AN ASSESSMENT OF THE RATE AND PREDISPOSING FACTORS TO THE DEVELOPMENT OF BREAST ABSCESS AMONG LACTATING MOTHERS IN THE BATIBO HEALTH DISTRICT, NORTH WEST REGION, CAMEROON

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ABSTRACT

Lactation breast abscess is a painful, debilitating condition that if inappropriately managed, may lead women to discontinue breastfeeding prematurely. This study assessed the rate and predisposing factors to development of breast abscesses among 100 women in the Batibo Health District.

A structured questionnaire was used to collect socio- demographic and other data which was analyzed using the Statistical Package for Social Sciences (SPSS), version 16.0; SPSS inc. 38 of the 100 women were found to have had breast abscess giving a rate of 38%. Premature cessation of breastfeeding, refusal to breastfeed, excessive weight gain during pregnancy, and abrupt method of weaning were the major predisposing factors identified. Thus, breast abscesses occur among lactating mothers in the Batibo Health District.

KEY WORDS

Breast abscess, Lactation, Breast feeding, Predisposing, Weaning

INTRODUCTION

Breast abscess is a relatively rare but serious complication of mastitis that may occur during breastfeeding particularly in primiparous women. These abscesses can be clinically difficult to detect and to distinguish from mastitis especially when the abscess is small or when it is located deep within the breast (Cunningham et al., 1997).

Lactation mastitis is a painful debilitating condition that can adversely affect mothers in their effort to breast-feed their babies. Despite being a relatively common complication of lactation, surprisingly few studies documenting the incidence of and risk factors for the condition have been reported. Studies of inflammatory processes of the breast during lactation show an estimated incidence of between 2% and 33 % (Foxman et al., 2002).

Some researchers have reported that delayed treatment of mastitis by antibiotic therapy is the major risk factor for the development of breast abscess (Marchant, 2002). Other researchers however suggest that this may not be the case because mastitis may be a self limiting disease in many cases (Fetherson, 2001).

The common problems that may arise during the breastfeeding period are breast engorgement, plugged duct, breast infection and lactation failure or insufficient milk supply and these are due to inadequate emptying of the breast, incorrect techniques, not frequent breastfeeding, breastfeeding on scheduled times, and use of food supplements. Absence of suckling due to various reasons is the most common for abandoning breastfeeding, which ultimately leads to lactation failure. Other reasons are glandular tissue problems, prior breast surgery and Sheehan's syndrome (Mather, 1992).

Although seldom overtly referred to in ancient or modern texts on child birth, it may be assumed that child birth and the subsequent nutrition of the infant have been of the greatest political importance to all societies, reason being that without new well-nourished members, the societies ceases to exist.

The knowledge of breastfeeding practices embedded within ancient civilization was the knowledge gained through observation and cognition and its philosophy was the philosophy of nature. The knowledge of women was passed from generation to generation by the rhetoric which has been identified as the oldest and the most important tradition of human sciences (Kjorup and Torhell, 1999).

During the end of the 19th century, modern pediatry emerged as a medical specialty based primarily on its expertise in artificial feeding (Brosco, 1999). By the middle of the 20th century, the preparation of breast milk substitutes (Formula) had become an industry in which much research and monetary funds were invested. During this period, Benjamin Spock became a world

authority on all aspect of infant care. In his famous text, (Spock and Lowenberg, 1955), he seems to struggle with his convictions, passing backward and forward between allowing the baby to determine its feeding time and allowing the mother to make the decision whether to offer her baby the breast or not.

Breastfeeding problems appear to have been with humanity since mothers first put their babies to the breast (Fildes, 1986) including sore and damaged nipples, insufficient milk and stagnation of milk in the breast. This discomfort may be one of the major reasons for a mother to make a decision to wean her baby from the breast (WHO, 2000).

Towards the end of the 1990s, WHO and UNICEF brought to focus the problem of falling rates of breast feeding all over the industrialized world and the effect that this would inevitably have on the breastfeeding rate of the developing countries and thus on infant mortality rates (WHO and UNICEF, 1989). Thus WHO with its BFHI and ten steps to successful breastfeeding united research institutions in breastfeeding pedagogy and breastfeeding has become an important public health issue worldwide (Palma, 2004).

BREASTFEEDING PRACTICES AND RISK OF BREAST ABSCESS DEVELOPMENT

International agencies recommend breastfeeding initiation within less than 2 hours after delivery. According to Hartmann et al. (1985),following birth, the breast produce a thick yellowish fluid which is primarily colostrum which differs from mature milk; protein, fat soluble vitamins and minerals are present in higher concentration while fat and lactose are present in lower concentration. ADA notes that feeding colostrum reduces the risk of gastroenteritis, diarrheal disease, and respiratory disease.

WHO and UNICEF (1992) describe breastfeeding “on demand” as “mothers of normal babies who are breastfeeding should have no restriction placed on the frequency or length of their babies’ breastfeeds, they should breastfeed their babies whenever they are hungry or as the baby wants”. In their review of the available evidence, Weighertet al. (2005), note that milk production is dependent on a physiological feedback mechanism determined by the rate at which the breast is emptied. If the infant is breastfed according to a rigid schedule rather than on demand, the breast may be emptied less often leading to problems as breast engorgement, sore nipple and even to the development of breast abscess.

WHO, (2009), estimates that the incidences of breast abscess vary between 2.65% to 33%. The prevalence globally is approximately 10% in lactating women. In India, incidence of lactation breast abscess ranges from7-11%. The incidence of lactation failure was 15%, among them, 11%

had secondary lactation failure and 4% had primary lactation failure (Cregan, 2002). A study was conducted to assess the incidence of breast abscess among lactating women.

A structured telephone interview was conducted among 1193 primiparous women. The result showed that 207 (95% CI=0.14-0.98) women experienced mastitis and 150 (95% CI=-1.6-6.7) women developed breast abscess. The study concluded that 72.4% of women with mastitis will develop breast abscess and the incidence of lactating breast abscess appear to be higher than reported in the past (Amir et al., 2004)

A study was conducted to assess the current status and causes of breast abscess. The samples were 299 Nigerian women whose medical records were analyzed and reviewed. The results revealed that lactation breast abscess constitute 95% while non-lactation breast abscess constitute only 5%. The high evidence of lactation breast abscess corresponded to low level of personal hygiene. The study concluded that the lactating women are more prone to breast abscess and should be educated about the importance of personal hygiene during breastfeeding periods (Efem, 1995).

Another study was conducted to assess the contributing factors and prevention of puerperal breast abscess among nursing women over a two year period during which 176 nursing women with breast infection was followed. Around 20.4% had breast abscess ($P \leq 0.05$) and 18.8% had a history of cracked nipples prior to the infection. The study revealed that milk stasis due to inadequate emptying of the breast lead to breast abscess formation. The study concluded that early identification would prevent breast abscess formation (Devereux, 1970).

A study was conducted to assess the association between excessive weights gained during pregnancy with early termination of breastfeeding. Around 2.783 women were included in the study. Their medical records were reviewed and categorized on BMI. less than 19.8/m2 was considered as underweight, 19.8-26 kg/m2 as normal, 26.1 to 29 kg/m2 as overweight and >29 kg/m2 as obese.

The result revealed that 30% women were underweight ($P < 0.05$), 30% were overweight ($P < 0.05$), 20% were obese and 20% were normal. So women who were overweight and obese had lactation failure ($P < 0.01$) which led to earlier termination of breast feeding. Thus, the study concluded that excessive weight gain during pregnancy led to lactation failure and hence women must be educated in weight management (Hilson and Rasmussen, 2006).

A prospective study was conducted to assess the incidence and causes of lactation failure among primigravid women. The study included 956 primigravid women and was given a leaflet explaining the objectives of the study and questionnaire was used to fill the data. The results revealed that out of 956 women, 788 had normal breast (80.3%), 188(19.7%) had breast problems like flat or inverted nipples, fissured nipples, breast surgery, tubular breast deformity

were the recognized causes. The incidence of lactation failure among women with these abnormalities was 9.8% (P≤0.005). The study concluded that nipple and breast abnormalities were recognized causes of feeding problems leading to lactation failure and intervention should be taken to identify and correct abnormalities of nipple or breast abnormalities in antenatal period (Sajeewa, 2006).

The recommended management of lactation failure is usually conservative with key recommendations being that mothers continue to breast feed frequently from the affected breast or expressed milk from the affected breast in an effort to clear blocked ducts and engorgement (WHO, 2000). However, one in every ten affected women were advised inappropriately either to stop breastfeeding from the affected breast or to stop breastfeeding all together. Despite being a relatively common complication of lactation, surprisingly few studies documenting the incidence of and risk factors for the condition have been reported.

The incidence of mastitis following delivery also depends on the frequency of breast- feeding. In the geographical area of a study carried out by the national board of health and welfare, breast-feeding is nearly 95% of the mothers' breast-feeding at the time their infant is two months old. All these factors are present in the area of study thus there is a need to carry out a study on the rate and predisposing factors to breast abscess in the area.

STATEMENT OF THE PROBLEM

Incidence of breastfeeding is declining in almost all parts of the world despite all its nutritional and immunological benefits. Breast infection most commonly occur during pregnancy and lactation which may or may not be cyclical and may or may not be associated with nodules. Breast infection is a common problem among lactating mothers and has a wider spectrum ranging from localized cellulitis to abscess formation. WHO estimated that incidence of breast abscess vary between 2.65%-33% with prevalence globally about 10% in lactating women indicating a decline in breastfeeding practices in the urban area of developing countries.

Research into breast inflammation during lactation has drawn attention to the fact that scientific evidence for the best care of these mothers is lacking. Empirical evidence is very limited and there are suggestions that breast abscess during lactation may occur without a forgoing episode of breast inflammation/mastitis. Despite being a relatively common complication of lactation, surprisingly few studies documenting the incidence of and risk factors for the condition have been reported. This result shows that although breast- feeding may be widespread in Cameroon, there is a big need to provide accurate information on proper breast- feeding practices and weaning.

MAIN OBJECTIVE

To assess the rate and predisposing factors to the development of breast abscess among lactating mothers in the Batibo Health District.

SPECIFIC OBJECTIVES

1. To assess the rate of occurrence of breast abscess among lactating mothers in the Batibo Health District.
2. To evaluate the predisposing factors to breast abscess among lactating mothers in the Batibo Health District.

HYPOTHESIS

Breast abscesses occur in lactating mothers in Batibo Health District.

SIGNIFICANCE OF THE STUDY

- Identification of factors other than current breast-feeding practices may increase understanding of the etiology of the disease and suggest more preventive measures for specific groups of women.
- It aims to improve the knowledge of breastfeeding on the part of nurse practitioners enabling them to be more explicit during education.
- To health departments in charge of sensitization of the public about breastfeeding and its relationship to breast abscess in that more information will be set out to enable people especially lactating mothers becoming aware and so put in measures to prevent it.

STUDY AREA AND DESIGN

The research design was a descriptive cross sectional study among lactating mothers in the Batibo Health District, with Batibo District Hospital being the hosting hospital for the research. The Batibo Health District is made up of 71 000 inhabitants and 22 health centers. It shares boundaries with Bali (Mezam), Widikum, Njie, and Mbengwi (Momo) in the North- West region; upper Bayang (Manyu), Wabane (Lebialen) in the South- West region. The main activity

here is farming with others including palm wine tapping and palm oil production of which they export 70% of it.

STUDY POPULATION

This study included lactating mothers attending the Batibo District Hospital. Targeted population was 71 lactating mothers of which 100 lactating mothers were recruited and involved in the study.

DATA COLLECTION

A well structured pre-tested questionnaire with close ended questions was filled up for data collection by interviewing on various socio-demographic variables and breast- feeding attitude. Data was keyed into data log book and later transferred to excel worksheet for analysis.

DATA ANALYSIS AND PRESENTATION

Data were analyzed that is compiled, edited and presented by frequency distribution table using the software the Statistical Package for Social Sciences (SPSS for Windows version 16.0 by SPSS Inc). Significance of variables was established using Pearson Chi-square test with p value calculated with 95% CI and those less than or equal to 0.05 considered statistically significant.

CRITERIA FOR THE SELECTION OF PARTICIPANTS

Inclusion Criteria

Mothers who;

- Were from selected health areas in Batibo urban
- Were willing to participate
- Were available at the time of data collection
- Answered questionnaire

Exclusion Criteria

Mothers who;

- Were not from selected health areas in Batibo Urban
- Were not willing to participate
- Were not available at the time of data collection
- Did not answer questionnaire

Ethical considerations

- A written permission from the school authority was obtained prior to the study.
- Permission was also obtained from the authority of the hospital
- Consent was taken from the clients before conducting the study
- Confidentiality of the subjects was maintained

RESULTS

This study assessed the breast abscess rate and predisposing factors among lactating mothers in Batibo Health District. During this study, 100 breast feeding mothers were identified. Of these, 38 women had breast abscess giving a rate of 38%.

n=38		
	Frequency	Percentage
Breastabscessyes no	38 62	38 62
Total	100	100

Table 1 Distribution according to the rate of breastabscess occurrence.

DISTRIBUTION OF WOMEN WITH BREAST ABSCESS ACCORDING TO DEMOGRAPHIC DATA OF PARTICIPANTS

38 women with breast abscess were of the adulthood age group. Majority of women with breast abscess were married (79%) while 21% of the women with breast abscess were single. This difference was however not statistically significant ($p<0.05$).Also, majority ended at the primary level of education (68.4%) while only 5.3% had attained tertiary level of education. This difference was also not statistically significant ($P>0.05$).Out of the 38 women with breast abscess, the majority 18 (47.4%) were primiparous, 9 (27.7%) had two children while 11 (28.9%) had three children. This difference was statistically significant ($p=0.023$).

n=38				
		Frequency	Percentage	Person chi-square test p value
Age	Adulthood	38	100.0	
Marital status	Married	30	79.0	0.401
	Single	8	21.1	
Level of education	Primary	26	68.4	0.150
	Secondary	10	26.3	

	Tertiary	2	5.3	
Number of children	one	18	47.4	**0.023**
	Two	9	27.7	
	Three	11	28.9	
Total		38	100	

Table 2 Distribution of women with breast abscess according to demographic profile of the population

SOCIOECONOMIC DISTRIBUTION OF WOMEN WITH BREAST ABSCESS

Majority of the women generate their income from farming (65%) followed by business (28.9%) then government employed (5.3%). The difference was statistically significant (p=0.041).

n=38			
Occupation	Frequency	percentage	Person chi-square test p value
Farming	25	65.8	
Business	11	28.9	
Civil servant	2	5.3	**0.041**
Total	38	100	

Table 3 Distribution of women with breast abscess according to socioeconomic factor

DISTRIBUTION OF WOMEN WITH BREAST ABSCESS ACCORDING TO BREASTFEEDING ATTITUDE

Majority 20 (52.6) of the women with breast abscesses do not breast feed their child frequently and on demand while 18 (47.4%) did. This difference was not statistically significant (p>0.05). Also, majority of the women with breast abscess 20 (52.6%) gained excessive weight during pregnancy while 18 (47.4%) did not. This difference was not statistically significant (p>0.05).
Majority initiated weaning at four months and above 24 (63.2%) while 14 (36.8%) initiated weaning at less than three months. Also, this difference was not statistically significant (p>0.05). Most of the women with breast abscess stopped breast feeding on a single day (57.9%) and 2 (5.3%) continued breastfeeding while introducing solid food. This difference was not statistically significant (p>0.05). Most of the women with breast abscess did not continue breastfeeding in case of an inflammation 27 (71.1%) while 11 (28.9%) continued breastfeeding. This difference was also not statistically significant (p>0.05).

n=38				
		Frequency	Percentage	Person's chi-square test p value
Does your child feed frequently and on demand?	Yes	18	47.4	0.08
	No	20	52.6	
Personal hygiene reduces formation?	Yes	21	55.3	0.650
	No	17	44.7	
Did you gain excessive weight while pregnant?	Yes	20	52.6	**0.02**
	No	18	47.4	
At what age did you introduce solid food to your child	≤ 3months	14	36.8	0.599
	≥ 4months	24	63.2	
How did you wean your child from the breast?	Gradualremoval	14	36.8	0.162
	Stopped on a single day	22	57.9	
	Never breastfed	2	5.3	
Continued breastfeeding in case of an inflammation?	Yes	11	28.9	0.067
	No	27	71.1	

Table 4 Distribution of women with breast abscess according to breastfeeding attitude

DISCUSSION OF RESULTS

Breastabscessis a condition in which there is a collection of pus in the breast due to infection with *Staphylococcus aureus* with common signs and symptoms being an elevated temperature either estimated or measured as being>38^{o}C, one or more of the constitutional symptoms of fever, body aches, headache and chills.

This study was done to determine the rate and predisposing factors to the development of breast abscess giving a rate of 38%. This rate is similar to that of 33% reported by WHO, 2009 but very different from72.4% reported by Amir *et al*. (2004). This difference could be due to the fact that this and other earlier studies probably underestimated the incidence due to limitations in case ascertainment and the short time period that women were followed.

In general, incidence rates for mastitis are below 10% when medical records and women seeking medical advice are used as a source of data whereas incidence rates at around 20% and above are seen in studies where diagnosis based on self-reported symptoms (Fetherson, 1997).

An assessment of the demographic characteristics was done where in all participants (100%) in this study were of the adulthood age group of which majority of them were less than 24 years (63.2%) with the mean age of participants being approximately 26 years (range 0f 19-39 years).

According to Mathir *et al.* (1992), maternal age had a clear effect on abscess formation. They showed that, least risk of breast abscess was seen amongst mothers who were ≤ 24 years and a significantly increased risk amongst mothers ≥ 30 years. Kaufmann (1991), also notes that breast abscesses more prevalent among first time mothers and mothers over thirty years of age. He states that the advent of a new child always gives cause for the restructuring of one's lifestyle.

It is possible that younger women are less set in their ways and more receptive to the babies demands to be fed at varying intervals and for varying lengths of time. Majority of the women with breast abscess ended at the primary level of education (68.5%) as such, failed to report to the hospital early enough for possible prevention of abscess formation but preferred self and traditional treatment including chewing of bitter cola reported by them where by failure of resolution resulted to seeking of medical care while already presenting with abscess.

Most of the women with breast abscess were first time mothers (44.4%). This is in line with the study of Sajeewa (2006), of which 80% first time mothers had breast problems like inverted nipples, fissured nipples, breast surgery resulting to lactation failure and breast abscess of which early identification during antenatal period would prevent the occurrence of the condition.

An assessment of breastfeeding attitude was also done of which majority of the women with breast abscess (52.6%) do not breast feed their children frequently and on demand. Weighert *et al.* (2005), noted that milk production is dependent on a physiological feedback mechanism determined by the rate at which the breast is emptied. Breast feeding the infant according to a tight schedule rather than on demand empties the breast less often leading to problems as breast engorgement, sore nipple and even to the development of breast abscess.

Most of the women with breast abscess reported practicing good personal hygiene (55.3%) as opposed to Efem (1995), in which lactation breast abscess (95%) was due to poor personal hygiene practiced by lactating mothers. This was due to the fact that poor hygiene resulted to cracked and fissured nipple giving way for microbes to enter the breast causing an infection.

Most of the women with breast abscess gained excessive weight during pregnancy (52.6%). This is in line with Hilson and Rasmussen (2006), who reported that women who were overweight and obese (50%) had lactation failure which led to earlier termination of breast feeding resulting in breast abscess hence, educating women in weight management during pregnancy is important.

Also, a greater number of the women with breast abscess initiated weaning at four months and above (63.2%). This result is in line with that of Srivastava *et al*.(1994), who reported that 73% of mothers established breast feeding successfully but 27% of mothers terminated breastfeeding due to reasons like lactation failure and breast infection. Though majority initiated weaning at four months and above, majority stopped abruptly and on a single day (57.9%). Weighert *et*

al.(2005), noted that milk production is dependent on physiological feedback mechanism determined by the rate at which the breast is emptied.

Stopping breast feeding abruptly without gradually signaling the brain through reduced rate of sucking the child leads to continued milk production as though the child was still breast feeding. This results to milk stasis from inadequate emptying as stated by Devereux (1970), making abscess formation unavoidable. Majority of women with breast abscess stopped breast feeding in case of an inflammation (71.1%) of the breast presenting reasons such as once the breast is inflamed; the milk automatically becomes infected and bad for the health of the child since it will cause the child to be sick. This is opposed to the findings of Vogel *et al*. (2008), in which 89% of women with lactation mastitis continued breastfeeding.

CONCLUSION

Breast abscess occurs in lactating mothers in Batibo Health District. The findings of this study suggest that one in three women may develop lactation breast abscess giving a rate of 38%. Major predisposing factors identified include premature cessation of breastfeeding, refusal to breast- feed in case of inflammation of the breast, of which mothers unnecessarily deprive their infants of the known nutritional and immunological benefits of breast milk, excessive weight gain during pregnancy, and abrupt weaning from the breast.

RECOMMENDATIONS

Governments should implement programs through which regular seminars could be organized to enable health workers become aware of conditions that interfere with maternal and child health directly linked or not such as breast abscess to ensure that they educate these women extensively so that they are able to put in measures that will help reduce the incidence.

The hospital should endeavor to organize breast- feeding clinics through which they can better explain to these mothers the importance of breast- feeding as well as good breast- feeding attitudes so as to curb the occurrence of breast- feeding problems as engorgement, mastitis and breast abscess. This will also enable the hospital best capable of keeping track records on the incidence of the condition through which action to reduce it can be put in place based on their records.

Mothers should put in efforts in taking control of their health and that of their children by ensuring that they heed to the advice offered in the hospital and by reporting to the hospital for clarifications when in doubt for early correction of the doubt avoiding complications that may impair health.

LIMITATIONS OF THE STUDY

Firstly, women identified as cases through interview were only identified if they answered yes to having had breast abscess specifically. They were not asked if they had experienced any symptoms suggestive of breast abscess.

This study does not determine the overall rate of breast abscess among lactating women since only those who reported to the hospital for management were included in the study.

We relied only on the women's judgment of gaining excessive weight during pregnancy since not all the women were admitted in the post natal ward as such; their BMI could not be gotten to confirm weight gain.

REFERENCES

1) Bernaix, L. (2000). Nurses attitudes, subjective norms and behavioral intentions towards supports of breastfeeding mothers. Journal of Human Lactation. 16(3); 202-209.

2) Black, A., Renfrew, M., Dykes, F., Burt, S. (1994). Assessing learning needs for breastfeeding; setting the scene. Maternal and Child Nutrition 2(4); 196-203.

3) Brosco, S. (1999).Knowledge, attitude and practice of breastfeeding. European Journal of Scientific Research. 4 (2): 404-422.

4) Chan, S.M., Nelson, E.A., Leung, B.S. (2000). 'Breastfeeding in a longitudinal post-partum material nutrition study. Journal of Hong Kong Paediatrics. 5:466-71.

5) Cunningham, F.G., Macdonald P.C., Grant, N.F.(1997). Williams Obstetrics. Conn Appleton and Lange. 20:564-565.

6) Devareux, W. P. (1970). The adequate puerperal mastitis: Evolution of its management. American Journal of Obstetrics and Gynecology: 20(8);78-81.

7) Efem, S. E. (1995). Breast Abscess in Nigeria Lactational versus Non-lactational. Quarterly Journal of Medicine 40(1);25-27.

8) Eskstrom, A., Nissen, E. (2006). A mothers's feeding for her infant as strengthened by excellent breastfeeding, councelling and continuity of care. Journal of Pediatrics., 18(2): e309-e314.

9) Evans, M. (1995). Incidence, prevalence and cost. Heads Journal of Mastitis: 3:65-71.

10) Fetherson, C. (1998). Risk factors for lactation mastitis. Journal of Human Lactation. 14:101-109.

11) Fetherson, C. (2001). Mastitis in lactating women: physiology or pathology? Breastfeeding Review. 9(1):5-12.

12) Fildes, F. (1986). The education of health practitioners supporting breastfeeding women; time for critical thinking/reflection. Maternal/ Child Nutrition. 2(4); 204-216.

13) Foxman, B., D'Arcy, H., Bobo, J.K., Schwartz, F. (2002).Lactation mastitis: occurrence and medical management among 946 breastfeeding women in the United States. American Journal of Epidemiology. 155:103-114.

14) Hartmann, J.R., O'Connell, D.L., Kinlay, S. (1985). Risk facrors for masttis in breastfeeding women: results of a prospective cohort study. Australian Journal of Public Health 25:115-120.

15) Hilson J. A., Rasmussen, K. M. (2006). Excessive weight gain during pregnancy is associated with early termination of breastfeeding. Journal ofAmerical Nutrition. 136(6);140.

16) James, S.S., Dobson, P.D. (2005). Breast engorgement: patterns and selected outcomes. Journal of Human Lactation, 10:87-93.

17) Jonsson, S.,Pulkkinen, M.O. (1994). Mastitis today: incidence, prevention and treatment. Annals of Gynaecology: 208:84-87.

18) Kaufmann, R., Foxman, B. (1991). Mastitis among lactating women: occurrence and risk factors. Social Science Medicine.33:701-705.

19) Kjorup, S., Torhell, J. (1999).Accurate puerperal breast abscess. Journal of Obstetrics and Gynecology. 188:807-809.

20) Labbok, C., Krsovec, A. (1990). Breast Abscesses in Lactating women. World Journal of Surgery. 27:130-133.

21) Lowe, T. (1990). Breastfeeding; attitudes and knowledge of health practitioners. Australian Fan Physician. 19(3):392-396.

22) Linda, J. H. (1995). 'Factors related to breast abscess after delivery'. Journal of Obstetrics and Gynaecology. 40(3):297-8.

23) Mather, G.P. (1992). Lactation failure. Journal of Indian Pediatrics. 21:1541-44.

24) Mathur, G. P., Chitrasonhi, S., Singh, S. B. (1992). Lactation failure. Journal of Pediatrics. 29(12);1541-4.

25) McMukin, S., Malone, R. (1994). Breastfeeding; midwives personal experience. Med Midwives. 4 (5):10-12.

26) Palma, E. R (2004).Common problems during Lactation and their Management. Journal of PediatricS. 80s: 1452-54.

27) Sajeewa, A. (2006). Incidence of breast and nipple abnormalities among primigravid women. Sri Lanka Journal of Child Health. 35:51-4.

28) Schwartz, K., D'Arcy, H.J., Gillespi, B., Bobo, J.,Longeway, M.,Foxman, B. (2002). "Factors associated with weaning in the first three months post-partum. Journal of Family practice. 51:439-444.

29) Spock, M.D., Lowenberg, K. (1955). 'Inadequate Brest Milk Production. Journal of Obstetrics and Gynaecolody. 870-877.

30) Udani, P. M. (1979). Researches on human milk and infant nutrition. Indian Journal of Pediatrics. 12:593:611.

31) Vogel, A., Hutchison, L., Mitchell, E.A. (1999). Mastitis in the first year post-partum. International Breastfeeding Journal. 26:218-225.

32) WHO Global strategy on infant feeding, 2002.

33) Weighert, L.J., Wilde, L. B., Hall-Lord, M.L., Rydhstroem, H. (2005). Effects of acupuncture and care interventions on the outcome of inflammatory sypmtoms of the breast in lactating women. International Nurses Review 51:56-64.