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FACILITATORS AND BARRIERS TO BREASTFEEDING SUCCESS IN ADOLESCENT
MOTHERS: AN INTEGRATIVE REVIEW

A CAPSTONE PROJECT
SUBMITTED TO THE GRADUATE FACULTY
OF THE GRADUATE SCHOOL
BETHEL UNIVERSITY

BY

Julie M. Edinger RN, BSN, and Kara N. Fairbanks, RN, BSN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
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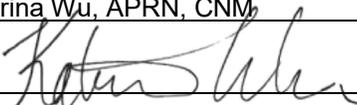
Facilitators and Barriers to Breastfeeding Success in Adolescent Mothers: An Integrative Review

Julie M. Edinger, RN, BSN, and Kara N. Fairbanks, RN, BSN

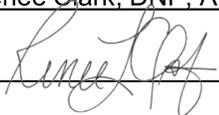
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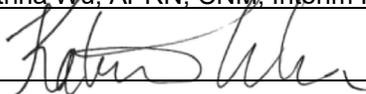
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Abstract

Introduction: Breastfeeding is the optimal feeding method for infants and confers numerous health benefits to mothers and their children. Nevertheless, despite overwhelming data supporting breastfeeding, breastfeeding rates remain suboptimal within the adolescent demographic.

Research Aim: To identify facilitators and barriers to improving breastfeeding success and outcomes in adolescent mothers.

Methods: A keyword search of the literature was conducted using the PubMed, CINAHL, and SCOPUS databases. Citation searching and a hand search of 3 relevant journals were also undertaken, yielding 21 original studies that met all inclusion and exclusion criteria. Relevant study demographics and findings were extracted and organized according to the designated levels of the socio-ecological model.

Results: Findings from 313,220 breastfeeding adolescent mothers demonstrated that awareness of health benefits, perceived affordability, convenience, intention to breastfeed, and family, peer, and partner support remained critical. Additional findings revealed the importance of professional, transparent, and ongoing breastfeeding education and guidance. Conversely, physical discomfort, perception of low milk supply, balancing competing societal roles, and negative peer and partner input hampered the breastfeeding success of teen mothers.

Discussion: This review discovered that the vast majority of current research focused on the individual, interpersonal, and organizational levels. Opportunities exist for developing and evaluating school programs, community lactation resource planning, and public policy advocacy efforts to improve breastfeeding in this vulnerable population.

Keywords: "Pregnancy in adolescence," "Maternal age 14 and under," "Teen mothers,"

*adolescent mothers," "Teenage mothers," "breastfeeding," "breastfeeding," and
"lactation" "Socio-ecological model," "breastfeeding facilitators," "breastfeeding
barriers"*

Facilitators and Barriers to Breastfeeding Success in Adolescent Mothers: An Integrative Review

Background

It is estimated that over 800,000 young lives could be saved worldwide, and the equivalent of over 302 billion United States (U.S.) dollars could be added to the global economy annually by achieving optimal breastfeeding outcomes (American College of Nurse-Midwives [ACNM], 2016; Rollins et al., 2016). Research has repeatedly demonstrated that breastfeeding confers numerous health and wellness benefits to mothers and infants and is the ideal choice for infant feeding (Godbout et al., 2016; Nuampa et al., 2018; Pillay et al., 2018). According to the American Academy of Pediatrics [AAP] (2021), breastfeeding plays an essential role in infant and child neural development and decreases the risk of sudden infant death syndrome and acquiring acute, chronic, and autoimmune illnesses. Maternal health advantages include a reduced risk of developing type II diabetes, breast cancer, and other common gynecological cancers (Abbass-Dick et al., 2021; AAP, 2021; American College of Obstetricians and Gynecologists [ACOG], 2021; Centers for Disease Control and Prevention [CDC], 2021a; Godbout et al., 2016).

The AAP (2021), ACNM (2016), ACOG (2021), CDC (2021a), and United States Preventive Services Task Force (2016) endorse exclusive breastfeeding for the first six months with continuation after the introduction of complementary foods to the first full year of life. The World Health Organization (2018) recommends that infants be breastfed on demand for the first two years and beyond.

Although 80% of all mothers in the U.S. initiate breastfeeding, only 25.8% of infants are

exclusively breastfed for six months, and only 35.0% receive breastmilk at one year despite the compelling benefits and clear professional recommendations (CDC, 2021b; Kellens, 2021; Office of Disease Prevention and Health Promotion, n.d.).

Unfortunately, the number of adolescent mothers who provide breast milk to their infants is substantially lower than adult mothers (Godbout et al., 2016; Leclair et al., 2015). Current evidence demonstrates that 70.5% of adolescent mothers in the U.S. initiate breastfeeding, and 27.9% continue for one year, versus more than 80% and 48% of mothers aged 20 or older, respectively (Olaiya et al., 2016; Wambach et al., 2021).

Economically, socially, and developmentally, teenage mothers have unique needs compared with older mothers (Priscilla et al., 2021). Ten million teens between the ages of 12 and 17 reside in low-income environments (Addy et al., 2013). The vast majority depends wholly upon their caregivers for financial security (Hall-Smith et al., 2012; Priscilla et al., 2021).

Socially, young mothers are susceptible to perceived negative stigma from their community, healthcare providers, and perhaps peers (Abbass-Dick, 2021; Powers & Takagishi, 2021). In addition, they fear being scrutinized and judged for going against the societal norm and entering motherhood before it is considered socially acceptable (Nuampa et al., 2018).

Frequently, young mothers are deterred by breastfeeding obstacles and rely heavily on peers and family for support (Edwards et al., 2017; Hall-Smith et al., 2012; Hunter et al., 2015; Powers & Takagishi, 2021). Furthermore, adolescent mothers are faced with the challenges of simultaneously maturing into adulthood and becoming a parent (Powers & Takagishi, 2021; Priscilla et al., 2021). Therefore, to achieve target goals and improve breastfeeding success, promotion and education efforts should be tailored to accommodate young mothers' unique

concerns (Abbass-Dick et al., 2021; Chopel et al., 2019).

Bronfenbrenner's (1999) socio-ecological model is an ideal framework for exploring health promotion and behavior change (Kilanowski, 2017; Snyder et al., 2021). The socio-ecological model fosters an appreciation and deeper understanding of the complex and multifaceted breastfeeding journey. This model provides a framework for how an individual's health can be affected by the bidirectional influences of personal perceptions and belief systems, close interpersonal relationships, the broader community, organizational structure, and public policy efforts (Dunn et al., 2014; Snyder et al., 2021). To provide clarity and enhance understanding, the definitions and characteristics of the model and how they may relate to breastfeeding in adolescent mothers may be found in Table 1.

The aim of this integrative review was to utilize the socio-ecological model as a theoretical foundation to answer the question: What are the facilitators and barriers to improving breastfeeding success in adolescent mothers? Findings will provide perinatal care providers with insight into the breastfeeding needs of young mothers and assist in creating innovative, evidence-based strategies that target interventions directed toward improving breastfeeding outcomes in this vulnerable population.

Table 1

Definitions and Characteristics of the Socio-Ecological Model (SEM) and how it Relates to Breastfeeding

Levels of SEM	Definition and Characteristics	Influences on Breastfeeding (BF)
Individual (I)	Personal attributes, including history, education, income, attitudes, level of self-efficacy	Perception and experiences: Health benefits, pain, social isolation, desire and commitment to BF, need to return to work or school
Interpersonal (II)	Formal and informal relationships and support systems include family, friends, partners, peers, neighbors, teachers, and coworkers	Supportive vs. unsupportive partners, friends, and family, and peer to peer support
Organizational (III)	Policies and practice and access to services and professionals within organizations, hospitals, clinics, WIC, and parenting groups	BF support during and after the hospital stay, those without adequate interpersonal support
Community (IV)	Places in which social relationships occur include schools, workplaces, and neighborhoods	Societal norms and expectations, normalization, public breastfeeding, community lactation support
Policy (V)	Influence of local, state, national, and global laws and practices and how these policies impact resources and funding	BF friendly policies, safe places to BF, protected work breaks, easy availability of formula, maternity leave, and WIC

Methods

Design

This document followed the standards for performing an integrative review presented by Whittemore and Knafl (2005). The integrative review is a research style that can include experimental and non-experimental research designs. Whitmore and Knafl expand upon this type of framework, describing it as the most encompassing review method, allowing the researcher to acquire the broadest insight and comprehension of an identified gap in understanding. Utilizing the steps outlined by Whitmore and Knafl as a basis, this review was conducted by determining an area of interest, performing a detailed literature search, extracting pertinent data, comprehensively analyzing the collated information, and synthesizing the findings. This strategy aimed to reduce bias, increase rigor, and improve the capacity for effectively incorporating diverse methodologies and designs into the body of literature.

Search Strategy

In June 2021, the writers consulted a Bethel University reference librarian to assist in constructing an effective search strategy and creating appropriate data-generating terminology. A single systematic search was conducted across three comprehensive online databases (PubMed, CINAHL, and SCOPUS), using the following keywords with Boolean operators: "Pregnancy in adolescence," "Maternal age 14 and under," "Teen mothers," "Adolescent mothers," "Teenage mothers," "breastfeeding," "breast feeding," and "lactation."

Studies qualified for inclusion in the review if the following standards were met: original investigations of healthy, singleton, full-term, pregnant or parenting adolescent mothers aged 19 years or younger of any parity. Studies needed to be available in English and published between 2010-2021. There was no consensus in the literature defining breastfeeding

success. Therefore, any amount of breastmilk offered to the infant was included, and no limitations were placed on breastfeeding initiation, duration, or exclusivity. In addition, to maximize the generalizability of the findings to adolescents in the U.S., studies were limited to those conducted in middle and high-income countries.

To facilitate author collaboration, increase rigor, and standardize decision making, search results were transferred into the Covidence Systematic Review Software (2014) for screening. Using the software-generated numeric results, a Preferred Reporting Items for Systematic Reviews and Meta-Analyses [PRISMA] (see Appendix A) was constructed. The PRISMA diagrammed the authors' screening methods and detailed the stepwise process used to identify relevant studies and eliminate redundant or non-applicable research (Page et al., 2021).

The initial search identified 2,398 articles (CINAHL= 278; PubMed = 1,659; and Scopus = 461), of which 418 duplicates were removed. The two authors independently screened the titles and abstracts of the remaining 1,980 studies. Ultimately, 217 publications met the screening criteria to be examined in their full text, yielding 21 studies selected for incorporation in this examination of current literature. All conflicts between those screening publications were resolved via in-person discussion and mutual agreement.

The bibliographic references of works meeting the criteria were then appraised to capture any relevant research not discovered in the initial database search. The Cochrane Database of Systematic Reviews was also accessed to ensure that no similar integrative reviews had been recently conducted. Furthermore, the Journal of Human Lactation, the International Breastfeeding Journal, and the Journal of Maternal and Child Nutrition were hand-searched for any applicable research since 2016. Neither citation searching nor journal hand searching yielded additional studies.

The 21 publications meeting inclusion criteria were analyzed to identify each study's breastfeeding facilitators and barriers and then stratified according to the appropriate socio-ecological model level. The literature matrix (see Appendix B) summarizes each study using the following descriptors: primary author, publication year, setting, aim, quality appraisal, design, sample, socio-ecological model designation, and key findings.

Finally, using the Johns Hopkins Nursing Evidence-Based Practice appraisal tool, the researchers independently assessed each study and assigned the level of evidence as determined by the research design [I-V]. Studies were classified based on the quality of the study components, relevance of the design, integration of data, and recognition of the study limitations. Subsequently, the research was categorized and awarded a grade of A, B, or C based on rigor, study attributes, and transparency. An "A" grade met the standard of high-quality evidence (Dang & Dearholt, 2018).

Results

The reviewed articles were published between 2011 and 2021, reflecting the most recent research and scholarship. Together they represent diverse methodologies and designs, including qualitative (n = 7), quantitative (n = 8), and mixed methods research (n = 6). Of the quantitative studies, three studies were high-quality randomized control trials (RCTs). Studies were conducted in numerous middle to high-income nations around the globe, including the U.S. (6), Brazil (6), Thailand (3), England (2), Canada (2), Ecuador (1), and South Africa (1).

Collectively, 313, 226 pregnant and parenting adolescent mothers contributed to the samples in these publications. Of the studies that disclosed participant characteristics, 10 focused specifically on primiparous adolescents residing in low-income cities within the nations discussed above, with sample racial and ethnic demographics being primarily White (n = 3), Black or African American (n = 3), Asian (n = 3), and Hispanic (n = 1). The mean age

of the participants in over half the studies ($n=12$) was 17, with a portion ($n=7$) that included adolescents 14 years of age or younger. Most study participants were single; however, four studies involved a sample population of either cohabiting or married adolescents. Lastly, one study included maternal grandmothers (Bica & Guigliani, 2014), and another evaluated the efficacy of a home visiting program utilizing locally trained Black doulas (Edwards et al., 2017).

The research reflected the lived experiences of pregnant and parenting adolescent mothers offering breastmilk to their infants to identify facilitators and barriers to breastfeeding success. The socio-ecological model designations of *individual*, *interpersonal*, *organizational*, *community*, and *public policy* were applied to provide structure, clarity, and summarize the research results (see Appendix C).

Individual Level: Facilitators

This review identified three significant facilitators at the individual level: perception of maternal and infant health benefits, cost savings and convenience, and a stated intention to breastfeed. Jara-Palacios et al. (2015) revealed that maternal awareness of health benefits raised the likelihood of breastfeeding by 4.6 times ($p = 0.049$). Further supporting this claim, eight additional studies demonstrated that the primary facilitator driving breastfeeding among adolescent mothers was the belief that breastfeeding conferred many short and long-term health benefits to the woman and her infant (Condon et al., 2012; Hall-Smith et al., 2012; Khonsung et al., 2021; Monteiro et al., 2014; Nesbitt et al., 2012; Nuampa et al., 2018; Nuampa et al., 2019; Wambach, 2011). During face-to-face interviews, teens expressed a desire to breastfeed based on their belief that "breast is best" and "breastfeeding is good for immunity" (Hall-Smith, 2012, p.3; Nuampa et al., 2018, p. 292).

Additionally, many teens were persuaded to breastfeed based on the perception that it was convenient and cost-effective (Condon et al., 2012; Hall-Smith et al., 2012; Nuampa et al., 2018).

One 17-year-old, who breastfed for six months, recounted that she was motivated to breastfeed by economic uncertainty, "My main reason for breastfeeding was less money I had to spend...I don't have the funds to get formula milk" (Hall-Smith et al., 2012, p. 3). According to Hall-Smith et al., four of five young mothers in the U.S. shared that they relied upon their parents for financial security. Khonsung et al. (2021) also identified that 80% of Thai adolescents live with their parents, while 81.5% had monthly earnings of less than 30 U.S. dollars, illuminating the reality that adolescents are disproportionately affected by low socioeconomic status. Khonsung et al. further discovered that breastfeeding afforded young mothers increased autonomy, and families experienced more economic freedom by not purchasing breastmilk substitutes.

Lastly, a mother's stated intention to breastfeed was identified as a facilitator. There was no clear consensus in the literature on the ideal timing for declaring one's intention to breastfeed. However, those who stated a prenatal intention were more likely to initiate breastfeeding (Apostolakis-Kyrus et al., 2013; Hall-Smith et al., 2012; Leclair et al., 2015; Wambach et al., 2011). Specifically, Wambach et al.'s RCT identified a prenatal intention to breastfeed as the most significant factor predicting breastfeeding initiation among teen mothers ($p = < .0001$).

Individual Level: Barriers

Prominent barriers faced at the individual level were the mechanical challenges encountered while breastfeeding, the difficulty in balancing multiple roles and expectations,

and adolescents' level of self-efficacy. The most frequently cited reasons for breastfeeding cessation were physical discomfort and concerns of insufficient milk supply. Ten studies associated barriers such as the perception of low milk supply, breast or nipple pain or trauma, maternal exhaustion, and unrealistic expectations to early breastfeeding cessation (Andrade Souza et al., 2016; Camarotti et al., 2011; Germano-Conde et al., 2017; Hall-Smith et al., 2012; Hunter et al., 2015; Jara-Palacios et al., 2015; Monteiro et al., 2014; Nuampa et al., 2018; Nuampa et al., 2019; Pillay et al., 2018). Moreover, Germano-Conde et al. found that when adolescent mothers encountered obstacles, the duration of breastfeeding was negatively impacted ($p = 0.0069$).

Often, teenage mothers lacked the knowledge to manage and troubleshoot breastfeeding difficulties when they arose, which further complicated the mechanical challenges (Hall-Smith et al., 2012). Interestingly, Nesbitt et al. (2012) noted that most mothers were aware of the local resources to assist with breastfeeding complications, yet few mothers sought them out or accessed them.

Another individual breastfeeding barrier was the unrealistic expectations held by young mothers (Hall-Smith et al., 2012; Nesbitt et al., 2012). Nesbitt et al. observed that more than half of the teens expressed breastfeeding was more complicated than expected and stated that it was time-consuming and exhausting, believing bottle feeding was more convenient and straightforward than breastfeeding.

Adolescents struggled to balance new motherhood and the desire for social freedom or the need to return to work or school; all of these proved to be a significant limitation to adolescent breastfeeding success (Andrade Souza et al., 2016; Camarotti et al., 2011; Cota-Robles et al., 2017; Hall-Smith et al., 2012; Jara-Palacios et al., 2015; Nesbitt et al., 2012;

Nuampa et al., 2018; Nuampa et al., 2019; Pillay et al., 2018). Camarotti et al. revealed that nearly half of their study group ($n = 37$) conveyed returning to work resulted in early cessation of breastfeeding. Nesbitt et al. confirmed these findings with mothers reflecting how they felt "trapped," "stuck," and unable to "do the things you need to do " (p. 7). Another teen shared that in her new role, she attempted to "juggle" many different expectations and obligations (Hall- Smith et al., 2012, p. 8).

Self-efficacy can be discussed from the perspective of both barriers and facilitators. Breastfeeding self-efficacy is one's perception and belief that one holds adequate "knowledge and skills to successfully breastfeed their children" (Germano-Conde et al., 2017, p. 384). Camarotti et al. (2011) and Germano-Conde et al. noted that those who reported lower self-efficacy and confidence scores were less likely to experience breastfeeding success. Alternatively, Germano-Conde et al. discovered that teens who had no complications in their pregnancy ($p = 0.0069$) or during labor and birth ($p = 0.0316$) had higher breastfeeding confidence. Interestingly while not statistically significant, for the teens who showed high self-efficacy, the mean number of exclusive breastfeeding days was 82.85 days versus 64.15 days for those who displayed lower self-efficacy (Germano-Conde et al., 2017).

Interpersonal Level: Facilitators

Interpersonal relationships encompass family, peers, intimate partners, and those with frequent contact with the adolescent mothers. Eleven studies observed that these multi-dimensional encounters have a tremendous influence on an adolescent mother's breastfeeding journey (Bica & Giugliani, 2014; Hall-Smith et al., 2012; Hunter et al., 2015; Jara-Palacios et al., 2015; Khonsung et al., 2021; Monteiro et al., 2014; Muelbert & Giugliani, 2018; Nesbitt et al., 2012; Nuampa et al., 2018; Pillay et al., 2018; Wambach et al., 2011).

Receiving compassionate and encouraging support from immediate family members,

especially a teen's mother, was essential. Muelbert and Giugliani's (2018) secondary analysis of a RCT revealed a marked association between maternal grandmother support and breastfeeding continuation for at least six and 12 months ($p = < 0.05$ and $p = < 0.001$, respectively). Nesbitt et al. (2012) and Hall-Smith et al. (2012) also concluded that adolescents with a female family member who had a positive breastfeeding experience were more likely to breastfeed their infants.

In addition to family members, support and reassurance from peers, friends, and partners appeared to play a valuable role in breastfeeding decisions and outcomes (Hunter et al., 2015; Nesbitt et al., 2012; Wambach et al., 2011). Nesbitt et al. recounted how one teen who was participating in a school-based program for young mothers articulated, "Not all of the girls breastfeed, only like a couple of them, but when I saw them they were breastfeeding, whatever, I didn't feel so singled out... so it was a lot more comfortable, and I was good after that" (p. 8).

Hunter et al.'s (2015) focus group of adolescent mothers reflected that online and in-person networking with peers in similar circumstances were equally effective in providing breastfeeding support. However, teens were wary of accepting breastfeeding assistance from strangers in either format.

Review research suggested that intimate relationships may have a favorable effect on breastfeeding practices (Godbout et al., 2016; Jara-Palacios et al., 2015; Muelbert & Giugliani, 2018; Nesbitt et al., 2012). Though not statistically significant, in their retrospective chart review, Godbout et al. learned that when fathers participated in infant care, 64.8% of mothers breastfed, versus 35.2 % when the father was uninvolved ($p = 0.679$). According to Nesbitt et al., when partners assisted with breastfeeding, outcomes were improved. One teen shares how this was

accomplished, "My boyfriend was just helping... He'd bring me the baby, and when I was sitting down, he would bring me a drink or a snack (p.7).

In addition, Muelbert and Giugliani (2018) discovered that paternal age greater than 22 years ($p = 0.05$) and any amount of paternal involvement might encourage young families to adhere to breastfeeding recommendations.

Interpersonal Level: Barriers

While most mothers considered their family, friends, and partners their primary source of breastfeeding support, occasionally, these same influences negatively impacted breastfeeding outcomes (Bica & Giugliani, 2014; Godbout et al., 2016; Hall-Smith et al., 2012; Muelbert & Giugliani, 2018). Godbout et al. determined that mothers were more likely to bottle feed when grandparents participated in the infant's care ($p = .0059$). Specifically, one mother from Brazil who weaned her infant prematurely divulged, "My mother said that I was too thin for giving breast, and it was better for me to stop soon..." (Andrade Souza et al., 2016, p.3).

Furthermore, peers' and partners' negative sentiments and opinions on breastfeeding seemingly compelled teens not to initiate or to prematurely cease breastfeeding (Hall-Smith et al., 2012; Hunter et al., 2015). One mother referred to her partner's remark that "breasts are not for the baby but for... [Interviewer: He's thinking sexual?]?...Yes. But, he says it's cheaper too" (Hall-Smith et al., 2012, p. 6). Hall-Smith et al. continued with comments made by a study participant's friend, in which the classmate asserted, "Why you breastfeeding? your, you know, it [breast] will get uglier" (p. 6). Most often, friends or family members whom the teen perceived as being unsupportive were those who lacked personal experience with breastfeeding and often encouraged teens to use formula over breastfeeding (Nesbitt et al., 2012).

Organizational Level: Facilitators

The quality, clarity, and candor of breastfeeding education and support provided at

the organizational level appeared to have a significant impact on the breastfeeding journey of adolescent mothers (Condon et al., 2012; Edwards et al., 2013; Hunter et al., 2015; Leclair et al., 2015; Monteiro et al., 2014; Nesbitt et al., 2012; Nuampa et al., 2018; Nuampa et al., 2019; Wambach et al., 2011). The mothers frequently expressed appreciation for honest, transparent, and easily understandable anticipatory guidance of common breastfeeding challenges (Condon et al., 2012; Hunter et al., 2015). Moreover, two studies indicated that adolescents preferred midwife-led education (Hunter et al., 2015) and felt midwife support and guidance were superior to other healthcare team members (Condon et al., 2012). Hunter et al. reported that teens appreciated midwives who took the time to offer reassurance, work in partnership with them "hands-on," and not pressure them (Nesbitt et al., 2012, p. 8). Most teens, irrespective of whether they were having breastfeeding difficulties, found midwifery presence as "incredibly reassuring" (Hunter et al., 2015, p. 54).

Edwards et al. (2013) inquired if a home visiting service in a large U.S. population center staffed by locally trained Black doula provided effective breastfeeding support to low-income Black mothers. These authors found doula care significantly improved the rate of breastfeeding initiation ($p = 0.02$) and duration of breastfeeding beyond six weeks among the study participants ($p = 0.04$). The researchers surmised that ongoing support, building trusting relationships, and receiving care from a provider with a similar cultural background enhanced breastfeeding outcomes (Edwards et al., 2013).

Organizational Level: Barriers

A common theme identified was that when professional breastfeeding support ended, young mothers were more likely to discontinue breastfeeding (Camarotti et al., 2011). Camarotti et al. discovered that breastfeeding challenges more than doubled from 15% to 35%

once a teen was discharged from the hospital. According to Condon et al.'s (2012) qualitative study, adolescent mothers reported instant dissatisfaction with the support they received if a provider terminated care due to the provider-held perception that breastfeeding was going well. Furthermore, Hunter et al. (2015) described how the perception of a "task-oriented" environment or a sense of "being observed" and "judged" led to feelings of disillusionment and abandonment (pp. 51-52).

Hall-Smith et al. (2012) illustrated how healthcare staff attitudes, interactions, and demeanor might prove fundamental to breastfeeding success. When one 16-year-old mother returned to the hospital due to high blood pressure on day four postpartum, her nurse quickly interpreted her infant's crying as a sign of hunger and instructed her to "...put the baby on the bottle...the baby is not getting enough" despite the teen's desire to breastfeed without significant breastfeeding challenges beyond engorgement (p. 8). Other statistically significant organizational factors hampering breastfeeding outcomes were not having an antenatal provider ($p = < 0.004$) and not participating in childbirth education classes ($p = < 0.0001$) (Leclair et al., 2015).

Community Level: Facilitators and Barriers

At the community level, minimal evidence focused on the facilitators and barriers to breastfeeding within the broader community context and generally accepted societal norms. The extracted facilitators included having a sense that public breastfeeding was an acceptable community norm, broad social support, and availability of informal local breastfeeding information, ideally through social media networks (Hall-Smith et al., 2012; Nuampa et al., 2018).

When considering community barriers to breastfeeding, a consistent thread throughout

the literature was the stigma attached to breastfeeding in public and the notion that breastfeeding goes against accepted social norms (Camarotti et al., 2011; Condon et al., 2012; Nesbitt et al., 2012; Nuampa et al., 2018; Nuampa et al., 2019). Teens may possess an increased susceptibility to these social pressures and may potentially feel breastfeeding their infants in public is "embarrassing" and interpret it as another opportunity to be "scrutinized" by others for being young mothers (Nesbitt et al., 2012, p. 7; Nuampa et al., 2018, p. 296).

Public Policy Level: Facilitators and Barriers

Less explored are how public policies and laws promote and facilitate positive breastfeeding outcomes in adolescent mothers. Unfortunately, the inconsistency of public policyguiding breastfeeding practices in the workplace and educational setting is apparent throughout the literature (Apostolakis-Kyrus et al., 2013; Nuampa et al., 2018; Pillay et al., 2018).

Teens were frequently concerned about the logistical difficulties of breastfeeding when returning to work or school. Often cited challenges difficult to overcome were having no designated private place to pump, no accessible storage for expressed milk, not being excused for breaks to pump, and busy work schedules (Hall-Smith et al., 2012; Nuampa et al., 2018; Pillay et al., 2018). A student detailed her frustration in the school setting, "I had to express my milk in the restroom and throw it away. I could not stock it anywhere because I was a student" (Nuampa et al., 2018, p. 296).

Discussion

This integrative review utilized the socio-ecological model as its foundation to elucidate what is currently known concerning the facilitators and barriers to improving breastfeeding outcomes in adolescent populations. The model's basic premise is that

numerous bidirectional considerations mold an individual's perceptions and experiences (Bronfenbrenner, 1999). Utilizing this framework helps inform the perinatal community and other breastfeeding support resources on best practices for promoting breastfeeding education and guidance among adolescent mothers.

Individual Level

Half of the studies in this review identified prenatal intention to breastfeed and the knowledge of maternal and infant health benefits as essential precursors to adolescent breastfeeding success and improved outcomes. These findings are supported by Sipsma et al.'s (2015) systematic review and SmithBattle et al.'s (2020) meta-synthesis into the breastfeeding behaviors and practices among adolescent mothers. When adolescent mothers understand the maternal and infant health advantages of breastfeeding and perceive it as beneficial to themselves or their infants, they are motivated to develop and embrace an intention to breastfeed (Hall-Smith et al., 2012; SmithBattle et al., 2020).

However, as Chopel et al. (2019) discovered in their examination of the social and structural barriers to breastfeeding in young mothers ages 14 to 24 years, there remains a disconnect between stated prenatal intention to breastfeed and actual breastfeeding behaviors. As in the current review, Chopel et al. concluded that the awareness of benefits was enough to inspire adolescents to initiate breastfeeding, yet knowledge alone was insufficient to overcome obstacles and affect the duration.

Although Devane-Johnson et al.'s integrative review in 2017 and Woods et al.'s (2013) focus group study did not research adolescent populations exclusively, the authors identified breastfeeding discomforts and barriers experienced by the mothers significantly impaired their ability to persevere and maintain breastfeeding. Early cessation in this instance may be

partly due to unrealistic expectations and the lack of a comprehensive understanding of how to navigate common breastfeeding discomforts.

This review determined that adolescents take on a passive role and are not yet equipped with the skills to ask for assistance when encountering difficulties (Hunter et al., 2015). Hence, further research should explore the ideal time and format to introduce professional recommendations and guidance for managing obstacles during breastfeeding education, emphasizing the unique needs of adolescent mothers.

Interpersonal Level

Consistent with the current review, the broader literature on adolescent breastfeeding indicates that partners, parents, and peers can act as facilitators by providing consistent encouragement, reassurance, and practical breastfeeding advice (Edwards et al., 2017; Segura- Perez et al., 2020; Snyder et al., 2021).

Furthermore, despite a study sample age greater than 19, a cross-sectional qualitative investigation conducted by Chopel et al. (2019) affirmed peer-led breastfeeding environments instill a sense of belonging and empowerment in breastfeeding women of all ages.

Interestingly, these same researchers identified several studies indicating negative comments, sexualization of breasts, and a perceived lack of support from friends and family might sabotage young mothers' breastfeeding efforts (Chopel et al., 2019).

Three studies in the current review revealed that the engagement of maternal grandmothers positively extended breastfeeding duration in young mothers (Bica & Guigliani, 2014; Godbout et al., 2016; Muelbert & Guigliani, 2018). Alternatively, Dunn et al.'s (2015) focus group involving primarily older mothers reported that maternal grandmothers who did not have breastfeeding knowledge or a positive personal breastfeeding experience could

undermine success.

Moreover, Dunn et al. (2015) further corroborated the findings of this review discovering breastfeeding success is hampered when family members desire to assist young mothers by feeding the infant rather than undertaking daily household tasks and praising the teens' breastfeeding efforts. The inconsistent findings may lie in the varying family dynamics and diverse cultural practices. Thus, further research is warranted to discover innovative ways for families, partners, and friends to engage in infant care, offer adequate breastfeeding support and provide practical everyday help.

Organizational Level

In this research, a prevalent theme was the importance of relationship-building between professionals and the breastfeeding teen at the organizational level. As in this work, Segura-Perez (2021) found that connecting teens to locally staffed community resources, such as teen mentoring groups or doula services that focus on breastfeeding education and fostering deeper connections between providers and teens, improved breastfeeding outcomes.

Moreover, in the present review, teens expressed a need for transparency and for healthcare team members to offer clear and direct communication with practical interventions for common breastfeeding challenges (Condon et al., 2012; Hunter et al., 2015).

A qualitative study from the United Kingdom involving breastfeeding mothers of all ages determined that if professionals offering breastfeeding support were to omit critical information incidentally, teens quickly ceased breastfeeding when uncertainties surfaced (Jaime et al., 2020). Furthermore, Jaime et al. identified that teens stated their breastfeeding efforts were sabotaged when health care practitioners suggested offering formula too readily.

Two studies in this review revealed mixed results when exploring the influences of the

Women, Infants, and Children (WIC), a federally funded nutrition education and a breastfeeding support program on breastfeeding in adolescents (Godbout et al., 2016). Though not statistically significant, Godbout et al.'s retrospective chart review of feeding choices in adolescent populations discovered that those participating in the WIC program were more likely to formula feed. While the authors did not focus on a specific age group, Chopel et al. (2019) found that peer counselors from WIC or other social services programs positively influenced breastfeeding success and satisfaction. Given the inconsistent results and limited research in adolescent populations, the need for further investigation on the impact of these programs on breastfeeding outcomes is highlighted. Furthermore, steps should be taken to ensure these resources are optimized to meet the unique needs of young mothers.

Community Level

Although the present review determined a lack of evidence concentrating on the facilitators and barriers to adolescent breastfeeding within the broader community, one study demonstrated that teens were motivated to breastfeed in public when society viewed it as socially acceptable (Hall-Smith et al., 2012). Notably, five studies in this review showed that teens are easily persuaded to discontinue or alter their breastfeeding practices when the community views public breastfeeding as unfavorable (Camarotti et al., 2011; Condon et al., 2012; Nesbitt et al., 2012; Nuampa et al., 2018; Nuampa et al., 2019). In addition, a fundamental concern throughout this review and the literature's greater purview was that teens' perception of the ease and comfort when breastfeeding in public was a potent mediator of their willingness to feed their infants while in public (Chopel et al., 2019).

Chopel et al. (2019) additionally reported on the existence of vast inconsistencies within community settings on the acceptability of public breastfeeding. Fortunately, a recent qualitative

study of adult breastfeeding mothers by Snyder et al. (2021) revealed that most believe public breastfeeding is growing more socially and culturally permitted.

The present review determined that for teen mothers to experience a high-quality breastfeeding experience, they need access to immediate and dependable support from community resources that promote breastfeeding (Hall-Smith et al., 2012; Nuampa et al., 2019). Supporting these findings, Dunn et al. (2015) and Snyder et al. (2021) also discovered that a teen's awareness of and quick access to community lactation information and support groups, ideally on social networking platforms (Jamie et al., 2020), were essential to breastfeeding success. Thus, establishing the need for and importance of ongoing breastfeeding promotion and advocacy efforts within the extended community is advised.

Public Policy Level

Providing dedicated time and private spaces for breastfeeding or pumping within the school setting was crucial for teens in this review (Cota-Robles et al., 2017; Hall-Smith et al., 2012; Nuampa et al., 2019; Pillay et al., 2018). While their research did not focus specifically on teen populations, Dinour and Suzaro (2017), Segura-Perez et al. (2021), and Vilar-Compte et al. (2021) confirmed this finding. These authors emphasized that having policies that provide dedicated breaks and private spaces to feed or express improved breastfeeding rates and facilitated breastfeeding commitment. Moreover, in their systematic review, Feldman-Winter and Shaikh (2007) asserted that advocates need to press school districts to provide accommodations to optimize breastfeeding promotion in teen mothers.

These conclusions also relate to the adolescent breastfeeding population within the present review. In Pillay et al.'s (2018) survey, 31% of South African adolescents drop out of school because of the birth of their baby. When asked how schools can decrease the challenge

to breastfeed while in school, over 50% of the adolescents surveyed recommended that schools should offer practical support and inspire mothers to breastfeed. Therefore, at the state and national levels, breastfeeding legislation needs to be in the spotlight to protect time and space for teens to breastfeed while at work or in site-based educational programs.

None of the studies in this review explicitly researched the impact of the Baby-Friendly Hospital Initiative, Healthy People goals, or policies that limit the marketing of breastmilk substitutes on the breastfeeding behaviors of adolescents. However, several authors in the review presented these programs as an explanation for why breastfeeding rates in their research may have been higher (Apostolakis-Kyrus et al., 2013; Bica & Giugliani, 2014; Camarotti et al., 2011; Condon et al., 2012; Khonsung et al., 2019; Muelbert & Giugliani, 2018). Thus, more exploration is needed to elucidate the value of these policies in adolescent populations.

Review Strengths and Limitations

The strength of this integrative review lies within the rigor of the screening processes and the diverse study populations that were included. This review maintained a global perspective to enhance strength and limit bias by including research from a range of heterogeneous populations with representation from various high-income nations. While the study samples in this review included diversity in socioeconomic status, race, ethnicity, cultural beliefs, and breastfeeding practices, group differences were not explicitly analyzed.

Moreover, the authors limited the review to a study sample of age 19 or less, and therefore studies with sample populations that involved older mothers were excluded. As there is a paucity of evidence regarding breastfeeding outcomes and success in adolescent populations, to help mitigate this omission, the discussion section integrated research and review findings from relevant breastfeeding literature that included all age groups.

Conclusion

Despite leading professional recommendations and awareness of the abundance of health benefits, adolescent mothers have the lowest rates of breastfeeding initiation and duration (AAP, 2021; ACNM, 2016; ACOG, 2021; CDC, 2021a). When the socio-ecological model was applied to illuminate the facilitators and barriers to breastfeeding success in young mothers, this review discovered that the vast majority of current research focused on the individual, interpersonal, and organizational levels. Thus, the deficiency of high-quality data leaves room for additional investigation into the impact at the community and policy levels. In addition, opportunities exist for developing and evaluating school programs, community lactation resource planning, and public policy advocacy efforts to improve breastfeeding success in this vulnerable population. To allow young mothers to achieve optimal breastfeeding outcomes, providing a nurturing and encouraging environment that offers practical, honest, and developmentally appropriate support remains invaluable.

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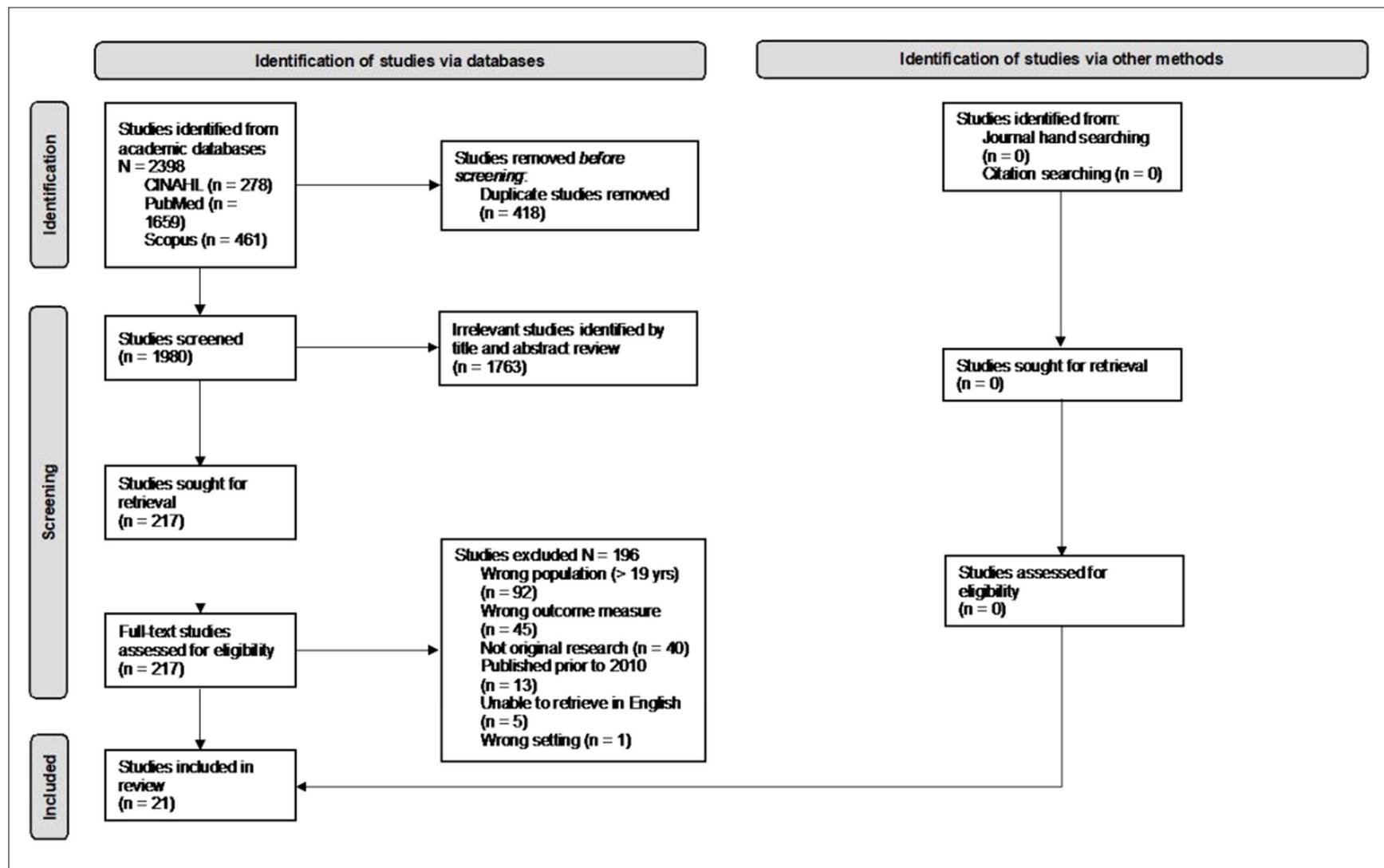
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Appendix A

PRISMA Flow Diagram



Appendix B

Matrix of Studies Included in the Integrated Review

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Andrade Souza et al. (2016) Jequie' Bahia, Brazil	To explore dynamics impacting early BF cessation in adolescent mothers	Level: III Quality: Good	Qualitative descriptive Semi-structured interviews Individual interviews with an open-ended questionnaire Thematic analysis T-tests, Chi-square, and Fisher's Exact Test Multivariate logistic regression analysis	Adolescent mothers N = 73	I, II, IV	Identified barriers: Lack of peer and family support, early introduction of complementary foods, maternal perceptions of inadequate milk quality and supply, balancing student responsibilities with motherhood, and mechanical challenges of BF
Apostolakis-Kyrus et al. (2013) Ohio, USA	To identify adolescent mothers most at risk of early weaning to develop targeted BF education curriculum and support interventions to improve BF initiation outcomes	Level: III Quality: Good	Retrospective population-based cohort Comparative analysis	Main exposure Group: Adolescent mothers N = 30,402 Reference group: Adolescent mothers N = 257,840	I, II, III, IV, V	Identified facilitators: White versus Black race (P = < .01) Identified barriers: Mothers aged 15 years or less, unmarried, public insurance

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Bica & Giugliani (2014) Brazil	To evaluate the impact of a WHO based counseling intervention directed toward improving BF prevalence and outcomes over the first postpartum year in adolescent populations	Level: 1 Quality: Good	Four group RCT Control: Routine care Intervention: Routine care plus six 1-hour counseling sessions on infant feeding; grandmothers received additional role-specific coaching Chi-square test Kaplan- Meier survival curves	Adolescents living with their mother: Control n = 64 Intervention n = 75 Adolescents not living with mother: Control n = 60 Intervention n = 61 Maternal grandmothers N = 169	I, II, IV	No variation was found in rates between the intervention and control groups in the presence of the maternal grandmother (p = 0.182) The intervention minimized the risk of early introduction of complementary foods by 48% in the first 6 months The intervention prolonged exclusive BF but did not influence the duration
Camarotti et al. (2011) Ribeira Preto, Brazil	To examine past and present BF experiences and perceived barriers to BF amongst adolescent mothers	Level: 3 Quality: Good	Exploratory, quantitative, observational Questionnaire administered in 3 phases: hospital, dismissal, postpartum Descriptive statistics and thematic analysis	Low-income adolescent mothers N = 80	I, II, III, IV	Identified barriers: Low self-efficacy, conflict between role as mother versus completing adolescence, conflict between maternal perceptions versus societal expectations, negative self-image, lack of familial support, returning to work After hospital discharge, BF challenges doubled from 15% to 32.5%

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Condon et al. (2012) United Kingdom, England	To examine pregnant and parenting adolescent mothers' perceptions of BF support provided by healthcare professionals	Level: III Quality: Good	Qualitative descriptive Individual semi-structured interviews Focus groups Inductive, thematic analysis	Pregnant and parenting adolescents N = 29 Focus group n = 12 Interviews n = 17	I, II, III, IV	Identified facilitators: Provider-led education of maternal and infant health benefits, maternal perceived convenience, midwifery support, continuation of provider BF support beyond early PP period, anticipatory guidance of frequent challenges, family, not provider, support with BF challenges Identified barriers: Perceived risk of social humiliation, access to hospital formula, lack of provider BF support beyond two weeks postpartum, challenges of balancing personal desire to BF with external societal norms (public BF)
Cota-Robles et al. (2017) Southwestern USA	To explore BF habits and expand upon adolescent mothers' decision, not to initiate BF and reasons for early cessation	Level: III Quality: Good	Mixed methods BF Survey used in the CDC's Infant Feeding Practices Study II, administered between 6- and 24-months PP	Adolescent mothers registered in the Personal Success Path of the Teen Outreach	I, II, III, IV	Identified barriers to initiation: Return to school or work, desire for more freedom, inconvenience, belief that formula was just as good as or superior to breast milk

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
				Pregnancy Services program N = 314		
Edwards et al. (2013) Urban university hospital, USA	To investigate the efficacy of a local doula home visiting service fostering positive BF outcomes in pregnant adolescents	Level: I Quality: Good	Mixed methods: RCT, qualitative interviews, chart review Control: Routine prenatal care (PNC) Intervention: Routine PNC plus 1- 10 weekly home visits during pregnancy, continuous intrapartum support, and 12 PP home visits during the first three months Analysis of variance (ANOVA), Pearson Correlation Coefficient, and Fisher's Exact Test	Low-income Black adolescents < 34 weeks' gestation Control group n = 124 Intervention group n = 124 Black doulas N = 4	II, III, IV	Doulas positively impacted BF initiation (p = .02) and duration rates beyond 6 weeks (p = .04) Ongoing education, building trusting relationships, readily available support, and similar cultural backgrounds were found to influence outcomes positively
Germano-Conde et al. (2017)	To explore the relationship between BF self-efficacy and duration of	Level: III Quality: Good	Longitudinal, prospective, and observational	Adolescent mothers N = 160	I	Identified barriers: Perceived BF challenges (p = 0.0069), perceived obstacles (p = 0.0316)

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Ribeirão Preto, Brazil	exclusive BF among adolescent mothers		BF Self-Efficacy Scale at > 24 hours PP and after BF initiation Telephone questionnaire at 1, 2, and 6-months PP			Provider awareness of BF self- efficacy may assist in interventions directed to empower adolescent BF success No statistical difference in self-efficacy or exclusive BF status during PP follow- ups
Godbout et al. (2016) Louisville, KY, USA	To discover how participation in WIC, paternal involvement, maternal grandparent support, and skin- to-skin influences infant feeding decisions	Level: III Quality: Good	Retrospective chart review Data extracted from Navicare Watch Child system Fisher Exact Test Student t-test for identification of social and obstetrical characteristics	Adolescent Mothers N = 457 BF group n = 301 Bottle-Feeding group n = 156	II, III, IV	Identified facilitators: Paternal participation was positively correlated with BF though not statistically significant (p = 0.0679) skin- skin positively impacted BF (p = .0064) Identified barriers: Black teens are more likely to bottle feed (p = .048), maternal grandparents/caretaker involvement negatively impacted BF rates (p = .0059) No statistical difference with WIC participation

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Hall- Smith et al. (2012) Greensboro, NC, USA	To examine how the social and lived experiences of adolescent mothers influence their BF journey	Level: III Quality: Good	Prospective Qualitative Face-to-face semi-structured interviews, weekly telephone contact, and a single follow-up interview	Adolescent mothers enrolled in childbirth education course N= 5	I, III, IV	Identified facilitators: Perception that "breast is best," affordability, antepartum intention to BF, accessibility, and school staff accommodation to pump, having a mother who BF
Hunter et al. (2015) Oxfordshire, England	To understand how inpatient hospital encounters affect adolescent mothers' attitudes, perceptions, and infant feeding decisions	Level: III Quality: Good	Qualitative Semi-structured interviews Focus groups Inductive and thematic analysis	Low-income adolescent mothers participating in young parent groups N = 15	I, II, III	Identified facilitators: Anticipatory guidance, encouragement, and praise trusting relationships, emotional support from peers, education from a midwife Identified barriers: Feeling disempowered and uninvolved, pain and exhaustion, impaired infant bonding, perceived hospital environment as task-oriented, criticism and discrimination, feeling observed and judged, fear of asking for assistance, being away from home

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Jara-Palacios et al. (2015) Quito, Ecuador	To determine factors that most significantly impact the decision to exclusively BF for young mothers	Level: III Quality: Good	Cross-sectional exploratory, mixed methods Analysis tool designed and previously validated by adolescent mothers Multivariate logistic regression and Chi-square test	Adolescent mothers N = 375	I, II, IV	Identified barriers to initiation and reasons for early cessation: Milk supply concerns, return to school or work, maternal choice Identified facilitators to exclusive BF: Knowledge of recommendations (p = 0.049), awareness of maternal health benefits (p = 0.029), family and partner support are essential
Khonsung et al. (2021) Northern Thailand	To determine if pregnancy intention, perceived benefits and barriers, self-efficacy, maternity care practices, and peer and family support are predictors of BF rates at 6 months PP in adolescent mothers	Level: III Quality: Good	Predictive cross-sectional mixed methods design using six previously validated tools: Pregnancy Intention and BF Practice Questionnaire, Perceived Benefits of BF Questionnaire, BF Efficacy Scale, Family Support Questionnaire, Maternity Practice Questionnaire Analysis was completed using descriptive and inferential statistics	Adolescent mothers N = 195	I, II	Identified facilitators: Self-efficacy (p = 0.006), high BF Self-efficacy scores (9.91 times more likely to exclusively BF, family support (p = 0.037), knowledge of BF benefits (p = .398) Identified barriers: Pre- pregnancy intention (p = 0.068), and maternity care practices (p = 0.514) did not predict rate of BF

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Leclair et al. (2015) Ontario, Canada	To describe the association between multiple sociodemographic factors and BF intention and initiation in pregnant adolescents	Level: III Quality: Good	Retrospective population-based cohort using the Better Outcomes Registry & Network (BORN) database Chi-square and independent t-test Multivariate logistic regression	Pregnant adolescents N = 22,023	I, II	Identified facilitators to exclusive BF at hospital discharge (all p = < .0001): Intention to BF, older age, attending prenatal classes, living in a higher-income area Identified barriers to exclusive BF at hospital discharge (all p = < 0.005): High parity, no antenatal provider, substance and tobacco abuse, no attendance of prenatal class, cesarean delivery
Monteiro et al. (2014) Ribeirão Preto, Brazil	To determine BF characteristics and needs in adolescent mothers	Level: III Quality: Good	Cross-sectional study with mixed method design Demographics retrieved from an online database Semi-structured interviews Descriptive statistics Thematic content analysis	Adolescent mothers Survey: N = 229 Interviews: N = 10	I, II, III	Identified facilitators: A positive view of BF and health benefits, healthcare team and family support, anticipatory guidance Identified barriers: BF difficulties (pain and fear), early introduction of complementary foods, infant refusal of the breast

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Muelbert & Giugliani (2018) Southern Brazil	To determine factors associated with BF maintenance at 6, 12, and 24 months in a cohort of adolescent mothers	Level: I Quality: High	Secondary analysis of RCT Univariate Poisson regression model	Adolescent mothers 6 months: N = 228 12 months: N = 237 24 months: N = 207	I, II, III, IV, V	Identified factors associated with BF at six months (all found to be statistically significant): Black/brown maternal skin color, living with maternal grandmother, pacifier non-use, longer exclusive BF duration Identified factors associated with BF at 12 months (all found to be statistically significant): Female infant sex, maternal grandmother and partner support, pacifier non-use, longer exclusive BF duration Identified factors associated with BF duration at 24 months (all found to be statistically significant): Paternal age > 22, multiparity, pacifier non-use
Nesbitt et al. (2012)	To examine adolescent mothers' perceptions of	Level: III Quality: Good	Qualitative descriptive Individual semi-structured interviews	Adolescent mothers N=16	I, II, III, IV,	Identified facilitators of initiation and duration: Decision to BF made prenatally, infant health

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Ontario, Canada	facilitators and barriers to the initiation and initiation and duration of BF					benefits, supportive partners, peer support, female family support, PP nursing care Identified barriers to initiation and duration: Lack of BF knowledge, misconceptions, unrealistic expectations, perceived social limitations, and concerns of societal judgment, time, not accessing PP support
Nuampa et al. (2018) Bangkok, Thailand	To explore the BF experiences among Thai adolescent mothers	Level: III Quality: Good	Qualitative descriptive, phenomenological Individual semi- structured interviews Demographics collected using the closed-ended Personal Information Form Descriptive statistics and content analysis	Adolescent mothers N = 20	I, II, III, IV	Identified facilitators: Perceived maternal and infant health benefits, maternal-infant bonding, economic savings, family, healthcare, and professional support Identified barriers: BF challenges, balancing work and school obligations, lack of BF support from work or school, public BF, balancing motherhood, social stigma

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Nuampa et al. (2019) Bangkok, Thailand	To obtain data regarding exclusive BF and patterns leading to successful BF in adolescent mothers	Level: III Quality: Good	Mixed methods using concept mapping, multidimensional scaling, and descriptive and cluster analysis	A purposive sample of adolescent mothers participating in brainstorming, sorting, and rating of statements N = 28 Participants randomized to a mapping and pathway creation n = 14	I, II, III, IV	Identified facilitators: Infant health benefits, patience, detailed education on expressing breastmilk, lactation consultant support, easily accessible information Identified barriers: Fear of infant choking, breast and nipple pain, social limitations, public embarrassment, limited power within family structure
Pillay et al. (2018) KwaZulu- Natal, South Africa	To gain deeper insight into thoughts and experiences of BF that influence teenage mothers' infant feeding decisions	Level: III Quality: Good	Cross-Sectional, exploratory descriptive Individual interviews with an open-ended questionnaire T-tests, Chi-square, and Fisher's Exact Test Multivariate logistic regression analysis	Adolescent mothers N= 73	I, II, III, IV	Identified facilitators: Supportive family, BF education Identified barriers: Less than 17 years, returning to school (8.6% more likely to cease BF), advice from family members, especially maternal grandmothers, 79.5% more likely to cease BF with significant challenges, maternal illness

Author/Date/ Location	Study Aim	JHNEBP	Methods	Sample	SEM	Key Findings
Wambach et al. (2011) KS, USA	To test the hypothesis that education programs provided by a lactation counselor and peer support team can improve BF initiation, duration, and exclusivity to 6 months PP	Level: 1 Quality: Good	Prospective non-blinded 3 group RCT BF Attrition Prediction Tool (BAPT) Univariate, multivariate, and descriptive statistical analysis	Adolescent mothers: N = 201 Intervention Group (focus on BF): n = 77 Attention Control (no focus on BF): n= 60 Usual care: n = 64	I, II, III	Identified facilitators to initiation: BF knowledge (p = .008), prenatal BF intention (p = < .0001), the timing of BF decision (p = .002), social and professional support (p = < .0001) Identified barriers to duration: Formula supplementation was prevalent by 3 weeks

Note. Socio-ecological model (SEM), Breast Feeding (BF), Post-Partum (PP), Randomized Control Trial (RCT)

Appendix C

Barriers and Facilitators Influencing Adolescent Breastfeeding Success

Socio-Ecological Model Level	Facilitators	Barriers
Individual (I)	Awareness of maternal and infant health benefits, affordability and convenience, a stated intention to breastfeed, high self-efficacy	Maternal perceptions of low milk supply, maternal exhaustion, breast and nipple pain, balancing developmental, student, work, and maternal roles
Interpersonal (II)	Regular paternal participation in infant care, support from maternal grandmother and female relatives with a positive breastfeeding experience, in-person and online peer and friend camaraderie and support	Lack of peer and family support, negative thoughts and opinions on breastfeeding held by peers and friends, sexualization of breasts, receiving guidance from those without a personal history of breastfeeding
Organizational (III)	Midwife-led education and lactation support, honest and transparent anticipatory guidance, trusting and culturally sensitive provider-patient relationships, home-visiting doula services	Task-oriented hospital environment, negative healthcare staff attitudes, and interactions, no prenatal provider, no childbirth class attendance, cessation of breastfeeding support

Socio-Ecological Model Level	Facilitators	Barriers
Community (IV)	Community acceptance of public breastfeeding as the societal norm, availability of informal local breastfeeding information, online community networking	Stigma attached to public breastfeeding resulting in feelings scrutinized and embarrassed, minimal community resources to facilitate breastfeeding maintenance
Policy (V)	None determined in the present review; possibly WIC, Healthy People 2030, and limitations on artificial milk marketing	Limited access to private pumping spaces, breaks, and milk storage within schools and workplaces