Mother’s attitude to breastfeeding and its effect on oxytocin levels in mothers: a review article

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ABSTRACT

Background: Breast emptying causes more milk to be released, which stimulates the production of breast milk. One of the crucial hormones that will rise with breastfeeding is oxytocin. This literature study aims to evaluate the mothers’ attitudes toward giving breastfeeding and how it relates to the mother’s oxytocin levels is reviewed in this study.

Methods: We used the phrases “mother’s attitude,” “breastfeeding,” and “oxytocin level” in several databases, including PubMed (NIH), Scopus, EMBASE, and Google Scholar, as keywords for literature searching. Also manually searched were pertinent reference databases. This review article integrated any previously recognized relevant publications from the database, explained the findings in a narrative format, and offered a thorough evaluation and analysis of the literature findings.

Results: According to this study, oxytocin levels are linked to many mothers’ attitudes toward nursing, most favorable. Several studies indicate that the oxytocin levels increase high empathy, reduce stress, reduce cortisol hormone, typical of bonding, and mother will feel confident.

Conclusion: The mother’s mindset and the increase in oxytocin are related to breastfeeding.

INTRODUCTION

The toddler years are crucial in a child’s development since they mark the beginning of the foundational growth that will shape the child’s future development. There are pivotal times in a child’s development when constructive stimulus is required for their potential to blossom. When social interactions are designed to satisfy the child’s needs at different stages of development, even when the baby is still in the womb, optimal development results. Breast milk is the best and only source of sustenance for infants in the first few months of life. Breast milk is a bodily fluid that is created when the mother’s breast glands secrete a mixture of nutrients. Breast milk’s macro- and micronutrient composition can satisfy infants’ demands in accordance with their developmental stage. Only breast milk should be given to them for the first six months of a baby’s life. This is known as exclusive breastfeeding.

The World Health Organization (WHO) suggests exclusive breastfeeding for the first 4-6 months of life. Because it is natural, nursing exclusively is the first, best nourishment for infants. Breast milk has many advantages, including a lower incidence of baby diseases. The growth and development of a child’s intelligence is also aided by breast milk. Because there is a complex connection between mechanical stimulation, nerves, and numerous hormones that affect the release of oxytocin to help with milk production, not all postpartum moms produce breast milk. Breastfeeding offers babies and infants unsurpassed natural nutrition with a nearly ideal balance of the vital vitamins and nutrients required for their growth and development. But because breastfeeding rates are still below the targeted level, the WHO has set a target of 50% exclusive breastfeeding by 2025. Breastfeeding’s special advantages aid infants’ health and development.

Colostrum, released in the first few hours following delivery, has high concentrations of protein, fat, and antibodies, primarily neutrophils and phagocytic macrophages, that help the infant’s immune response by surviving the digestive system. Breastfed infants have a four times lower risk of developing diarrhea than formula-fed...
Breastfeeding can reduce the high infant mortality rate seen around the world. Although measles and diarrhea are frequent causes of infant mortality, malnutrition brought on by not nursing accounts for 54% of infant deaths. According to WHO statistics, there are 170 million malnourished children on the globe, and three million of them pass away every year from conditions related to their malnutrition. Therefore, the World Health Organization (WHO) advises that all newborns receive colostrum (first and two days after birth) as a macrophage gene activator against microbes. Furthermore, Oxytocin Receptor (OXTR) has correlated to children’s prosocial behavior in the golden generation. It may cause by breastfeeding and may elevate children’s quality of life since early childhood.

This article evaluates the factors that influence mothers’ attitudes toward breastfeeding. It also reviews the evidence about the relationship between the level of oxytocin (OXTR) and the mothers’ breastfeeding practice.

METHODS
This review searches studies related to factors that influence positive and negative attitudes towards breastfeeding among mothers as well as the effect of breastfeeding on the level of OXTR in mothers utilizing a number of databases, including Google Scholar, Scopus, EMBASE, and NIH (PubMed) databases. Additionally, relevant reference databases were manually searched. This review essay contained all pertinent publications from the above database and narratively described them, along with a thorough literature analysis. The PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) requirements were strictly adhered to. This review included and narratively analyzed all pertinent papers of any research design published in the prior data set, whether in English or Indonesian.

RESULTS
Several studies investigating the connection between oxytocin levels during breastfeeding and mothers’ attitudes have been published, as stated in Table 1.

DISCUSSION
Interviewed moms who had just given birth to healthy newborns in San Francisco, California, to learn about their perspectives toward nursing. The study found that people who drank instant formula milk tended to view breastfeeding negatively. Physical concerns, discomfort, embarrassment over breastfeeding in public, and unfavorable influences from family or friends all contributed to negative views. The extent of exclusive breastfeeding was also influenced by social comfort with breastfeeding and knowledge of the advantages of breastfeeding. They recommended boosting breastfeeding duration and exclusivity by promoting breastfeeding in social settings and reinforcing messaging about the health benefits of nursing.

In a different study, it was discovered that low-income mothers gave the same explanations for stopping breastfeeding early as had been given for other populations of women. These findings highlight the need for timely, culturally responsive interventions to address latch issues in the early weeks and supply issues as babies develop to eliminate differences in breastfeeding length. It has also been established that women’s knowledge, attitudes, and practices regarding exclusive breastfeeding have been examined. Mothers’ reasons for discontinuing or not continuing breastfeeding have been examined, as have the factors related to knowledge and practices surrounding A child should only be breastfed for the first six months.

In this study, many moms had little or no knowledge of the advantages of exclusive breastfeeding. Therefore, greater prenatal education results in better attitudes and increased knowledge about breastfeeding. During nursing, prolactin and oxytocin production are linked to reduced maternal stress and enhanced bonding. On the other hand, mothers’ risk of postpartum depression has been associated with early or complete discontinuation of nursing. Premenopausal breast cancer and ovarian cancer are less common among nursing mothers. Children’s cognitive development considerably improves due to the abundance of vitamins, minerals, vital fatty acids, and amino acids in breast milk. Additionally, neurological development in general and language development have greatly improved.

Mothers in Saudi Arabia, who are typically between the ages of 31 and 40, have a bachelor’s degree and are employed, tend to be against breastfeeding. The most frequent obstacles to breastfeeding were maternal illness and the husband’s lack of support. The vast majority of moms in Thailand remained uncommitted to exclusive breastfeeding. They had a fair amount of self-assurance, and there was a big difference between women who lived in nuclear households and those who did not. Extended family structures may impact the mother’s food preferences and the length of exclusive breastfeeding. However, only 14% of Thai moms breastfed their infants exclusively for six months. This study aimed to comprehend the steps women in Bangkok Metropolitan took
to successfully breastfeed their infants exclusively for six months.\textsuperscript{22}

Specifically, because of their lower levels of education and lack of breastfeeding knowledge, moms in Ethiopia tended to maintain a neutral attitude regarding exclusive breastfeeding.\textsuperscript{23} According to a previous study, multiparous mothers have higher oxytocin levels than primiparous mothers. As a result of the mother’s psychological adaptation during nursing, oxytocin released in response to the practice may increase the amount of breast milk produced. Breastfeeding initiation might be impacted by stress and medical treatments during childhood. Reduced oxytocin levels have been linked to prenatal stress, postpartum depression, social anxiety, and autism in children, and more studies have found similar results.\textsuperscript{17,24}

Breastfeeding relies heavily on oxytocin, a peptide produced in the hypothalamic supraoptic and paraventricular nuclei (SON and PVN). By constricting the myoepithelial cells surrounding the milk-producing alveoli and relaxing the sphincter of the milk duct, oxytocin released into the bloodstream during nursing encourages the flow of breast milk.\textsuperscript{17} Oxytocin is a hormone released from brain nerves when a baby is breastfed. Oxytocin helps the body and mind adjust physically and mentally to breastfeeding and motherhood.\textsuperscript{25} Prolactin is released more readily due to oxytocin, which increases milk production. Additionally, it has potent anti-stress benefits, which include raising metabolism and digestion while reducing blood pressure and cortisol levels.\textsuperscript{26}

A previous study among medical students found a significant correlation between oxytocin levels, empathy, and breastfeeding intention. This study found that breastfeeding intention and empathy were not only related to oxytocin levels but that mothers’ attitudes toward learning at the academic and professional levels also required psychological or educational interventions to support the development of these two social aspects.\textsuperscript{27} Additionally, breastfeeding may cause moms’ endogenous oxytocin levels to rise. According to studies showing a rise in mothers’ oxytocin levels during breastfeeding and in keeping with the recognized function of oxytocin during breastfeeding, this is true.\textsuperscript{28}

In contrast to this study, it observed no variations in oxytocin AUC across a feed between women who were depressed or worried and women who had no symptoms at either 2 or 6 months after giving birth. No changes in oxytocin trajectories were seen during breastfeeding by symptom group, but there may have been differences based on antidepressant use, according to repeated measures analyses. Our research reveals that environmental factors may impact how oxytocin, maternal mood symptoms, and newborn feeding are related.\textsuperscript{29}

From labour to postpartum, oxytocin levels are increased in the bloodstream and the maternal brain. Elevated levels of oxytocin help pregnant women experience good emotions and combat stress, fear, and pain. Additionally, oxytocin promotes advantageous maternal adaptations, such as activating brain reward centers that promote mother-newborn attachment

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<tr>
<th>The population of reference breastfeeding</th>
<th>Mother’s attitude</th>
<th>Oxytocin</th>
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<tr>
<td>59 medical students\textsuperscript{27}</td>
<td>Empathy high</td>
<td>Increasing</td>
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<tr>
<td>Literature review\textsuperscript{28}</td>
<td>Reduce stress</td>
<td>Increasing</td>
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<td>601 women\textsuperscript{19}</td>
<td>Lowered cortisol</td>
<td>Increasing</td>
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<td>Increasing</td>
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<td>160 women\textsuperscript{11}</td>
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<td>ND</td>
<td>No correlation</td>
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<tr>
<td>1,272 mothers\textsuperscript{33}</td>
<td>No maternal sensitivity</td>
<td>ND</td>
</tr>
<tr>
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<td>Increasing</td>
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<td>202 families\textsuperscript{35}</td>
<td>Homotypic and heterotypic stability</td>
<td>Increasing</td>
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<td>Mother will feel confident</td>
<td>Increasing</td>
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<tr>
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<td>Reduce stress</td>
<td>No significant</td>
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<td>Responsive</td>
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<tr>
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<td>Lower anxiety</td>
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<tr>
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<tr>
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<td>Significant</td>
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<td>34 general practice\textsuperscript{39}</td>
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and caregiving. In addition to promoting the start of nursing, oxytocin elevations during labor may sensitize the mother’s skin and increase the amount of oxytocin released by her body when she comes in contact with her newborn.10

The study involved 160 women who were chosen randomly from a convenience sample to examine the relationship between oxytocin use by mothers during labor and the nursing habits of newborns within two hours of birth. Compared to the group of women who received oxytocin during labor, nursing was considerably stronger in the babies whose mothers had a physiologic birth; using oxytocin during labor directly reduces breastfeeding in newborns. Therefore, educating and preparing pregnant women for a physiologic birth would seem vital.11

Despite slight variations in the early milk production pattern, using oxytocin nasal spray had no appreciable impact on the outcome. A considerable placebo effect (supported by scant information from historical controls) and the advantages of the additional breastfeeding support made available throughout the study are suggested because most mothers believed they were getting the active spray.12 Additionally, the length of breastfeeding predicted secure attachment at 24 months, but in this study, it did not function as a mediator in the relationship between the length of nursing and mother sensitivity. Gaining a deeper comprehension of how breastfeeding affects the mother-child dyad after infancy will enable one to recommend the best nursing techniques.13

Although in this study, breastfeeding duration and mother sensitivity were not mediated by breastfeeding duration, nursing duration predicted secure attachment at 24 months. It will be possible to provide advice on the optimum nursing strategies by understanding how breastfeeding affects the mother-child dyad after infancy.14 Following the birth of the kids, the mothers were questioned about their attitudes toward and interactions with their offspring, while the interactions between the babies and their mothers were documented. Oxytocin levels were linked to a certain set of mother-bonding behaviors during early pregnancy and the postpartum period, such as gaze, vocalizations, useful effect, loving contact, attachment-related thoughts, and frequent checks on the baby. Levels of oxytocin were also stable during the experiment. Oxytocin may help human moms develop actions and mental images that suggest bonding during pregnancy and postpartum.15

The study’s scant direct effects are consistent with the theoretical hypothesis that nursing behavior is merely one of many elements that influence the development of strong mother-child relationships. The study’s small impact sizes suggest that nursing for a long time may still be beneficial at different periods of later development. Several ecosystems and circumstances have an impact on how the mother-child bond grows. Maternal activities had homotypic and heterotypic stability, in contrast to dyadic behaviors, which only exhibited one. The children’s behavior showed signs of both homotypic and heterotypic instability.16

Studies at the Lawaga Poso health center show that oxytocin massage and breast care, which depend on the frequency and duration of breastfeeding and the baby’s weight, boost milk supply. Health experts, such as doctors, midwives, and nurses, offer guidance on oxytocin massage and optimal breast care for nursing mothers to perform these procedures that increase breast milk independently and for breastfeeding mothers to breastfeed their infants exclusively.17

Health professionals are crucial in spreading information and inspiring moms to breastfeed, encouraging them to give colostrum, engage in on-demand feeding, and plan to do so.18 Research findings on men suggest that primary health practitioners should pay more attention to raising client awareness of the value of exclusive breastfeeding during every stage of pregnancy and postpartum, for every new partner or elderly partner, and promoting positive husband support.19

Saudi Arabian mothers generally don’t understand the value of exclusive breastfeeding and early beginnings. They lack the resources, support, and preparation to practice exclusive breastfeeding. They experience social challenges, a lack of resources, unpreparedness, and a lack of support. The goal of providing exclusive breastfeeding can be altered by the use of instructional materials employing tablet-based mHealth. Additionally, it can, to a certain extent, support choices about early initiation. Their attitude toward breastfeeding, level of education, age, and the availability of expert advice all have an impact on their desire to exclusively breastfeed. The Internet and social media can be used to offer Arabic resources. Obstetricians and maternity nurses can help promote breastfeeding in conjunction with prenatal and pediatric consultations when feasible.20

Female medical students’ serum oxytocin levels are correlated with their level of empathy and breastfeeding frequency. Oxytocin levels are higher among women who are empathic and intend to breastfeed. According to educational level, oxytocin levels, breastfeeding intention, and empathy all increased. The study’s findings can be utilized to evaluate the learning process at the academic and professional levels, allowing for the development of learning strategies that will support competency growth and learning success.21 To maintain both individual and social health, disease prevention is crucial. During the perinatal period, breastfeeding offers immunological protection and prevents several disorders. In addition to delivering numerous generally acknowledged advantages for mothers and kids, breast milk is recognized as the best source of nutrition for newborns and babies. Additionally, there are particular advantages for mothers, such as the possibility of a delayed menstrual cycle and a resulting decrease in anemia, as well as a strong correlation with emotional attachment and fulfillment. Additional societal advantages include reduced infant mortality, the financial advantages of nursing versus formula milk, and the ecologically favorable element of lactation. There is enough data to imply that breastfeeding may dramatically affect an infant’s immune system. There is enough proof to conclude that nursing exclusively for the first six months of life can help lower the prevalence of atopic allergies. Components included in breast milk that help the intestinal mucosal barrier mature and, as a result, help the establishment of
oral tolerance.40  

Midwives and nurses can use hypno-breastfeeding massage as postpartum care to avoid postpartum depression and ensure the success of exclusive breastfeeding. The intervention is unrelated to breastfeeding. Intervention education must be provided to prevent a breakdown in communication between postpartum women and their families. After a 30-minute hypno-breastfeeding massage or one that includes hypno-breastfeeding and endorphin massage, the mother might feel better. Positive advice via MP3 can help mothers think positively and boost their confidence in breastfeeding. A type of support for the postpartum breastfeeding process is the husband giving the wife a mild massage.41  

This research was conducted at the Saudi Arabian Princess Nourah Abdulrahman University (PNU) in Riyadh and demonstrated the predominance of mothers’ negative sentiments toward breastfeeding. Significant correlations have been found between attitude and factors like age, nationality, education, occupation, salary, and life. Mothers who are older, more educated, and from non-Saudi countries are more supportive of breastfeeding. Contrarily, there is less connection between acceptance and the number of newborns or the nursing frequency. The two limitations with the largest proportion are maternal illness and work. Other obstacles were also mentioned as reasons for preventing breastfeeding. While much knowledge exists on enhancing milk production, little data is available on how to induce lactation. Given the less positive findings regarding breastfeeding and associated determinants, specific recommendations include incorporating health education programs into student curricula, encouraging the development of a breastfeeding-friendly workplace, and launching campaigns to promote lactation reduction.42  

Although half of the respondents had a positive attitude regarding breastfeeding, most respondents were recognized as having adequate knowledge. Awareness of the program is advised, particularly for men with low education levels. The majority of respondents had a positive attitude toward breastfeeding overall. Gender and educational attainment were shown to be knowledge-related factors, but attitudes about breastfeeding were found to be influenced by educational attainment and the number of children. To raise understanding and attitudes about breastfeeding, it is advised that greater awareness programs be created, especially for men, low-educated individuals, and those with fewer children.43 This will ultimately boost their favorable support for breastfeeding practices among working women. The results of this study can serve as a foundation for developing culture-specific interventions aimed at encouraging breastfeeding by exposing specific knowledge and misunderstandings of interest and identifying country-specific differences in predicted intentions to breastfeed. Participants had a generally optimistic outlook, an average degree of nursing knowledge, and a perception of conduct as neutral. There are misconceptions and knowledge gaps, especially among working women and concerning breastfeeding in public. It was discovered that breastfeeding intention was substantially correlated with knowledge, attitudes, and behavior in Lebanon and Syria.44  

Many bodily systems depend on oxytocin, which has long-term effects on both the mother and the fetus. Skin-to-skin contact during labor and delivery affects oxytocin, which is also involved in milk production and is the baby’s main hormonal contact. During nursing, oxytocin integrates the operations of numerous bodily systems and has a variety of impacts on both the mother and the infant. Babies have higher oxytocin levels than moms, and the birth technique affects these levels. Skin-to-skin contact’s significance, its connection to breastfeeding, and its role in mother-infant bonding.45  

According to the most recent research, mothers’ cortisol responses to breastfeeding differ depending on their genetic ability to release oxytocin, which may also affect how their child regulates stress.46  

Another study conducted in Saudi supported this result. Positive willingness to breastfeed exclusively was expressed by mothers after giving educational videos using mHealth.49 In addition, a cross-sectional study conducted among mothers who attended primary health care in Malaysia highlighted reciprocal decision between mother and father was associated with exclusive breastfeeding practices. This emphasized the role of the father in exclusive breastfeeding practices.48  

A weak but substantial positive connection between changes in extracted and non-extracted oxytocin levels during nursing was discovered (breastfeeding baseline reduction); no other significant positive positional association was detected. Nursing raises salivary oxytocin levels. This study demonstrates that anxiety decreases when oxytocin levels rise after nursing. At the 1-month follow-up, mothers who exclusively nursed tended to have slightly higher changes in oxytocin than mothers who did not. Frequent oxytocin withdrawal and decreased anxiety may follow early postpartum nursing, supporting exclusive breastfeeding.47 With the increased size and frequency of oxytocin pulses throughout pregnancy and during the first and second phases of labour, plasma oxytocin levels gradually increase. At birth, a sizable oxytocin pulse occurs. During labor, oxytocin secreted from the brain impacts the mother’s physiology and behavior. Circulating oxytocin induces uterine contractions. The blood-brain barrier prevents intravenous oxytocin from having the same effects on the brain as oxytocin utilized after vaginal delivery.48  

Previous research has demonstrated that social restrictions on breastfeeding initiation and overall length result from negative cultural attitudes toward the practice. There is a correlation between societally accepted negative sentiments and mothers’ perceived competence and willingness to nurse in public. Examining how attitudes around nursing in public have changed over time is also fascinating, both in terms of cultural advancements and shifts in women’s perceptions of their personal experiences. To promote mothers’ demand-driven, providing facilities that facilitate the breastfeeding process is necessary. Negative attitudes toward breastfeeding in public are certainly barriers that must be overcome to foster a more positive attitude. The health
of babies and breastfeeding rates can benefit from greater societal acceptance of breastfeeding in public.48

The stimulation of the oxytocin system and the known role of oxytocin in increasing positive influence and approach behaviors while reducing stress and avoidance behaviors may be related to the heightened socio-affective reactions reported in breastfed toddlers. Breastfeeding helps mothers feel better physically and psychologically, promotes happy emotions, and improves maternal sensitivity and caring. The oxytocin system presumably partly explains the effects on mother psychology and behavior.58

Regardless of their job, health providers lack enough information, congenial attitudes, and breastfeeding support abilities. High-quality education must be made available to see a rise in exclusive and total breastfeeding rates. Education is crucial for preparing health professionals with the necessary knowledge, attitudes, and abilities that can only be acquired through first-hand experience working with breastfeeding women, their children, and their partners.

The findings of this study suggest that health professionals have difficulties putting the WHO and UNICEF recommendations for prolonged breastfeeding into practice. We think healthcare experts can comprehend the rules because they are so simple. Conflicting knowledge and individual attitudes might make it difficult to put principles into action. Since attitudes concerning breastfeeding are mostly based on personal experience, it can be extremely difficult to change existing attitudes and apply new knowledge and skills. Mothers don’t just want doctors to have a theoretical understanding of medicine. They anticipate receiving professional direction, support, and encouragement.50

According to these findings, It is possible to identify pregnant women who are at risk of early breastfeeding termination by looking for depression symptoms, and exclusive breastfeeding can help decrease depressive symptoms from the time of delivery until three months after giving birth.51

The average score suggests that nursing is seen favorably. The findings revealed a strong correlation between the mother’s age and the breastfeeding self-efficacy score and between the nursing attitude score and the mother’s employment level, pregnancy plan, preferred feeding technique for the infant, and length of previous child’s breastfeeding. The findings demonstrate that the mother’s age, breastfeeding self-efficacy, occupation, and anticipated pregnancy all predict her breastfeeding attitudes. To strengthen and enhance breastfeeding attitudes and self-efficacy in nursing mothers, educational development programs that are in line with their needs during pregnancy and the postpartum period, as well as proper maternal support, are crucial.52-54

In response to nursing, oxytocin is released, which results in milk ejection as well as physiological modifications that boost milk production and psychological adjustments that make parenthood easier. Stress and birth-related medical procedures could impact these outcomes and the start of breastfeeding.17

Oxytocin effects of tonic and phasic nursing and potential contributing factors According to correlation analysis, maternal oxytocin did not differ between the physically fed and parental groups, which also showed that frequency and frequency of tonic feedings were not associated with any of the maternal oxytocin. This demonstrates that the accuracy for detecting angry faces decreases as oxytocin increases, whereas the accuracy for detecting happy faces increases, and the arousal rating for pleasant faces decreases. OXT was not connected to task performance in the parent group.55,56

Infants in England who are breastfed are protected from developing diarrheal disease, although the level of protection may vary from infant to infant and diminish when breastfeeding is discontinued. Caregivers in underprivileged communities or homes should get education about the advantages of breastfeeding and the risks of insufficient sterilization.57,58

CONCLUSIONS

In summary, this study discovered that mothers’ good attitudes toward breastfeeding are linked to the practice of breastfeeding, which in turn affects the mothers’ oxytocin levels. Oxytocin helps moms psychologically and emotionally, which can help with breastfeeding promotion.

CONFLICT OF INTEREST

There was no conflict of interest in writing this literature review.

ETHICAL CONSIDERATION

This literature review has followed ethical guidelines in scientific publications based on the COPE and ICMJE protocols.

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AUTHOR’S CONTRIBUTION

The author fully contributes to the ideas and conceptual framework, collection, analysis and interpretation of data in the literature and contained in scientific narratives.

REFERENCES


