

## Determinants of exclusive breast feeding among women of child bearing age in the Gambia using Gambia demographic and health survey (GDHS) 2019-20 data

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### Abstract

**Background:** all infants are expected to be exclusively breastfed during the first six months of their lives. According to The Gambia nutrition profile 2019, the prevalence of exclusive breastfeeding among infants under 6 months was only 48.6%. This figure is way above the western Africa average of 31.0% and lower than the national target of 70%. Higher exclusive breastfeeding (EBF) rate were observed in Ghana (52.0%) and Togo (58.0%) and the lowest are Nigeria and Ivory Coast <20%.

**Objectives:** The aim of this study was to assess the determinants factors of exclusive breast feeding among women of child bearing age in The Gambia through the analysis of GDHS 2019-20.

**Methods:** This study used a cross-sectional study design using the data from the 2019-20 Gambian Demographic and Health Survey (GDHS). The population of the study was women of child bearing age in the Gambia during the study and the sample of the study was infants under 6 months at the same time which was 1,372 children of singleton live births. The study used a backward logistic regression for the analysis.

**Results:** The age of the child, antenatal care visits behaviours, pre-lacteal feeding and bottle feeding were the determinant factors of exclusive breastfeeding practices among women of child bearing age in The Gambia. Mothers who had regular antenatal care visits were more likely to practice exclusive breast feeding, compared to those that did not have regular antenatal care visits. Infants who had pre-lacteal feeding were 2.19 times more likely to exclusively breastfeed their children during the first six months of life. Furthermore, mothers who've never practiced bottle-feeding before were 15.05 times more likely to practice exclusive breast feeding compared to those who've previously practiced bottle feeding.

**Keywords:** Exclusive Breastfeeding; Demographic and Health Survey; Bottle Feeding; Infants Under 6 months; Women of Child Bearing Age

### 1. Introduction

More than 10 million children under five in the world die every year, 45% of them are caused by malnutrition, either directly or indirectly. Two thirds of these deaths occur in the first year of life due to improper feeding practices [1]. Research revealed that exclusive breastfeeding can reduce the risk of infant mortality by 12% [2]. The result of The Gambian Demographic and Health Survey (GDHS) shows a decrease in the number of exclusive breastfeeding coverage

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from 60.2% in 1998 to 53.5% in 2003 and 42.9% in 2008. In 2013, exclusive breastfeeding coverage increased to 46.4%, but this increase is still a long way off targets set by the National Nutrition Agency (NaNA) and the Ministry of Health's target which is increasing coverage to at least 80% by 2020 [3].

Breast milk is the best food that supports optimal growth and development in the early life of an individual [1,4]. The World Health Organization (WHO) recommends exclusive breastfeeding (babies are given breast milk only without fluids or other foods, except for vitamin, mineral and/or drug supplements for medical reasons) until the age of six months and continued until the child is two years old [5,6]. Breast milk is able to meet all the nutrients a baby needs during the first six months of life and is still able to meet about one-third of a baby's caloric needs at the age of two [1,7]. In addition, breast milk has been shown to be able to meet the baby's needs from the nutritional and immunological (immune system formation) aspects. Psychological (mother and child interactions that occur during breastfeeding), brain development and economic aspects plays an important role in postponing pregnancy [3,7,8]. The Gambia Government has issued a National Nutrition Policy in 2006 which covers important aspects in exclusive breastfeeding as an effort to protect, support and promote exclusive breastfeeding in the Country. The policy states the importance promoting and increasing the efforts and support from the government, local government, health service facilities, health workers, the community and family members so that mothers can provide exclusive breastfeeding to babies [8,9]. Exclusive breastfeeding is influenced by various factors, including: demographic, economic, biological, psychological, cultural and social factors. Several studies have shown that education, employment, place of delivery, family support and cultural values have a strong association with exclusive breastfeeding [2,10,11]. In addition, factors from the baby can also influence exclusive breastfeeding, including gestational age, birth weight and number of babies born (single or twins) [7,12–14]. With the coverage of exclusive breastfeeding which is still quite low when compared to the government's target, it is important to know determinants of exclusive breastfeeding as one of the steps to increase the coverage of exclusive breastfeeding in The Gambia [3].

## 2. Methods

This research is a further analysis of The Gambia Social Demography and Health Survey 2019-20 data. The 2019-20 Gambia Demographic and Health Survey (GDHS 2019-20) is a national survey with 11,8867 households as respondents, 45,607 married women between the ages of 15-49 years and 9,306 men between the ages of 15-54 years are married or have been married once. The 2019-20 GDHS data was downloaded for free from the Demographic and Health Survey (DHS) website with the website address [www.measuredhs.com](http://www.measuredhs.com). Before downloading, permission to access the data obtained has been obtained from the relevant authorities on the 12<sup>th</sup> July 2021. The population of this study are children less than 6 months of age. The inclusion criteria are children that are alive at the time of the survey, last born (if more than one child), not twins, living with the mother and aged less than 6 months. Respondents with "I don't know" answers or were the answers were missing are not included in the analysis. The sample size obtained for analysis was 1567 children, after weighting and removing all the unnecessary data for the analysis, the final sample size of the study was 1,022 children. The dependent variable in this study is exclusive breastfeeding which was obtained from information on the history of feeding in the last 24 hours in children age under 6 months. Independent variables include socio-demographic factors (age of child, maternal age, maternal education, maternal occupation, economic condition and place of residence) as well as pre and post-natal factors (parity, ANC visits, method of delivery, place of delivery, post-natal visits, present pre-lacteal feeding, early initiation of breastfeeding and the use of feeding bottles).

The ages of the children in this study were divided into three groups, namely 0-1 months, 2-3 months and 4-5 months. Maternal age was also divided into three groups, namely 15-19 years, 20-34 years and 35-49 years. Maternal education is divided into four groups, namely no formal education, primary/junior school education, senior/high school education and tertiary education. Mother's occupation is divided into two groups, namely working and non-working mothers. Socio-economic status uses a wealth index which is divided into two groups, namely lower and higher income rate, while, the residence is divided into two groups, namely urban and rural areas.

The definition of parity in this study is the number of children born by a mother during the survey, which is then divided into two primiparous (one child), multiparous (two or more children). The mother is said to have conducted ANC (antenatal care) visits if during pregnancy she has conducted at least one visit to the nearest hospital, health centre, clinic or a trekking site and has been observed by the midwife in the first trimester, at least one visit in the second trimester and at least twice in the third trimester. The method of delivery was divided into two groups, namely normal delivery (vaginal) and caesarean section. The definition of a PNC (postnatal care) visit is a child who has been seen at nearest hospital, health centre, clinic or a trekking site during the first two months after birth. Mothers are said not to practice EBF if their children are given other foods and/or water within the first six months of life. Whereas, the definition of bottle feeding is any child who in the last 24 hours drank or eat formula milk using a pacifier/pacifier (bottle with nipple).

The variables were analysed by using SPSS version 20. Multivariate analysis was carried out with multiple logistic regressions using the reverse method with a significance of 5% and a 95% confidence interval, so that approval can be obtained by offering exclusive breastfeeding. Candidate selection for multivariate analysis and bivariate analysis were carried out by simple logistic regression with a significance of 25%. Cross tabulation was carried out to obtain the proportion of each variable category according to the pattern of offering breast milk.

### 3. Results

**Table 1** Bivariate analysis of the association of socio-demographic factors to exclusive breastfeeding practice in children 0-5 months in The Gambia, using GDHS 2019-20.

Variables	EBF Status (n=1,422)				P-value	OR (CI 95%)		
	No EBF (n=548)		EBF (n=474)					
	n	%	n	%				
<b>Age of Child (Months)</b>								
0-1	119	21.7	324	68.3	0.00	(2.47) 1.70-3.58		
2-3	171	31.2	145	30.5		(2.87) 1.94-4.23		
4-6	258	47.1	53	11.2		Ref		
<b>Mothers Age (Years)</b>								
15-19	57	10.3	82	17.2	0.24	Ref		
20-34	321	58.6	234	49.4		(1.44) 0.80-2.59		
35-49	170	31.1	158	33.4		(1.53) 0.78-2.98		
<b>Mothers Education Level</b>								
No Formal Edu	18	3.3	66	13.9	0.14	Ref		
Primary/Junior Sch	248	45.2	231	48.7		(1.74) 0.82-3.67		
Upper/High Sch	196	35.8	119	25.1		(1.70) 0.84-3.47		
Tertiary Institution	86	15.7	58	12.3		(2.10) 0.94-4.70		
<b>Work Status</b>								
Working	453	82.6	152	32.1	0.05	Ref		
Not working	95	17.4	322	67.9		(1.34) 1.00-1.97		
<b>Social Economic Status</b>								
Low	226	41.2	317	66.9	0.53	Ref		
High	322	58.8	157	33.1		(1.22) 0.79-1.89		
<b>Residential Areas</b>								
Urban	302	55.2	195	41.2	0.89	Ref		
Rural	246	44.8	279	58.8		(1.02) 0.76-1.37		

Bivariate analysis on socio-demographic factors showed that children's age, maternal age, maternal education and maternal occupation had a relationship ( $p < 0.25$ ) to practicing exclusive breastfeeding (Table 1).

Table 2 shows some of the pre/post-natal factors that have a statistical relationship ( $p < 0.25$ ) to exclusive breastfeeding, which are parity, ANC visits, delivery methods, pre-lacteal feeding, early breastfeeding initiation, use of feeding bottles/pacifier.

**Table 2** Bivariate analysis of the relationship between pre/post-natal factors and exclusive breastfeeding practices among children 0-5 months in The Gambia, Using GDHS 2019-20

Variables	EBF Status (n=1,422)				P-value	OR (CI 95%)		
	No EBF (n=548)		EBF (n=474)					
	N	%	n	%				
<b>Parity</b>								
Primipara	198	36.2	233	49.2	0.03	Ref		
Multipara	350	63.8	241	50.8		(1.41) 1.04-1.92		
<b>Antenatal Care (ANC) Visits</b>								
No	406	74.1	198	41.8	0.00	Ref		
Yes	142	25.9	276	58.2		(1.72) 1.24-2.23		
<b>Delivery Method</b>								
Caesar Operation	95	17.4	96	20.2	0.01	Ref		
Normal Delivery	453	82.6	378	79.8		1.66 (1.10-2.59)		
<b>Place of Delivery</b>								
Home	80	14.6	42	8.9	0.32	Ref		
Health Facility	468	85.4	392	91.1		(1.16) 1.06-2.08		
<b>Delivery Conducted by</b>								
Health Personnel	463	84.4	425	89.7	0.11	Ref		
TBA/Others	85	15.6	49	9.3		(1.04) 0.67-1.91		
<b>Post Natal Care Visits</b>								
No	335	61.1	264	55.6	0.63	Ref		
Yes	213	38.9	210	44.4		(0.81) 0.71-1.34		
<b>Pre-Lacteal Foods</b>								
Yes	380	69.4	72	15.2	0.00	Ref		
No	168	30.6	402	84.8		(2.08) 1.98-2.99		
<b>Early Breastfeeding Inanition</b>								
Within 1 hour	281	51.2	374	78.8	0.00	Ref		
After 1 hour	267	48.8	100	21.2		(0.53) 0.33-0.91		
<b>Use Feeding Bottles</b>								
Yes	516	94.2	134	28.2	0.00	Ref		
No	32	5.2	340	71.8		(11.11) 8.10-19.61		

In the multivariate analysis process, all selected variables with  $p < 0.25$  were included in the model. The results of multiple logistic regression analysis showed that the variables affecting exclusive breastfeeding were the age of the child, ANC visit, pre-lacteal feeding and the use of feeding bottle/pacifiers (Table 3). Based on the analysis, children aged 0-1 months (4.66) and 2-3 months (3.74) are more likely to be exclusively breastfed than children aged 4-5 months.

The results of the analysis showed that mothers who visited ANC were 1.15 times more likely to exclusively breastfeed their babies. Children who were never given pre-lacteal food in the first three days of life were 2.19 times more likely to be exclusively breastfed than children who were given pre-lacteal foods. Whereas, children who do not use bottles with nipples/pacifiers are 15.05 times more likely to be exclusively breastfed.

**Table 3** Multivariable analysis of the determinants of exclusive breastfeeding among children aged 0-5 months in The Gambia, 2019-20 GDHS

Variable	Adjusted OR	95% CI	P-value
<b>Age of Child (Months)</b>			
0-1	4.66	3.61-7.88	0.00
2-3	3.74	2.79-4.17	
4-6	Ref		
<b>ANC Visits</b>			
No	Ref		0.00
Yes	1.15	1.09-2.72	
<b>Pre-Lacteal Foods</b>			
Given	Ref		0.00
Not Given	2.19	1.81-3.22	
<b>Use Feeding Bottles</b>			
Yes	Ref		0.00
No	15.05	0.03-0.09	

#### 4. Discussion

Children aged 0-1 months were 4 times more likely to be exclusively breastfed than children aged 4-5 months and children aged 2-3 months had a higher probability (3.74 times). According to a national nutrition agency (NaNA) report in 2016, when the age of the child approaches 6 months, exclusive breastfeeding decreases significantly, this is in line with existing studies in Iran and Ethiopia [15-18]. This may be caused by mothers' willingness to introduce complementary foods earlier because of the perception of mothers who think breast milk is not sufficient to meet the baby's nutritional and sustainable needs [8]. Although breast milk can actually meet the nutritional needs of a baby during the first six months of life and is still able to meet about one-third of a baby's calorie needs up to the age of two years [5,7].

The decrease in the percentage of exclusive breastfeeding at the age after three months can also be related to the expired maternity leave of working mothers [10,19]. The standard of giving maternity leave which is only three months is a challenge in giving exclusive breastfeeding to working mothers [2,20].

Government Regulation/National nutrition policy Number 2 Year 2016 highlights the importance of supporting and encouraging exclusive breastfeeding programs at the workplace. However, until now there are still a few workplaces that provide special facilities for breastfeeding and/or expressing breast milk in The Gambia.

Apart from the age of the baby, the use of a bottle feeders or bottles with pacifiers has the greatest influence on exclusive breastfeeding. The World Health Organization (WHO) has made a policy on ten steps towards successful breastfeeding where the ninth step is not to give a pacifier to a breastfeed baby [21].

The use of a pacifiers may interfere with the correct latching mechanism of the feeding and may be associated with a confusing nipple event. Nipple confusion is a condition in which the baby refuses to breastfeed because the baby has difficulty attaching or sucking, so that the baby finds it easier to drink using a feeding bottle/pacifier. It is evident that when breastfeeding, babies have to work harder to get access to breast milk. Therefore, if the mother must be separated from her baby, expressed breast milk should be given in a cup/glass or feeders [16,20,22]. Research in Cairo has shown that babies who drink using cups/glasses are more likely to be exclusively breastfed than babies who drink by feeding bottles/pacifiers [23]. Other studies conducted in America have also shown that using a pacifiers in infants can significantly reduce the duration of breastfeeding [5,24].

The results of the multivariate analysis of this study also showed that antenatal care (ANC) visits had a significant effect on increasing coverage of exclusive breastfeeding. The Ministry of Health of the Republic of The Gambia through National Nutrition Agency, has developed a maternal health task force, which encourages pregnancy examination visits at least 1 time in the first trimester, at least once in the second trimester and at least 2 times in the third trimester [3]. According to the task force, ANC services should provide 10 key standard services that must be carried out by health workers during ANC visits, one of which is sensitization and health talk activities. At this health talk services/sensitization, there will be counselling on planning for childbirth, postpartum family planning as well as counselling on the preparation of the management of breastfeeding for babies after delivery [3,23,25,26]. Research conducted in Singapore shows that education regarding the management of breastfeeding during antenatal care significantly increases the rate of exclusive breastfeeding [18,26,27]. Knowledge of breastfeeding management should be known as early as possible before the mother gives birth. Knowledge about this can be obtained from counselling during antenatal care. Therefore it is important for pregnant women to have a pregnancy check up to get the information they need about the health of the mother and baby, including breastfeeding [5,28–32].

Pre-lacteal feeding is one of the greatest obstacles in increasing the rate of exclusive breastfeeding in developing countries including The Gambia [3,7]. The disadvantage of pre-lacteal feeding is that the baby does not get colostrum because it is replaced by pre-lacteal food, the baby is more susceptible to infection, protein intolerance and other digestive disorders [2,8,21]. In addition, pre-lacteal feeding will make the baby reluctant to breastfeed, resulting in less stimulation of the breast to produce breast milk. In some mothers after childbirth, breast milk will not be smooth immediately but new-borns also do not need a lot of breast milk in early life, so in general babies do not need pre-lacteal feeding/drinks unless it is for medical reasons [11].

## 5. Conclusion

Age of the child, history of ANC visits, pre-lacteal feeding and use of nipples and/or feeding bottles are determinants factor of exclusive of exclusive breastfeeding practices among women of child bearing age in The Gambia. The rate of exclusive breastfeeding decreases in infants aged 2-5 months. Increasing rate of exclusive breastfeeding at this age can be done by providing special facilities for breastfeeding and/or expressing breast milk at work together with health education and sensitization. Pre-lacteal feeding and use of nipples and/or feeding bottles can reduce the rate of exclusive breastfeeding among women of child bearing age in The Gambia.

### *Recommendations*

Special and extra efforts are needed so that mothers of child bearing age can increase their knowledge regarding the use of cups/glasses as a substitute for pacifiers/ feeding bottles when the mother is separated from her baby due to work or other reasons. In addition, it is necessary to disseminate information that new-borns do not need pre-lacteal food except for certain medical reasons especially in the rural areas where knowledge on exclusive breast feeding is lower compared to urban areas.

## Compliance with ethical standards

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### *Disclosure of conflict of interest*

The authors declare that they have no conflict of interest. No commercial organization with a direct or indirect interest in the content of this study has conferred or will confer a benefit on the authors or any organization with which the authors are associated. This study has not previously been presented in any forum.

### *Statement of informed consent*

An Informed consent was obtained from all the respondents as per government standards by The Gambia Bureau of Statistics (GBoS) during the survey. The Authors of this paper obtained permission to further analyze the data used in the previous demographic and health survey data and therefore the informed consent of the original surveyor satisfies the authors.

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