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Systematic Review

Determination of the early initiation of breast feeding in low-middle income country: a systematic review

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ABSTRACT

WHO recommends Early Initiation of Breastfeeding (EIBF), which means direct breastfeeding to newborns within the first hour of life. However, nowadays, EIBF is not often carried out by mothers, which increases the risk of infant death. This review investigates studies that identify factors associated with EIBF practices. We conducted a systematic review to answer the aforementioned aims. Factors associated, mother-child, and early initiation breastfeeding were used as initial keywords, which were further developed using Medical Subject Headings. Four databases, including Sciencedirect, pubmed, Cochrane, and wiley online library were searched for potential articles. We also searched the references in addition to the main search. We included 12 articles in this review. Type of delivery assisted and mode of delivery were the most influence factors associated to EIBF. Other factors that are frequently showed up in analysis of studies included such as ANC/PNC visits, households wealth, place of residence, and birth order. Addressing the EIBF problem requires multi-sectoral and complex repair efforts. The results of this review show promising problem mapping to initiate a transformation. The type of delivery assisted and the mode of delivery were the most influential factors, in addition to other factors such as ANC/PNC visits, household wealth, place of residence, and birth order. Therefore, health workers must be aware of and communicate with clients regarding the urgent need for early breastfeeding.

Keywords: Intervention, Early initiation of breastfeeding, Determinant

INTRODUCTION

Breastfeeding is an indispensable primary healthcare routine for optimal newborn infant care.[1]

Early initiation of breastfeeding (EIBF) refers to feeding a newborn through the mother's breast milk within the first hour of birth.[2] Regarding nutritional, developmental, and immunological outcomes, EIBF has significant implications for infants and mothers.[3]

EIBF allows for providing immunoglobulin and other essential bioactive molecule-rich colostrums for newborn, which is critical for the immunity, growth, and development.[4] Vigorous evidence indicates that EIBF is strongly associated with lower neonatal and newborn mortality.[5]

Furthermore, research shows that EIBF promotes "Maternal-Infant Bonding," which results in better outcomes for children's development.[6] EIBF practice has also been shown to benefit mothers in the short and long term.[1,7,8] Early initiation and exclusive breastfeeding are nutritional interventions that statistically authenticate cogency in receding neonatal mortality.[9]

Debeset al in a systematic review study, underlined that initiation of breastfeeding within 24 hours after birth could reduce up to 44% of all causes of neonatal death, of which the remaining 42% are neonatal deaths related to low birth

weight.[10] In Nepal, two studies highlighted the importance of breastfeeding initiation within 24 hours of birth due to its excellent benefits in preventing around 19.1% of all neonatal deaths.[11,12]

There is a concordance with the conclusions raised in a cross-sectional study in Ghana and previous meta-analyses that the increased risk of neonatal death is closely related to the delay in breastfeeding initiation.[13,14] Furthermore, the study stated that the highest risk was found in breastfeeding conditions after 1 hour compared to within one hour. It increases the rate of early breastfeeding initiation from 42.2% to universal practice (closer to 100%).

The 2017 UN report stated that there were 18 global neonatal deaths per 1000 live births.[15] The Sustainment Development Goals (SDGs) agreement attempts to reduce neonatal mortality to at least 12 per 1000 live births by 2030. EIBF, breastfeeding in the first hour of life, has been proposed intervention to reduce mortality.[2]

EIBF practices were positively reported to correlate three times lower with neonatal mortality from any cause compared to infants who were not breastfed earlier.[16] However, in reality, EIBF is no longer as widely practiced as it was in the past. The 2015 Countdown for Maternal, Newborn, and Child Survival (Countdown) data shows that the average global EIBF rate is only 50% [1].

The latest global estimate is only 42%, showing a downward trend, especially in low and middle-income countries with even lower rates.[17-19] The possibility that three out of five babies are not breastfed early places them in a higher risk group of death and disease, resulting in less likelihood of continuing to receive exclusive breastfeeding.[20] In Nepal, no more than 36.77% of mothers had EIBF.[21]

Factors such as mothers' attitudes towards breastfeeding, culture, and demographics can influence the low implementation of EIBF.[22] In the culture of several countries, such as South Asia and Nepal, women do not have more rights in making household decisions, which is closely related to the low number of EIBF practices.[23,24]

EIBF practices were also lower in mothers who were uneducated or with low education, which was associated with less ability to make logical decisions.[25] A study in Indonesia stated that mothers with a high level of education were predictors of EIBF.[26]

This scoping review was carried out as part of an initiative to expand on the existing evidence on women's empowerment and EIBF.

This review pinpointed interventions that empower mothers and the barriers and facilitators that mothers face when initiating early breastfeeding.

METHODS

Literature search

This review study complied with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.

All literature was searched systematically and focused on articles in English published from indexed studies from 2010 to 2022 through the Pubmed, Science Direct, Cochrane, and Wiley online libraries databases. In titles and abstracts, the following search terms were combined: (early initiation breast feeding or breast-feed or breastfeed or breast milk) and (mother or maternal or baby or babies or newborn or child or infant). The bibliographies of all relevant articles and reviews were also checked.

Eligibility criteria

The following criteria were used to determine inclusion: studies examining the relationship between factors associated and early initiation breastfeeding, participants were mothers or mother-child dyads, and quantitative measures of early initiation breastfeeding and factors associated were used.

Articles that were not in English, reviews, case studies, case series, qualitative studies, conferences, commentaries, theory papers, or books were excluded, or if the relationship between factors associated with early initiation breastfeeding was not statistically analyzed.

After withdrawing duplicates, the two authors independently screened titles and abstracts for qualified studies. Unmet criteria papers were dismissed from consideration. The first two authors then independently reviewed the full texts of relevant papers. Contentions were settled through discussion.

Quality assessment

Using the NIH quality assessment tool for observational cohort and cross-sectional studies, the first two authors independently assessed the methodological quality of the included studies (National Heart, Lung, and Blood Institute).

The evaluation is based on 14 criteria that focus on key internal validity concepts. It is possible to assess the risk of selection bias, information bias, measurement bias, and confounding variables.

We evaluated the criteria in greater detail; a 3-point scale (1= yes, 0.5= partially, 0= no) was used instead of the original dichotomous scale (yes, no). Criteria that were not applicable were coded as "NA", and criteria that were not reported as "NR". Each study was given a final score that indicated the percentage of relevant criteria that were met.

Data extraction

The first author extracted data from the included studies. The second author checked for accuracy and completeness.

Differences of opinion are resolved by consensus. Information considered to be the most substantive and representative of the article's overall content was extracted, such as author, year, country, study design, sample size, covariates, and findings.

Data synthesis

Due to the heterogeneity of the included studies in terms of study design, exposure dose, exposure, and outcome measures, the synthesis was carried out narrative rather than collecting data for a meta-analysis (Center for Review and Dissemination, 2009).

The study findings' similitude and disparities in sample characteristics, exposure dose, outcome measures, and assessment time, and methodological quality were investigated.

The findings are described in detail using text and tables. The studies were organized into groups based on the factors associated with EIBF.

RESULTS

Figure 1 illustrates a literature search based on the PRISMA 2020 template. Following the removal of replications, 1,677 records were screened for eligibility established on abstracts and titles. The remaining 449 articles were screened in full text after 1,228 records were removed. Twelve articles met the inclusion criteria. There was a significant concurrence between the two reviewers regarding abstracts and an unequivocal agreement regarding screening the full text.

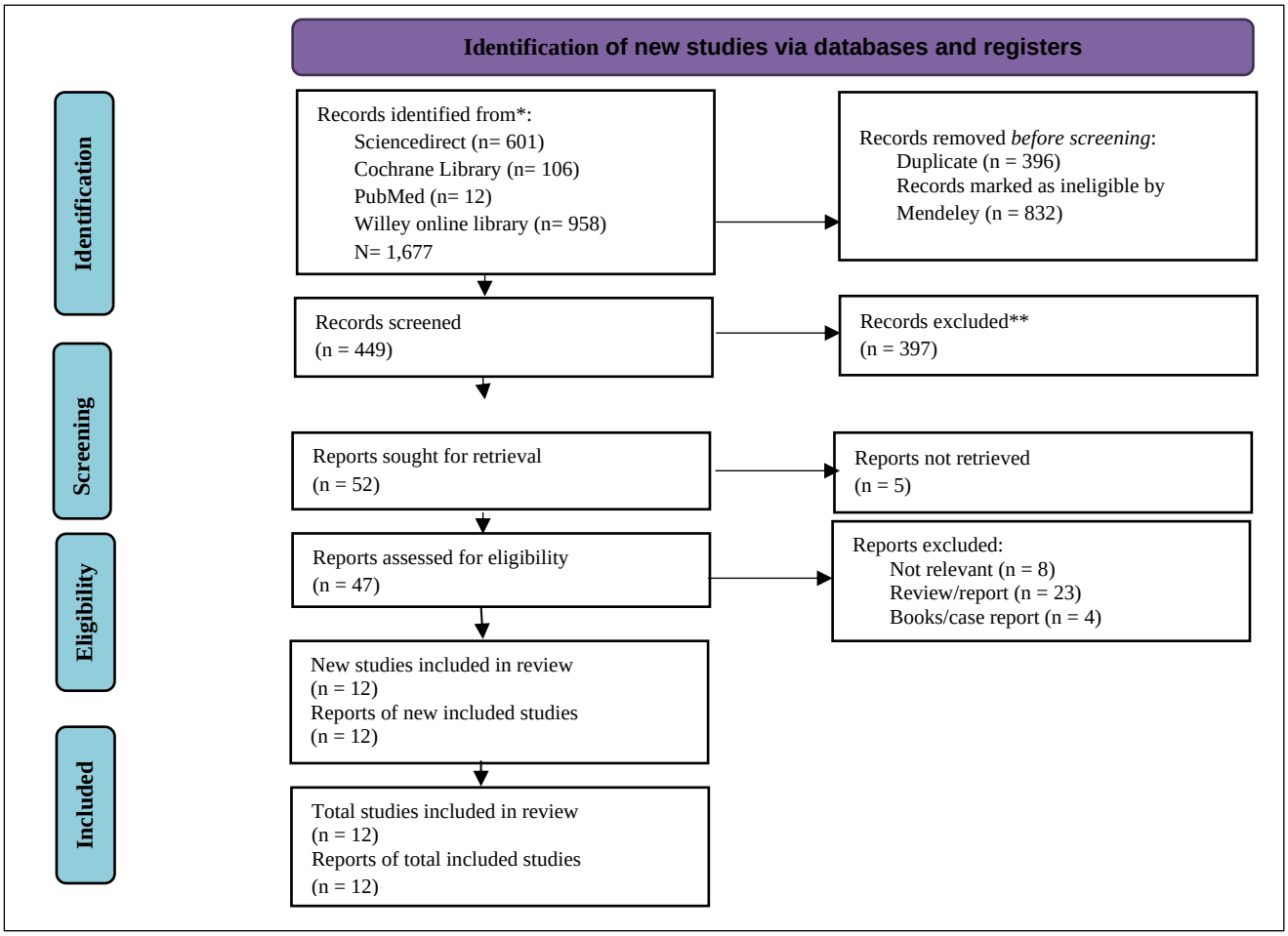

Figure 1: PRISMA flowchart for literature search.

Characteristics of studies included

Most of the studies included in this review are from the continents of Africa and Asia, not a whim of the authors, but because most searches refer to studies conducted in these parts of the world.

Many surveys have been conducted in these countries related to the theme of maternal and child health. Most of the studies were cross-sectional studies using data from national surveys from 2000 to 2016. The countries included in the studies included Ethiopia (n=4),

Bangladesh (n=2), and each 1 study for Saudi Arabia, Malawi, Sudan, Nepal, India, and Namibia.

Quality assessment results

Quality studies were conducted with assistance from the NIH Quality Assessment. Summary of study quality assessment can be seen in the following Table 2.

Based on the table above, it can be seen that overall the included studies are in the 'Good' category with 'Yes' answers reaching 70 to 80% of the 14 questions asked. In accordance with the guidelines issued by the NIH for observational and cross-sectional studies, that assessment of the quality of these studies also provides a reference for the risk of bias of the studies assessed, where based on the quality of these studies, the risk category of bias of the included studies is 'Moderate'.

Factors related to EIBF

Based on the extraction results of the studies included in this study, several factors were found related to the prevalence of EIBF, including the mode of delivery, wealth index, mother/father educational level, residence area, birth order, birth weight, mother age, prelacteal feeds, ANC/PNC, mother weight[34], work status, family size, child's sex, and marital status.[27-37,39]

Furthermore, we also present factors that are closely related to EIBF which appear more frequently in the studies included in this review including the or value of each of the factors in question.

Based on the Table 3, it is known that there are six main factors that always appear in the studies included in this review including delivery assisted, mode of delivery, ANC/PNC visit, economic status, residence area, and number of children.

DISCUSSION

According to WHO recommendations, breastfeeding should start as soon as possible after birth.[2] Increased early breastfeeding initiation will directly support progress towards SDG 3 reduction on neonatal mortality.[16,39,40] Improving child nutrition is associated with a lower prevalence of wasting and stunting including acute and persistent illnesses such as diarrhea in children under five years of age.[10,38] The current review shows that multi-sector improvements are absolutely necessary in order to achieve a broader practice of EIBF. Access to universal primary health education, for example, will minimize the deleterious effects of the lack of education of mothers and fathers about EIBF.[41–44] Advances in maternal health and the promotion of health services including ANC, skilled delivery and postnatal checks influence a mother's determination and qualifications to start breastfeeding one hour after delivery. It is especially relevant in Ethiopia, where more than half of deliveries arrange outside health facilities [36] and home was identified as a hurdle to EIBF. The less utilization of ANC is also observed as barrier in India, Bangladesh, Ethiopia, and Namibia.[28,33-37,39] These similarities suggest that promoting and encouraging the utilization of maternal health aid should be prioritized in order to advance in EIBF. Actions aimed at the elements and specific impediments pinpointed in the current review will synergize the EIBF and the achievement of other development goals.

The main finding of this review is that two factors are significantly associated with EIBF: delivery and mode of delivery (vaginal and cesarean). Nearly all of the studies included in this review involved both of these factors, and or values suggest that the effect on supporting and delaying EIBF is consistent. Mothers who give birth with the help of one or more health workers have a higher chance of starting breastfeeding on time than mothers who give birth alone. It is not surprising, given that primary health care providers such as midwives or other trained health professionals will easily inform and manage mothers to achieve timely initiation.[45]

Even so, it does not mean that a positive guarantee if the mother gives birth in the hospital means that her EIBF practice will be good, whereas in reality the opposite occurs in Saudi Arabia, when mothers and babies are separated after delivery and will be reunited after more than one hour.[28,46-49] This condition was also found in other studies in Greece, and India.[49,50] This delay spotlights routines at the gynecology unit. It broadens the scope of relevant regulations and the ability of staff in health facilities to defend mothers who start breastfeeding on time and to prevent the free distribution of factory milk in hospitals, all of which are linked to EIBF. Skin-to-skin postponement due to protracted mother-infant detachment has been conjoined to delinquency to trigger breastfeeding in women who give birth via cesarean section.[51] Some justifications for delayed breastfeeding among cesarean births include anesthesia, cesarean procedure, maternal tiredness and alertness, and insufficient maternal skills to initiate breastfeeding.[52,53]

Table 1: Characteristics of studies included.

Author, year, Country	Study design	Sample Size	Covariates	Main findings
John et al, Ethiopia[27]	Retrospective	4121 mothers between 25 and 34 years	Individual, household, and community level actors.	- Delivered with assistance of health professional (AOR 1.68; 95% CI: 1.23,2.29)

Continued.

Author, year, Country	Study design	Sample Size	Covariates	Main findings
				- Caesarean section has a lower risk of early initiation of breastfeeding than vaginal delivery (AOR 0.14). - Living in Oromiya (AOR 2.58) and SNNP (AOR 2.75) versus living in Tigray - Wealthier mothers have higher likelihoods than the poorest mothers (AOR 1.43) - Birth order with newborn child having higher chance (AOR 1.44)
Salih et al, Saudi Arabia[28]	Cross-sectional	1700 mothers of infants aged 0-24 months		- Vaginal : caesarean (AOR 2.071) - Mother education (AOR 1.54)
Nkoka et al, Malawi[29]	Cross-sectional	6351 mothers of children <24 months		- Mother with 6-23 children months had higher odds (AOR 1.32). - Living in rural had increased odds (AOR 1.98). - Secundigravida (aOR 1.34) - Health facility (aOR 1.78), - Vaginal (AOR 3.15), - Singleton births (aOR 1.96)
Tongun et al, Sudan[30]	Cross-sectional	806 mother-infant pairs	Sociodemographic characteristics, Maternal health services, Breastfeeding practices	- Caesarean section (AOR 41), discarding of colostrum (AOR 9.89), unmarried (AOR 3.76), exposure to infant formula (AOR 1.82), no house ownership (AOR1.52)
Khanal et al, Nepal[31]	Cohort	735 mother-infant pairs	Assistance during delivery, Prelacteal feeds, Birth weight, maternal age, maternal education, maternal occupation, antenatal care visits, mode of delivery	- TBA (aOR 0.47) - Caesarean section (aOR: 0.39) - Middle caste (aOR: 0.62) and Dalit caste (aOR: 0.52) - LBW (aOR: 0.36) - Age 30–45 years (aOR: 0.45) - Poorest families (aOR: 2.43) - Not provided prelacteal feeds (aOR: 2.00)
Senanayake et al, India[32]	Cross-sectional	94,104 women aged 15–49 years	Socio-economic, individual and health service	- Secondary and above education were more likely to timely EIBF compared to no education mothers (AOR 1.40; p<0.001) - Caesarean birth (AOR: 0.53; p<0.001) - TBAs: health professionals (AOR: 0.87, p<0.001 and AOR: 0.84; p<0.001) - Four or more ANC visits and gave birth in a health facility : no ANC visits and birth at home (AOR: 1.43; p<0.001 and AOR: 1.22, 95%; p<0001)

Continued.

Author, year, Country	Study design	Sample Size	Covariates	Main findings
Karim et al, Bangladesh[33]	Cross-sectional	3,162 mothers	Individual, household and community	- EIBF was significantly associated with household wealth, place of residence, administrative divisions, birth order of the child, ANC visits. - C-section: NVD (AOR: 0.32; p value<0.001). - PNC within 1 hour of childbirth : no PNC (AOR: 1.61; p value<0.001)
Islam et al, Bangladesh[34]	Cross-sectional	4,092 mothers with children age <2 years	Geographical location, religion, education level, wealth index, currently working employment of the mother, age of mother, age at first marriage, age at first child birth, marital status, number of ever born children, place of delivery, sex of last children, mode of delivery, marriage to first birth interval, number of family members, number of antenatal care visits, mothers' body mass index	- Ruralmothers: urban (AOR: 1.164; p<0.05) - Secondary- higher education: uneducated (AOR: 0.814; p<0.05): (AOR: 0.584; p<0.01). - Normal weight mothers: overweight : obese (AOR: 0.776) (AOR: 0.568). - ANC (3 and more) : no ANC visits (AOR: 1.243; p<0.05) - Natural/vaginal delivery : caesarean delivery (AOR: 0.302; p<0.01)
Mekonen et al, Ethiopia[35]	Cross-sectional	823 women aged 15 to 49	Residence, parity, ANC, place and mode of delivery	- Urban mothers (AOR 2.1) - Multiparous mothers (AOR 2.8), - ANC (AOR 3.2), - In a health institution (AOR 3.1) - Vaginally (AOR 4.1)
Ahmed et al, Ethiopia[28]	Cross-sectional	15,106 aged 15-49 years	Socioeconomic, demographic, health service, and community level factors.	- Employed mothers: no employment (aOR 1.37) - Middle level households: poor households (aOR 1.21) - ANC 1-3 (aOR 1.63; 95% CI 1.06, 2.49): four or more ANC visits (aOR 2.26): no ANC visits. - Peripheral regions: larger central regions (aOR 0.66)
Woldeamanuel, Ethiopia[36]	Cross-sectional	5,122 mothers aged 15-49 years old	Mother's and father's education, maternal age, wealth index, religion, residence area, professional ANC/PNC, place and mode of delivery, birth type, sex of child, size of child, employment status and parity	- Urban residents: rural areas (OR 0.71) - The male newborn: female (OR 1.18) - Outside the health facility (OR 1.55) - Normal deliveries: caesarean birth (OR 0.10) - Small family size: higher family size (OR 0.69)

Continued.

Author, year, Country	Study design	Sample Size	Covariates	Main findings
Ndirangu et al, Namibia[37]	Cross-sectional	27,600 women aged 15-49 years	Maternal, obstetric and child related factors	- Poorer households : richer households (AOR 1.82) - Rural areas (AOR 0.58) - Four or more ANC visits (AOR 0.14) - Mothers aged 15-19 years (AOR 2.28), - Married mothers (AOR-1.57) - Vaginal delivery (AOR-2.74) - Birth order of fourth or above : first-born babies (AOR 1.52) - Health professional assisted : TBAs-assisted delivery (AOR 0.19)

Table 2: Studies were assessed using the NIH quality assessment tool for observational cohort and cross sectional studies.

Author	Criteria													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
John et al[27]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Ahmed et al[28]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Nkoka et al[29]	Y	Y	Y	Y	NR	Y	Y	Y	Y	NA	Y	NR	NR	Y
Tongun et al[30]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	Y	Y
Khanal et al[31]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	Y	Y
Senanayake et al[32]	Y	Y	NR	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Karim et al[33]	Y	Y	NR	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Islam et al[34]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Mekonen et al[35]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Ahmed et al[28]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Woldeamanuel[36]	Y	Y	Y	Y	Y	Y	Y	Y	Y	NA	Y	NR	NR	Y
Ndirangu et al[37]	Y	Y	Y	Y	NR	Y	Y	Y	Y	NA	Y	NR	NR	Y

Note:*Y= yes, NR=not reported, NA=not applicable.

Table 3: Most Factors associated to early initiation of breast feeding of included studies.

Author	Covariate OR					
	Delivery assisted	**Mode of delivery**	**ANC visit/PNC**	**Household wealth**	**Residence area**	**Birth order**
John et al[27]	Health professional 1.68	Caesarean(delay) 0.14	-	Wealthier households 1.43	-	Fist born 1.44
Salih et al[28]	-	Caesarean (delay) 2.07	-	-	-	Higher parity 6.58
Nkoka et al[29]	In health facility 1.78	Vaginal 3.15	-	-	Rural 1.98	Secundipara 1.34
Tongun et al[30]	-	Caesarean (delay) 41	-	No house (delay) 1.52	-	Primipara (delayed) 1.22
Khanal et al[31]	TBA (Lower) 0.47	Caesarean (delay) 0.39	-	Poor (delay) 2.53	-	First born
Senanayake et al[32]	TBA (lower) 0.87	Caesarean (delay) 0.53	≥4 visits 1.33	-	-	-
Karim et al[33]	-	Caesarean (delay) 0.32	Within 1 hour 1.61	Poor 0.78	Rural 1.21	Second or third 1.23
Islam et al[34]	-	Vaginal 0.302	≥3 visits 1.24	-	Rural 1.164	Multipara

Continued.

Author	Covariate OR					
	Delivery assisted	**Mode of delivery**	**ANC visit/PNC**	**Household wealth**	**Residence area**	**Birth order**
Mekonen et al[35]	In health institution 3.1	Vaginal 4.1	≥1 visit 3.2	-	-	-
Ahmed et al[28]	-	-	≥4 visits 2.26	Poor households(delay) 1.21	Rural (delay) 0.66	-
Woldeamanuel et al[36]	Outside health facility (Lower) 1.55	Caesarean (delay) 0.10	-	-	Urban 0.71	Primipara
Ndirangu et al[37]	Health professional 0.19	Vaginal 2.74	≥4 visits 0.14	Poor 1.82	Rural (Lower) 0.58	Multipara 1.52

In general, factors related to delays and compliance with EIBF is categorized into four main factors. The scheme of the four main categories as factors related to EIBF can be described as in Figure 2.

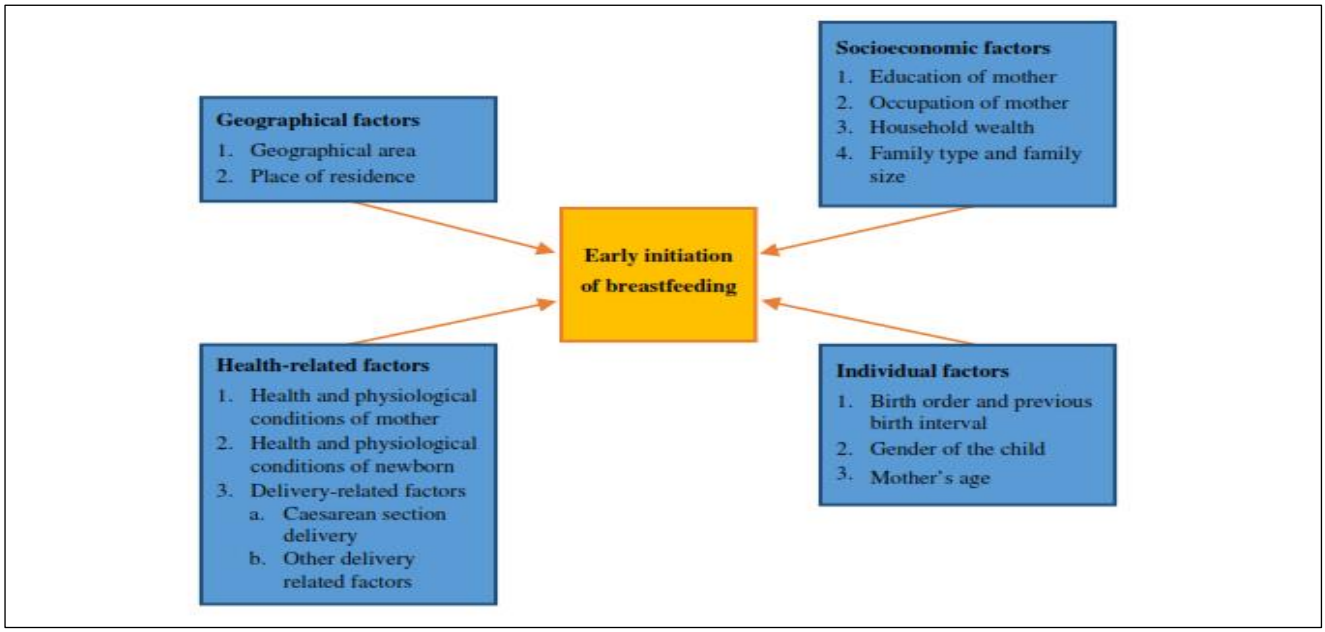

Figure 2: Factors associated to EIBF.[54]

Other factors that repeatedly appear in the literatures also have a strong effect on EIBF, including ANC/PNC visits, household wealth, residence area, and birth order. The health facts presented during ANC sessions may avail adherence to breastfeeding guidance.[43,55,56] Per the revised Baby-Friendly Hospital Initiative (BFHI) advice, health workers should provide adequate information to pregnant women and families about the essence of breastfeeding and how to handle it in ANC sessions.[2] During their follow-up time, mothers who attended ANC visits may acquire miscellaneous nutritional and other health-related instructions which may significantly impact exclusive breastfeeding. Another plausible explanation relates to increased knowledge and changed attitudes due to health professional info regarding newborn feeding and the nutritional value of breast milk.[57,58] Household wealth may contribute to EIBF for various reasons, including improved admission to and availability of health resources and increased intelligence capability through high-quality education.[7] Women in urban areas prefer infant formula to women in rural areas, which can increase the likelihood of providing bottle feeding over breastfeeding.[24]

The existing review furnishes a recap of the literature on the factors associated with EIBF. Only studies with quantitative measures of EIBF published in peer-reviewed journals were included in the review. The review does, nonetheless, have some impediments. Only African and Asian studies were included, restraining the generalizability of upshots to other countries. Furthermore, the number of studies needs to be increased to pull tight judgments, particularly regarding the most critical factors exploiting EIBF. Because of the wide range of sample sizes, study comparability is limited. The review may have

been influenced by publication bias, contributing to an overestimation of consequences.

CONCLUSION

Although the findings reported are provisional, the type of delivery assisted and the mode of delivery were the most influential factors, in addition to other factors such as ANC/PNC visits, household wealth, place of residence, and birth order. Therefore, health workers must be aware of and communicate with clients regarding the urgent need for early breastfeeding.

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