

# Narrative Review of Effectiveness of Breastfeeding Education Interventions in Improving Exclusive Breastfeeding Knowledge and Practice among Adolescent Mothers

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## Abstract:

Exclusive breastfeeding (EBF) for the first six months of life retains the importance of being an initial public health priority for reducing infant mortality and maternal health problems, however rates of practice in adolescent mothers remain consistently low, despite their reach of mass communications. This narrative review focuses on empirical evidence of effects of breastfeeding education interventions on EBF knowledge and practice by adolescent mothers in diverse circumstances, with special focus on low- and middle-income countries. Evidence is available from cross-sectional, quasi-experimental and review studies indicating that adolescents often demonstrate partial awareness and limited actionable knowledge, weak intention and limited self-efficacy concerning EBF. Education interventions, such as antenatal counselling, structured educational packages, skills-based coaching, peer support and digital follow up, have been found to be effective in consistently improving knowledge, confidence and technical breastfeeding skills. However, translating of knowledge gains into prolonged six months EBF practice is variable and highly moderated by socio-cultural beliefs, the influence of family, stigma and initial challenges with breastfeeding, and structural barriers that include return to school and lack of support for childcare. Multi-component interventions, that integrate education, practical demonstration, repeated reinforcement, peer and family engagement, and mobile health support have more lasting impact than those involving single session and information-focused approaches. The review has concluded that adolescent-focused,

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culturally responsive, skills-based and socially supported education packages are more likely to bridge the knowledge - practice gap and to better the outcomes of EBF among adolescent mothers.

**Keywords:** Exclusive breastfeeding, Adolescent mothers, Breastfeeding education, Health education interventions, Breastfeeding practice, maternal knowledge,

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## Introduction

Exclusive breastfeeding (EBF) is the feeding of only breast milk with no water and fluids/foods (other than medications and prescribed supplements) for the first six months of life. It is a cornerstone of child survival and maternal health strategies in all parts of the world (World Health Organization [WHO] & UNICEF, 2017/2018; CDC, 2023). Breast milk is particularly responsible for providing optimal nutrition, offering immunologic protection and developmental advantage as well as reducing the risks to the mother which includes cancers like breast and ovarian cancers reducing risk for postpartum period and due to lactational amenorrhea contributing to birth spacing (CDC, 2023; WHO, 2023). Despite these well-established benefits, EBF rates are sub-optimal in many low level and middle-income countries (LMICs), with disparities most striking with vulnerable groups including adolescent mothers. Adolescents are disproportionately affected by social stigma, loss of autonomy, reliance on significant others, truncated education and lack of access to consistent health information - all of which may undermine EBF intention and practice (Kingsley et al., 2021).

Evidence from various settings is suggestive of a recurring theme: although awareness of breastfeeding might be high, correct knowledge of duration of breast-feeding (EBF), breast-feeding at early onset (within the first hour of birth), and practical skills (positioning, latch, and problem-solving) are often inadequate; and even when adequate knowledge is known, adherence to six-month EBF often remains low because of socio-cultural beliefs and constraints within structural situations (Dolley et al 2019; Jean et al. 2020; Mai et al. 2018). Among adolescents, these gaps are worsened by the age-related power dynamics and lack of "cultural health capital" - a disconnect between the expectations of the health system and the communication confidence, social position, and ability to negotiate on feeding decisions of adolescents (Kimberly et al., 2020). Consequently, breastfeeding education interventions (hereafter, "education interventions") have emerged as a key public health intervention strategy to improve EBF knowledge, self-efficacy, intention and practice in rates and delivered mainly through antenatal counselling, postnatal coaching, structured educational packages (booklets/videos/demonstrations), peer support and most recently digital platforms (e.g. WhatsApp and telephone follow up) (Athirarani et al., 2022; Jennifer et al., 2023; Valerie et al., 2022).

This narrative review summarizes empirical evidence on the effectiveness of breastfeeding education interventions on improvement of EBF knowledge and practice among adolescent mothers, paying special attention to the LMIC settings, Nigerian relevant barriers (i.e., colostrum tabuos, perceived inadequate quantity of milk, early return to school, and inconsistent support systems). The mechanisms of intervention (knowledge, intention, self-efficacy, skills), contextual moderators (socio-cultural norms, family support, health system quality) and the knowledge-practice gap generally found in adolescent populations are emphasized in the review.

## Narrative Review Approach

This article takes a narrative review approach, which is suitable for synthesizing heterogeneous evidence from different settings, study designs and intervention models. The evidence summarized in this paper is drawn from the literature embedded within the provided dissertation background and literature review content: these include cross sectional studies, quasi-experimental research, systematic reviews and intervention evaluations ranging from Nigeria and other contexts (e.g. East Africa, Italy, Ethiopia, Pakistan, Bangladesh,



Bhutan, Turkey, UAE, Canada, Thailand). The empirical studies with outcomes on breastfeeding knowledge, attitudes, intention, initiation or EBF continuation are prioritised for the review. Because this is a narrative (not systematic) review, it is not with the aim of exhaustive coverage of available databases but of analytic synthesis: identification of consistent patterns in effectiveness of interventions, reasons for successful and unsuccessful interventions, and adolescent-specific implications for implementation.

### **Baseline Knowledge, Attitudes, and Practice of Exclusive Breastfeeding among Adolescents**

A consistent beginning across studies is teenagers tend to have partial awareness of EBF and limited depth of understanding and weaker intention to engage EBF longer (for 6 months). In East Africa, a systematic review found that although 96.2% of the mothers had heard about EBF and 84.4% had heard of EBF, only 49.2% of the mothers knew the recommended duration and 42.1% disagreed that initiating breastfeeding within one hour was important - indicating that there are misconceptions about starting breastfeeding early and duration (Jean et al., 2020). These gaps extend beyond simple informational level, but illustrate the ways that adolescents understand breastfeeding norms based on family narratives, influence from peers and beliefs that have been culturally-transmitted. Evidence from samples of adolescents highlights this problem. Among adolescents in India, Punjab had the lowest percentage of adolescents with good breastfeeding knowledge followed by poor knowledge (i.e. 26% versus 74%) (Simmi et al., 2019). Similarly, in Ethiopia, pregnant women had suboptimal knowledge (57.8% adequate) and only 46.9% had positive breastfeeding attitude leading to the conjecture that knowledge alone may not lead to favourable attitude and intention (Endeshaw et al., 2022). Nigerian evidence is replete with similar challenges: in Enugu State, 58.7% of currently pregnant primiparous mothers had poor knowledge and only 62.7% used the intention of exclusive breastfeeding for 6 months (Chikaodili et al., 2019). Only 26.8% reported EBF in Jigawa State in Nigeria, with significant proportions of people feeling that formula was more convenient, the breast milk was not sufficient or the colostrum was dirty (Abdulwali et al., 2023). Such beliefs are related directly to early supplementation and mixed feeding.

However, baseline knowledge sometimes looked "good" in surveys despite low practice levels that uncovered an important conceptual distinction between knowing facts technically (recognizing that EBF is advisable) and knowing how to act (being able to latch properly, do largely without perceived lack of esotropia, resist peer pressure to administer water and maintain EBF, including on a daily basis as one navigates an unknown valley of constraints). In Bhutan, although 98% of respondents showed sufficient knowledge, the practice of EBF was low and harmful practices were prevalent - 13.2% discarded colostrum and supplementation was widespread which is an example of a classic knowledge-practice gap (Dolley et al., 2019). Similarly, in Abu Dhabi, overall knowledge scores were said to be good, but the prevalence of EBF was only 16.9% and the practices were still suboptimal (Mai et al., 2018). Nigeria-based comparative evidence also implies the existence of contextual patterning whereby respondents living in rural areas may report higher EBF practice than urban counterparts because of work constraints and early return to employment in cities (Mobolanle et al., 2017). For adolescents, the barrier of returning to school has a similar aspect of reducing time and privacy for feeding.

A critical adolescent specific factor is reliance on "significant others." Adolescents--who are often stigmatized and rejected due to their sexual activity -- have often relied on older relatives/partners for advice and material support, and these gatekeepers sometimes perpetuate mixed feeding norms, colostrum taboos, or the introduction of early water (Lori, n.d., Feldman-Winter, n.d., Milka et al., 2017). As a result, even if adolescents receive counselling in the facility, the household dynamics may trump the clinical advice given. This helps to explain findings where the coverage of antenatal counselling is not the same as the impact of breastfeeding counselling. For example, in Tanzania, 91% of pregnant mothers were counselled for antenatal care, but only 39% of pregnant women and 25% of postpartum mothers reported that they had been counselled for breastfeeding (Jean et al., 2020) - this represents an opportunity missed and/or weak counselling specificity. For adolescents, those missed opportunities be disproportionate since they have fewer alternative sources of correct referral.

### **Effectiveness of Antenatal Breastfeeding Education and Counselling for Adolescents**

Antenatal education is promoted extensively since they are made before feeding decisions are an urgent requirement and can affect intention, confidence, and planning. Multiple reviews suggest prenatal breastfeeding education improves knowledge and helps toward positive breastfeeding practices. A systematic review found breastfeeding knowledge, breastfeeding initiation and prolonged duration and exclusivity to be higher when women had received educational breastfeeding interventions both during antenatal care and after birth, and that this increase was because informed knowledge leads to high confidence and refusal to give up breastfeeding after discharge in febris (Jennifer et al., 2023). This is in line with evidence of the association between improved knowledge and likelihood of initiation and continuation although the strength of this relationship depends on context and the availability of enabling support structures. Intervention studies, based on structured educational packages, have shown positive gains in knowledge. In Indonesia, an educational package based on a self developed booklet & breastfeeding success questionnaire had a result of statistically significant improvement in breastfeeding success, the p-value is reported as 0.003 [Ina & Gilang, 2020]. Similarly, ambiguous results obtained from other quasi-experimental and intervention study designs in other maternal health educational contexts demonstrate significant pre- and post changed knowledge (Sonia et al., 2024), providing evidence of the plausibility of structural education to rapidly change knowledge when content is appropriately provided and culturally intelligible.

In addition to general education, the quality and frequency of counselling is important. WHO/UNICEF counselling guidance stresses repeated contacts throughout the continuum of care recommending counselling for the antenatal and postnatal periods, at least 6 times and face to face and remotely where necessary (UNICEF, 2021). The mechanism is not so much of transferring facts, but of providing anticipatory guidance, problem-solving abilities and confidence-building which are particularly important for adolescents who might be afraid of being judged and/or hesitant to ask questions. However, evidence can also advance caution, that education alone (or passive methods particularly) may have limited effects on initiation and sustained EBF. The Cochrane review on antenatal breastfeeding education reported evidence that single trials of education as compared with standard care will often fail to show improved initiation but that multi-component interventions (eg, booklet plus video plus lactation consultant) showed more promise on sustainability of EBF to 3-6 months (Cochrane



Library, 2016). This is a distinction that is important within the age of adolescents as they may need continuous reinforcement, skills demonstration, and supportive follow-up in order to get the learning applied under the pressure of family norms and returning to school.

Empirical results from different settings further demonstrate this complexity. In Iran, an educational intervention that is based on planned behavior constructs improved intention and other constructs than controls suggesting that interventions that explicitly target the formation of intention and perceived control can change proximal determinants of breastfeeding behavior (Seydah et al., 2017). Such results are consistent with one believing adolescents benefit when education is not strictly mechanical (bio-medical), but motivational and skills-based-back to the idea of adolescents being helped to anticipate barriers (pain, perceived insufficient milk, embarrassment, school constraints) - and plan their ways of coping with barriers. Yet, the Tanzanian example points to the existence of problems in ensuring universal breastfeeding among high coverage of antenatal contacts, raising the possibility of implementation gaps in routine services (Jean et al., 2020). For adolescents in Nigeria, these gaps could be further worsened by stigma, poor clinic attendance, delayed clinic booking and limited privacy during clinic visits. Therefore, although antenatal education is needed, it is conditional on the quality of delivery, its relevance to content, and whether it is also linked with postnatal reinforcement and support at the household level.

### **Skills-Based Breastfeeding Education**

While knowledge of the benefits of breastfeeding is important, empirical evidence is consistently showing that practical skills training (especially positioning, attachment (latch) and early management of difficulties) is one of the decisive determinants of successful exclusive breastfeeding (EBF). For adolescent mothers, who are more likely to be first-time mothers and have had no previous exposure to infant care, skills-based education is especially critical. Without proper positioning and attachment, infants may fail to receive enough milk transfer and mothers can have nipple pain, engorgement and even lack of encouragement and thus are more likely to be supplemented or end milk feeding early (Gizachew et al, 2020; NHS, n.d.). Clinical and observational studies are pointing to inappropriate positioning, attachment, and suckling technique as key predictors of insufficient intake, risk of stunted growth, and maternal dilemma such as sore nipples and engorgement (Gizachew et al., 2020). Among young and first-time mothers is a repeated need for designed structured guidance and recommendations that should breastfeeding technique be actively demonstrated, observed and corrected early on in the postnatal period. This is consistent with WHO/UNICEF baby-friendly guidelines that healthcare workers must demonstrate positioning, support early initiation and assist mothers with some common difficulties (WHO & UNICEF, 2018).

Intervention evidence for skills-focused educational packages. In a study based on an experimental and control group in breastfeeding education, it was found that mastery of correct breastfeeding posture and technique was significantly superior in breastfeeding intervention group (88.5%) of the population rather than the control group (63.8%) and that the early correction of breastfeeding technique resulted in the reduction of nipple soreness and associated complication (Heifeng et al., 2022). Similarly, structured educational packages preparing and providing women with demonstrations, visual material, and guided practice, have demonstrated statistically significant gains in breastfeeding knowledge and technique scores (Ina & Gilang, 2020). These packages usually contain step-wise teaching of such



positions as cross-cradle, football hold, side-lying, laid-back, and straddle/koala hold and instructions regarding effective latch (e.g., areola coverage, chin contact, audible swallowing). Such practical detail is certain to be especially important to adolescents who may not be as confident as troubleshooting problems for themselves.

Evidence also shows that early technical problems are very much linked to discontinuation. Studies report a high proportion of mothers having breastfeeding challenges in the first weeks after giving birth - cracked nipples, perceived lack of sufficient milk, pain, and fatigue - with rates greater than 70% in some samples (Maria et al., 2019). In Ethiopia, maternal breast problems were reported from more than half of the lactating mothers with ineffective breastfeeding techniques and mixed feeding practices highly prevalent (Anguach et al., 2024). Among adolescents, embarrassment, fear of pain and body image (e.g., shape changes to the breasts) add to the discouraging effect of early technical problems (Lutaaya, & Kiu, 2024). These results suggest that education interventions which do not include hands-on skills coaching are unlikely to result in sustained improvements in EBF despite increased knowledge scores.

Facility-based baby-friendly efforts reinforce this skills orientation. Core components - staff training, immediate skin-to-skin contact, early initiation (within 1 hour), rooming-in with mother, feeding on demand, avoidance of artificial feeds and pacifiers, referral to support groups (Melissa, n.d.). Nigerian evidence shows that the quality of counselling given in government antenatal clinics and hospital-oriented systems for breastfeeding has a significant impact on especially on initiation and continuation patterns; where counselling was practical and supported, patterns of EBF were higher, although still susceptible to their family and peer pressures (Chizoma & Ologunye, 2020). Skills-based coaching for adolescents must also consider the role of psychosocial context without a private environment, confidence building, and non-judgmental correction, in order to be effective.

### **Digital and Mobile Health (mHealth) Breastfeeding Education and Follow-Up**

Recent literature emphasizes the increasing importance of digital and mobile health (mHealth) interventions such as telephone counselling, SMS and WhatsApp based interventions to reinforce breastfeeding education and follow-up. These approaches are especially relevant for adolescents, who are usually high users of mobile communication, and may want to use remote, less stigmatizing channels of support. Telephone counselling interventions have proven benefits. In an intervention (controlled) where over 1000 participants were studied, early initiation rates were higher in the intervention group (37%) than controls (24%), and although EBF rates were similar at 24 hours, the intervention group had significantly higher rates of EBF at follow up (Archana et al., 2018). Similarly, a multi-component intervention in Bangladesh that included telephone follow-up resulted in high prevalence of EBF from early infancy through until five months: the patterns of decline were slower than typical comparison results (Iftia et al., 2020). These results suggest that coherent remote-communication continues to reinforce initial learning, aids troubleshooting and particular motivation.

Whatsapp and social messaging platforms being used more and more for structured breastfeeding support. In Lagos, Nigeria, the outcomes of an interpersonal communication intervention delivered via WhatsApp were able to significantly improve EBF rates at six weeks postpartum - 83% in the intervention group compared to 52% in a comparison group (Valerie et al., 2022). Such platforms facilitate group-based encouragement, fast

question/answer exchanges, sharing of instruction videos (e.g. positioning and latch), and peer normalization of EBF. For adolescent mothers, who may suffer from stigma in physical support groups, digital groups offer psychologically safer spaces for engagement. Systematic and narrative reviews of education programs also support the validity of computer assisted and messaging-based interventions in contemporary breastfeeding education packages (Athirarani et al. 2022). These programs commonly involve a combination of antenatal teaching and postnatal digital reinforcement that involves continuity of education and is a component of other programs shown to have better outcomes than one-time sessions (Jennifer et al., 2023; Cochrane Library, 2016).

However, effectiveness is down to content quality, moderator competence and message frequency. Unstructured groups which are unguided by professionals pose the risk of spreading misinformation. That is why best practice models combine digital platforms and trained counsellors or lactation educators (UNICEF, 2021; Athirarani et al., 2022). For adolescent-focused interventions, digital tools hold particular promise slowed the geographic boundaries of mentoring because many adolescents prefer digital communication and the mentoring program appears to be something that can take place beyond the walls of healthcare offices and clinics. The literature suggests that education packages vis-a-vis face-to-face sessions alone, give better continuity in retain EBF behaviour (Archana et al., 2018; Valerie et al., 2022; Iftia et al., 2020).

### **Peer, Family, and Community Support as Educational Extensions**

Education interventions seldom work in isolation and their success is conditional on peer, family and community support structures. For adolescent mothers - who often are economically and socially dependent on others - breastfeeding education can be strengthened or weakened by the support networks they have in place. Peer support models have been extensively researched and the outcomes have been consistently positive. Community based interventions of peer support for nutrition in low or middle-income countries have been linked with very large increase of EBF at three, five and six months as well with a pooled evidence suggesting strong effectiveness (Prakash et al., 2017). Another intervention synthesis found that compared with women without added support with breastfeeding, women receiving breastfeeding plus support were about at least 27% less likely to stop EBF between four and six months (Gavin et al., 2022). Peer support groups usually offer reassurance, shared problem-solving, and normalising of breastfeeding difficulty, all of which can be particularly valuable to adolescent girls with identity stress and low confidence.

Qualitative and mixed-method evidence place emphasis on how peer relationships may establish structured and trust-based support systems for pregnant vulnerable adolescents if the programs are well organised (Jenny & Maggie, 2015). Peer supports+) - whether trained volunteers or experienced mothers to support bridge the gap between the formal call for health advice and normal practice. UNICEF UK guidance highlight the importance of peer support, by helping to bridge gaps in support by providing connection of mothers with trained supporters with lived experience to increase the quality of relatable and trust. UNICEF UK, n.d. Family support is also just as influential. Reviews emphasise the fact that spousal and family encouragement have shown to be a strong predictor of breastfeeding initiation and continuation, while negative beliefs (e.g. colostrum is dirty, milk is not good enough, breastfeeding causes sagging breasts or illness) are a discouraging factor for EBF (Milka et al, 2017; Expatica, 2024; Musa et al, 2023). In adolescent populations, decision-making authority



is often in the hands of older family members and so educating families is key to a successful education. Evidence from Indonesia suggests that family support is key to adolescent breastfeeding decision-making and sustainability as adolescents often have to cope with identity and role transitions at the same time (Vetty et al., 2021).

Empirical studies in Nigeria further demonstrate that social influences, such as friends and relatives, can be a reason for the early introduction of other fluids despite the facility education that has taken place in the cases (Chizoma & Ologunye, 2020). Lack of spousal support, absence of maternity protection, and no childcare facilities (e.g., crche) are also related to lower rates of EBF practice (Vivian & Scot, 2018). For adolescents returning to school, structural barriers to six-month EBF are created by institutional policies against bringing infants to school (Kingsley et al., 2021). Taken together, the peer and family support are force multipliers for education interventions. Programmes which combine peer groups, partner education and family counselling are more likely to turn knowledge acquisition into sustained EBF practice (Prakash et al., 2017; Gavin et al., 2022).

### **Cross-Study Outcome Patterns: What Improves After Breastfeeding Education Interventions?**

Across the reviewed literature, the effectiveness of breastfeeding education interventions on proximal outcomes (knowledge, awareness, intention, confidence and technical skills) is consistent and positive, but effects on distal behavioral outcomes, specifically six-month exclusive breastfeeding (EBF) are more variable and strongly context dependent. This distinction is important when understanding effectiveness of adolescent mothers. Multiple intervention and quasi-experimental studies show statistically significant improvements in knowledge on breastfeeding after structured education packages. For instance, an educational booklet-based intervention followed by technique assessment improved breastfeeding knowledge and practice indicators to a significant extent (Ina & Gilang, 2020). Experimental education packages on breastfeeding posture and positioning resulted in significantly higher levels of mastery in intervention group than control (88.5% vs. 63.8%), as well as a reduction in nipple soreness (Heifeng et al., 2022). Comparable interventions with mothers in mating and related perinatal areas demonstrate significant gains in pre-and post-test preimprovement of knowledge scores and reinforce the conceptualization of structured teaching models as being effective for knowledge-transference.<sup>5,6</sup>

These findings are supported by systematic reviews. A review of breastfeeding education in pregnancy concluded that breastfeeding education interventions increase breastfeeding among mothers, increasing their knowledge and improving their breastfeeding practices as mothers who receive such interventions are more likely to initiate breastfeeding and continue breastfeeding for a longer period of time (Jennifer et al., 2023). Another systematic review on structured education versus normal care noted that breastfeeding education programmes - delivered pregnant or after birth, through counselling, teaching sessions or technology helped interventions - have an added benefit of increasing breastfeeding practice rates in diverse settings (Athirarani et al., 2022).

However, advances in knowledge do not necessarily lead to equating advances in persistent EBF practice, particularly in adolescents. Cross-sectional and comparative studies invariably find the situation of "good" knowledge coupled with low EBF prevalence. In Bhutan, although 98% of participants had adequate breastfeeding knowledge, there still was limited breastmilk feeding and discarding of colostrum by a notable minority (Dolley et al., 2019). In Abu Dhabi,



the findings of good knowledge scores were associated with low prevalence of EBF (16.9%), suggesting a mismatch between cognitive awareness and behavioural adherence (Mai et al., 2018). Nigerian comparative data are also good knowledge with fair or inconsistent EBF practice, especially in urban or working population (Mobolanle et al., 2017).

Among adolescents specifically, the intention and self-efficacy seem important mediators between the knowledge and practice. An intervention based on planned behavior theory showed that education was able to significantly increase intention and behavioral control constructs as compared to controls (Seydah et al., 2017). This is consistent with adolescent psychology-smart thoughts on what to do, control and confidence are more frequently predictive of behavior than facts are. Reviews emphasise the fact that interventions to increase breastfeeding self-efficacy and confidence are more likely to have an impact in terms of continued breastfeeding, not only initiation (Jennifer et al., 2023; Gavin et al., 2022).

Evidence on outcomes for initiation generally is better than outcomes for six months of EBF. Telephone and multi-contact interventions have been associated with greater early initiation of and better short-term exclusivity than controls (Archana et al., 2018). Interventions for digital interpersonal communication in Nigeria showed significantly greater EBF on early postpartum checkpoints (Valerie et al., 2022). Community peer support interventions have good pooled effects for EBF at three to six months in LMICs (Prakash et al., 2017). Yet even in these enhanced designs, the effect sizes are moderated due to contextual barriers, such as cultural beliefs, family pressure, and maternal return to school or work.

One of the most persistent themes cutting across the literature is the knowledge-practice gap - the failure of sufficient knowledge to translate into correct and persistent EBF behaviour. This gap is documented repeatedly between countries and study designs, and is especially pronounced between adolescent mothers. Systematic review evidence from East Africa indicates high levels of awareness but lower levels of adherence to critical EBF practices of early initiation and 6-month exclusivity (Jean et al., 2020). Italian and UAE cross-sectional studies report similarly that while a large number of subjects know of EBF recommendations, a minority of them practice these recommendations properly (Diana et al., 2019; Mai et al., 2018). We find parallel trends in Nigerian research: good knowledge, but low-to-moderate EBF practice with spousal support, maternity protection and childcare infrastructure (Vivian & Scot, 2018; Mobolanle et al., 2017).

### **Implications for Designing Adolescent-Focused Breastfeeding Education Packages**

The reviewed evidence from this review shows that breastfeeding education interventions are most effective when they are not done in an isolated way but are structured and multi-stage processes of support that are tailored to the developmental, social, and structural realities of adolescent mothers. Adolescents are distinct from adult mothers in terms of autonomy, decision-making power, economic dependency, self-belief for interaction with healthcare professionals and the stigma they face. Consequently, education packages found to be successful in general maternal populations need modification in tone, mode of delivery, mode of reinforcement, and integration of support in order to obtain comparable results in adolescents.

Empirical studies have shown consistently improved knowledge is gained readily after structured education, while practice improves for longer when interventions include skills training, repeated contact and support systems. Intervention packages should thus combine antenatal education and postnatal practical coaching (demonstration, supervision with



correction of positioning and attachment techniques). Evidence from controlled intervention studies supports that mastery of breastfeeding posture and latch is increased significantly if mothers are educated using a structured skills-based program and early correction is effective in reducing complications that are likely to lead to early cessation, such as nipple soreness (Heifeng et al., 2022; Gizachew et al., 2020). For adolescent mothers, who are more likely to be first-time mothers and anxious about pain and failure, this skills component should be emphasized and presented in a supportive and non-judgmental way.

The review also suggests that there should be explicit educational content that addresses common adolescent-relevant misconceptions and fears, such as perceived inadequate quantity of milk, rejection of colostrum, body image issues and embarrassment with public breastfeeding. Studies from Nigeria and other settings also demonstrate that beliefs about the dirtiness of colostrum, the inadequacy of breast milk or the changing of breast shape with breastfeeding play a key role in determining whether breastfeeding is exclusive or not and whether a child will be supplemented with anything other than breast milk in the first few months of life (Abdulwali et al., 2023, Milka et al., 2017, Musa et al., 2023). Education packages that merely recommend and do not directly address these beliefs are less effective. Culturally responsive education - in which myths are named, discussed and corrected with understandable explanations - has more behavioral impact than generic education (Athirarani et. al., 2022)

Another important implication is with regards to delivery channels. Digital and mobile platforms have shown some measurable success in strengthening the educational and continuance of breastfeeding. Telephone counselling and WhatsApp-based interpersonal communication interventions had improved higher rates of early initiation and exclusivity rates compared with standard care (Archana et al., 2018; Valerie et al., 2022). For adolescents, digital platforms provide an element of privacy, convenience and normalization of peer participation, and may alleviate the barrier of potential stigma that may prevent participation in face-to-face support groups. However, effectiveness is dependent on structured moderation and evidence-based content that also hints at adolescent-focused programs run that should include trained counsellors or lactation educators in the digital support channels than relying on un-moderated, peer groups.

The literature goes on to support that adolescent breastfeeding behavior is strongly influenced by social gatekeepers such as the parents, partners, and older female relatives. Because of the limited authority adolescents have on decisions about infant feeding, education focused only on the adolescent mother has limited reach. Studies have repeatedly shown that family beliefs, as well as peer influence, drive supplementation and early mixed feeding despite having been counselled at the facility (Chizoma & Ologunye, 2020; Vetty et al., 2021). Effective education packages should therefore include family-inclusive components, e.g. partner sessions, and include caregiver leaflets or joint counselling encounters. Community peer support models demonstrate significant collected impacts in exclusive breastfeeding for a longer duration and comprise particular low- and middle-income countries and ought to be regarded as core elements among optional additions (Prakash et al., 2017; Gavin et al., 2022).

There are also structural realities which a programming must be confined by. Evidence has shown that adolescents who return to school will have practical barriers to continue six-month exclusive breastfeeding where institutional policies do not allow bringing infants or

are lacking childcare provisions (Kingsley et al., 2021). Education interventions that do not account for these realities are in danger of making too much optimism about the potential for adherence. Programmes that focus on adolescent mothers should therefore incorporate anticipatory guidance, problem-solving, with school return, milk expression where possible, a feeding approach that will involve caregiver-assisted feeding while using expressed milk, and advocacy of adolescent-friendly school health policies. The need for anticipatory counselling and continuity between the antenatal and postnatal period is already recognised by the guidance on Health systems, recommending that contacts are repeated and that multiple delivery modes are recommended (UNICEF, 2021). Applying this model to adolescents specifically helps to make the intervention realistic.

Taken together, the evidence is consistent with an adolescent-focused breastfeeding education package model, which is multi-component, skills-based, culturally responsive, digitally reinforced and socially inclusive. Such packages are more likely to turn knowledge gains into long-term exclusive breastfeeding behaviour than single session approaches or information only approaches.

### **Policy and Practice Implications for Health Systems and Programs**

At the level of the health system, the reviewed evidence is suggestive that enhancing breastfeeding outcomes among adolescent mothers requires more than trying to improve coverage of ANC; it requires improving quality and specificity of breastfeeding counselling provided within ANC. And there is evidence from East Africa that reveals high coverage of antenatal care counselling, but much lower exposure to breastfeeding counselling, suggesting that opportunities are being missed in the routine services (Jean et al., 2020). Training health workers in adolescent friendly communication, useful skills in demonstration and non-judgemental counselling methods is therefore crucial. Baby-friendly facility initiatives and WHO/UNICEF breastfeeding counselling frameworks already exist to provide guidance for operationalizing breastfeeding support in terms of early initiation, rooming-in, demand feeding and structured counselling contact (WHO & UNICEF, 2018; UNICEF, 2021). Improving such frameworks by embedding adolescent-sensitive adaptations such as privacy protection, protective language of stigma and flexible follow-up to name a few, would make them more effective for the younger mothers. Evidence for superiority of multi-method education (booklets and video and support from a consultant) compared to standard care: investment in diversified education materials and modalities is supported (Cochrane Library, 2016).

Community and public health programs should also focus on infrastructure for peer support. Systematic review evidence exists that community-based peer support is associated with significantly higher rates of exclusive breastfeeding at several time points leading into life in LMICs (Prakash et al., 2017). Integrating trained peer supports into adolescent maternal programs can help reach the goals of reaching adolescent maternal health services and reaching continuity between clinic visits. Digital platforms can be used to scale such support in an efficient manner especially in urban and peri-urban settings where adolescent phone use is high (Valerie et al., 2022). Policy attention is also needed in relation to structural barriers. Lack of maternity protection, lack of childcare support and rigid school policies have been shown repeatedly to be associated with a reduced exclusive breastfeeding practice (Vivian and Scot, 2018; Kingsley et al., 2021). While things in education may change attitude and knowledge, policy environments help or hinder sustained practice based on policy and programs. Therefore, breastfeeding promotion among adolescents should be associated with

adolescent health, education and social protection policies and not only as a maternal education issue.

### **Limitations of the Existing Evidence Base**

The quantity of body of literature reviewed, although substantial, has several limitations that impact on interpretation. First, many studies are cross-sectional studies, which have demonstrated associations between exposure to education and breastfeeding but cannot conclusively determine cause and effect. Second, outcome measurement is quite varied in the studies, with differences in the way exclusive breastfeeding duration was defined, in recall periods and in self-report measures, which reduces comparability. Third, relatively little research on interventions is restrictively oriented towards adolescent mothers; many of these studies have adolescent mothers as part of groups of maternal populations, across which many cohorts no longer allow for age-specific analysis. Fourth, although there are systematic reviews on prenatal education as well as on peer support there are fewer reviews that disaggregate results according to adolescent status which is a meaningful moderator.

There is also heterogeneity in the content and intensity of the interventions. Education packages range from simple booklets to multi-session counselling with subsequent digital follow-up and it is therefore difficult to determine effects on particular components. Finally, most studies are knowledge-based and short-term practice based, with fewer assessing long-term follow-up continuation, and real-world sustainability with school return structural constraints. These limitations suggest a need for more adolescent specific, theory based and multi-component intervention trials with standardised outcome measures.

### **Conclusion**

This narrative review demonstrates that breastfeeding education interventions have an important role in the improvement of exclusive breastfeeding knowledge, intention, confidence and practical skills of adolescent mothers. Structured approaches to education always result in improved understanding of the benefits of breastfeeding, the correct duration, early initiation and proper techniques. When adolescents receive specific, practical and supportive instruction, the readiness and motivation to breastfeed exclusively increases. Skills-based teaching - especially in terms of positioning, latch and early management of problems - becomes an important link between knowledge and real practice. At the same time, the evidence shows that the effect of improved knowledge on exclusive breastfeeding for six months is not necessarily sustained among adolescents. There is always a gap between what young mothers know and what they are able to do. This gap is defined by a variety of factors, such as socio-cultural beliefs, stigma, and dependence on family decision-makers as well as low levels of self-efficacy, early breastfeeding challenges and structural factors such as returning to school and childcare support. As a result, single session or information only models of education tend to produce limited change in behavior.

More consistent and longer-lasting improvements in exclusive breastfeeding practice are noted when education interventions are delivered in multi-component packages. Programs which include antenatal teaching, postnatal skills coaching, peer and family support and follow up by telephone or digital platforms are more successful than stand-alone approaches. These combined models provide an additional form of reinforcement for learning, troubleshooting at the right time, normalizing challenges faced in breastfeeding, and creating even greater social support systems around the adolescent mother.



Overall, the effectiveness of breastfeeding education for adolescents should be age sensitive and culturally responsive and should be practically oriented and supported beyond the clinic capacity. Interventions should consist of repeated contacts, hands-on demonstrations, supportive communication and the involvement of key family members. Literature: Making education programs work in alignment with supportive school and community structures, as well as with health system structures, will further increase the chances that knowledge gains will be translated into sustained exclusive breastfeeding practice.

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