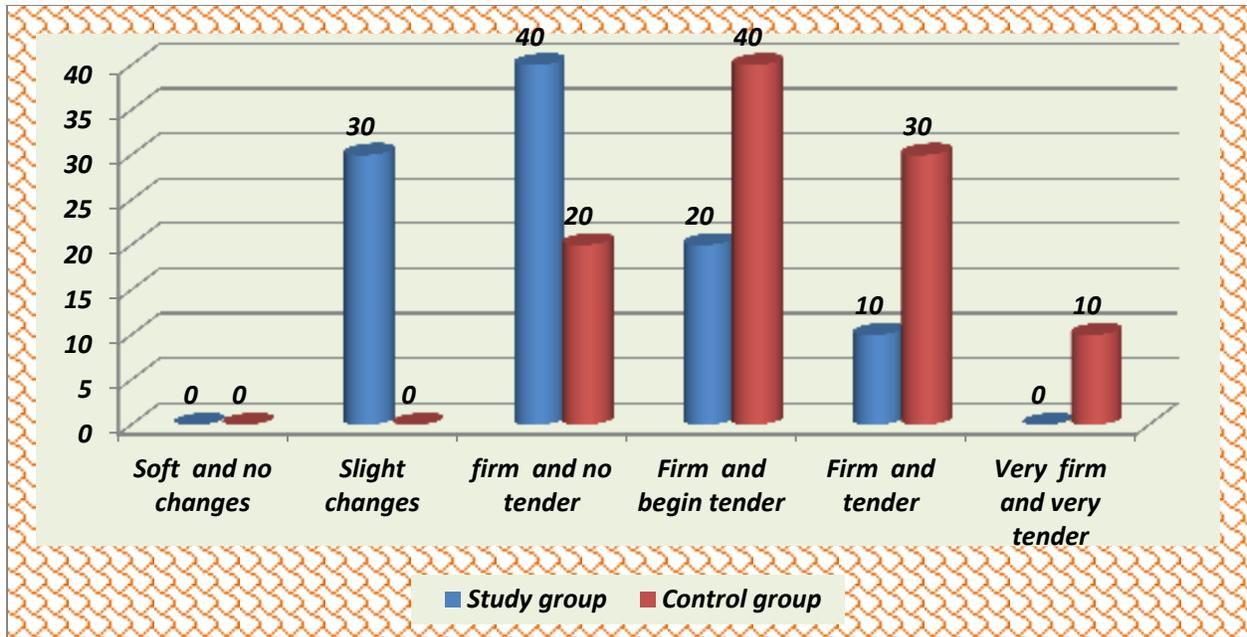
**Table (6):** indicates a highly statistical significant difference between study and control groups regarding breast tenderness and pain score at the third day after intervention phase ( $p < 0.001^{**}$ ).

**Table (7): Distribution of breast redness and edema at the third day after-intervention among study and control groups(n=100).**

	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Breast redness</b>						
No	32	64.0%	7	14.0%	34.96	<0.001**
Mild	14	28.0%	14	28.0%		
Moderate	4	8.0%	29	58.0%		
Sever	0	0.0	0	0.0		
<b>Breast edema</b>						
No	33	66.0%	6	12.0%	36.29	<0.001**
Mild	13	26.0%	17	34.0%		
Moderate	4	8.0%	27	54.0%		
sever	0	0.0	0	0.0		

**Significance, p<0.001**

**Table (7):** indicates a highly statistical significant difference between study and control groups regarding breast redness and edema at the third day after intervention phase (p<0.001\*\*).



**Figure (2):** percentage distribution of breast milk engorgement score after three days of intervention among studied women at both study and control group.

**Table (8): Distribution of breast tenderness and pain score at the fifth day after-intervention among study and control groups(n=100).**

	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Pain</b>						
No	36	72.0%	0	0.0%	59.53	<0.001**
Mild	12	24.0%	27	54.0%		
Moderate	2	4.0%	19	38.0%		
Sever	0	0.0%	4	8.0%		

**Significance,  $p < 0.001$**

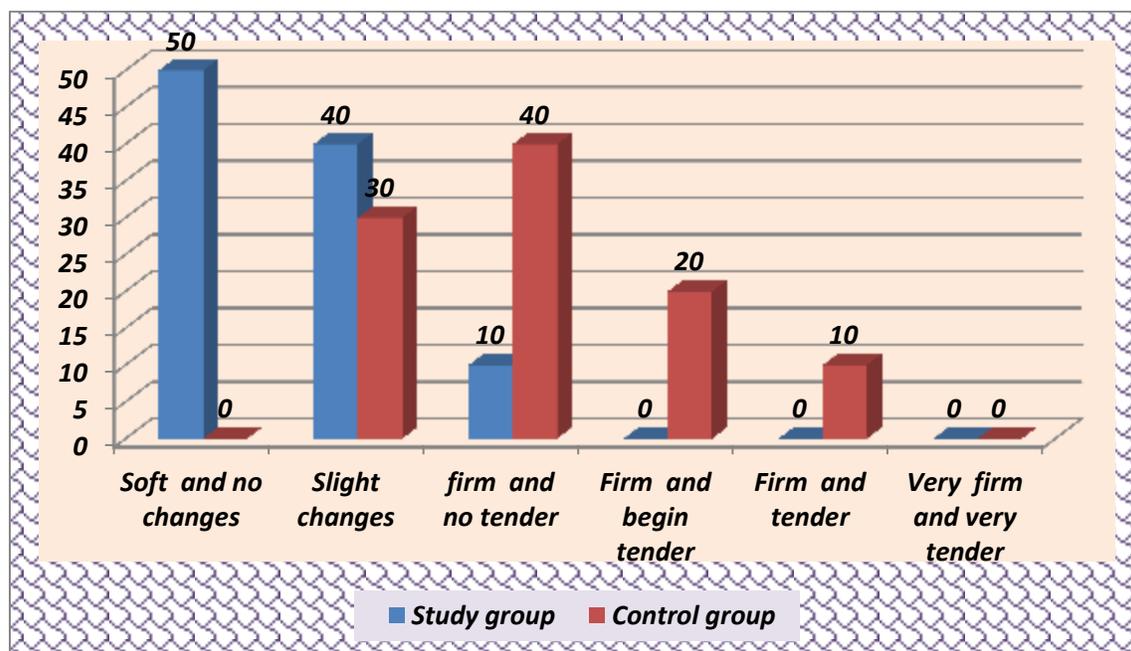
**Table (8):** indicates a highly statistical significant difference between study and control groups regarding breast tenderness and pain score at the fifth day after intervention phase ( $p < 0.001^{**}$ ).

**Table (9): Distribution of breast redness and edema at the fifth day after-intervention among both study and control group (n=100).**

	Study group N=50		Control group N=50		Chi square test	P value
	No	%	No	%		
<b>Breast redness</b>						
No	46	92.0%	1	2.0%	83.28	<0.001**
Mild	4	8.0%	16	32.0%		
Moderate	0	0.0%	33	66.0%		
Sever	0	0.0	0	0.0		
<b>Breast edema</b>						
No	37	74.0%	3	6.0%	54.68	<0.001**
Mild	13	26.0%	25	50.0%		
Moderate	0	0.0%	22	44.0%		
sever	0	0.0	0	0.0		

**Significance,  $p < 0.001$**

**Table (9):** indicates a highly statistical significant difference between study and control groups regarding breast redness and edema at the fifth day after intervention phase ( $p < 0.001^{**}$ ).



**Figure (3):** percentage distribution of breast milk engorgement score after five days of intervention among studied women at both study and control group.

## Discussion

Breast engorgement is a common problem among postnatal women. It is influenced by the confidence and continuation of breast feeding in the first week following birth. In addition, improper infant sucking, position, abrasion of the nipple and mastitis can occur. Cabbage leaf used for women with breast engorgement to reduce pain, the firmness of the engorged breasts, and increased the duration of breast feeding. Also, the use of cabbage leaves compresses on the engorged breasts can promote vasodilatation, and increases circulation, and volume of milk in the breasts. Therefore, the current study aimed to assess the effect of cabbage leaves on relief breast engorgement among postnatal women. (Gauss F., 2014). Intervention towards relieving pain and other discomfort related to breast engorgement. Concerning postpartum pain, cabbage leaves are used as alternative to relief discomfort (Pediatric advisor., 2011, Henderson, McDonalds S., 2012).

The present study was conducted to study the effect of cabbage leaves on relief of breast engorgement among postnatal women. The study highlights the need for strengthening mother training as well as pointing out to the extent their knowledge and practice this lead to safe breast feeding and prevent engorgement.

The present study shows that the mean age of the studied sample was  $25.8 \pm 5.5$  years old and 22% of them were secondary educated. This comes in agreement with a study performed by (Eapen M, & Fernandez S., 2013) regarding the effectiveness of an information booklet on measures for managing breast engorgement. They reported that the highest percentage of mothers were in the age group of (23-27) years old, 36% in the age group of (18-22) years, 14% percent were between (28-

32)years. The educational status reveals that the majority of them completed secondary education, and 20% percent completed primary school.

Also,(*Thulier& Mercer, 2013*) added that Social Role Preparation, Mother-Infant Attachment Promotion, Mother-Infant Interaction Focused Education, Infant Care giving Instruction, and Therapeutic Relationships are the five environmental variables that were described in Mercer's BAM theoretical model as having the potential to influence the process of becoming a mother .In addition to(*Mercer & Walker, 2012*).Added that the breastfeeding education from mother receive can be a factor that affects the process of becoming a mother. Obtaining information on a mother's baseline breastfeeding knowledge can provide breastfeeding educators with information to effective plan educational breastfeeding programs that address areas of strengths and weaknesses. The results of this study expand on the information available from the perspective of first-time, low-income pregnant women concerning their breastfeeding knowledge base.

The present study shows that the family income in the third of the study group not enough that is agree with (*Centers for American Progress, 2013*).The Women from lower social economic status are more likely to lack knowledge about the benefits of breastfeeding, mainly in the United States. This information supports a need for educational interventions that are aimed to provide low-income pregnant women with breastfeeding information that emphasizes the benefits of breastfeeding.

Also, (*Okolo S.N, 2011*) conducted on current breast feeding knowledge, and practices of mothers in five rural communities in the savannah region of Nigeria. The knowledge and practice regarding breast

feeding among 100 mothers in five rural communities in Toto local Government in Nassarwastate. 'Nigeriawere investigated using a questionnaire. More than half were illiterate while more than third had either primary or secondary school education from giving babies colostrum's, which was seen amongst with high level of educations ( $P < 0.001$ ) other practices investigated such as exclusive breast feeding, demand feeding" rooming in" and time of first breast feeding and time of breast feed were not influenced by the mothers level of education.

Also, (*Mercer & Walker, 2012*).concluded that benefit of breastfeed and time of initiate breast feeding were not influenced by the mother level of education. All mother attended to antenatal clinic but only more than third received instruction from health worker on breastfeeding and less than half received from closer at home.

The present study stated that more than half of the study group had no information about benefits of breast feeding for the mother. The majority of both study & control group had incorrect information about benefits of breast feeding. that is agree with (*Potter & Perry, 2012*)Concluded that maternal knowledge and practice of breast feeding was influenced by individual characteristics of the mother such as age and level of education (personal factors), type of employment (situational influences) and support offered by health workers, spouse and family members (interpersonal influences).

Also, (*Schlickau& Wilson, 2012*) concluded that the findings have been reported in Latin America where a review of literature on factors influencing breast feeding practices of mothers were found to be the same as the determinants of health promoting behavior according to the health promotion model .

Also, (Motee et al., 2012) said that proper breastfeeding practices are effective ways for reducing childhood morbidity and mortality. While many mothers understand the importance of breastfeeding, others are less knowledgeable about the benefits of breastfeeding. Also, (Lakantrée et al., 2011) suggested that the main source of information on breast feeding was from health care providers. Study done in Uganda also reported that most mothers learnt about breast feeding from health care workers.

(Gunasekaran et al., 2011) recommended that breast feeding information on printed materials such as posters and brochures increased breast feeding awareness among mothers in the study. Provision of such materials is however not enough. Direct counseling of mothers enables health workers to answer questions mothers may have and correct misconceptions about breast feeding. This has been found to have more impact than printed and audio visual material .

The present study clarify that less than quarter of the study group has visit ante-natal clinic for one to two times that is not enough for fully examination. That is agree with (KDHS, 2008/2009). When breast feeding information obtained directly from the nurses is considered, very little has changed since release of the country's most recent health demographics survey which mothers received information on breast feeding during ANC attendance. Focused antenatal care requires that at every visit, an expectant mother should undergo complete head to toe examination, including breast examination. This presents an important opportunity for individual counseling of mothers on breast feeding and teaching on how to examine the breast. Breastfeeding during antenatal counseling was found to be inadequate for the population Also, (Gunasekaran et al., 2011). Suggested that mother not aware of benefits of breast feeding to

their own health. Less than half of the mothers sampled could mention at least one maternal benefit of breast feeding.

(*WHO, 2012*) illustrate that the majority of randomly selected mothers should mention at least two benefits of breast feeding to both the infant and the mother. A study done in Nakuru Kenya reported a large percentage of mothers were not aware of maternal benefits of breast feeding. In addition, they believed health problems would occur in women who practice exclusive breast feeding (*Webb-Girad et al, 2011*). illustrate that the women are unaware of benefits of the practice to their own health. This could imply that more emphasis has been placed on benefits of breast milk to the baby and women.

(*Marewa et al, 2012*). Disagree with present study that said that the mothers sampled in a study believed breast feeding improved the well-being of the mothers. The health promotion model postulates that individuals are more likely to engage in health promoting behavior if they are fully aware of its benefits. (*Marriner & Raile, 2013*). Said that if maternal benefits of breast feeding were similarly emphasized, it might have an impact on improving mothers' attitudes to breast feeding and therefore increase the rates of the practice. Age was identified as a barrier to acquisition of knowledge about breast feeding. Older and more educated mothers knew benefits of breast feeding. The researcher hypothesis that this group of mothers was more eager to learn and receptive of the information given by the health workers during antenatal visits. Young and less educated mothers however, had less knowledge on breast feeding. Young people generally are reluctant to seek health service for their sexual and reproductive health needs. (*Atuyambe et al, 2011*). said that adolescent mothers made fewer visits and had poorer care of the newborn compared to adult mothers.

(*EkambaramK .,2011*)conducted a study to assess the knowledge attitude and practices about breast feeding in Bihar. Study revealed that two third of mothers discarded the colostrums on their own. One- third of the mothers discarded the colostrums on the advice of their elders. The main reason for this was the belief that colostrums is not good for the health of the newborn. The study reveals that adequate knowledge to the mothers regarding breast feeding is necessary to prevent the occurrence of breast engorgement.

(*Ekambaramk.,2011*) added that study revealed lack of knowledge of health care providers in approaching the problems related to breastfeeding is also one of the main issues. The rate of breastfeeding is low in the worldwide The mother's decision isn't only factor in early termination of breastfeeding, nipple soreness, breast engorgement, infant's restlessness, doubts about the insufficiency of breast milk and beliefs regarding early termination in the society are the other factors. This study which was designed to find the knowledge level of health professionals about breast milk and breastfeeding is the most frequent problem regarding to exclusive breastfeeding is maternal employment. The other factors include maternal or infants' health problems, different beliefs about child's nutrition and sociocultural factors.

*Also,(Atuyambe et al, 2011)* showed thatthe variables that correlate significantly with breast engorgement and that might be amenable to nursing interventions. Data on the initiation of feeding, frequency of feedings, feeding duration, rate of milk maturation, and supplementation were obtained of 54 women. These variables were found to be significantly correlated with breast engorgement.

The present study results revealed that the most of majority of breast engorgement in control group of the mothers whereas in the study group it is more than half knows that breast engorgement is considered one of the most serious problems which interfere with breast feeding. Less than half from study & control group do not know about the causes of it. The majority of study & control group reported correct but incomplete answer regarding signs & symptoms of breast engorgement. While comparing the results that of the (*PadmasreeSR ,et al., 2012*).added that the findings were more or less consistent in nature; it may be due to influence of extraneous variables. Comparing the incidence of breast engorgement, less than quarter of mothers only reported breast engorgement in study group where as the half of mother in the Control group, which shows remarkable decrease in the incidence of breast engorgement in the former group.

Concerning symptoms of breast engorgement, the current study illustrated that more than twenty percent of each group were suffered from firm and tender breasts (Level four of engorgement). Also, there was a statistically significant difference between the control and study symptoms and levels of breast engorgement for the two groups ( $p < .05^*$ ). The methods of nursing care (cabbage leaves compresses) for the management of breast engorgement was effective. This agree with (*Motee et ., 2012*).They mentioned that each treatment was applied for 30 minutes for three times daily for two days. Treatment was effective in reducing pain and engorgement.

In addition to, the current study reported that, pain score for the cabbage group reduced more than half. While the group who use routine care, their pain score reduced less than third during the post-intervention. This agree with (*Snowden HM et al., 2011*)who reviewed research

studies to determine the effects of several interventions to relieve symptoms of breast engorgement among breastfeeding women and found that cabbage leaves were effective in the treatment of this painful condition. Cabbage leaves were preferred by the mothers. The advantage of using cabbage leaves is its low cost and convenience as compared to other medical regimens.

*Also, (Roberts KL et al., 2013)* mention that when compared the efficiency of cabbage leaf extract with the treatment of breast engorgement in lactating women; they concluded that both the groups received equal relief from the discomfort and the hardness in breast tissue decreased substantially.

*(Hill PD & Humenick S., 2014)* who reported that the use of cabbage leaves for engorgement is not effective. The study involved 120 mothers, who took part in the research during their post-partum hospital stay. 60 of the women applied cabbage leaves after a feed, leaving them in place until they had reached body temperature. This process was repeated for a total of four feeds, and after each application the women were asked to report whether they felt their breasts were engorged. A control group of 60 women, who did not use cabbage leaves, were also asked to report whether their breasts were engorged. These differences between the two groups is very small indeed, and it is not statistically significant, so the only appropriate conclusion is that there is no support for the hypothesis that cabbage leaves prevent engorgement.

*(Nikodem et al., 2012)* conducted a randomized, controlled study evaluating the effect of cabbage leaf application on mothers' perceptions of breast engorgement and the influence of the cabbage leaf treatment on breastfeeding practices, and reported that women who received the

cabbage leaf application were more likely to breastfeed exclusively and for a longer period of time, but it was not clear whether the greater breastfeeding success might have been due to some beneficial effect of the cabbage leaf application or to secondary reassurance and improved confidence and self-esteem in the mothers.

(*Snowden et al., 2011*) clarify a variety of clinical trials for the treatment of breast engorgement and reported that in three studies which used cabbage leaves or cabbage leaf extracts, no overall benefit was found and since cabbage extract and placebo creams were equally effective, the alleviation in symptoms might have been brought about by other factors such as breast massage.

Also, (*Schlickau & Wilson, 2012*) clarify that we cannot rule out the possibility that cabbage leaves had a direct effect on breast engorgement, and that this may have contributed to the increased breastfeeding success.

(*Roberts KL et al., 2013*) said that the study has examined the effects of cabbage leaves in various ways, in an attempt to work out why exactly they are believed to relieve engorgement. One hypothesis is that they are cabbage may be cool or in room temperature. The results of one study support this: a study group comparing chilled gel packs with cabbage leaves found them to be equally effective at relieving pain.

(*Hill PD., 2014*) revealed that cabbage extract composition has now been found which is effective for accelerating lactation cessation in both breastfeeding and non-breastfeeding mothers and in alleviating the symptoms of breast engorgement.

The present study clarified that pain score of breast tenderness and edema disappear and highly statistical significant after intervention with

cabbage leaves. That is agree with (*Roberts, Reiter & Schuster., 2013*) conclude the evidence for the effectiveness of cabbage leaves is highly effective for reducing pain and improve breastfeeding. No one has yet been able to elucidate how they might work, and every study conducted so far has concluded that positive results are more likely to be due to the psychological impact of medical attention than a magical property of the cabbage. Applying them may be of limited psychological benefit.

Regarding the study objective, (*Reiter S & Schuster M., 2013*) the use of non-pharmacological therapies to relieve the pain from breast engorgement, and according to the pre-established criteria, we identified the following therapeutic resources: a cabbage leaves, According to (*G. Saeed, 2012*) added that the application of cabbage leaves at different temperatures is a technique used to treat engorged breasts. However, the studies present conflicting results and none of them used a placebo or control group without treatment .Furthermore, we could discuss if the effects in the relief of symptoms or pain secondary to the engorgement relief are due to the cabbage leaf or to its temperature, considering that one study has found similar results for chilled cabbage leaves and a cold gel bag

*Also, (Sales AN, Vieira GO., 2013)* said that the use of the cabbage leave in clinical practice is the need to perform an effective sterilization of the leave to avoid any bacterial proliferation, which would produce an infectious process, through the nipple pores or trauma is very effected compared with the application of local heat directly on the engorge breasts promotes vasodilatation, and thus increases circulation and, consequently, the volume of milk in the breasts, which, physiologically, would lead to an increase in the engorgement. However, no studies aimed at studying the hot compress specifically. It was more effective for pain

relief when compared to the use of cabbage leaves, although this was a quasi-experimental study.

(*Arora S, Vatsa M., 2014.*) Added that the cold compress is responsible for reducing the milk production when applied over the engorged breast. The cold temperature causes temporary vasoconstriction that reduced the blood flow, edema and lymphatic drainage thus reducing the production of milk. In the studied articles, cold compresses were reported to produce effective pain relief, but data was presented regarding the milk production after its application.

Supporting to these findings study conducted by (*Ruba.A., 2014*) found that prime gravid mothers were more prone to develop breast engorgement than multigravida..Majority of postnatal women were breast feeding. There are no supportive or contradictory studies found in baseline data of mode of delivery and type of feeding. The findings of the pre- treatment scores of pain by using breast engorgement pain and severity rating scale were found to be severe pain in postnatal women. After application of cabbage leaves the post test scores of pain was absent of postnatal women and experienced slight pain in the control group.

The similar study was conducted by (*Robert KL., 2013*) in Australia. The study findings showed that there was a statistically reduction in pain score of cabbage leaf and gel packs ( $p=0.0001$ ). And concluded that gel packs and cabbage leaves were both effective treatments in reducing pain associated with breast engorgement. Another study supported the same results which was conducted by (*Wong BB, Koh S, 2012*) which concluded that cabbage leaf application reduced pain associated with breast engorgement.

(*Rober KL, Reiter M, Diane., 2013*) concluded that which revealed a statistically significant reduction in pain scores for both room temperature and chilled cabbage leaves ( $p=0.0001$ ). But Contradictory to these findings the study conducted by (*Smriti A., 2011*) which found that hot and cold compress was more effective at  $p=(0.007)$ .

In addition to( *Reiter MA., 2012*) were contradictory to that of the study. The study was conducted to compare the effectiveness of chilled and warm cabbage leaves in reducing the discomfort in postnatal mothers. It found that there was no difference in the post- treatment ratings for both treatments ( $p=0.04$ ) and concluded that it is not necessary to chill cabbage leaves before use.

This finding is in consistent with (*Gauss M, 2011*) who mentioned that breasts may feel swollen, fuller, and heavier. In some cases, women describe the breasts as being warm and appear hard and shiny. Women may notify some redness of the skin; get a slight fever and experience chills it is highly effective when apply cabbage leaves for reduce signs &symptom of engorgement.

In the present study, shows that there was a statistically significant difference between the pretest and posttest of the pain score and engorgement score for the cabbage group and the routine care group was highly significant ( $p < .001^*$ ).That is agree with (*Wong P ., 2011*) there are several approaches for the treatments of breast engorgement have been explored as; cabbage compresses that is highly significant ( $p < .001^*$ ).In Taiwan a Randomized Controlled Trial .According to his colleges, they stated that, cabbage leaf treatment used on women with breast engorgement to reduce pain, the firmness of the engorged breasts and increased the duration of breastfeeding.

Also, (*Saini H., 2012*) added that The engorgement score reduced after the intervention. This finding is in consistent with (during an uncontrolled pilot study in 50 women with breast engorgement compared pain scores before and after the mothers applied cabbage leaves to their breasts two times a day for three days for fifteen to twenty minutes.

The present study clarified that Engorgement scores were decrease more than half after three days than at the beginning of the study and disappear at fifth day. That is agree with study done by (*Najem&Dhia Al-Den., 2011*) .reported that lacking of prenatal education of primi mothers about breastfeeding merely eight percent of mothers received breastfeeding education reflects difficulties particularly in the early postnatal period which is a critical period in starting and continuation of breastfeeding.

Also, (*Saini H., 2012*), mention that when early treated, are easy to solve and result in satisfactory experiences for the woman and newborn, considering that breastfeeding is an important process after childbirth, with a positive relationship with the newborn's feeding and benefits for. Who have not received any breastfeeding assistance at all more than third of study women occurrence of breast engorgement from two to fifth day after discharge, respectively the study findings do not conform to another study conducted by (*Reiter, M., 2013*) in which chilling had no difference and even at room temperature cabbage leaves were just as good as chilled.

The present study findings are disagree with a study conducted by (*Arora S ., 2011*) on cold cabbage leaves versus alternate hot and cold compresses. The study concluded that both can be used in the treatment of breast engorgement. Hot and cold compresses were found to be more

effective than cold cabbage leaves alone in relieving pain due to breast engorgement.

The Present study has also shown improvement in breast engorgement with both the treatments. Mean engorgement score after the application of cabbage leaves was comparatively little low, as compared to after the application of routine care, though difference was statistically not significant. These findings were also supported by the findings of (*Mathew, and Disha et al., 2012*).in which the researchers found that both the treatments were effective in reducing breast engorgement.

The results of the present study showed that cabbage leaves were effective in reducing the breast engorgement than the routine care. The study findings are similar to a study conducted by (*Robert S., 2012*) who compared chilled gel packs with chilled cabbage leaves; and both were equally effective in relieving breast pain and engorgement in postnatal .

However, the present study findings do not conform to another study conducted by(*Reiter S.,2011*) in which chilling had no difference and even at room temperature cabbage leaves were just as good as chilled.

The present study findings are also supported by the findings of (*Snowdenet.,2013*) that did a review of research studies to determine the effects of several interventions to relieve symptoms of breast engorgement among breastfeeding women and found that cabbage leaves were effective in the treatment of engorgement. Although breast engorgement is a common problem among postnatal mothers, but if it is not relieved at the right time, the nipples become sore and cracked, thereby impairing the breast feeding process and also severe breast

infections like mastitis. Hence, timely interventions like application of chilled cabbage leaves, warm compression, etc., can relieve breast engorgement.

The study has also shown effectiveness for breast engorgement with Cabbage leaves treatments. Mean engorgement score after the application of cabbage leaves was comparatively little low as compared to after the application of routine care, although difference was statistically not significant. The interventions used in present study i.e. cabbage leaves are easily available. These do not require many skills; do not require any special cost. These can be done at hospital and at home as well. These are basically home remedies that must be considered as the first line of treatment. This approach provides opportunity of cure without significant risk, burden or complications. In present study no side effect of cabbage leaves has been found on doing the patch test before its application. So its use is safe for the mothers. Along with the application of intervention, health education to the mothers is must regarding proper breast feeding, proper compliance with the treatment to increase the success rate of the intervention. It is concluded that application of cabbage leaves are effective for relieving breast engorgement.

The research question and the aim of the study is achieved which shows that the breast engorgement (pain- severity) was minimized after applying cabbage leaves. Hence this was in the same line with the aim of the study. The aim of this study (To assess the effect of cabbage leaves on relief breast engorgement among post-natal women).

## **CONCLUSION**

Based on the findings of the present study, an application of cabbage leaves is effective for relieving breast engorgement. In addition, there was a statistically significant difference between the pre-test and post-test of the pain score and engorgement score for the cabbage group and the routine care group ( $p < .05^*$ ). Cabbage leaves as the treatment modalities are low cost and available. It can be implemented by the nurses in the day today practice at the hospital as well as at home to reduce breast engorgement.

## **RECOMMENDATIONS**

**Based on the study findings the following recommendations are suggested:**

(1) Implementation of training programs provided for women regarding how to using cabbage leaves to relief breast engorgement.

(2) Nurses should be trained to use the cabbage leaves compresses as the nursing approach for managing breast engorgement in their discharge teaching plan.

### **Further study:-**

Experimental studied should be conducted to determine the efficiency of cabbage leaves compress in large size sample& in different settings.

## Summary

Breast engorgement is one of the most common minor discomfort of the women after delivery especially primipara. Breast engorgement is a physiological condition that is characterized by painful, swelling of the breast as a result of a sudden increase in milk volume, lymphatic and vascular congestion, and interstitial edema during the first two weeks following child birth, this condition is caused by insufficient breast feeding or obstruction in milk ducts. Breast pain during breast feeding is a common problem that interferes with successful breast feeding leading to engorgement (*Fraser D, Cooper M., 2013*). The maternity nurse is in a unique position to assist in prevention and management of breast engorgement through their health education and counseling which are very crucial nursing tasks (*Fletcher G., 2013*). In order to reduce early cessation of breast feeding therefore this study was be under taken to find out the effect of cabbage leaves on relief breast engorgement among postnatal women.

### *Aim of the study:*

To assess the effect of cabbage leaves on relief breast engorgement among post-partum women.

### *Subjects and method:*

Aquasi experimental (equivalent pre-posttest group) was used to assess the effect of cabbage leaves on relief breast engorgement among post-partum women. This study carried out at postnatal unit in Obstetrics & Gynecology department at Benha university hospital.

### *Sampling:*

The sample size was a purposive sample.

Postnatal women within 5 days of postnatal period with the complain of breast engorgement and willingness to participate in the study

***Tool of data collection:***

Four types of tools have been designed and used in this study for data collection as follow:

1-structure interviewing questionnaire sheet

2-six- point engorgement scale

3-visual analogue rating scale

4- Breast redness & edema assessment scale

***Result:***

The studied women are in age group ranging from 23-27 years old. There is no statistical significance difference between study& control groups regarding their general characteristics.

The present study indicated that no statistical significance difference between study& control groups regarding family history.

The present study indicated that no statistical significance difference between study& control groups regarding breast pain score, redness & edema at pre-intervention phase

The present study indicated that highly statistical significance difference between study& control groups regarding pain score, redness & edema of breast at third day & fifth day post-intervention phase

The knowledge about breast feeding was not adequate among whole study. A sizeable proportion of them lacked the basic knowledge regarding breast engorgement; they also lacked the experience in relation to proper technique of breast feeding.

***Conclusion:***

The study also revealed that the cabbage leaves more effective and contributed rapid recovery from breast engorgement.

***Recommendation:***

Based on the finding of this study it was recommended that:

Nurses should be trained to use the cabbage leaves compress as the nursing approach for managing breast engorgement in their discharge teaching plane

Teaching mother how to apply cabbage leaves to reduce breast engorgement.

***Further study:***

Experimental studied should be conducted to determine the efficiency of cabbage leaves compress in large size sample &in different settings.

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## المخلص العربي

النفاس عملية طبيعية و كثيرا ما يصاحبها سلسلة من التغيرات الفسيولوجية والنفسية وهذه التغيرات قد تؤدي الى متاعب صحية بسيطة تتطلب من جانب الام الضبط والتكيف و يعتبر احتقان الثدي احد هذه المشاكل البسيطة الاكثر شيوعا التي تواجه النساء المرضعات اثناء الاسبوعين الاوائل بعد الولادة خصوصا البكرات منهن. احتقان الثدي يحدث كنتيجة للزيادة المفاجئة فى حجم الحليب, حيث تحتقن الاوعية الدموية والليمفاوية والتي تؤدي الى تورم الثدي وثقله واحمراره والشعور بالالم مع ارتفاع فى درجة الحرارة. احتقان الثدي بالرغم من كونه بسيط ولا يهدد حياة الام او الطفل ولكن وجوده يؤرق السيدات . هذا بالاضافة ان اهمالة قد يؤدي الى مضاعفات خطيرة اهمها التهاب وخراج الثدي .وهذه المضاعفات بدورها قد تؤدي الى التوقف عن الرضاعة الطبيعية وحرمان الطفل الرضيع من منافع حليب الام.

على اية حال فانه يمكن الوقاية من احتقان الثدي ومنعة وذلك بالعناية والدعم والاستشارة الصحية فى فترة ما قبل الولادة للاستعداد للرضاعة لكن لسوء الحظ , العديد من النساء لا يذهبن الى الاستشارة و المتابعة اثناء فترة ما قبل الولادة بخصوص منافع حليب الام والتقنية الصحيحة للرضاعة الطبيعية .

تلعب ممرضة الصحة الانجابية دور فريد للمساعدة فى منع وعلاج احتقان الثدي من خلال التعليم والاستشارة المقدمة للامهات المرضعات , لذا فهى فى حاجة الى معرفة اثر استخدام اوراق الكرب فى تخفيف احتقان الثدي , حيث يتثنى لها تقديم الرعاية المناسبة لانجاح الرضاعة الطبيعية.

### اهداف البحث:-

هدف البحث دراسة اثر استخدام اوراق الكرب فى تخفيف تحجر الثدي لدى السيدات فى فترة النفاس

### افتراضات البحث:-

استخدام اوراق الكرب سوف يقلل احتقان او تحجر الثدي لدى السيدات فى فترة ما بعد الولادة

## طرق البحث:-

### نوع الدراسة:- شبة تجريبية

**المكان:-** قسم النساء والتوليد بمستشفى بنها الجامعى

**حجم العينة:-** تشمل العينة (١٠٠) سيدة وتعانين من مشكلة تحجر الثدي

**مدة الدراسة:-** استغرقت الدراسة ستة اشهر بدءا من يناير وحتى نهاية يونيو ٢٠١٧

**سمات العينة:** الدراسة اجريت على السيدات فى فترة النفاس والتي تخلو من الامراض التي تعوق الرضاعة الطبيعية و الاطفال المولودة طبيعى وخالية من العيوب التي تعوق الرضاعة الطبيعية.

**طريقة البحث:** العينة جمعت فى خلال ٣ ايام اسبوعيا لتحديد الامهات التي تعانين من تحجر الثدي وتمت المقابلة شخصا مع السيدات ووصفت لهن اهمية الدراسة واعطيت الثقة و الطمانينة لكى تساهم فى الدراسة وكانت المدة الزمنية للمقابلة الشخصية حوالى ٣٠ دقيقة

### ادوات البحث:

١. استمارة استبيان عن طريق المقابلة الشخصية وهى مصممة لتقييم :  
الصفات العامة لعينة الدراسة (العمر, المؤهل , الوظيفة , الدخل الشهرى .....)  
تقييم المعلومات عينة الدراسة عن الرضاعة الطبيعية والمشاكل المصاحبة لها ( كقيمتها , فوائدها , عوائقها.....)

٢. استمارة ملاحظة تحتوى على :-

بيانات خاصة بتقنية الرضاعة الطبيعية

٣. استمارة ملاحظة مصممة لتسجيل حالة الثدي , احتوت على اعراض احتقان الثدي ( احمرار , ألم , حرارة، تورم)

٤. استمارة متابعة لملاحظة وتقييم التنام الثدي بعد استخدام اوراق الكرب لتقييم اثر استخدام اوراق الكرب فى تخفيف تاجر الثدي

### التصميم التنفيذى:

قامت الباحثة باخذ الموافقة من السيدات

تم ملء استمارة الاستبيان بعد شرح هدف البحث للسيدات ،المقابلة اجريت بشكل منفرد وفى سرية تامة

جميع السيدات التى تمت مقابلتهم من قبل الباحثة اثناء الساعات الاولى بعد الولادة لاكتشاف الخصائص العامة من العينة وتقييم معرفتهم حول الرضاعة من الثدي واحتقان الثدي

تشكلت العينة من (١٠٠) سيدة التى تعانى من تاجر الثدي .تمت مقابلة السيدات من قبل الباحثة فى اليوم الثالث لتمييز حالتهم الحالية , اعراض تاجر الثدي.

### **تم تقسيم العينة عشوائيا الى مجموعتين :-**

مجموعة تداخلية والتى تحتوى على نصف عدد السيدات (٥٠) سيدة والآتى استخدمن اوراق الكرب فى تخفيف تاجر الثدي

مجموعة ضابطة والتى تحتوى على النصف الاخر من السيدات (٥٠) سيدة والآتى خضعن الى رعاية المستشفى بعد الولادة الروتينية.

### **دراسة استكشافية:**

تمت مراجعة اداة البحث عن طريق اساتذة من كلية التمريض جامعة عين شمس وبنها للتأكد من مطابقة محتواها ودرجة وضوحها. ثم اختبرت على ١٠% من العينة الكلية (١٠ سيدات خارج العينة) قبل البدء فى جمع البيانات وذلك لبيان مدى وضوحها وامكانية تطبيقها والوقت اللازم لاجرائها.

## نتائج البحث:-

لقد اسفرت نتائج البحث عن الاتى:

اظهر البحث ان درجة احتقان الثدي قد تتاثر ب السن , مستوى التعليم , المهنة, السن عند الزواج, دخل الاسرة, معلومات السيدات عن مشاكل احتقان الثدي

كما اظهر ايضا ان درجة احتقان الثدي قد تتاثر ب تقنية الرضاعة الطبيعية ( بداية الرضاعة الطبيعية, عدد مرات الرضاعة)

اتضح من البحث ان الشفاء الكامل من احتقان الثدي واعراضه وعلاماته كان بشكل واضح بين سيدات المجموعة الاولى (المجموعة التداخلية) اقوى واسرع من بين سيدات المجموعة الثانية.

## توصيات البحث:-

فى ضوء نتائج البحث فقد اوصى البحث بما يلى :

يجب تدريب الممرضات والسيدات على استخدام اوراق اكرنب وكيفية وضعها كتدخل ترميضى فى تقليل احتقان الثدي



# تأثير اوراق الكرب في تخفيف تحجر الثدي لدى السيدات في فترة ما بعد الولادة

رسالة

توطئة للحصول على درجة الماجستير في علوم التمريض

(تمريض صحة المرأة والتوليد)

كلية التمريض - جامعة بنها

مقدمة من

**امانى احمد محمد مسعود**

معيدة بقسم تمريض صحة المرأة والتوليد

كلية التمريض- جامعة بنها

تحت اشراف

**ا.د\ جلال احمد الخولى**

استاذ امراض النساء والتوليد

كلية الطب- جامعة بنها

**ا.م.د\ سعاد عبد السلام رمضان**

استاذ مساعد بقسم تمريض صحة المرأة والتوليد

كلية التمريض- جامعة بنها

**د\ اميرة رفعت سعيد**

مدرس تمريض صحة المرأة والتوليد

كلية التمريض- جامعة بنها

كلية التمريض

جامعة بنها

٢٠١٨