

## CLINICAL UPDATE AND TREATMENT OF LACTATION INSUFFICIENCY

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*SUMMARY: Lactation is beneficial to mother's health as well as provides specific nourishments, growth, and development to the baby. Hence, it is a nature's precious gift for the infant; however, lactation insufficiency is one of the explanations mentioned most often by women throughout the world for the early discontinuation of breast-feeding and/or for the introduction of supplementary bottles. Globally, lactation insufficiency is a public health concern, as the use of breast milk substitutes increases the risk of morbidity and mortality among infants in developing countries, and these supplements are the most common cause of malnutrition. The incidence has been estimated to range from 23% to 63% during the first 4 months after delivery. The present article provides a literary search in English language of incidence, etiopathogenesis, pathophysiology, clinical features, diagnosis, and current update on treatment of lactation insufficiency from different sources such as reference books, Medline, Pubmed, other Web sites, etc. Non-breast-fed infant are 14 times more likely to die due to diarrhea, 3 times more likely to die of respiratory infection, and twice as likely to die of other infections than an exclusively breast-fed child. Therefore, lactation insufficiency should be tackled in appropriate manner.*

*Key words : Lactation insufficiency, lactation, galactagogue, breast-feeding*

### INTRODUCTION

Breast-feeding is advised because human milk is species-specific nourishment for the baby, produces optimum growth and development, and provides substantial protection from illness. Lactation is beneficial to mother's health and biologically supports a special mother-baby relationship. It is nature's gift to baby and meant for human infant.

The synonyms of lactation insufficiency are as follows: lactational inadequacy (1), breast milk insufficiency (2), lactation failure (3,4), mother's milk insufficiency (MMI) (2), perceived insufficient milk (PIM) (5, 6), insufficient breast milk, partial lactation failure (3, 7, 8), neonatal insufficient milk syndrome (NIMS), hypogalactia or lactation inadequacy, breast-feeding failure (9), and suboptimal infant breast-feeding (SIB) (10). Lactation failure is defined as the need to start top feeds for the baby within 3 months of delivery because of inadequate breast milk supply (4). Total lactation failure was defined as either a total absence of milk flow or secretion of just a few drops of breast milk following suckling for at least 7 days (3, 8). Partial lactation failure was defined as either inadequate milk output or the need for

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supplemental feedings to sustain growth (3,8). Lactation insufficiency or failure is relatively common among women (11). The most common cause of lactation failure is insufficient milk or no milk (80%). The age, parity, education, socioeconomic status, religion, family structure, and urban versus rural status of mother all had a bearing on the occurrence of lactation failure (12). The perception of not having enough milk often leads to infrequent suckling, leading to a true reduction in production of breast milk (13). Segura Millan et al. called oligogalactia as perceived insufficient milk (PIM), which is one of the reasons mentioned for the introduction of supplementary bottles (5). This is of public health concern for the reason that the use of breast milk substitutes increases the risk of morbidity and mortality among infants in developing countries and shortens birth intervals (14). The complaint of "insufficient milk" is more often than not a wrong perception of the mother, fostered by the mother's uncertainty about her capacity to feed her baby properly, no knowledge about the normal behavior of a baby (who usually nurses frequently), and negative opinions of significant persons (15). The reasons why a mother feels that she has insufficient milk are because the baby cries often, wakes up frequently, demands frequent feeds, or is irritable. The mother should be told that an exclusively breast-fed baby showing a weight gain of 500–1000 gm/month and passing urine at least 6–8 times/day is definitely getting enough milk (16,17).

**Incidence and prevalence:** Perceived insufficient milk supply is common among postpartum women and is a major reason for early weaning. Studies indicate a significantly higher incidence of insufficient milk supply in women who undergo caesarean section as compared with women who undergo vaginal delivery (18). Segura Millan et al. stated that the incidence of oligogalactia has been estimated to range from 23% to 63% during the first 4 months after delivery (5). Between 12.8% and 44% of infants reportedly experience suboptimal infant breast-feeding (SIB) (10). Forman and his colleagues in their prospective cohort study of 1005 Bedouin Arab women who delivered healthy newborns in 1981 and 1982 described the factors associated with milk insufficiency versus another reason for introducing the bottle and its potential health effects by 2 months postpartum: 72% introduced the infant to the bottle with 72% reporting milk insufficiency as the reason for introducing the bottle. The percentage of milk insufficiency declined with increasing age of the infant (19). In a study of breast-feeding

problems in rural Karnataka, it was observed that not enough milk was the reason for starting top feeds in 53.6% of cases (20). Lindquist conducted a prospective study on perceived breast milk insufficiency in a group of 51 healthy, well-educated Swedish women during a period from 3 days to 18 months after delivery. The aims were to investigate the incidence, causes, and consequences of perceived breast milk insufficiency (transient lactation crises) by relating this phenomenon to the infant's breast milk consumption and growth, and to the course of breast-feeding. It was found that every second mother experienced transient lactation crises on at least one occasion (the crisis group). Some general findings revealed a wide variation in breast milk consumption, not only between infants but also in the same infant from one occasion to another. The total energy intake was almost the same for the partially breast-fed infants, receiving breast milk plus supplementary food, and those who were exclusively breast-fed. Although most mothers in both groups initiated the weaning in accordance with general recommendations, a wide variation was also found in the length of the weaning period. In some cases it lasted for more than 5 months (21). In Kabul, many mothers complain of a lack of breast milk and believe that this is due to stress and not eating enough good food. Mothers presenting with breast milk insufficiency raise a number of challenges for the treatment of infants in feeding centers. The admission criteria and treatment of these young infants in the Therapeutic Feeding Units (TFUs) in Kabul have evolved over time. In 2003, the criterion of mother's milk insufficiency was added to the existing admission criteria. In June 2005, the criteria were amended further to admit infants with a weight for length less than or equal to 80% if the mother reported she was suffering from a "lack" of breast milk and the infant was not gaining or was losing weight at home (2). A lot of women discontinue breast-feeding during the first few weeks of the postpartum period because of perceived insufficient milk, and approximately 35% of all women who wean early report PIM as the primary reason. Many women utilize infant satisfaction cues as their main indication of milk supply and many researchers, clinicians, and breast-feeding women do not evaluate actual milk supply (22).

### **Insufficient Milk Production**

#### *Primary lactation insufficiency*

Five percent of mothers may have a primary

inability to lactate due to inadequate glandular tissue resulting from hypoplastic breasts, breast surgery such as mastectomy, breast reduction, or cyst removal (23-25). Breast surgery, including nipple piercing, can disrupt the ductal and neurological pathways. Additional causes of primary inability to lactate are severe illness such as postpartum hemorrhage with Sheehan's syndrome, infection, or hypertension (23).

#### *Secondary lactation insufficiency*

To establish a diagnosis of secondary lactation insufficiency, the first step should be an objective measurement of the mother's milk production (6).

#### **Etiology/Predisposing Factors**

##### *Factors in the baby*

Prematurity/Low birth weight, birth asphyxia, illness, and defects, *e.g.*, cleft palate (14), congenital heart disease, and urinary tract infection (26).

##### *Maternal factors*

- Maternal health: Anemia, postpartum hemorrhage (26), smoking (moderate/heavy) (14,26)
- Mammogenesis: Insufficient breast tissue, breast surgery (reduction)
- Lactogenesis: Retained placenta, delayed breast-feeding
- Galactopoiesis: Inadequate breast drainage, infant tongue-tie
- Milk intake: Restriction of frequency or duration of feeds (14,26)
- Poor motivation or ignorance leading to discontinuation of feeds for minor ailments, administration of infrequent strict time scheduled feeds, etc.
- Inappropriate management of local problems in the breast, *e.g.*, flat and sore nipples, engorgement (14), retracted, short, or too large nipples (27)
- Sedation (also influences the baby) (14), over anxiety (14), excessive fatigue (14), and drugs, *e.g.*, oral contraceptives (14)
- Wrong technique of breast-feeding (27)
- Previous or chronic psychiatric disorders including depression may recur in the postpartum period and interfere with maternal parenting abilities (25)

##### *Environmental factors and hospital practices*

- Separation of the baby from the mother

- Painful infections, *e.g.*, episiotomy, cesarian section, *etc.* (14)
- Early introduction of bottle feeds, use of pacifiers
- Inadequate facilities for working women (14)
- Inadequate support and guidance from health professionals (14)
- High-pressure advertisement of baby foods (14)

The causes of breast-feeding failure are:

A. Perceived or actual milk insufficiency, caused by:

1. Inappropriate feeding practices, rooted in
2. Lack of understanding of the process of lactation
3. Lack of knowledge of infant behavior

B. Pain during breast-feeding, caused by:

1. Nipple trauma from inappropriate technique or practices
2. Breast pain from inappropriate technique
3. Nipple or breast pain from pathological organisms

C. Lack of support or undermining the decision, from:

1. Family and friends
2. Health professionals
3. Employers and school administrators (28)

Pathophysiology: Lactation is influenced by a complex hormonal milieu including reproductive hormones (estrogen, progesterone, placental lactogen, prolactin, and oxytocin) and metabolic hormones (glucocorticoids, insulin, growth hormone, and thyroid). The reproductive hormones act directly on the mammary gland, whereas the metabolic hormones act indirectly by altering endocrine response and nutrient flux to the mammary gland. Ductal growth is primarily regulated by estrogen and growth hormone, and alveolar development requires progesterone, prolactin, and possibly placental lactogen. During pregnancy, the high levels of circulating progesterone inhibit the secretory process of the mammary gland. Once the placenta is expelled after birth, progesterone levels decline rapidly, and increasing prolactin levels trigger the beginning of lactogenesis II, which is the onset of copious milk secretion (17). Two similar but independent mechanisms are involved in the establishment of successful lactation (lactogenesis); the first mechanism causes the release of prolactin and the second induces the release of

oxytocin, to induce milk ejection reflex. Although these two mechanisms are similar in that they can both be activated by suckling, they are mediated through two entirely different neuroendocrinological pathways. The key event in lactogenesis is suckling, and the sensitivity of the breast accommodates itself to this important activity. During pregnancy the skin of the areola is relatively insensitive to tactile stimuli but becomes much more sensitive immediately after delivery. This is an ingenious physiological adaptation that ensures there is an adequate stream of different neurological stimuli from the nipple to the hypothalamus to initiate and maintain the release of prolactin and oxytocin both of which are required for successful lactation.

Any maternal or infant factor that restricts the emptying of the breasts may reduce breast milk synthesis by mechanical and chemical inhibition. The continuous removal of feedback inhibitor of lactation (FIL) from the milk guarantees the total restoration of the removed milk (29). Women suffering from a PPH may experience a transient hypotensive insult and pituitary ischemia and/or infarction resulting in inhibition of the hormonal triggering of lactogenesis Stage II by prolactin. In rare cases, women who bleed severely during childbirth may develop Sheehan's syndrome, or ischemic necrosis of the pituitary gland, in particular of the anterior lobe, secondary to hypoperfusion. Failure to lactate or difficulties with lactation, due to absent or deficient prolactin secretion, are common initial symptoms of Sheehan's syndrome. In addition, elevated cortisol levels following such a stressful labor and delivery may also adversely affect lactogenesis Stage II. Delayed early contact between mother and baby following a complicated birth with PPH may also impact on a mother's ability to successfully establish and maintain breast-feeding (30).

### Assessment of adequacy of milk

When milk is not sufficient, the infant does not feel satisfied after feedings, cries a lot, wants to nurse frequently, takes very long feedings, and does not gain weight properly (<20 gm/day). The number of wet diapers a day (less than six–eight) and infrequent bowel movements, with a small amount of stools, which are dry and hard, indirectly indicate low intake of milk. The following signs indicate that an infant is not receiving enough milk in the first weeks of life: weight loss greater

than 10% of the birth weight, not regaining birth weight up to 2 weeks of life, no urinary output for 24 hours, and absence of yellow stools in the first week and clinical signs of dehydration (15,31). An infant's milk ingestion is accurately measured by test weighing, which entails weighing the infant before and after a breast-feed without changing clothes or accessories between the two weighing (6). This age-old practice of test-weighing, recording the baby's weight before and after feeding, is not only tedious but also fallacious and often just a waste of time in day-to-day practice, although careful use of electronic balances and other more sophisticated methods constitute good research tools. To determine how contented the infants are and to note whether they are sucking and sleeping well and gaining weight at suitable intervals, the infants are commonly taken to well-baby and under-five clinics (14). Is the baby wetting four–six diapers each day? After each feeding the baby appears to be satisfied, or does the baby appear hungry by crying vigorously and sucking frantically on his or her fist (31)?

### Diagnosis

There are a number of questions to ask about the mother's general health:

- Any medical conditions or breast surgery?
- Does she smoke? (Smoking over 15 cigarettes daily may reduce milk supply)
- Any endocrinological issues such as hypothyroidism or polycystic ovarian syndrome (PCOS)? Although some women with PCOS have no problems breast-feeding, there appears to be a group of women with PCOS with insufficient glandular tissue to produce an adequate milk supply (25,26). Most women will experience breast growth during pregnancy (or rarely this occurs in the postpartum period only. The general practitioner can ask the mother if she noticed breast changes in the pregnancy or after the birth—no changes may be an indication of insufficient glandular tissue.

If remnants of placenta are retained, lactogenesis II may be delayed. Therefore, questions need to be asked about the birth and the completeness of the placenta. Did she lose a lot of blood after the birth? Anemic women are less likely to continue breast-feeding than other women. Next, information is collected about the baby's birth weight, condition, and loss of weight in the first few days.

### Investigation of low supply

When indicated, the woman's hemoglobin level or thyroid function should be checked. Uterine ultrasound can assess retained products of conception if this is suspected. Maternal testosterone is raised in the presence of gestational ovarian theca lutein cysts, a rare cause of delayed lactogenesis. Urinary tract infection may be asymptomatic in infants, apart from failure to thrive, so a urine test may be worthwhile for the infant. If the baby appears unwell, further investigations may be required (26).

### Treatment

If milk production seems to be insufficient for the infant, due to low weight gain, in the absence of diseases, the first thing to do is to check whether the infant is properly positioned during breast-feeding and whether the latch-on is appropriate. To increase milk production, the following measures are useful:

- Improve latch on, if necessary
  - Increase the frequency of feeding
  - Offer both breasts in each breast-feeding
  - Allow the infant to empty the breasts completely
  - Alternate between breasts during the same feeding
- if the infant feels drowsy or if he/she is not sucking vigorously
- Avoid the use of bottles, pacifiers, and nipple shields
  - Eat a balanced diet
  - Drink enough fluids (recall that excessive intake of fluids does not increase milk production, and can even reduce it)
  - Take a rest (29)

### Relactation

When a mother chooses to stimulate lactation after a period of weaning or decides to breast-feed after having never breast-fed, the term relactation is used (32).

### In partial lactation failure

Satisfactory relactation in these mothers is attained by motivation and encouragement. They need to be educated on the supremacy of breast milk and actively involved in achieving success with "commitment for the cause." As the days pass by, the amount of top feed needs to be reduced in increments until the infant is entirely on mother's milk (27).

### Incomplete lactation failure

This is rather a more difficult situation. In addition to motivation, encouragement, and moral support, the following actions are warranted:

- Nipple stimulation exercises by nipple stroking, massaging the breast, and rolling the nipple between thumb and the index finger.
- Frequent suckling, at least 8–10 times a day, each session lasting 10–15 minutes for each breast.
- Drop and drip method may be employed if the infant fails to suckle for 8–10 minutes. The method involves expressing some breast milk or top milk in a cup and gradually pouring it over as drops over the breast. As the drops slide over the nipple down into infant's mouth, he is stimulated to suckle at the breast (27,32).

### Evidence of successful relactation

- Appearance of first milk secretion in 2–10 days.
- Partial restoration of breast-feeding with reduction of top feed to half of the initial.
- Complete restoration of breast-feeding with total withdrawal of top feed.
- Satisfactory weight gain by the infant (27).

### Galactagogues

Galactagogues (or lactogogues) are medications or other substances believed to assist initiation, maintenance or augmentation of maternal milk production. Because low milk supply is one of the most common reasons given for discontinuing breast-feeding, both mothers and physicians have sought medicine to address this concern. Common indications for galactagogue are adoptive nursing (induction of lactation in a woman who was not pregnant with the current child), relactation (reestablishing milk supply after weaning), and increasing a faltering milk supply because of maternal or infant illness or separation (34,35). Mothers who are not directly breast-feeding but are expressing milk by hand or with a pump often experience a decline in milk production after several weeks. One of the most common indications for galactagogue is to augment a declining milk supply in mothers (34).

### Metoclopramide

The vast majority of published clinical data evaluating the use of drug therapy for breast milk production focuses on metoclopramide, which promotes lactation by antagonizing the release of dopamine in the central nervous

system (35, 36). This drug can cause extrapyramidal side effects, which may include tremor, bradykinesia (slow movements), and other dystonic reactions. Kauppila *et al.* reported a dose–response relationship between improved lactation and metoclopramide 5, 10, or 15 mg 3 times daily in 37 mothers who had deemed their breast milk production insufficient during the initial 2 months after delivery. Daily doses of 30 and 45 mg of metoclopramide resulted in significant increases in serum prolactin levels and milk yield, with the 45 mg daily dose producing a faster onset of effect (35).

Metoclopramide have been linked to accelerated declines in the protein concentration of breast milk and also to changes in the electrolyte composition of breast milk (37).

### Domperidone

Domperidone is also a dopamine antagonist (35,37) that is available outside the United States for the treatment of chronic postprandial dyspepsia, reflux esophagitis, and emesis. The usual oral dosing range varies from 10 mg 3 times daily to 40 mg 4 times daily depending on indication (25). Administration of domperidone results in increases of mean serum prolactin levels in normal women from 8 to 111 ng/ml following a single 20 mg dose (25,37). Doses used for induction and maintenance of lactation range from 10 to 30 mg 3 times daily. In a recent, randomized, double-blind, placebo-controlled study, 20 women were assigned to receive either domperidone (11 women) 10 mg orally 3 times daily or placebo (9 women) for 7 days. In the final analysis, 4 women were excluded, 3 had incomplete milk records, and 1 infant died of neonatal complications. As compared to baseline, the mean increase in milk yield from days 2 to 7 was significantly higher ( $P < .05$ ) in the domperidone group ( $50 \pm 29$  ml) as compared to the placebo group ( $8 \pm 40$  ml), even though the domperidone group had a significantly higher milk volume at baseline. In addition, serum prolactin levels were significantly increased by domperidone therapy ( $p = .008$ ) (35).

### Sulpiride

Sulpiride is a typical antipsychotic that serves as a galactagogue by increasing hypothalamic prolactin-releasing hormone. The typical dosage for initiation of lactation is 50 mg 2–3 times daily. Maternal side effects include extrapyramidal effects such as tremors, bradykinesia, and acute dystonic reactions, and possible

endocrinological concerns such as weight gain. The use of sulpiride to increase milk production has been evaluated in two studies. Ylikorkala *et al.* administered sulpiride 50 mg orally 3 times daily or placebo to 24 women who believed their milk yields to be insufficient during the initial 4 months after delivery. Therapy was continued for a 2-week period. In addition, supplemental buccal oxytocin was administered to some patients. One woman in the sulpiride group and three in the placebo group discontinued therapy owing to lack of effect. Daily milk yield was significantly greater with sulpiride therapy versus placebo both at 1 week ( $628 \pm 51$  ml vs.  $440 \pm 68$  ml) and 2 weeks ( $684 \pm 67$  ml vs.  $423 \pm 60$  ml) of treatment ( $P < .05$ ). Higher serum prolactin concentrations were also noted in women receiving sulpiride therapy (35).

### Thyrotrophin-Releasing Hormone

Thyrotrophin-releasing hormone (TRH) is available in the United States as a diagnostic agent in the assessment of thyroid function. It is structurally similar to naturally occurring TRH, which increases the release of both TSH and prolactin. Peters *et al.* evaluated the use of TRH as a galactagogue in 19 women with inadequate lactation, defined as less than 50% of normal milk yield, on the fifth day postpartum. In a random fashion, 10 women received a nasal spray formulation of TRH and 9 received a 0.9% sodium chloride spray for 10 days starting on day 6 postpartum. One spray, equivalent to 1 mg of TRH, was administered 4 times daily at prespecified times. At the end of the initial 10-day period, milk production was significantly increased in the TRH group from a mean of 142 gm/day to 253 gm/day ( $P = 0.014$ ). Seven women in the TRH group requested further treatment for an additional 10-day period. Continued therapy resulted in a further increase in milk yield, up to 424.3 gm/day. Administration of long-term high-dose (40 mg) oral TRH administration has been associated with the development of hyperthyroidism in women, but this effect was not observed in patients in this trial (35).

### Oxytocin

Although used commonly in the past in the United States, oxytocin is no longer on the market. Oxytocin is typically used to promote milk letdown; however, it has been evaluated to enhance the onset of lactation among 8 mothers of premature infants. Subjects were given a spray bottle containing either oxytocin 40 U/ml or a blank

solution and were instructed to administer 1 spray in each nostril (total dose of 3 U oxytocin) prior to pumping milk. The effect of the spray on milk production was highly significant, resulting in a threefold to fivefold increase in milk production in primiparas and a twofold increase in multiparas. No significant change in composition of breast milk was noted (35).

### **Chlorpromazine**

Chlorpromazine, another typical antipsychotic, has also been used as a galactagogue. It is conformationally similar to the dopamine molecule and has the ability to bind and block the dopamine receptor, resulting in increased prolactin levels (35).

### **Growth hormone**

The exact mechanism of action by which human growth hormone may stimulate lactation remains unknown. The development of a controlled trial to evaluate the effects of human growth hormone on lactation was based on animal data observed in cows. In this randomized, double-blind, placebo-controlled trial, 16 healthy, lactating women received either recombinant human growth hormone in a dose of 0.1 IU/kg/day subcutaneously, or placebo injection, on days 3–9 of a 10-day study period. At baseline, milk production volumes were similar in both groups. After 7 days of therapy, there was a significant increase ( $P < .02$ ) in milk volume in the human growth hormone-treated group ( $18.5 \pm 1.5\%$ ) as compared with the placebo-treated group ( $11.6 \pm 2.0\%$ ) mothers. The use of this drug as a galactagogue is limited. Studies evaluating the use of human growth hormone in women with actual lactational insufficiency are lacking, as is safety data in breast-feeding infants.

In some selected cases, when the measures mentioned above do not work, the use of medications may be useful. The most widely used medications are domperidone and metoclopramide, dopamine antagonists, which increase prolactin levels. Domperidone, widely used in Canada and Mexico, does not cross the blood–brain barrier, which makes it safer than metoclopramide, with fewer side effects, and may be used for an undetermined time period. However, these drugs seemingly do not stimulate milk secretion when prolactin levels are already sufficiently high or when there are not enough glandular tissues (38).

Metoclopramide and chlorpromazine may help certain mothers with lactation failure to revert to normal milk production through their galactagogue effect (27).

Metoclopramide is a more effective releasing agent for prolactin than TRH. There is some indication that it increases milk production in women with lactation failure. One placebo-controlled trial showed that metoclopramide was more effective than placebo at maintaining failing lactation (39).

### **Herbs and natural substances**

The use of natural products believed to be able of increasing milk production has a long history. The most frequently used products include fenugreek, Anise, fennel, cumin, grape, and coffee have also been traditionally used. Various pharmacological and clinical studies have proven the galactagogue activity of herbs such as when rats were fed with *Nigella sativa* seeds, weight of the litters of rat was increased. This revealed that the seed of *N. sativa* has marked galactagogue action in rats (40). Many studies showed that roots of *Asparagus racemosus* Willd when administered orally in goats (41), rats, cows, and buffaloes (42–45) increased milk production. Kaikini and his coworkers in their study observed that crude alcoholic extract of root of *A. racemosus* increased the weight of mammary glands in postpartum and oestrogen-primed rats and the uterine weight in oestrogen-primed group (44). A double-blind randomized clinical study evaluated the galactagogue effect of root of *A. racemosus* in lactating mothers. The study results showed that the oral administration of root increased plasma prolactin concentration threefold in the trial than in the control group (46). Other studies reported that the effect of *A. racemosus* was attributed to the release of corticosteroids or an increase in prolactin. It is proved that Shatavarin I-V, the steroidal saponins, has the hormonal effect of Shatavari and confirms its use as traditional galactagogue (47,48). The studies conducted in buffaloes showed that milk production significantly increases ( $P < 0.01$ ) in animals feeding on *Gossypium herbaceum* seeds compared to the control group animals feeding on concentrate mixture (49,50). Fenugreek has been reported to increase milk production in women within 24–72 hours after initiation of therapy. The recommended dose of fenugreek for use as a galactagogue is two–three capsules of 500 mg 3

times daily (51). In a study, 10 mothers were asked to maintain a diary of the quantity of milk produced with a pump for a period of 2 weeks. In the first week, baseline milk production was evaluated; in the second week, mothers took fenugreek, three cups, 3 times daily. In the first week average quantities were 207 ml/day, whereas, milk production in the second week averaged 464 ml/day ( $p = 0.004$ ) (52).

## CONCLUSION

Mother's milk is very important for child. Child-survival

data recommend the promotion of exclusive breast-feeding in the first 6 months as the single most effective intervention to reduce mortality by 13%–15% below 5 years of age. Mothers often feel that they have insufficient milk, and face numerous physical, emotional, and logistical obstacles to breast-feeding, and even small anxieties about milk supply can lead to lactation insufficiency or failure. Lactation insufficiency in mothers is mainly because of not using proper technique to breast-feed the infant. However, there are some conditions that affect lactation where the proper diagnosis and treatment is necessary.

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