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*Full Length Research Paper*

# Knowledge on birth preparedness and complication readiness in Eastern Region of Nepal

Prativa Dhakal<sup>1\*</sup> and Mangala Shrestha<sup>2</sup>

<sup>1</sup>College of Nursing, Chitwan Medical College, Chitwan, Nepal.

<sup>2</sup>B.P. Koirala Institute of Health Sciences, Dharan, Nepal.

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**Birth preparedness and complication readiness (BP/CR) strategy encourage women to be informed of danger signs of obstetric complications and emergencies which will help them to recognize problem and reduce the delay on deciding to seek care, making the care-seeking process more efficient. The objective of this study was to assess the knowledge regarding birth preparedness and complication readiness and its effect on the place of delivery. A descriptive cross sectional study was conducted from November to December, 2012. A total of 93 mothers who gave birth in the last 12 months preceding the survey in Jhorahat VDC of Morang district were interviewed. Data were analyzed using Chi-square test at 0.05 level of significance. Only 45.2% and more than half (58.1%) of the mothers spontaneously mentioned at least three components of BP/CR and three danger signs during pregnancy respectively. Education of mother was significantly associated with knowledge of BP/CR. More than half (58.1%) of the mothers had institutional delivery. Knowledge of BP/CR was associated with place of delivery. Literate mothers were more aware of BP/CR than illiterate. Thus, provision of information, education and communication targeting women, family and the general community on BP/CR are recommended.**

**Key words:** Place of delivery, knowledge of BP/CR, danger signs.

## INTRODUCTION

Birth preparedness and complication readiness (BP/CR) is a comprehensive package aimed at promoting timely access to skilled maternal and neonatal services (Markos and Bogale, 2014; Kaso and Addisse, 2014). It includes knowledge of danger signs, planning for a birth attendant and birth location, arranging transportation, identifying a blood donor, and saving money in the case of an obstetric complication (Mbalinda et al., 2014; Urassa and Pembe, 2012).

Birth preparedness has been globally endorsed as an essential component of safe motherhood programs to reduce delays to care-seeking for obstetric emergencies—delay in recognition of problem, delay in seeking care, and delay in receiving care at facility. These delays represent barriers that often result in preventable maternal deaths. The presence of a skilled birth attendant (SBA) at delivery is recognized as essential to preventing maternal mortality (JHPIEGO, 2004b; McPherson et al.,

\*Corresponding author. Email: [pathakprativa@gmail.com](mailto:pathakprativa@gmail.com). Tel: +9779844022806.

2006).

The principle and practice of BP/CR in a third world setting where there is prevailing illiteracy, inefficient infrastructure, poor transport system, and unpredictable access to skilled care provider have the potential of reducing the existing high maternal and neonatal morbidity and mortality rates. BP/CR promotes skilled care for all births and encourages decision making before the onset of labor (Ekabua et al., 2011).

The safe motherhood plan of the Ministry of Health and Population defines a range of complementary interventions to improve maternal and newborn health, one of which is the birth-preparedness package (BPP). The purpose of the package is to encourage pregnant women, their families, and communities to plan for normal pregnancies, deliveries, and postnatal periods and to prepare to deal effectively with emergencies if they occur. The BPP is a demand-creation intervention that promotes key messages and behaviour change via interpersonal communication through community health volunteers (McPherson et al., 2006; DOHS, 2014)

Knowledge on BP/CR improves problem recognition of the problem and reduces the delay in deciding to seek care. It provides information on appropriate sources of care making the care-seeking process more efficient. It also encourages households and communities to set aside money for transport and service fees, avoiding delays in reaching care caused by the search for funds (Ekabua et al., 2011). The majority of pregnant women and their families do not know how to recognize the danger signs of complications and when complications occur they will waste a great deal of time in recognizing the problem, getting organized, getting money, finding transport and reaching the appropriate referral facility (Moore et al., 2002). With the assumption that "every pregnancy faces risks", women should be made aware of danger signs of obstetric complications during pregnancy, delivery and the postpartum. The knowledge will ultimately empower them and their families to make prompt decisions to seek care from skilled birth attendants (Kabakyenga et al., 2011). In this context, it is necessary to evaluate the knowledge on BP/CR and obstetric danger signs.

The objective of this study was to determine knowledge regarding birth preparedness and complication readiness of Eastern Nepalese mothers and to find out the association between knowledge regarding birth preparedness and complication readiness and place of delivery.

## METHODOLOGY

A descriptive cross sectional study was conducted from November to December 2012 in Jhorahat Village Development Committee (VDC) of Morang district which was selected randomly. A sampling frame was made enlisting all eligible subjects, that is, mothers who gave birth in the last one year preceding the data collection period. Total mothers meeting the inclusion criteria were 93. So, all the

mothers residing in Jhorahat VDC were taken as sample. Ethical approval was taken from Institutional Ethical Review Board of BP Koirala Institute of Health Sciences, Dharan. Permission from the office of VDC was taken before collecting the data. Informed verbal consent was obtained from each mother after explaining the objectives of the study. Pretested semi structured self-developed interview schedule was used to collect the data. All the mothers were visited door to door and interviewed face to face by investigator herself. All information obtained was kept confidential.

Knowledge regarding birth preparedness and complication readiness (categorized as adequate and inadequate) was taken as dependent variable. In this study, mothers were classified as having adequate knowledge if they were able to answer at least three components of BP/CR and at least three danger signs during pregnancy. Data were collected including several independent variables; age, religion, caste (categorized on the basis of Nepal government system), education of mother and spouse, occupation of mother and spouse, per capita income, parity, number of antenatal visits and place of delivery (categorized as institution and home).

Data were cleaned and entered in Microsoft Excel 2007 sheet for preparing master chart. Entered data were verified and converted in Statistical Package for Social Sciences (SPSS) version 16 for statistical analysis. Descriptive statistics were presented in frequencies, percentage, mean, median and standard deviation. Bivariate analysis (Chi-square test) was used to test the significant association between independent and dependent variables. The significance level was set at  $p=0.05$ .

## RESULTS

Table 1 presents the socio-demographic profile of mothers which showed that 88.2% were aged 20-34 years with mean age 25.23; more than half (54.8%) were Dalit; 31.2% were illiterate; 91.4% were housewife; 88.2% were living below poverty line.

### Socio-demographic profile of spouse

Secondary level of education was obtained by 31.2% of the spouse. Almost half (48.4%) of the spouse were daily wage laborers.

### Obstetric characteristics

More than half (58.1%) of the mothers were multiparous with mean parity of 1.86 (SD=0.92). Almost all (98.9%) mothers had attended ANC at least once. Among them 76.3% had attended at least four ANC visit. Only 58.1% of the mothers delivered in institution. Majority (88.2%) had spontaneous vaginal delivery.

### Knowledge of mother about BP/CR

Table 2 shows that saving of money, clothes for mother and baby and arrangement of transportation were mentioned by 61.3, 52.7 and 49.5% of the mothers, respectively. Only 45.2% of the mothers spontaneously mentioned at least three components of BP/CR.

**Table 1.** Distribution of socio-demographic profile of mothers.

Variables	Frequency	Percentage
<b>Age group in years</b>		
<19	7	7.5
20-34	82	88.2
≥35	4	4.3
<b>Religion</b>		
Hindu	87	93.5
Christian	6	6.5
<b>Caste</b>		
Dalit	51	54.8
Disadvantaged Janajatis	25	26.9
Disadvantaged non-dalit Terai caste	3	3.2
Relatively advantaged Janajatis	2	2.2
Upper caste	12	12.9
<b>Education</b>		
Illiterate	29	31.2
Read and write	15	16.1
Primary level	13	14.0
Secondary level	27	29.0
Higher secondary and above	9	9.7
<b>Occupation</b>		
Housewife	85	91.4
Service	4	4.3
Business	4	4.3

n=93

**Table 2.** Birth preparedness and complication readiness mentioned by mothers.

Birth preparedness and complication readiness*	n (%)
Clothes for both mother and baby	49 (52.7)
Selection of institution for delivery	4 (4.3)
Arrangement of transportation	46 (49.5)
Collection/saving of money	57 (61.3)
Arrangement of blood	5 (5.4)
Arrangement of food stuffs	4 (4.3)

\*Multiple response.

### Knowledge of mother about danger signs during pregnancy

Table 3 illustrates that severe abdominal pain, vaginal bleeding and passage of foul smelling discharge were mentioned as danger signs during pregnancy by 61.3, 60.2 and 44.1 of the mothers, respectively. More than

half (58.1%) of the mothers spontaneously mentioned at least three danger signs during pregnancy.

Table 4 shows that if the respondents were able to answer any of the three components then it was categorized as adequate if they were not able to answer any of the three components then it was categorized as inadequate. Education of the mother was one of the



**Table 3.** Danger signs during pregnancy mentioned by mothers.

<b>Danger signs during pregnancy*</b>	<b>n (%)</b>
Severe headache	32 (34.4)
Vaginal bleeding	56 (60.2)
Blurring of vision	3 (3.2)
Severe abdominal pain	57 (61.3)
Leaking/Passage of foul smelling discharge	41 (44.1)
Sluggish or absent fetal movement	8 (8.6)

\*Multiple response.

**Table 4.** Association between knowledge regarding BP/CR and socio-demographic characteristics.

<b>Variables</b>	<b>BP/CR</b>		<b>p value</b>
	<b>Adequate n=42 (%)</b>	<b>Inadequate n=51 (%)</b>	
<b>Age group in years</b>			
≤19	2 (28.6)	5 (71.41)	0.451
>19	40 (46.5)	46 (53.5)	
<b>Religion</b>			
Hindu	40 (46.0)	47 (54.0)	0.686
Christian	2 (33.3)	4 (66.7)	
<b>Caste</b>			
Upper caste	6 (50.0)	6 (50.0)	0.718
Others	36 (44.4)	45 (55.6)	
<b>Education</b>			
Illiterate	7 (24.1)	22 (75.9)	0.006*
Literate	35 (54.7)	29 (45.3)	
<b>Occupation</b>			
Housewife	37 (43.5)	48 (56.5)	0.451
Others	5 (62.5)	3 (37.5)	

\*Significant p value. n=93.

significant factors ( $p=0.006$ ) which affect the knowledge regarding birth preparedness and complication readiness.

#### **Association between knowledge regarding danger signs during pregnancy and socio-demographic variables**

It is also important for a woman to know about abnormal pregnancy besides normal pregnancy. There are some

important danger signs during pregnancy which point towards underlying abnormalities. If the respondents were able to answer any of the three components then it was categorized as adequate if they were not able to answer any of the three components then it was categorized as inadequate. Caste and education of the mothers were found to be significantly associated with the adequacy of knowledge regarding danger signs during pregnancy with  $p=0.011$  and  $p=0.008$ , respectively.

Table 5 shows that there was a significant association

**Table 5.** Association between knowledge regarding BP/CR and danger signs during pregnancy with place of delivery.

Characteristics	Place of birth		p value
	Home n=39 (%)	Institution n=54 (%)	
<b>Birth preparedness and complication readiness</b>			
Inadequate	29 (56.9)	22 (43.1)	0.001*
Adequate	10 (23.8)	32 (76.2)	
<b>Danger signs during pregnancy</b>			
Inadequate	24 (61.5)	15 (38.5)	0.001*
Adequate	15 (27.8)	39 (72.2)	

\*Significant p value.

between knowledge of BP/CR and place of delivery. Those mothers who had adequate knowledge of BP/CR were more likely to deliver at institution.

## DISCUSSION

Age, parity and number of ANC visits were not significant factors in having knowledge of BP/CR and danger signs during pregnancy which is contradictory to the finding in the study done in rural Tanzania (Pembe et al., 2009). This study shows association between education of mothers and knowledge regarding BR/CR and danger signs during pregnancy which is similar to the study done by Pembe et al. (2009). Kabakyenga et al. (2011) also reported that high level of education modify the relationships between knowledge of key dangers signs and birth preparedness in a synergistic direction. This finding suggests the educated are able to better understand the health messages acquired from various sources. Caste was also a significant factor which affects the knowledge of danger signs during pregnancy. This study shows that more than half (54.8%) of the mothers were Dalit. Dalits are more likely to be deprived of education due to the economic status, reducing their level of understanding. This study revealed that occupation was not associated with the knowledge of BP/CR and danger signs during pregnancy which is contradictory to the finding of the study done in Uganda (Mbalinda et al., 2014). As compared to housewife, government employee women were about four times more likely to mention at least three danger signs during labour. This could be explained by the fact that, a woman who has her own income might be autonomous in seeking better health care than housewife who does not have her own income.

Knowledge regarding danger signs of obstetric complications is the first step in the appropriate and timely referral for essential obstetric care (JHPEIGO, 2004a, b). Knowledge of BP/CR and danger signs during pregnancy was associated with place of delivery. Tura et

al. (2014) concluded that women who knew three or more key danger signs during labor were more likely to use skilled care as compared to those who did not know any key danger sign (OR = 1.59; 95%CI: 1.05, 2.43). The study done in Tanzania stated that low awareness may be a cause of failure to recognize the complication when it occurs; thus, delaying the decisions to seek care (Urassa and Pembe, 2012)

## Conclusion

Less than half of the mothers had adequate knowledge regarding BP/CR. Women who were literate were more aware of BP/CR and danger signs during pregnancy than illiterate. Education on BP/CR and danger signs is an important factor in increasing utilization of institutional delivery. Delivery at home and low awareness of danger signs are serious bottleneck in the reduction of maternal mortality as home delivery is associated with more delay to get appropriate care when a complication arises. Health professional should give due emphasis on BP/CR to improve the access to skilled obstetric care. Thus, provision of information, education and communication targeting women, family and the general community on BP/CR and obstetric danger signs is recommended.

## Conflict of interest

The authors declare that they have no conflict of interests.

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*Full Length Research Paper*

## Early breastfeeding initiation (EBFI)

Gladys Mugadza, Mathilda Zvinavashe, Felicity, Zvanyadza Gumbo, Babill Stray-Pedersen  
and Clara Haruzivishe

University of Zimbabwe, College of Health Sciences, Harare, Zimbabwe.

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The objective of the paper was to describe the concept Early Breastfeeding Initiation (EBFI). Early breastfeeding initiation (EBFI) is recommended within the first hour following giving birth as a simple strategy in enhancing neonatal health and survival. Despite the clear definition by [WHO] on EBFI, some variations still exist across board on what exactly EBFI initiation is. The variations have compounded negatively on neonatal outcomes hence the need to describe EBFI by assigning measurable attributes for standardisation of operations in maternity units. A literature review of 39 articles was conducted between the years 1999 to 2016 in a period of two weeks from the 1<sup>st</sup> to the 15<sup>th</sup> of July 2016. The following search engines were used: Cochrane data base, Journal of human Lactation, Pub- med and MEDLINE. EBFI has been inconsistently described within the same health profession. Taking into cognisance the attributes of EBFI and applying them in the maternity units has a potential of averting neonatal deaths by a significant percentage.

**Key words:** Early breastfeeding initiation.

### INTRODUCTION

Early breastfeeding initiation (EBFI) is recommended within the first hour following giving birth as a simple strategy in enhancing neonatal health and survival (World Health Organisation [WHO] and UNICEF, 2010; Hailemariam et al., 2015). The value of EBFI lies in colostrum which is the first breast milk to be produced within 72 h following giving birth. Colostrum contains bioactive immune factors that have protective effect against early neonatal infections (American Academy of Paediatrics, 2012; Vijayalakshmi et al., 2015). According to WHO (2010), EBFI is the provision of the mothers' first

breastmilk within an hour following giving birth. This definition entails that the newborn has to receive some colostrum within that hour not just mere being on the breast.

### Problem statement

Despite the clear definition by WHO on EBFI, some variations still exist across board on what exactly EBFI Initiation is. Debes et al. (2013) define early

\*Corresponding author. E-mail: [gladys.maryvincent.mugadza@gmail.com](mailto:gladys.maryvincent.mugadza@gmail.com). Tel: + 263 772595446

breastfeeding as initiating breastfeeding within 24 h of birth. More so operational variations still exist on the attributes or characteristics of EBFI making it difficult to measure the concept for quality. This time to initiation variation gap leads to unstandardized operation as well as loopholes for continued escalating neonatal deaths. Evidence drawn from a meta - analysis study of 67 developing countries, proven that EBFI prevents neonatal sepsis and hypothermia that are major causes of neonatal deaths (Mullany et al., 2008). Describing the concept, EBFI will help bridge the variation gap with regards to description or practice.

### Justification of the study

The [WHO] stands as a template body of excellence in all matters related to health hence its principles are to be aligned with. Outstanding deviations from stated standards with regards to EBFI have detrimental effects to neonatal health during the critical period following birth. Describing what EBFI is, by explain its attributes will help in standardising operations in the maternity units.

### Purpose of the study

The purpose of the study was to describe the concept EBFI by stating and explaining its antecedents and attributes for the purpose of being able to measure it and also to evaluate performance towards reducing neonatal deaths.

### Objective

The objective of the study was to describe the concept EBFI by assigning measurable attributes or characteristics.

### METHODOLOGY

Walker and Avant concept analysis model was used to guide the study. A literature review of 39 articles was conducted between the years 1999 to 2016 in a period of two weeks from the 1<sup>st</sup> to the 15<sup>th</sup> of July 2016. The following search engines were used: Cochrane data base, Journal of human Lactation, Pub- med and MEDLINE. Sixteen studies that met the inclusion criteria were considered for defining, describing the concept of interest and also in the discussion.

### Inclusion and exclusion criteria

Inclusion criteria were based on the subject topic: Early breastfeeding or early initiation, factors associated with EBFI, consequences of delayed breastfeeding, EBFI and neonatal outcomes or definition of EBFI.

The excluded studies described breastfeeding in general without specifying any antecedents or attributes in the interactional

process of EBFI. These articles stressed on breastfeeding in the context of HIV in a bid to prevent mother to child transmission (MTCT) and also more on the structural process of breastfeeding at programme level. Such processes included items in the ten successful steps to breastfeeding like having a breastfeeding policy in place without spelling out what exactly constitutes EBFI.

Search terms were applied with various Boolean operators based on the core concept: Early Breastfeeding Initiation or Timing of Breastfeeding. Such terms as early skin to skin contact (ESSC), proper position and attachment, suckling and colostrum were also used.

### RESULTS

39 Articles were reviewed (Figure 1). All selected articles to some extent assisted in defining the concept of interest (WHO, 2010; Debes et al., 2013). Some variations did existed on how EBFI was defined, but it gave a platform for discussion and to pave away for concept description. Eighteen articles were dropped for several reasons: Six articles described breastfeeding in general without specifying any antecedents or attributes in the interactional process. These articles stressed on breastfeeding in the context of HIV in a bid to prevent mother to child transmission (MTCT) and also more on the structural process of breastfeeding at programme level. Such processes included items in the ten successful steps to breastfeeding like having a breastfeeding policy in place without spelling out what exactly constitutes EBFI (Hoddinott et al., 2014, Sayer et al., 1995, Kalies et al., 2005, UNICEF and WHO, 2010; Trickey and Newburn, 2014; Wagh et al., 2013).

Seven articles focussed more on the knowledge, attitudes and practices regarding value placed on colostrum the first breast milk and its composition (Joshi et al., 2012; Goyal et al., 2011; Abudul Ameer et al., 2008; Hall and Aagaard, 2008; Waldenstom, 2008; Palmer et al., 2010; Health People, 2010). Four articles focussed on prelacteal feeds (Praveen et al., 2014; Rajesh and Renuka, 2014; Exavery et al., 2015; Hailemariam, 2015). Four articles had inputs on the definition of EBI (WHO, 2010; Debes et al., 2013; Mbada et al., 2013; Yalan, 2016). These articles were found useful in clarifying the definition of EBFI and attributes involved.

Five articles described the determinants of EBFI which assisted in identifying antecedents in the interactional process of EBFI (Dewey, 2001; Montigny and Lacharite, 2005; Nice and Luo, 2010; Patel et al., 2015; Khanal et al., 2015). The main antecedents highlighted in all articles were the maternal age, mode of delivery, knowledge on the benefits of EBFI, parity and baby's condition at birth. Four of the five articles mentioned above dealt with issues surrounding breastfeeding and were considered appropriate for this paper. One article (Moran, 1999) however, showed no elements of actual breastfeeding, but focussed on modesty to breast feeding and was not included in this concept paper. Three other papers

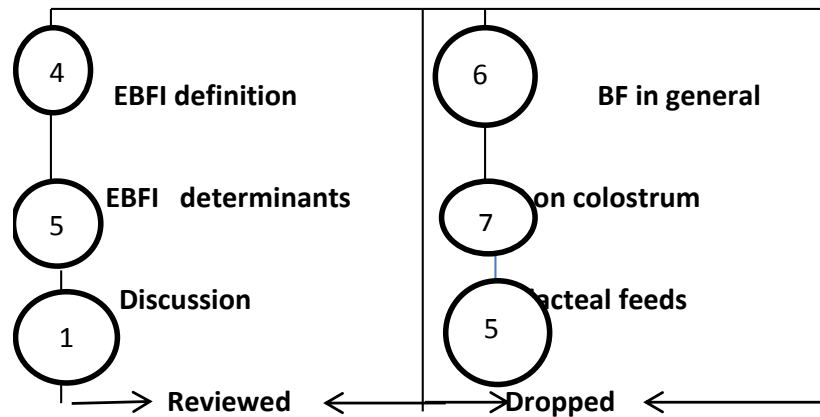


Figure 1. 39 Articles review ed.

(Mulder, 2006, Bell et al., 1998, Norton, 2013) were considered relevant on this concept paper EBFI. These papers, though had some variations, they had familiar antecedents as well as attributes of interest with this paper. Twelve articles assisted in the discussion section (Dennis, 2002; Edmond, 2006; Mullany et al., 2008; Tawiah- Agyemang, 2008; Oddy, 2008; Klaus and Kennel, 2008; Orun et al., 2010; Amin et al., 2011; Debes et al., 2013; Montgomery, 2014 and Seid et al., 2013).

## DISCUSSION

EBFI has been inconsistently defined within the same health profession. The inconsistent definition of EBFI has resulted in variations in the timing of breastfeeding following giving birth. Early breastfeeding initiation is defined as provision of the mothers' breast milk to the baby within an hour following birth (WHO, 2010). According to Debes et al. (2013), early breastfeeding entails initiating breastfeeding within 24 h following birth. These two definitions though they are in agreement on the provision of breast milk to the newborn, their time to initiation differ greatly. The variation in time to initiation makes it a challenge to standardise operations in maternity units.

Despite the appropriate timing of breastfeeding initiation following birth by WHO, both definitions do not closely tie the attributes of EBFI (early skin to skin contact, proper positioning and attachment, rooting and a strong suckling reflex as well as colostrum transference into the baby's mouth) in the interactional process in the achievement EBFI.

Attributes according to Walker and Avant (2005), are those traits or characteristics which make it possible to measure a concept objectively.

According to Walker and Avant (2005), attributes make it possible to measure if an event has really taken place. In the context of this study, it would be very questionable

if someone claims to have initiated breastfeeding early without tangibly stating presence of these attributes.

According to Mbada et al. (2013), EBFI goes beyond mere putting the baby to the breast rather a combination of putting the baby to the breast and the actual transference of colostrum into the baby's mouth followed by swallowing. All the attributes should come into play in the interaction process of achieving effective EBFI. In view of this, Walker and Avant (2005), speaks of a model, borderline and a contrary case. A model case is when all the EBFI attributes are present within a time frame of an hour following birth. The model case is the ideal standard if neonatal mortality is to be averted. In a systematic review on EBFI, Nepal initiated breastfeeding within an hour and reduced neonatal deaths by 19% (Mullany et al., 2008). Variations in defining EBFI makes us have either boarder line or contrary cases where critical attributes of EBFI will be partially present or even missing.

Contrary cases was seen as rounds were made in the maternity units, involving delivery of the baby onto the mother's chest, and subsequent interruption of skin to skin contact because the baby has been dressed and laid besides the mother. The baby is set for breastfeeding, but the mother is fast asleep without even facing the baby. Four to six hours later, the mother starts to initiate breastfeeding. In some cases, if the in-laws are around at time of giving birth, the baby can be given either water with sugar or ordinary milk to stop it from crying. According to Yalan (2016) cultural beliefs have bearing effects on EBFI and some of the effects compound negatively on neonatal health and survival.

If a cross checking of this case is done with the delivery record under the section "Breastfeeding initiated within an hour", that section is usually ticked yes. In view of this, one begins to wonder if EBFI is really known. Poor practice in maternity units with regards to EBFI has costed the public due to preventable neonatal deaths (Mullany et al., 2008, Tawiah-Agyemang et al., 2008;

Oddy, 2013). Early breastfeeding initiation is evidenced by skin to skin contact maintenance (Dennis, 2002). In view of this, dressing the baby soon after births interrupts this process. Ideally, the baby's skin should be in contact with that of its mother and both covered with a warm blanket. According to Klaus and Kennel (2008) and Debes et al. (2013), skin to skin contact facilitates the Breast Crawl Behaviour. In their studies they cited that breast crawl behaviour enables every newborn that is placed on the mothers' abdomen or chest following birth to search for the breast.

For effective EBF, antecedents should also be taken into consideration for they can impact negatively to early initiation. Antecedents are incidents that occur prior the prevailing concept (Walker and Avant, 2005). In the context of this study, these include: Maternal age and experience, knowledge, attitudes, mode of delivery, gestational age and wellness of the mother - baby pair. According to Orun et al. (2010) mode of delivery especially vaginal interacts positively with EBF as opposed to operative delivery where the woman experience some degree of stress, discomfort and altered level of consciousness as in the case of effects of general anaesthesia. Stressful stimuli as a result of either operative or prolonged deliveries interfere with EBF by inhibiting oxytocin release thereby milk production (Montgomery, 2014; Seid et al., 2013; Moore et al., 2016). According to Amin et al. (2011), increased maternal age and multiparity were found to be positive predictors or attributes for EBF. In view of this, midwives have the responsibility of predicting those women who are likely to face challenges in EBF and offer practical support accordingly.

## Conclusion

The concept was chosen for analysis for the purpose of standardizing operations in terms of timing and measuring EBF. A lot of studies have been carried out in view of delayed BFI, but no study that has been conducted to describe EBF and explaining its antecedents and attributes. Taking into cognisance the attributes of EBF and applying them in the maternity unit has a potential of averting neonatal deaths by a significant percentage (Lamberti et al., 2011).

## Conflicts of Interests

The authors have not declared any conflict of interests.


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