Geographic Analysis of the Knowledge, Attitude and Practice of Exclusive Breastfeeding by Women of Reproductive Age in Bauchi Local Government Area, Bauchi State, Nigeria.

[1]Johnson Egbemudia Dudu Ph.D and [1]Garba Mohammed Bandi

[1]Department of Geography, Faculty of Social Sciences, Federal University of Kashere, Gombe State.
Email: Jedudu@yahoo.co.uk & garban.bandi@gmail.com

Abstract

Exclusive breast feeding (EBF) is very useful to children. World Health Organization (WHO) set a target of at least 90% children to be exclusively breastfed by 2025. However, most women are not knowledgeable of this feeding method. The women who are informed of EBF are not putting the knowledge into use due to attitudinal issue. Therefore, this study was conceived to assess the knowledge, attitude, and practice of EBF, in Bauchi Local Government Area, among women of reproductive age. The investigation involved a cross sectional study. A structured questionnaire was administered on 400 respondents. The local government area was stratified into 4 districts. A systematic sampling technique was used to select the respondents in the sampled communities. Results from the study indicate that 44.5% of the women of the study area have poor knowledge despite 55.5% of them having good attitude to EBF. The prevalence of EBF in this study is 37.9%. This is less than the 90% target by WHO by 2025. The conclusion from the study is that, though, appreciable level of attitude toward EBF was found in the study area, the level of knowledge as well as the prevalence of EBF are still low. The study recommended that the Bauchi Local Government Area as well as the Bauchi State Government should promote EBF. The health extension workers in the state should particularly make EBF a subject of education to the women, using effective communication media.

Keywords: Attitude, Bauchi, Exclusive Breastfeeding, Breast milk and Reproductive age

Introduction

Breast milk is very useful and nutritious food which gives strength to children in their early days, thereby nurturing healthy growth and development (Diana & Adi, 2019). The breastfeeding of children is as old as man, and this has increased their life span and reduced their morbidity as well as mortality (Marzo *et al*, 2019). Breast milk is a unique food for infants due to the healthy constituents. It is universally acknowledged as the best and complete food for infants including the sick as it fulfils their specific nutritional needs (Mohan, 2018). The Department of Child and Adolescent Health (2002) described breastfeeding as the least expensive, simplest, and healthiest feeding method that fulfils the infants' needs. Breast milk nutrients are well balanced to meet the changing needs of newborn and give protection against

infection and is easily digested. Breast milk contained maternal immunoglobulins, anti-oxidants, enzymes and hormone, which are important for growth of the infant. Breastfeeding has copious benefits to developing countries as well as for industrialized nations, hence the advocacy for Exclusive Breastfeeding (EBF) of all infants (McKinney *et al*, 2009; Mohan, 2018).

The observance of exclusive breastfeeding method varies globally. Hawley *et al* (2015), Skouteris *et al* (2014) and WHO (2014) put the figure of infants who are exclusively breastfed at only 38% universally for the first six months of life. The figure for High-income countries such as the United States is 19%, United Kingdom (1%), and Australia (15%). Also, studies, indicate that high income countries have shorter breastfeeding duration than do low-income and middle-income countries (Issaka *et al*, 2017; Rollins *et al*, 2016). In low-income and middle-income countries, only 37% of infants younger than six months are exclusively breastfed (Rollins *et al*, 2016). For East African countries, EBF stands at 53.5% (Issaka *et al*, 2017), which is way below the WHO target of 90% by 2025 (Jahanpour *et al*, 2018). A study by Agunbiade and Ogunleye, 2012 in the Southwest of Nigeria recorded a practice of 19% EBF. Investigation by Dudu *et al* (2016) revealed an EBF prevalence of 19.7%, in Ughievwen Clan, Delta State, Nigeria, while that of Oche *et al* (2011) reported a figure of 31% of children that enjoyed EBF in Kware, in Sokoto State, Nigeria. In Bauchi State and indeed all parts of the State, including Bauchi Local Government Area, UNICEF (2018) in their promotion of EBF opined that many mothers have paucity of information on this infant feeding scheme and their practice of EBF is low in Bauchi State. According to UNICEF (2018), many parents in Bauchi lamented not exclusively breastfeeding their older children because they did not have information on the benefits of exclusive breastfeeding. To remedy the low prevalence of EBF in the state, the European Union and the Children's Investment Fund Foundation, UNICEF, in collaboration with the Bauchi State Primary Health Care Development Agency, has trained scores of volunteer community mobilisers who are encouraging pregnant women and mothers to take up healthy infant and young child feeding practices. However, despite the impact of this development, the status quo of EBF in Bauchi State is yet to be ascertain.

The US Department of Health and Human Services (2011) and Tshering *et al* (2019) indicate that the promotion of breastfeeding knowledge leads to the promotion of attitude and subsequently to the improvement of their breastfeeding practices. Despite the efficacy of the early exclusive breastfeeding (EBF) approach to child nutrition in reducing child mortality, few nursing mothers in Nigeria are knowledgeable on EBF (Dudu *et al*, 2016; Oche *et al*, 2011). Besides, the attitudes and willingness of mothers to adopt this method of feeding in Nigeria is relatively poor (Agunbiade, & Ogunleye, 2012; Dudu *et al*, 2016). Therefore, the study investigated the geographic knowledge, attitude and practice of EBF in Bauchi Local Government Area of Bauchi State.

Conceptual Clarification

Exclusive Breastfeeding

Exclusive Breastfeeding (EBF) means the feeding of an infant only with its mother's breast milk and without any food or liquid for the first six months (WHO, 2014). This relates to a situation where an infant receives no other food or drink, not even water, except breast milk (including milk expressed or from a wet nurse) for 6 months of life. However, such children are allowed to receive Oral Rehydration Salts (ORS), drops and syrups (WHO, 2006). American Academy of Pediatrics (AAP) recommends that infants be breastfed exclusively for first six months of life and breastfeeding continued for at least 24 months (Kumar, 2004). The World Health Organization (WHO, 2014) and the United Nation Children's Education Fund (UNICEF, 2018) recommend initiation of breastfeeding within the first hour after birth. The World Health Organization (WHO, 2014) and UNICEF (2018) also recommend exclusively breastfeeding for the first six months of age and continuation of breastfeeding for up to two years of age or beyond, in addition to adequate complementary foods. There has been an increasing interest in the promotion of exclusive breastfeeding as the 'best' feeding method for new births especially when viewed against the backdrop of available scientific evidence on the importance of exclusive breastfeeding (EBF) in reducing children's non-communicable diseases, infant morbidity, and mortality earlier and later in life (Onyango, 2019).

According to a NEOVITA Study Group (2016), exclusive breastfeeding could prevent over 800,000 deaths (13% of all deaths) in children under five years. It has been established that children who received exclusive breastfeeding had a better immunity and lower mortality rate (Khan *et al*, 2015). EBF is seen as high impact nutrition intervention (HINI), hence it is prioritized as an important public health strategy in reducing under five mortality (Morrow & Lutter, 2012). It has been reported that if children are exclusively breastfed for the first six months of their life, their survival rates will be improved by 13 percent (Engebretsen *et al*, 2014). In mothers, breastfeeding has been shown to decrease the frequency of postpartum hemorrhage, postpartum depression, breast cancer, ovarian and endometrial cancer, as well as facilitating weight loss (Holtzman & Usherwood, 2018; Saadeh & Benbouzid, 1990). The World Health Assembly (WHA) has set a global target in order to increase the rate of EBF for infants aged 0–6 months up to at least 50% and an expectation of 90% from 2012–2025 (WHO, 2014).

Review of related Literature

There have been plethora of literature dealing with the subject of knowledge, attitude and practice (KAP) of exclusive breastfeeding. In other parts of the world several studies have dealt with KAP of EBF. The study by Diana and Adi (2019) revealed that 83% and 17% of mothers had good knowledge and insufficient knowledge respectively of EBF in Indonesia in the areas of: definition and benefit of exclusive breastfeeding, time to give complementary foods, and when to stop breast milk. There were some items which were not well understood by the mothers, that is, the definition of exclusive breastfeeding, the benefit of breastfeeding for their

children (growth, development, immunity, morbidity, and mortality) and for themself (mothers had a longer time to delay fertility postpartum so it could delay the pregnancy and slim faster). On attitude to EBF, the study revealed that less than half of the mothers (49.7%) had a positive attitude towards exclusive breastfeeding. Negative attitudes include statement like breast milk can be substituted by infant formulas, it is hard for the working mothers to give exclusive breastfeeding, and it needs a special training in giving breast milk. Meanwhile more than one third mothers had a neutral attitude. On the prevalence of EBF, the study by Diana and Adi (2019) revealed 47.6% prevalence. Diana and Adi (2019) also indicate that there was a significant association between breastfeeding knowledge (p=0.003) and attitude (p=0.000) with exclusive breastfeeding practice. The study by Onyango (2019) revealed that major sources of information on EBF were medical providers in hospital (70%) and friend/relative (15.2%) in Kenya.

Marzo *et al* (2019) work in Malaysia on EBF showed that the mothers placed a high value on knowledge and attitude but need to improve the practices on EBF. Around 44% and 53% of mothers possessed good to excellent knowledge. About 71% had a positive attitude. Only 52% of the mothers had good practices on EBF, even though 82% practiced breastfeeding. The study opined that good knowledge and attitude sometimes are not enough to enable mothers to be partakers in EBF. The subject of EBF has been of concern in Bhutan, South Asia. The work by Tshering *et al* (2019) revealed that 91.2% knew about EBF from source information obtained from doctors and 51.2% from health workers, followed by 24.4% from national television. Other sources mentioned were neighbours, friends and families (5.9%), radio, posters, leaflets and books (9%). Very few of them cited newspapers and social media as a source. With regards to the actual duration of the exclusive breastfeeding, almost all (98.5%) knew that the baby should be exclusively breastfed till six months. The rate of actual practice of EBF by mothers was very high - 91.2%. The knowledge of EBF by mother in Myanmar is 83% with 72% prevalent rate (Aye, 2019).

In Africa, Nukpezah *et al* (2018) study on EBF in Ghana revealed that the knowledge of EBF among mothers was 70% with information heard from electronic media (53.2%) as compared to health professionals (34.4%) as their major source of information. Despite 70 knowledgeable on EBF, only 27.7% practiced EBF, thus indicate a gap between knowledge and practice of EBF. In another study in East Africa by Dukuzumuremyi *et al* (2020), 72.9% of mothers were knowledgeable on EBF, with 55.9% them who had exclusively breastfed their children for the first six months. About 79.5%, had given colostrum in the same study. The Source of information about EBF according to Dukuzumuremyi *et al* (2020) was from health institutions 67.8%, mass media13.1%, husband 2.6%, and friends 1.4%. Dukuzumuremyi *et al* (2020) rated the attitude of mothers in their study to range from very good (30.2%), good (19.8%) and bad (50%).

Like other parts of Africa, studies have been carried out on EBF in Nigeria. Despites the benefits of EBF as documented from various studies and bodies, the rate of exclusive breast feeding in Nigeria has remained the lowest (17%) with Nigeria lagging behind other African countries

such as: Ghana (53.4%), Republic of Benin (43.1%) and Cameroon (23.5%) (Agho *et al*, 2011). Several factors are responsible for the low rate of exclusive breast feeding in Nigeria. Davies-Adetugbo (1997) and WHO (2014) identified traditional beliefs, practices, and rites as responsible for the low rate of EBF. According to Davies-Adetugbo (1997) in Yoruba and Bini communities, EBF is considered dangerous to the health of the infant who is thought to require water to quench thirst or stop hiccoughs - a phenomenon (WHO, 2014) described as: mixed feeding, believing an infant needs additional liquids or solids before six months because breast milk alone is not adequate. Other reasons adduced for low EBF in the literature are delivery of women outside health facility (Salami, 2006) and knowledge/attitude of mothers on EBF (Ekele & Ahmed, 1997; Okolo & Ogbonna, 2002). Other factors according to WHO (2014) are hospital and health-care practices and policies that are not supportive of breastfeeding, lack of adequate skilled support (in health facilities and in the community), aggressive promotion of infant formula, milk powder and other breast-milk substitutes, inadequate maternity and paternity leave legislation and other workplace policies that support a woman's ability to breastfeed when she returns to work and lack of knowledge on the dangers of not exclusively breastfeeding and of proper breastfeeding techniques among women, their partners, families, health-care providers and policy-makers. Exclusive breastfeeding is necessary for successful curbing of infant malnutrition and the reduction of child mortality rate across Nigeria (Agunbiade & Ogunleye, 2012). Two aspects of EBF practice are crucial, initiation and duration which are affected by factors such as level of education, nature of job, place of delivery, culture, family pressure (Zoller, 2009; Schmied & Barclay, 1999). The rate of breastfeeding initiation has been on the increase compared to the duration in Nigeria (Ogunlesi, 2010; Osibogun *et al*, 2018).

Some studies have been done on EBF in parts of northern Nigeria. For example, Joseph and Earland (2019) explored sociocultural determinants of exclusive breastfeeding practices among rural mothers in the Northwest. Balogun *et al* (2016) examined the factors influencing exclusive breastfeeding in early infancy in north central Nigeria. Qureshi *et al* (2011) evaluated the use of community volunteers to promote exclusive breastfeeding in Sokoto State. None of these studies directly relate to KAP of EBF, Bauchi State and adopted geographic perspective of rural urban investigation. In Bauchi, UNICEF (2018) believed that the prevalence of EBF is low due to lack of awareness of this feeding mode. The Nigeria Population Commission (2019) described the EBF of Northeast Nigeria which Bauchi State belong to be very low and less than 50% - putting overall prevalence of EBF for Nigeria at 29% for children under age 6 months. Therefore, a detailed study of the current knowledge, attitude and practice of EBF is therefore imperative for the understanding of the practice of EBF among women of reproductive age in Nigeria by understanding EBF even at the local government areas. It is from this perspective that this study assessed the knowledge, attitude and practice of exclusive breastfeeding by women of reproductive age in Bauchi Local Government Area of Bauchi State.

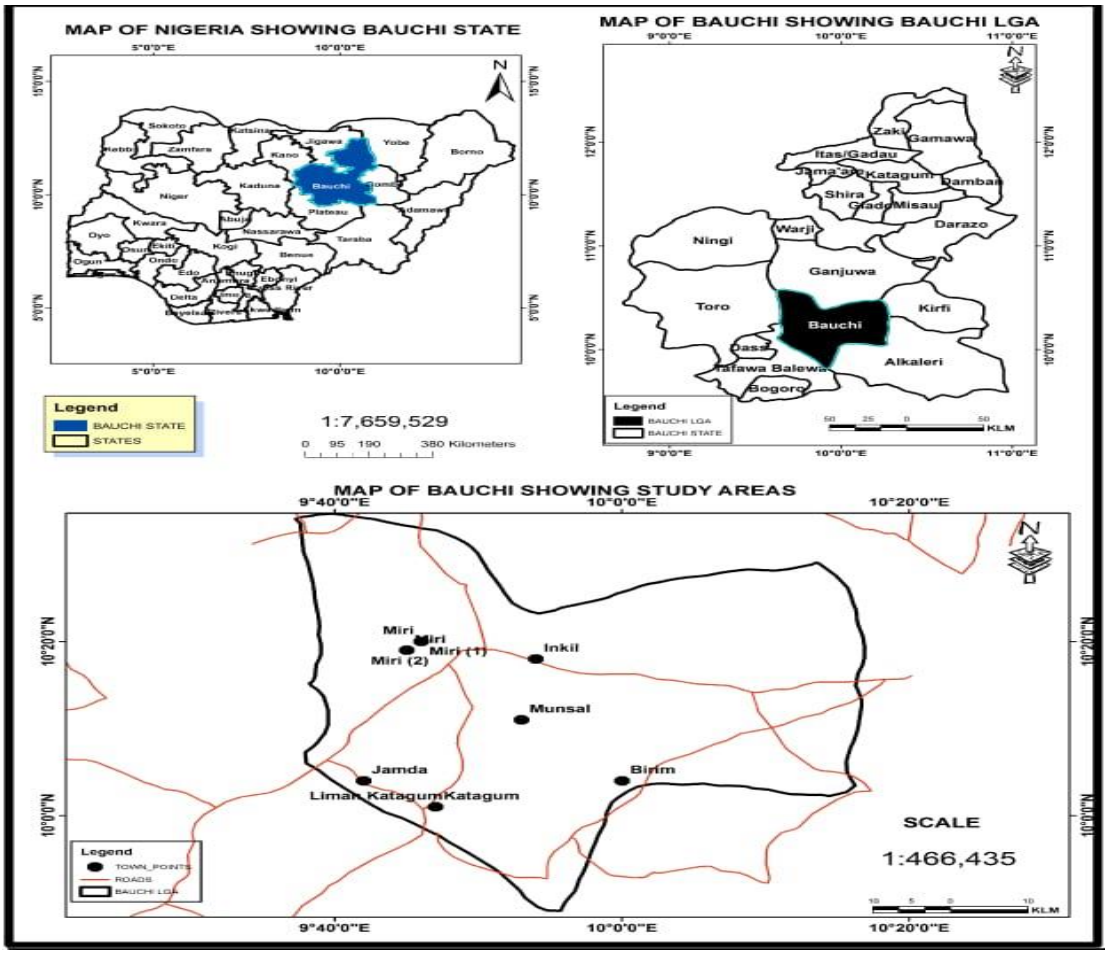
Hypothesis

To guide the focus of this study, the hypothesis state as follows;

Ho: There is no relationship between location and those that have heard about EBF in the study area.

Description of the Study Area

Bauchi Local Government Area is located at between 9^0 29' N to 12^0 30'N and 08° 45'E to 11° 00'E. Bauchi is a town in northeastern Nigeria, the capital of Bauchi State. Bauchi Local Government Area has four (4) districts namely; Bauchi, Zungur, Galambi and Miri, collectively known as Bauchi Emirate. The LGA is located at the north edge of the Jos Plateau, at an elevation of 616m above sea level. Bauchi LGA has a total land area of 3,687km^2 with total population of about 493,810 according to the 2006 national census (National Population Commission, 2010).



Materials and Methods

The study adopted a descriptive cross-sectional approach. Data were collected using structured questionnaire. The inclusive criteria for the study were on women of childbearing age who were

currently breastfeeding at the time of the study or who had stopped breastfeeding not later than a year before.

The first part of the questionnaire includes socio-demographic characteristics. The second section dealt with knowledge of EBF. A third part related to attitude of the participants to EBF and a fourth part dealt with the prevalence of EBF. The outcome variables studied were sufficient knowledge, good knowledge and insufficient knowledge. Attitude was rated either positive or negative of EBF, while EBF practice was presented as: good practice or poor practice. Knowledge, attitude and practice were computed on the basis of pre-determined comparative rating scales. This involved calculating the percentage of correct scores in each knowledge, attitude and practice question categories. The scores for each correct answer were computed and the average score calculated for knowledge, attitude and practice of EBF in the study area. Respondents who scored at least 50% were rated sufficient knowledge, 60% score depict good knowledge and any score less than 50% was rated as insufficient knowledge. Attitude was considered good if the scores was up to 50% and if less, it is rated as poor attitude. Finally, EBF was rated as good practice with a score of up to 50% and a less score was depicted as poor practice of EBF. The study took place between November and December, 2021 in the sampled communities.

The study used combinations of sampling techniques at different stages. Bauchi LGA was sub-divided into four districts (Bauchi, Zungur, Galambi and Miri) using stratified sampling. A community each was selected as the location for the study in each district. In Bauchi district, Jahun town was selected as an urban locality. In Zungur, Liman Katagun village was selected. In Galambi district, Munsal village was chosen. Lastly, Miri village represented Miri district. These communities were selected from simple balloting to avoid bias.

The sample size for the study was calculated from Taro Yamane formula. It was 400, distributed in four communities. In Jahun town, 190 questionnaires were administered (urban location). In Liman Katagun, Munsal and Miri villages, 70 questionnaires were administered in each of the villages – making for a total of 210 questionnaires that were administered in rural neighborhoods. A systematic approach was used to select the respondents who meet the inclusive criteria in each of the study communities. The Statistical Package for Social Sciences (SPSS) was used for data analysis in this study. The analysis involved the use of descriptive statistics such as frequency tables, and percentages. Cross tabulation and Chi-Square were used to identify relationship between location of communities and knowledge, attitude and practice variables of exclusive breastfeeding. The study was classified as a low risk one in terms of the objects of investigation. At all levels, participants consents were received verbally before administering of the questionnaire. In addition, all respondents were informed of their right to withdraw their participations in the study at any stage. They were assured of their anonymity during and after the study.

Result of the findings

Demographic Characteristics of Respondents.

The results of the demographic characteristics of respondents are presented in Table 1. The result of the findings in Table 1 indicates that 32% fall in the age bracket of 26-30 years old, 25.3% between 21-25 years old, and 22.8% respondents are between 31-35 years old. Others were 13.3% and 6.8% of the women who are between 36-40 years and 41-45 years old respectively. The respondents were married as 89.3% are in this category. They have secondary education (35%), primary school education (32%) and 23% of them without any formal education. Only 10% of them have tertiary education. The respondents were farmers (32.8%), traders (28.2%), animal keepers (11.3%), civil servants (10.5%) and 17.3% of them that were unemployed. The respondents reside in rural communities (52.5%) and urban localities (47.5%). They gave birth to their children in either homes of traditional birth attendant (34.8%) or in the hospitals (65.2%).

Table 1. Demographic Characteristics of Respondents

Variable	No (400)	%
Age (Years)		
21-25	101	25.3
26-30	128	32.0
31-35	91	22.8
36-40	53	13.3
41-45	27	6.8
Marital Status		
Married	357	89.3
Single	19	4.8
Divorced	9	2.3
Separated	8	2.0
Widowed	7	1.8
Highest Education Level		
No formal education	92	23.0
Primary Education	128	32.0
Secondary Education	140	35.0
Tertiary Education	40	10.0

Occupation		
Farming	131	32.8
Animal Rearing	45	11.3
Trading	113	28.2
Civil Service	42	10.5
Unemployed	69	17.3
Location of houses of the respondents		
Rural Community	210	52.5
Urban Community	190	47.5
Place of Child Birth		
Home of Traditional Birth Attendant	139	34.8
Hospital	261	65.2

Source: Field Survey 2021.

Awareness of EBF and the Sources of Information.

Table 2 reveals that 55.3% of the respondents have heard about exclusive breastfeeding in the study area. The figure was 58.9% in the urban area and 51.9% in rural area. Table 2 also shows clearly that the channel of information on EBF is medical personnel (48.5%), with rural area having 51% to 45.8% of urban area. Other sources were mass media (23.8%), friends/family (20.3%) and books/newspapers (7.4%).

Table 2. Awareness of EBF and sources of their information in rural, urban and the study area.

Variable		Rural (%)	Urban (%)	Study Area (%)	% of Dominant Answer	P-value
Heard about exclusive breastfeeding or not by location (n=400)						
Yes	221	51.9	58.9	55.3	55.3	.157*
No	179	48.1	41.1	44.8		
Source of information on EBF	**(n=221)**					
Medical Personnel	194	51.0	45.8	48.5	48.5	.004*
Mass Media	95	19.5	28.4	23.8		
Friends/family	81	25.2	14.7	20.3		
Books/Newspapers	30	4.3	11.1	7.4		

Source: Field Survey 2021. P-values: * Location.

Knowledge of EBF in the study area.

Table 3 reveals that 49.5% of the respondents in the study area are aware that newborn babies should not be given food supplements before they are six months old. More persons (52.4%) in the rural communities held this view than those in in urban area which were 46.3%. Also, Table3 indicates that only 33% of the respondents know that exclusive breastfeeding is a form of child spacing option. The figure for urban areas was 34.7% and 31.4% in rural communities. The proportion of respondents who believed whether exclusively breastfed child cannot take water until 7 months, or more were 47.2% in the study area. It was 51.6% in urban area and 43.3% of rural localities. On the knowledge of whether breast milk is enough to take care of the child and keep him/her healthy in the first six month, 56.3% of the respondents hold this position in the study area. The figure for urban area was 57.9% compared to 54.8% in the rural population sampled. On how soon a mother should initiate breastfeeding after birth, only 36.3% of them know that this should happen 30 minutes after birth. The figure for urban was 41.1% as against 31.9% in rural places.

Table 3. Knowledge of EBF in the rural, urban and study area.

Question	No (n = 400)	Rural (%)	Urban (%)	Study Area (%)	% of Correct Answer	P-value
Baby should be given food supplements before they are six months.						
Yes	202	47.6	53.7	50.5	49.5	.226*
No	198	52.4	46.3	49.5		
Exclusive breastfeeding is a form of child spacing option						
Yes	132	31.4	34.7	33.0	33.0	.482*
No	268	68.6	65.3	67.0		
Exclusively breastfed child cannot take water until 7 months or more.						
Yes	189	43.3	51.6	47.2	47.2	.099*
No	211	56.7	48.4	52.8		
Breast milk is enough to take care of the child and keep him/her healthy in the first six month.						
Yes	225	54.8	57.9	56.3	56.3	.528*
No	175	45.2	42.1	43.8		
How soon should a mother initiate breastfeeding after birth?						
1 hour after birth	158	38.6	40.5	39.5	36.3	.027*
30 minutes after birth	145	31.9	41.1	36.3		
wait at least two hours	86	27.1	15.3	21.5		
Wait till a day after birth.	11	2.4	3.2	2.8		

Source: Field Survey 2021. P-values: * Location.

Note: Average of knowledge of EBF. (%):49.5+33.0 + 47.2 + 56.3+36.3 =222.3/5 = 44.5%

Attitude to EBF in the study area.

The result of the findings on eight variables explored relating to attitude is presented in Table 4. Table 4 reveals that 47% of the respondents admit that supplementary food should not be given to newborn babies. The figure for urban area was 48.4% and 45.7% rural communities. On whether working mothers should not exclusively breastfeed their babies, 54.8% of the respondents correctly believed that this should not be the case. However, more persons in the rural communities (60.5%) compared to 48.4% in urban areas held this position. The study area has a figure of 67.8% of respondents who held that health of babies who are breastfed exclusively is better than those who are not. The proportion for urban area was 74.4% compared to 61.4% in rural communities. Forty-five percent of the respondents see colostrum as okay to be given to babies immediately after birth. However, 52.6% in urban communities held this view beside 38.1% in rural localities. Respondents (51.2%) correctly held the view in the study area that, there is a difference in immunity between exclusively breast fed and non-exclusive breast-fed babies. The proportion of mothers in the urban area are 54.2% compared 48.6% in rural communities. On whether all infants have the rights to accept exclusive breastfeeding, 75.8% of the respondents in the study area took this position, though the figure for urban localities was 77.9% and 73.8% in rural areas. Over 55% of the mothers believed that breast milk cannot be substituted by infant formula. Though more persons in the rural communities (61.9%) believed in this position compared to 48.4% in urban area. In the study area, 46.3% do not believe it is hard for the working mothers to give exclusive breastfeeding, though the proportion of mothers with this position is 52.9% in the rural area and 38.9% in urban locality.

Table 4. Attitude to EBF in the rural, urban and study area.

Questions	**No (n = 400)**	**Rural (%)**	**Urban (%)**	**Study Area (%)**	% of Correct Answer	P-value
Supplementary food should be given to babies very early in their birth to make them not to be hungry.						
Yes	212	54.3	51.6	53.0	47.0	.588*
No	188	45.7	48.4	47.0		.
Working mothers should not exclusively breastfeed their babies.						
Yes	181	39.5	51.6	45.3	54.8	.016*
No	219	60.5	48.4	54.8		
The health of babies who are breastfed exclusively is						

better than those who are not						
Yes	271	61.4	74.7	67.8	67.8	.004*
No	129	38.6	25.3	32.2		
Colostrum is too dirty to be given to babies immediately after their birth.						
Yes	220	61.9	47.4	55.0	45.0	.004*
No	180	38.1	52.6	45.0		
There is a difference in immunity between exclusively breast fed and non-exclusive breast-fed babies.						
Yes	205	48.6	54.2	51.2	51.2	.260*
No	195	51.4	45.8	48.8		
All infants have the right to accept exclusive breastfeeding.						
Yes	303	73.8	77.9	75.8	75.8	.341*
No	97	26.2	22.1	24.2		
Breast milk can be substituted by infant formula						
Yes	178	38.1	51.6	44.5	55.5	007*
No	222	61.9	48.4	55.5		
It is hard for the working mothers to give EBF						
Yes	215	47.1	61.1	53.8	46.3	005*
No	185	52.9	38.9	46.3		

Source: Field Survey 2021. P-values: * Location.

Note: Average of attitude to EBF (%):47.0+54.8+67.8+45 +51.2 + 75.8+ 55.5+46.3 =443.4/8 =55.4%

Practice of EBF in the study area.

Table 5 reveals that 41.8% of the respondents exclusively breastfed their Children in the study area compared to 47.1% in rural communities and 35.8% in urban inhabitants. Among those that practice exclusive breastfeeding (167 or 41.8%) of the respondents, 41.9% of them started feeding their babies immediately after birth in the study area, while it was 47.1% in urban area, it was 38.4% in rural localities. On how often the respondents breastfeed their babies daily,

Table 5 also indicate that 39.5% feed their children as much as the babies' desire. However, a large portion of the sampled population (41.3%) did not count the number of times they were involved in the exercise. Some segments of mothers feed their babies for six to eight times (12.6%) and for more than eight times (6.6%). On the duration in months of EBF practice, 38.6% of the respondents were of the view that they fed their babies for six months, comprising 45.5% of mothers who were involved in this at the rural communities compared to 29.4% in urban areas. It is also worthy to mention that 4.2% respondents did practice EBF for more than six months, while 56.9% did not meet up the expected six months target. Table 5 equally captured the length of each breastfeeding of mothers who practiced EBF. It is evident that 46.1% did not record this. However, 27.7% did this for 30 minutes to one hour with more persons in rural areas (29.3%) compared to 25% in urban location. Over 22.8% fed their babies for less than 30 minutes and 3.6 for more than one hour.

Table 5. EBF Prevalence in the rural, urban and study area

Question		Rural (%)	Urban (%)	Study Area (%)	% of Correct Answer	P-value
Was your last baby exclusively breastfed?	**(n=400)**					
Yes	167	47.1	35.8	41.8	41.8	.021*
No	233	52.9	64.2	58.2		
When did you start feeding your last baby after birth (n=167)						
Immediately after birth	70	38.4	47.1	41.9		.104*
Within the first two hour after birth	52	27.3	36.8	31.1		
After two hours after birth	18	15.2	4.4	10.8	41.9	
On the second day after birth	8	6.1	2.9	4.8		
Cannot remember	19	13.1	8.8	11.4		
How often do you breastfeed your baby daily?						
6 – 8 times	66	38.4	41.2	12.6		.798*
More than 8 times	21	13.1	11.8	6.6	39.5	
As much as my baby desires	11	8.1	4.4	39.5		
Did not count	69	40.1	42.6	41.3		
How long do you feed your baby exclusively with breast milk?						
Less than 3 months	78	35.4	63.2	46.7	38.9	.004*

4 months	17	13.1	5.9	10.2		
6 months	65	45.5	29.4	38.9		
More than 6 months.	7	6.1	1.5	4.2		
Length of each breastfeeding of mothers who practiced EBF.						
Less than 30 minutes	38	17.2	30.9	22.8	27.5	.227*
30 minutes to hour	46	29.3	25.0	27.5		
More than 1 hour	6	4.0	2.9	3.6		
Not recorded	77	49.5	41.2	46.1		

Source: Field Survey 2021. Note: P-values: * Location.

Note: Averaging the Practice of EBF. (%):41.8 +41.9+39.5 +38.9+27.5 =189.6/5 =37.9%

Discussion

The socio-demographic characteristics of the mothers in this study indicate they were young women. This is not however surprising, since the study population were women of reproductive age. Most women usually target early age to give birth to their children, all things being equal. Expectedly, a preponderant of the respondents were married. A huge proportion of the study participants had some forms of education from primary to tertiary training. The mothers were farmers, traders, animal keepers and civil servants. Their residence was almost equally share between rural and urban area. Majority of them gave birth to their babies in hospital as well as those that used traditional birth attendants' homes as their place of birth.

Over half of the mothers have heard about EBF. However, a test of significant relationship indicates that there is no relationship between location and those that have heard about EBF with a chi square value of P-value of .157 at .05 confidence limit. Hence, living in urban or rural vicinities do not have effect on hearing about EBF. This may not be unconnected to the same cultural setting that limit discussion on reproductive health by women whether they live in rural or urban areas. The figure of 55.3% of those who have heard of EBF in this study is less than those reported by Dudu et al (2016) in Delta State, Nigeria, Nukpezah *et al* (2018) in Ghana, Diana and Adi (2019) in Indonesia and Tshering *et al* (2019) in Bhutan that reported figures of 63%, 79.1%, 70.5% and 91.2% respectively. Thus, the proportion of those that have heard of EBF in the study area are comparatively low.

Information on EBF in this study were mostly from medical personnel. This is contrary to the findings of Nukpezah *et al* (2018) where mass media served as the highest source of information rather that medical personnel. The setting of the study in Ghana which was a metropolis might be responsible for electronic media having upper hand as source of EBF information. Friends/family constitute a third medium of information on EBF in this study. Disparities was found between urban and rural areas. These disparities could be explained from the view that,

in the near absence of mass media in rural communities, friends as well as families fill the gap for information in what Olaleye *et al* (2009) described as one of the traditional sources of information. Books/newspaper also accounted for pocket of information to the study area. Therefore, it is safe to say that the promotion of EBF practice will have to count on the major sources such as medical personnel and mass media. This is with a view of tapping on all the benefits that come from the adoption of this feeding method for children.

The overall computation of answers to knowledge questions revealed mothers have insufficient knowledge whether in rural or urban localities. The proportion of 45.5% knowledge in this study did not meet 50% set out in the knowledge scale to be considered as having at least sufficient knowledge. In all the knowledge question in this study, mothers have sufficient knowledge only on breast milk is enough to take care of the child and keep him/her healthy in the first six month (56.3%) and baby should be given food supplements before they are six months, where their knowledge was approximately 50% - since their score of knowledge was 49.5%. The test of significant association between location and knowledge variables revealed that no significant relationship. It is only between locations and how soon should a mother initiate breastfeeding after birth, that there was a significant relationship at P-value of .027. Thus, location of mothers counts very little in their level of knowledge of EBF. The aggregate of knowledge in this study which is 44.5% is slightly higher than those reported by Okolo and Ogbonna (2002) in Nasarawa State and Dudu *et al* (2016) in Delta State that reported EBF knowledge of 43.8% and 43.9% respectively. However, the figure of knowledge reported here is lower than those of Diana and Adi (2019) in Indonesia and Aye (2019) in Myanmar with 83% each but almost equal to Marzo *et al* (2019) work in Malaysia where knowledge of mothers was around 44%.

The study explored eight variables relating to attitude. These variables include: if supplementary food should be given to babies very early in their birth to make them not to be hungry, if working mothers should not exclusively breastfeed their babies, that the health of babies who are breastfed exclusively is better than those who not, if colostrum is too dirty to be given to babies immediately after their birth, that there is a difference in immunity between exclusively breast fed and non-exclusive breast fed babies, if every infants have the right to accept exclusive breastfeeding, if breast milk can be substituted by infant formula and whether it is hard for the working mothers to give exclusive breastfeeding. Mothers in the study have positive attitude in five of the variables scoring above 50%, while scoring more than 45% in the other three attitudinal variables. For the rating of attitude for the study area, a figure of 55.4% was obtained from all the correct answers to attitudinal question, therefore, the study participants have positive attitude to EBF. However, this figure of positive attitude is higher than those of Dudu *et al* (2016) of 38.6% in Delta State and that of Diana and Adi (2019) of 49.7%% in Indonesia, but lower than 71% of Marzo *et al* (2019) in Malaysia. It is important to note that the test of significant relationship between location and some attitudinal variables was significant. For example, in the test of association between location and if breast milk can be substituted by infant formula, a chi square value of .007 was found. Thus, indicating a

significant association. Also, the chi square value for the relationship between location and if it is hard for the working mothers to give exclusive breastfeeding was .005, equally showing an association. This shows that location in term of rural or urban is an essential factor in the attitudes of the mothers in some issues.

The variables considered in determining the prevalence of EBF were, whether mother exclusively breastfed their last child? When mother start feeding their last baby after birth? How often mothers breastfeed their baby daily? How long mother fed their baby exclusively with breast milk and the length of each breastfeeding of mothers who practiced EBF? In all the variables considered in the study, mothers the practice was poor. Overall, the prevalence of EBF in this study stood at 37.9%, indicating poor practice of EBF. Location was not a very strong factor of mothers who practice EBF except for whether mother exclusively breastfed their last child were the P-value for location and the variable is .002% and how long mother fed their baby exclusively with breast milk. The test of association of location and this later variable has a P-value of .004. The EBF prevalence of 37.9% as found in this study is higher than those of Dudu *et al* (2016) and Nukpezah and Ninnoni (2018) with 19.7% and 27.7% prevalence respectively, but lower than those of Diana and Adi (2019) with 47.6% prevalence and Aye (2019) with 72% prevalence in Myanmar. It is however important to point out in this study that, the knowledge of 45.5% and attitude 55.4% obtained in this study, seemed not to have influence the prevalence of EBF in the study, hence the relatively low prevalence of EBF of 37.9%. The 37.9% EBF prevalence is lower than the World Health Assembly's global target of 50% EBF from 2012–2025 (WHO, 2014). It is also lower than the 90% by WHO (Jahanpour *et al*, 2018). This supports the views of Marzo *et al* (2019) that good knowledge and attitude sometimes are not enough to enable mothers to be partakers in EBF.

Conclusion

This study has assessed the level of knowledge, attitude and practice (KAP) of exclusive breastfeeding of women of reproductive age in Bauchi Local Government Area, Bauchi State, Nigeria. Though the attitude toward EBF (55.4 %.) as found in this study is positive from the scale of evaluation, the level of awareness (44.5%) as well as EBF prevalence of 37.9% are still relatively low. The awareness of 44.5% is considered not sufficient. Additionally, the prevalence of 37.7% is seen to be relatively low. Thus, the knowledge, attitude, and practice in this study, seem not to have clear distinction between urban and rural communities, consequently indicating that whether rural or urban vicinities, the issues of knowledge, attitude and practice are comparatively the same. It seems the knowledge and attitude of the mothers are not reflected on the level of EBF prevalence in the study. The prevalence of 37.7% in this study is lesser than the target of 50% by World Health Assembly (WHA) and prevalence of 90% by WHO by 2025.

Recommendations

Based on the findings from this investigation, the study makes the following recommendations;

i. Bauchi LGA should work with the State Government to promote EBF at all levels in the State especially with the Ministry of Health at the State and Department of Health in the LGAs. This is with a view of meeting the 50% target of EBF by WHA in the short run, with the expectation of the 90% target by WHO in 2025.

ii. Health personnel and other health extension workers should make EBF one of their Cardinal Health educational projects in the rural and urban communities through effective communication media and incentives from Governments.

Acknowledgement: *The authors are grateful to: Master Jalaluddeen Muhammad Muazu and other research assistants who worked during the data collection for this study. We are equally grateful to Engr. Stephen Eyube Emuejevoke and Mr. Neto Amos College of ITF who supported this work with some money during the fieldwork.*

References

Agho, K.E., Dibley, M.J., Odiase, J.I., & Ogbonmwan, S.M. (2011). Determinants of exclusive breastfeeding in Nigeria. *BMC pregnancy and childbirth*, 11(1), 1-8.

Agunbiade, O.M., & Ogunleye, O.V. (2012). Constraints to exclusive breastfeeding practice among breastfeeding mothers in Southwest Nigeria: implications for scaling up. *International Breastfeeding Journal*, 7(1), 1-10.

Aye, N.S.T. (2019). *A study on an exclusive breastfeeding practice among working mothers in myanmar (case study: thingangyun township)* (Doctoral dissertation, Yangon University of Economics).

Balogun, O.O., Kobayashi, S., Anigo, K.M., Ota, E., Asakura, K. & Sasaki, S. (2016). Factors influencing exclusive breastfeeding in early infancy: a prospective study in north central Nigeria. *Maternal and child health journal*, *20*(2), 363-375.

Davies-Adetugbo, A. A. (1997). Sociocultural factors and the promotion of exclusive breastfeeding in rural Yoruba communities of Osun State, Nigeria. *Social science & medicine*, 45(1), 113-125.Dennis, C. L. (2002). Breastfeeding initiation and duration: A 1990-2000 literature review. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*, 31(1), 12-32.

Department of Child, & Adolescent Health (2002). The optimal duration of exclusive breastfeeding: a systematic review.

Diana, R., & Adi, A.C. (2019). Mother's Knowledge, Attitude, and Practice of Exclusive Breastfeeding. *Indian Journal of Public Health*, 10(3).

Dudu, J.E., Okoro, F.I., & Otto, I. (2016). Knowledge, attitude and practice of exclusive breastfeeding by women of reproductive age in Nigeria. *Imperial Journal of Interdisciplinary Research*, 2(5), 1350-1361.

Dukuzumuremyi, J.P.C., Acheampong, K., Abesig, J., & Luo, J. (2020). Knowledge, attitude, and practice of exclusive breastfeeding among mothers in East Africa: a systematic review. *International Breastfeeding Journal*, 15(1), 1-17.

Ekele, B.A., & Ahmed, H. (1997). Exclusive breastfeeding: hospital or home practice. *Nig Med Pract*, 33, 62-64.

Engebretsen, I.M.S., Nankabirwa, V., Doherty, T., Diallo, A.H., Nankunda, J., Fadnes, L.T., & Tumwine, J.K. (2014). Early infant feeding practices in three African countries: the PROMISE-EBF trial promoting exclusive breastfeeding by peer counsellors. *International Breastfeeding Journal*, 9(1), 1-11.

Hawley, N. L., Rosen, R. K., Strait, E. A., Raffucci, G., Holmdahl, I., Freeman, J. R., ... & McGarvey, S. T. (2015). Mothers' attitudes and beliefs about infant feeding highlight barriers to exclusive breastfeeding in American Samoa. *Women and Birth*, *28*(3), e80-e86.

Holtzman, O., & Usherwood, T. (2018). Australian general practitioners' knowledge, attitudes and practices towards breastfeeding. *PloS one*, 1-16.

Issaka, A. I., Agho, K. E., & Renzaho, A. M. (2017). Prevalence of key breastfeeding indicators in 29 sub-Saharan African countries: a meta-analysis of demographic and health surveys (2010–2015). *BMJ open*, *7*(10), 1-10.

Jahanpour, O., Msuya, S. E., Todd, J., Stray-Pedersen, B., & Mgongo, M. (2018). Increasing trend of exclusive breastfeeding over 12 years period (2002–2014) among women in Moshi, Tanzania. *BMC pregnancy and childbirth*, *18*(1), 1-8.

Joseph, F. I., & Earland, J. (2019). A qualitative exploration of the sociocultural determinants of exclusive breastfeeding practices among rural mothers, North West Nigeria. *International breastfeeding journal*, *14*(1), 1-11.

Kumar, R.(2004). Exclusive breastfeeding Every child's first right. *Health action*, 17(1), 35-37

Marzo, R. R., Rou, K. Z., Yin, O. Y., Gill, A. S., & Salam, A. (2019). Knowledge, Attitude and Practice on Exclusive Breastfeeding among Mothers in Malaysia. *International Medical Journal*, *26*(2), 77-80.

McKinney, E.S., James S.R., Murray, S.S., & Ashwill W.J. (2009) *Maternal – Child Nursing*. (3rd ed). Missouri: Saunders Elsevier.

Mohan, C. (2018). Assessment of knowledge regarding exclusive breastfeeding among primigravida and primipara mothers. *International Journal for Advance Research and Development*, *3*(8), 1-128.

Morrow, A.L., & Lutter, C.K. (2012). Strategic global approaches to improve breastfeeding rates. *Advances in Nutrition*, *3*(6), 829-830.

National Population Commission (NPC)(2010). Federal Republic of Nigeria 2006 population and Housing Census Priority Table Volume IV Population Distribution by Age andSex (State andLocal Government area) Table DS5, National Population Commission.

NEOVITA Study Group. (2016). Timing of initiation, patterns of breastfeeding, and infant survival: prospective analysis of pooled data from three randomised trials. *The Lancet Global Health*, *4*(4), 266-275.

Nukpezah, R. N., Nuvor, S. V., & Ninnoni, J. (2018). Knowledge and practice of exclusive breastfeeding among mothers in the tamale metropolis of Ghana. *Reproductive health*, *15*(1), 1-9.

Oche, M.O., Umar, A.S., & Ahmed, H. (2011). Knowledge and practice of exclusive breastfeeding in Kware, Nigeria. *African health sciences*, *11*(3), 518 – 523.

Ogunlesi, T.A. (2010). Maternal socio-demographic factors influencing the initiation and exclusivity of breastfeeding in a Nigerian semi-urban setting. *Maternal and child health journal*, *14*(3), 459-465.

Okolo, S.N., & Ogbonna, C. (2002). Knowledge, attitude and practice of health workers in Keffi local government hospitals regarding Baby-Friendly Hospital Initiative (BFHI) practices. *European Journal of clinical nutrition*, *56*(5), 438-441.

Olaleye, R.S., Gana, F.S., Umar, I.S., Ndanitsa, M.A. & Peter, E.W. (2009). Effectiveness of radio in the dissemination of agricultural information among farmers in Edu Local Government Area of Kwara State, Nigeria. *Continental Journal of Agricultural Science 1-6.*

Onyango, D.O. (2019). *Socio-Demographic, Knowledge, Attitude and Work Place Factors Influencing Exclusive Breastfeeding Practice by Employees in Maseno University, Kenya* (Doctoral dissertation, Maseno University).

Osibogun, O.O., Olufunlayo, T.F., & Oyibo, S.O. (2018). Knowledge, attitude and support for exclusive breastfeeding among bankers in Mainland Local Government in Lagos State, Nigeria. *International breastfeeding journal*, *13*(1), 1-7.

Qureshi, A. M., Oche, O. M., Sadiq, U. A., & Kabiru, S. (2011). Using community volunteers to promote exclusive breastfeeding in Sokoto State, Nigeria. *Pan African Medical Journal*, *1-16.*

Rollins, Nigel C., Nita Bhandari, Nemat Hajeebhoy, Susan Horton, Chessa K. Lutter, Jose C. Martines, Ellen G. Piwoz, Linda M. Richter, Cesar G. Victora (2016). The Lancet Breastfeeding Series Group. "Why invest, and what it will take to improve breastfeeding practices?" *The lancet* 387, No. 10017: 491-504.

Saadeh, R., & Benbouzid, D. (1990). Breast-feeding and child-spacing: importance of information collection for public health policy. *Bulletin of the World Health Organization*, *68*(5), 625–631

Salami, L. I. (2006). Factors influencing breastfeeding practices in Edo state, Nigeria. *African journal of food, agriculture, nutrition and development*, *6*(2), 1-12.

Schmied, V., & Barclay, L. (1999). Connection and pleasure, disruption and distress: women's experience of breastfeeding. *Journal of Human Lactation*, *15*(4), 325-334.

Skouteris, H., Nagle, C., Fowler, M., Kent, B., Sahota, P., & Morris, H. (2014). Interventions designed to promote exclusive breastfeeding in high-income countries: a systematic review. *Breastfeeding Medicine*, *9*(3), 113-127.

Tshering, D., Gurung, M. S., Wangmo, N., & Pelzom, D. (2019). Knowledge attitude and practice of exclusive breastfeeding among breastfeeding mothers in Trongsa district, Bhutan. *Bhutan Health Journal*, *5*(1), 21-25.

UNICEF. (2018). *Breastfeeding: a mother's gift, for every child*. UNICEF.

US Department of Health and Human Services. (2011). The surgeon general's call to action to support breastfeeding 2011.

WHO (2006). Infant and young child feeding counselling: an integrated course.

WHO (2014). Global Nutrition Targets 2025 Breastfeeding Policy Brief. *WHO reference number: WHO/NMH/NHD/14.7 edn: World Health Organization*.

Zoller, H., & Dutta, M. J. (2009). *Emerging perspectives in health communication: Meaning, culture, and power*. Routledge.