

An Outlook on Breastfeeding Assessment Tools- A Review

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ABSTRACT

Breastfeeding is a biological inheritance shared by women all around the world. It is the 'natural' way to feed new born babies, and the best source of nutrition for infants. After birth, loose stools and pneumonia are more frequent and serious in the formula fed babies, and can cause deaths. Otitis media, haemophilus influenza meningitis, and urinary tract infection are less frequent in babies who are fed human milk. Infants who are formula fed have a greater chance of developing chronic illnesses, such as asthma, diabetes mellitus type I, and intestinal diseases like inflammatory bowel disease. Coordination of mother and infant is most important for breastfeeding to be successful. Ineffective breastfeeding can contribute to mortality among new born babies and infants. Hence various breastfeeding assessment tools have been developed to advise and promote mother's comfort, motivation, and assess the infant's neurobehavioural development. In this review, the literature to find out the most commonly used breastfeeding assessment tools, their salient features, advantages and disadvantages, acceptability, usage and validation have been reviewed.

Keywords: Human milk, Infant formula, LATCH scoring, Mother-infant dyad

INTRODUCTION

Breastfeeding practice has been emphasised in the ancient Hindu scriptures, holy quran, and biblical records [1]. Breastfeeding has short and long term advantages for both infant and mother. It also prevents the occurrence of several sudden and persistent diseases among the new born babies and infants. A study which conducted review on breastfeeding assessment reveals that in developing nations, infants who are not breastfed are six to tenfold more probable to perish in the initial few months than breastfed infants [1].

The close contact between the mother and the child during breastfeeding fosters an emotional and psychological bond, leading to the healthy growth and development of the child [2]. The infant mortality rate is the national indicator of health, and almost 50% of infant deaths occur during the neonatal period [3]. The need to feed infants with breast milk is a priority across the globe and is also essential for the child's survival. Hence, it is very important to promote and provide support to mothers breastfeeding the infants [4]. A study conducted in North India reveal that there was good attachment in 42% mother-infant pairs and infants were held in "correct position" by 60% mothers [5]. A study in Bangladesh reported that correct breastfeeding position (74%) and good attachment (72.3%) as assessed by community health workers at late visits (67 days after delivery) were practiced by mothers [6].

The efficiency of breastfeeding must be assessed objectively to achieve adequate success in breastfeeding. One of the factors that ensure successful breastfeeding is the latching of the baby to the breast. Though it is normal norm for mothers to breastfeed, without proper understanding this can become a task, so complex for the mother-infant dyad. This needs proper coordination of the suck reflex, swallow reflex, ability to breathe, the neurobehavioral aspects of development, and also motivation and comfort of the mother [4].

During the initial days of life, support from the professionals present in the hospital is required to motivate the mother on the start and duration of breastfeeding. It is also important to predict the LATCH on of the infant to the breast which positively increases the success associated with breastfeeding. The World Breastfeeding Initiatives assessed a total of around 15 factors including children programs and policies related to feeding of infants and young children in the year

2015, in which India had a score of 78 out of 150. This was just a marginal improvement from the score of 68 out of 150 that India had got in 2005 [3]. There was a segment of a program that aimed to increase the rate of breastfeeding. It was suggested to use a tool that was reliable, reproducible and to find mother-infant duo who need additional support and frequent follow-ups.

BREASTFEEDING ASSESSMENT TOOLS

Many small and malnourished infants under six months of age have problems with breastfeeding and restoring effective exclusive breastfeeding is a common treatment goal. Assessment is a critical first step of case management. As a result, it is critical to check breastfeeding to discover lactational issues and evaluate progress [7].

A few key components are critical to the overall success of lactation. This includes the infant's behaviour, the attitude of mother, position and posture, LATCH, efficient feeding, condition of the breast, infant's well-being, and mother's perspective about the nursing experience. It is important to figure out what the primary challenges are for each mother-infant dyad [8]. More specific diagnosis will lead to more targeted and, eventually, more successful feeding for the new born and their caregivers.

The commonly used assessment tools are:

1. LATCH Scoring System.
2. Infant Breastfeeding Assessment Tool (IBFAT).
3. Mother Baby Assessment Tool (MBA).
4. Bristol Breastfeeding Assessment Tool (BBAT).

LATCH Scoring System [9]

In 1994, Jensen D et al., established the LATCH scoring system, which is regarded as one of the most essential breastfeeding evaluation tools [9]. It is an evaluation method for determining the efficiency of early breastfeeding. As a result, it has been incorporated into each hospital's medical record, and a record will be made before discharge under the term LATCH Charging System.

LATCH is a breastfeeding charting system which gathers information on individual breastfeeding sessions.

Each letter of the acronym LATCH denotes the key component which is the area of assessment.

- L - how well the infant latches onto the breast.
- A - the amount of audible swallowing noted.
- T - the mother's nipple type.
- C - mother's level of comfort.
- H - amount of help the mother needs to hold her infant to the breast.

The system assigns a numerical score, 0, 1, or 2, to five key components of breastfeeding. The system is visually represented in the same form as the Apgar scoring grid, and the numbers are handled in the same way. Each component scored from 0-2, total score is 10 [9] [Table/Fig-1].

Key component	Score		
	0	1	2
L- LATCH	-Too sleepy or reluctant -No LATCH achieved	-Repeat attempts. -Hold nipple in mouth. -Stimulate suck.	-Grasps breast -Tongue down -Lips flanged -Rhythmic sucking.
A- Audible swallowing	None	-A few with stimulation.	-Spontaneous and intermittent <24 hours -Spontaneous and frequent >24 hours old.
T- Type of nipple	-Inverted	-Flat.	-Everted (after stimulation)
C- Comfort (breast/nipple)	-Engorged -Cracked/bleeding/large blisters or bruises. -Severe discomfort	-Filling. -Reddened/small blisters or bruises. -Mild/moderate discomfort.	-Soft -Non tender
H- Hold (positioning)	-Full assist (Staff holds infant at breast)	-Minimal assist. -Teach one side: mother does other staff holds and then mother takes over.	-No assist from staff mother able to hold/ position infant.

[Table/Fig-1]: LATCH scoring system.

Usage of the LATCH score: In India, a prospective cohort research was conducted in which a total of 93 mother and infant pairs were included. Assessment of breastfeeding was done twice, the former on 1st day of life and the later at the time of discharge. Before being discharged, mothers having poor scores were advised accordingly. At six weeks, mother and infant pairs were assessed for exclusive breastfeeding and rate of weight gain and those with lower score (below 5) were advised and were given necessary help to breastfeed successfully [10].

The LATCH score is a simple, useful measure for health workers to use in maternity wards to assess breastfeeding, especially for documenting data and monitoring lactation. Because the first days of life are pivotal for the initiation and duration of breastfeeding, the influence of an early LATCH score is essential in the prediction of exclusive nursing at discharge. Low scores mean mothers will have to feed their kids, nutrition other than breastmilk in the first days of life, jeopardising exclusive lactation's near and future benefits.

In a study done by Zenobi C and Lawrence N paired t-test analysis showed improvement in the postintervention LATCH score in total score (9.3 vs. 7.8, $p=0.000$), as well as three sub scores, LATCH (1.8 vs. 1.5, $p=0.01$), audible swallowing (1.8 vs. 1.5, $p=0.001$) and hold (1.8 vs. 1.4, $p=0.000$) [11]. In a study done by Abbas IM and Hasan RT total LATCH scores positively correlated with duration of breastfeeding ($n=128$; $r=0.26$, $p=0.003$) and to mother's scores ($n=132$; $r=0.58$, $p=0.001$). Correlations among LATCH measures ranged from 0.02 to 0.51 [12].

Infant Breastfeeding Assessment Tool (IBFAT) [13]

The IBFAT was created in 1988 and is a tool to assess and measure the infant's rooting, fixing, and sucking activity while breastfeeding.

It can be used easily by medical professionals, mothers, healthcare workers and nurses. The instrument consists of four components. Each of the components has a significant role in infant breastfeeding behaviour. These include: readiness to feed, rooting, fixing and sucking. Every component is assigned a numerical value of 0, 1, 2, 3 based on the answer chosen and the total score is 12 which is the score for a vigorous, effective feeding [13]. The end report of the breastfeeding assessment tool is as shown in [Table/Fig-2].

Component	3	2	1	0
In order to get baby feed:	Placed baby on the breast as no effort was needed.	Used mild stimulation such as unbundling, patting or burping.	Unbundled baby, sat baby back and forward, rubbed baby's body or limbs vigorously at beginning and during feeding.	Could not be aroused.
Rooting	Routed effectively at once.	Needed coaxing, prompting or encouragement.	Routed poorly even with coaxing	Did not root.
How long from placing the baby on breast to LATCH and suck?	0-3 minutes.	3-10 minutes.	Over 10 minutes.	Did not feed.
Sucking pattern	Sucked well throughout on one or both breasts.	Sucked on and off but needed encouragement.	Sucked poorly, weak sucking; sucking efforts for short periods.	Did not suck.

[Table/Fig-2]: Infant breastfeeding assessment tool.

Mother's evaluation (it is not calculated in IBFAT score); How do you feel about the way the baby fed at this feeding?; 3-Very Pleased 2-Pleased 1-Fairly Pleased 0-Not pleased

Usage of IBFAT score: In a study conducted by Mathew MK et al., the instrument was used to assess the breastfeeding behaviours of 60 healthy new born babies from birth to four days after birth [13]. In total, 920 feeds were assessed by the mothers. The investigator also assessed 77 feeds. Inter-rater reliability for this study was 91%.

Mother Baby Assessment (MBA) Score [14]

The MBA (Mother Baby Assessment), also known as the breastfeeding Apgar score. It stands for maternal and infant breastfeeding behaviour assessment. It's a ten point scale that rates how well a mother and baby nurse. The evaluation method may be used to follow a woman and her baby's development as they learn to breastfeed, as well as in-hospital charting, referrals, triage, and research.

Mother baby assessment score is characterised by five point chart which involves the assessment of mother to infant breastfeeding behaviour. Sequential events during breastfeeding includes signalling, positioning, fixing (latching), milk transfer, ending. Baby signals by a cry, indicating a need for milk. This phase is terminated when the mother offers the breast for milk. Positioning is the placement of the baby, which is ready to receive the milk, the mother makes the comfortable position by using pillows or other aided, and the baby is well comforted with soft cloth, baby neck is neither flexed not extended. The position is very important such that the baby is located near the breast which initiate the head, mouth and tongue reflex. Fixing is the phase in which the act of sucking begins.

In this phase the mother's nipple is positioned close to the lip of the baby. This procedure initiates the proprioception of the lips which cause the breast past the sucking pattern. Milk transfer, this is the important phase in breastfeeding because there is an actual intake of milk. The involuntary ejection reflex to the sucking action transfers the milk into the baby which satisfy the actual cry of the baby. Ending is the satiety which is the condition of end of the nursing phase. This phase ends by the detaching the baby from the mother's breast.

Usage of MBA score: This tool is useful in hospital charting, when conducting research, practicing triage and making referrals [14] [Table/Fig-3].

Step	Mother's response	Baby's response
1.	Readiness/cues/response	Cues/readiness/response
2.	Positioning	Rooting
3.	Fixing	Sucking
4.	Mother's signs and symptoms of milk release	Baby's signs of milk intake
5.	Condition of breasts	Baby's signs of satiation

[Table/Fig-3]: Mother baby assessment tool.

Bristol Breastfeeding Assessment Tool (BBAT) [15]

Based on research findings and World Health Organisation (WHO) baby friendly initiative breastfeeding practice principles, five lactational physicians recommended the components of current breastfeeding assessment tools and decided to use some attributes that were similar to two LATCH items (swallowing, comfort) and one from the IBFAT (sucking) and added two new items to score positioning and attachment. The end report of the breastfeeding assessment tool is shown along with a detailed discussion of the scoring [Table/Fig-4].

Parameters	0 (Poor)	1 (Moderate)	2 (Good)
Positioning: Baby well supported, tucked against mother's body, lying on side/untwisted neck, nose-nipple, mother's handling of the baby is confident.	No or few elements achieved.	Achieving some elements.	Achieving all elements.
	Needs to be talked through positioning.	Some positioning advice still needed.	No positioning advice needed.
Sucking: Able to establish an effective sucking pattern on both breasts (initially the sucks are rapid and then they get slower with pauses) and then there is termination of feeding.	No effective sucking, no sucking pattern.	Some effective sucking is seen initially and then there is not adequate sucking pattern on and off the breast.	The pattern of sucking is efficient.
Swallowing.	Swallowing is not heard and clicking noises are heard.	Swallowing is heard occasionally and certain swallows are clicking in nature or noisy.	Audible, regular soft swallowing, no clicking.
Attachment: Positive rooting, wide open mouth, baby achieving quick LATCH to adequate breast tissue in mouth and also has the LATCH throughout feed.	Baby unable to LATCH onto breast or achieves poor LATCH. No/few elements achieved. Needs to be talked through attachment.	Achieving some elements and some advice on attachment needed.	Achieving all elements and no advice on attachment needed.

[Table/Fig-4]: Bristol breastfeeding assessment tool [15].

ADVANTAGES AND DISADVANTAGES OF BREASTFEEDING ASSESSMENT TOOLS

LATCH is a simple, cost effective tool which assesses both maternal and infant variables. Through this the areas which needs intervention can be detected even within 24 hours of child's birth, so that exclusivity of breastfeeding can be improved. IBFAT is also a simple and cost effective tool and is designed to be used by mothers, midwives and health professionals. In this, the infant's readiness to feed, root, fix, suckle as well as the baby's feed initiation status is assessed in items 2-5 but the mother's evaluation score is not included in the IBFAT score [13]. MBA is another simple tool used to follow-up development of a new born, it can be used even for hospital charting and in triage [15]. But still the problems associated with breastfeeding continued despite these tools. Hence there was a need for the development of a new breastfeeding assessment tool for effective breastfeeding and to maintain consistency of this effectiveness.

From studies conducted in various regions, it was revealed that tongue-tie may be a contributing factor to mother's experiencing breastfeeding problems, as difficulties with both breast and bottle feeding have been reported in 25-44% of infants with this condition [15-18]. Research was carried out to address this issue.

A systematic review was conducted on "outcomes of frenotomy on breastfeeding" and it revealed that main tools used to assess breastfeeding were LATCH and IBFAT [19]. Some of the studies have suggested that these assessment tools are too broad to show differences in pre and post frenotomy breastfeeding scores and that other more subjective assessment should be used [16]. Also in a study conducted by Riordan J and Koehn M it was revealed that reliability coefficients for all three assessment tools (LATCH, IBFAT and MBA scores) are below acceptable levels for clinical decisions and hence they concluded that that these tools are invalid for clinical use [20]. In a study conducted by Ingram J et al., it was found that, there was no difference between the LATCH or IBFAT scores across the timeline, but significant improvement was found for BBAT scores (from five days to eight weeks) in intervention group (post frenotomy) compared to the comparison group ($p=0.02$), which indicates that BBAT may be a more sensitive breastfeeding assessment tool [6].

CONCLUSION(S)

Breastfeeding is the only source of sustenance for infants. A healthy mother-baby relationship is required for efficient lactation which involves the convenience of the mother, her understanding of breastfeeding, encouragement to the mother, and proper infant sucking and swallowing. Highlighting the significance of early breastfeeding, monitoring the activities of premature babies under kangaroo mother care, and breastfeeding charts in a hospital setting are the factors to be followed-up after discharge.

Numerous assessment tools have been developed to promote breastfeeding. The majority of breastfeeding evaluation methods focus on the mother's positioning and attitude, the breast's health, the infant's placement, connection, efficient feeding (e.g. clear swallow), the baby's health, and the mother's impression of the lactational experiences. However, there is no clear and well-defined cut off point for the gold standard technique, therefore each assessment instrument has its advantages and disadvantages. As a result, there is a need for a consistent and efficient breastfeeding assessment method that focuses on delivering breastfeeding assistance to mothers who are learning to lactate or who are having difficulty with an older child. To guarantee improved breastfeeding efficiency and higher maternal self confidence, reliable evaluation is necessary.

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