

Breastfeeding and weaning practices in an urban slum, north 1 western Nigeria

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4 **Aims:** The aim of the study was to determine the pattern and factors influencing exclusive
5 breast feeding and weaning practices in a homogenous urban slum.

6 **Study methods:** The study was a descriptive cross-sectional among 143 mother-child pairs
7 using a combination of simple and systematic sampling methods. Interviewer administered
questionnaire was used to obtain information on pattern of breastfeeding, weaning and weaning
foods

8 **Results:** The ages of the mothers ranged from 13-41 years while the infants were aged 0-26
months. Breastfeeding was initiated by 83 mothers within 30minutes of delivery and the main
reason for delayed initiation of breastfeeding was the belief that colostrum was dirty 99(69.2%) .
only 32 (22.3%) of the mothers commenced weaning before the age of 4 months mainly on pap
made from corn or millet.

10 Out of the 143 respondents, only 46 (32.2%) practiced exclusive
11 breast feeding. There was a statistically significant relationship ($P=0.006$) between the age of
12 the respondents' and the practice of EBF as the mothers who were more than 30 years of age
13 were more likely to practice EBF compared to those younger than 30 years. However, the level
of education and

14 occupation of the mothers had no significant bearing on the practice of EBF.

15 **Conclusion:** The practice of exclusive breast feeding is low and is influenced by social
16 determinants that need to be addressed by policy makers. Risk factors for early weaning
should be identified and appropriate interventions put in place.

17 **Keywords:** *Breast feeding, Weaning, Practices, Urban slums*

18 Introduction

19 For almost all infants, breastfeeding remains the simplest, healthiest and least expensive
20 feeding method that fulfils the infants' needs (Kramer and Kakuma, 2002). The health
21 benefits of breastfeeding to both mother and infant have been well documented. It has been
observed that infants aged 0–5 months who are not breastfed have seven-fold and five-fold increased
risks of death from diarrhoea and pneumonia, respectively, compared with infants who are exclusively
breastfed(Arifen et al 2001)

At the same age, non-exclusive rather than exclusive breastfeeding results in more than two-fold
increased risks of dying from diarrhoea or pneumonia. similarly, 6–11-month-old infants who are not
breastfed also have an increased risk of such deaths (WHO 2000)

The United Nations Children's Fund (UNICEF) has estimated that exclusive breastfeeding in the first
six months of life can reduce under-five mortality rates in developing countries by 13% (UNICEF
2004

26 Despite the strong evidences in support of exclusive breast feeding (EBF) for the first six
27 months of life, its prevalence has remained low (Li, et al., 2005) due to large
28 variety of beliefs and traditions related to breastfeeding in many parts of the world
29 (Buyukgebiz, et al 1992; Marandi, et al., 1993; Giovannini, et al., 1999; Ergenekon-Ozelci,
30 et al., 2001; Hazel, et al., 2006). According to the WHO, exclusive breastfeeding for
the first 6 months of life and continued breastfeeding with the addition of
complementary feeding for up to 2 years of age and beyond is sufficient for
maintaining a child's health status (World Health Organization, 2006).

31 The transitional period from breastfeeding to adult diet (weaning period) is usually associated
with a number of concerns and problems in developing countries. The major concerns are what
foods should be given to the child, how and when they should

32 be given (Uwaegbute, 1990). In developing countries, the age at introduction of weaning

33 foods is of public health importance because of the risk of diseases, particularly diarrhoeal

34 diseases from contaminated weaning foods and the risk of growth faltering and malnutrition
35 from delayed weaning (Cohen, et al., 1994). In the study area, although several studies have
36 been carried on the pattern of breast feeding amongst mothers, (Oche 2008, Qureshi et al 2011)
37 no study had addressed the problems associated with weaning. The age at introduction of
38 weaning foods varies
39 and is influenced by traditions of different ethnic populations, urbanization and the socio2
40 economic status of households. The objective of this study is to determine
41 the pattern and
42 factors influencing EBF and weaning practices in a homogenous urban slum of Sokoto. It is
43 therefore hoped that the results of this study will add to existing knowledge on breastfeeding and
44 appropriate weaning practices in our communities.

39 **Methodology**

40 This was a descriptive cross-sectional study carried out in Helele settlement – a homogenous
41 local population in Magajin gari ward of Sokoto town, Nigeria. The study population
42 comprised of women who were currently breastfeeding or had stopped breastfeeding not later
43 than one year ago(Inclusion criterion) and has
44 estimated women of child bearing age of 1, 694 (Federal office of statistics/National
45 Population Census, 2006). The main indigenous tribe in the area is Hausa with Islam as the
46 main religion. Farming and petty trading are the main pre-occupation of the inhabitants.
47 Using the formula for cross-sectional studies (Ibrahim 2009) and an EBF prevalence of 13%
48 (Federal office
49 of statistics/National Population Census, 2008), a sample size of 143 was determined. Six
50 Research assistants (RAs) were trained on the objectives and instruments of the study. House
51 numbering was done by the RAs and using a combination of simple and systematic sampling
52 methods and a sampling interval of 9, a total of 143 mother-child pairs were selected after a
53 random sampling of the first house. All the respondents agreed and participated in the study
54 (100% response rate). In a house without eligible women, the next house was
55 chosen and where there are 2 or more eligible mother-child pairs in a selected house, a pair
56 was selected by simple random sampling using the balloting technique. Each respondent in a
57 house was given a tag carrying the house number for easy identification in case of missing
58 information on the questionnaire.
59 Data was collected using a set of pre-tested interviewer administered questionnaire which had
60 both open and closed ended questions. The
61 questionnaire sought information on socio-demographic characteristics such as age,
62 occupation and educational status; pattern of breast feeding, weaning and weaning foods
63 amongst others. RAs made concerted efforts in getting reliable information from respondents
64 including equating dates with special events. Data was entered into and analysed using EPI-Info
65 version 3.4.1 computer
66 software program and Microsoft office Excel 2010. There was cross tabulation of variables
67 with level of statistical significance set at 95% confidence interval.

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63 **Operational definitions**

64 **Exclusive breast feeding (EBF):** The practice of feeding only breast milk, including
65 expressed breast milk to infants and excluding water, other liquids, breast milk substitutes
66 and solid foods in the first 6 months. Vitamin drops, minerals, oral rehydration solutions
67 (ORS) and medicines may be given.

68 **Prelacteal feeds:** Feedings that are given to the infant before they are put to the breast for the
69 first time.

70 **Weaning:** Transition from breastfeeding to adult diet

71 **Weaning food:** Any food items including water given at the age of six months

72 **Correct weaning:** Additional food given at 6 months

73 **Early weaning:** Foods given in addition to breastfeeding before the age of 6 months

74 **Delayed weaning:** Additional food given after 7 months

Formal education: Ability to read and write in English under a conventional school system

75 **Ethical considerations**

76 The study was approved by the Ethical committee of the Usmanu Danfodiyo University

77 Teaching Hospital, Sokoto and verbal informed consent obtained from respondents after

78 explaining the purpose of the study to them and could opt out if they so wished.

79 **RESULTS**

80 One hundred and forty three questionnaires were correctly filled and returned (100% response rate).

Findings from this study showed that the ages of the respondents ranged from 13 - 41 years,

81 majority 71 (49.7%) between 23-32 years with a mean age of 28.6 ± 4 years. A total of 48

82 (33.6%) of the respondents had formal education Majority, 90 (62.9%) were full time housewives and were

84 all of the Islamic faith. The ages of the infants ranged from 0-26 months (Table 1).

85 On the breastfeeding practices of the mothers, a total of 83 (58.0%) initiated breastfeeding

86 less than 30 minutes after delivery while 60 (42.0%) did so after 30 minutes (Table 2). The

main reason for delayed initiation of breastfeeding was the belief that colostrum was dirty 60

(42.0%) (Table 3). Out of the 143 respondents,

89 only 46 (32.2%) practiced EBF (table 2). There was a statistically significant relationship

90 ($P=0.006$) between the age of the respondents' and the practice of EBF as the mothers who

91 were more than 30 years of age were more likely to practice EBF compared to those younger than 30 years.

92 However, the level of education and occupation of the mothers had no significant bearing on

93 the practice of EBF.

94 Concerning their main source of information about breastfeeding, 61% of the mothers

95 mentioned friends and relatives, 30% cited health workers, while only 9% of them named the

96 media including radio and television.

97 Almost all the mothers 141 (98.6%) used different forms of galactologues

98 including spicy foods, leaf extracts and pap mixed with potash to enhance milk production 99 and out flow.

100 Only 28 (19.6%) of the mothers who were mainly civil servants or doing business timed their

101 babies' feeding, 115 (80.4%) breastfed on demand, while 123 (86%) breastfed at least eight

102 times in 24 hours. All the mothers in our study slept in the same room (Rooming in) with

103 their babies, however, only sixty one (42.7%) of the mothers slept on the same bed with their 104 babies.

105 Out of the 143 study subjects, only 32 (22.3%) commenced weaning before the age of 4

106 months, 65 (45.5%) between 4-6 months with only 28 (19.6%) practicing weaning at 6

months (Table 2). Among the

107 reasons adduced for weaning are breast milk not sufficient (42.0%), child refused to suck

108 (10.5%) and child old enough to eat family diet (34.3%) (table 4). Weaning diets given to

109 babies included pap made from corn or millet, pap mixed with formula milk 109 or animal milk,

110 animal milk alone, formula milk and family diet (table 5). Majority, (75%) used forced

111 feeding while administering the weaning diets to the babies while only a few, (25%) used cup

112 and spoon.

113 Most, 35.4% of the mothers with formal education practiced early weaning followed by

114 31.3% who practiced late weaning. On the other hand, more than half, 51.6% of the

115 mothers with no western education practiced normal weaning while 32.6%

116 practiced late weaning. The relationship between the

117 educational status of the mothers and their weaning practices was found to be statistically significant ($P=0.198$) (Table 7). A total of

118 26.5% of the mothers, who initiated breast feeding less than 30 minutes after delivery,
119 practiced early weaning compared with 16.7% mothers who initiated breastfeeding later than
120 30 minutes. Similarly more than half, 55% of the mothers who initiated breastfeeding more
than 30 minutes

121 after delivery, practiced normal weaning compared with 38.6% who initiated breastfeeding
122 less than 30 minutes. The relationship between time of initiation of breast feeding and
123 weaning practices was found not to be statistically significant ($P=0.132$) (Table 8).

124 Only one child stopped breastfeeding before the age of six months as a result of onset of a
125 new pregnancy, 33 (23.1%) stopped between 16-24 months while majority, 102 (71.3%) did
126 so after 24 months. Majority, (61%) of the mothers stopped breast feeding on their own
127 initiative, 15% based on advice from other people and in only 11% that the babies stopped on
128 their own. For most mothers (51%) when breastfeeding was to be discontinued, the babies
129 were usually taken either to a co-wife, mother, grandmother or a close relation of the mother
130 of the baby.

131 The use of feeding bottles was not popular among the mothers in the studied community and
132 none of the mothers used pacifiers for their babies.

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181 **DISCUSSION**

182 The Baby friendly Hospital Initiative (BFHI) was designed to promote early initiation of
183 breast feeding, preferably immediately after birth. In this study, more than half (58%) of the
184 mothers initiated breastfeeding immediately after birth. The proportion of mothers who
185 initiated breastfeeding after birth in our study was higher than the observed figure among
186 Japanese women (Nakamura and Yamanouchi, 2000), but lower than 88.6% observed in the
187 study from North Jordan (Khassawneh, et al., 2006; Nakao, et al., 2008). This might not be
188 unrelated to the differences in cultural beliefs and practices that exist in these countries. Early
189 contact with the baby immediately after birth promotes a closer relationship between a
190 mother and her baby and has been found to give the mother a strong sense of satisfaction
191 (Nakamura and Yamanouchi, 2000). Moreover, previous studies have emphasised the risk of
192 delayed initiation of breastfeeding on neonates in sub-Saharan Africa and showed that
193 neonatal mortality could be significantly reduced by 16% if the mothers started breastfeeding
194 on day one and by 22% when breastfeeding was initiated within the first hour (WeldeGebriel,
195 2001; Edmond, et al., 2006)

196 For the mothers who initiated breastfeeding later than 30 minutes, the commonest reason for
197 late initiation was the perception that colostrum was dirty and therefore harmful to the new
born (69.2%).

198 Although, breast feeding is a universal practice, there are cultural aspects that vary
199 considerably about Colostrum which is secreted for the first 2 days. . Most mothers who
200 cannot wait for the few days that the 'clean and safe milk' is expected, resort to expressing
201 the milk and discarding same. These practices are often upheld and enforced by aunts,

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mother's in-laws and other elderly women or relatives in the family. These beliefs and practices are also reported among the Yorubas of South western Nigeria (Omotala and Akinyela, et al., 1985; Onayande, et al., 1996), different parts of India (Khan, 1990; Singh, et al., 1997) and in Turkey (Ergenekon-Ozelci, et al., 2006; Hizel et al., 2006). Whereas, current evidence shows that colostrum contains immunoglobulins, lactoferrin and lysozyme which may help reduce and protect against neonatal septicaemia, diarrhoea, and acute respiratory infections, thus reducing infant mortality rates (Hanson, 2004). In contrast to the findings in our study, Bhardwaj, et al., (1991) observed that the commonest reason for not giving colostrum was religious belief (63.6%) followed by reasons that it was thick (12.8%) . These wrong beliefs about the use of colostrum in our communities underscores the need for continuous awareness creation among mothers as their unwillingness to use it will deny their children the

immunological constituents of colostrums.

The mothers in our study while awaiting the establishment of "clean and safe milk" gave such prelacteals in the form of animal milk, boiled water, boiled leaf extracts, washings from Quranic inscriptions on a slate and sometimes honey. The processes of collection and storage of these prelacteals

might lead to contamination of the animal milk with pathogenic organisms resulting in diarrhoea and eventual malnutrition. The leaf extracts and washings from Quranic inscriptions on the slate are believed to be medicinal as they cleanse the abdomen of dirt associated with meconium. However, there is the need for studies to assess the health implication of these practices.

Although breastfeeding is universal among Hausa women, the exclusive breastfeeding (EBF) rate at 6 months was found to be only 32.2%. The low EBF rate observed in this study may not be

unrelated to the fact that most of the mothers delayed initiating breastfeeding immediately after birth and resorted to the use of prelacteal feeds. The EBF rate obtained in this study was high compared to the Nigerian national average of 17% (Federal office of statistics/National Population Census, 2008), 22.2% in rural Jamaica (Chatman, et al., 2004), 1.5% in North east Brazil (Marques, et al., 2001). In rural communities of south western Nigeria, exclusive breastfeeding is considered dangerous to the infant who is thought to require water to quench thirst and promote normal development (Davies-Adetugbo, 1997) and in a related study from the slums of Diyarbakir, Turkey, it was observed that none of the mothers exclusively breastfed her infants (Hazel, et al., 2006)

There was a statistically significant relationship between the age of respondents and the practice of EBF as more mothers older than 30 years of age practiced EBF compared to those younger than 30 years of age ($P=0.006$). Female education has severally been described as one of the strongest determinants of the practice of EBF (Dubois and Girard, 2003). However, the level of education and occupation of the mothers had no significant bearing on the practice of EBF.

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Almost all the mothers (98.6%) in this study agreed to the consumption of certain preparations to enhance milk production and flow. These "galactologues" which have a long and respected history amongst Hausa women includes gruel made with potash (*kunun kanwa*), bitter leaf soup (*miyan shuwaka*) which is an extract of "*vernonia amygdalina*" and

sometimes spicy foods. However, these substances have not been subjected to any scientific evaluation and therefore raise the need for future studies.

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Findings of this study revealed that feeding on demand was highly practiced 247 (80.4%). In a

248 related study from another community similar to the study area, Oche and Umar (2008)
249 observed that all the women in their study practiced on demand feeding as observed in
another study (Igbedioh, et al.,
250 1995). This practice of on demand feeding is equally common among the Yorubas of South
251 western Nigeria (Omotala and Akinyela et al., 1985; Onayande, et al., 1996), Idoma and Tiv
252 women of north Central Nigeria (Igbedioh, et al., 1995; Igbedioh, et al., 1996) and Yemen
253 (Bagenholm et al., 1985).

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255 Breastfeeding alone is sufficient for the growth and nourishment of the child for the first six
256 months of life and WHO has recommended that other foods and fluids before the age of six
257 months is not necessary (WHO, 2000-2004). Findings from our study revealed that only
22.4% of

258 the mothers commenced weaning before the age of four months (early weaning). Early
259 weaning has been reported from several studies (WeldeGebriel, 2001; Bagenholm et al.,
260 1985; Ergenekon-Ozelci, et al., 2006). Weaning early in age is harmful in many ways as
261 food and water if not well processed could harbour pathogenic microorganisms resulting in
262 diarrhoea. Studies have found poor nutritional status to be significantly associated with
263 earlier complimentary feeding and early weaning has been reported to be a cause of anaemia
264 in the first year of life (Uwaegbute, 1990). Among the reasons given by mothers for
265 practicing early weaning was insufficient breast milk. This is consistent with findings from
266 Tehran (Marandi, et al., 1993). Among the Hausa women of the study area, there is a strong
and

267 widely held belief about insufficient milk and hence the need to commence complimentary
feeding.

268 In this study, 19.6% of the mothers practiced normal weaning only commencing weaning
269 diets at 6 months of age. Cereal Pap (*kunu*) made from corn (maize, *zea mays*),
270 *guinea corn (sorghum)* or millet (*pennisetum typhoides*) usually prepared by the mothers
271 themselves was the most common weaning food given to the infants. Majority gave it plain
272 while a few others mixed it with animal or formula milk. This finding is similarly observed
273 across different regions of Nigeria (Bagenholm et al., 1985; Uwaegbute, 1990, Igbedioh, et
274 al., 1995). The commonest mode of administering the pap was by forced feeding which
275 exposes the infant to aspiration of the food into the respiratory tract.

276 In our study only one child stopped breastfeeding before the age of six months as a result of
277 onset of new pregnancy. It is the general belief of the Hausa women in the study area that
278 when a breastfeeding woman becomes pregnant, she has to discontinue breastfeeding as the
279 “new milk” will cause diarrhoea and thus growth faltering (*shan ciki*). According to the
280 Yoruba culture, pregnant women were not expected to breastfeed (Davies-Adetugbo, 1997).
281 The use of feeding bottles by the mothers in our study was not common as only a few who
282 were either civil servants or business women used the bottles. This practice was also found
283 among Idoma and Tiv women in north central Nigeria (Bagenholm et al., 1985; Igbedioh, et
al., 1995;

284 Igbedioh, et al., 1995) and in Ethiopia (WeldeGebriel, 2001). The use of such bottles could be
285 vehicles for the transmission of pathogenic micro-organisms and should as much as possible
286 be discouraged in our environment.

287 **Conclusion:** Strategies that are aimed at promoting EBF and weaning practices must be
288 developed based on social determinants that influence the observed practices and periodic
289 surveys to assess these determinants for reprogramming.

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291 **Competing interest:** The Authors have declared that no competing interests exist

Limitations of the study

One of the challenges faced by the RA's was the possibility of inadvertent withholding of information by some mothers.

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TABLE 1. SOCIO-DEMOGRAPHIC CHRACTERISTICS

Maternal age(yrs)	No (%)
13-22	28 (19.6)
23-32	71 (49.7)
≥33	44 (30.8)
Educational status	
Formal	
Primary	29 (20.3)
Secondary	15 (10.5)
Tertiary	4 (2.8)
Non-formal	
None	51 (35.7)
Arabic only	44 (30.8)
Occupation	
Full time house wife	90 (62.9)
Civil servant	15 (10.5)
Business	38 (26.6)
Age of Index Child (months)	
0-6	66 (46.2)
7-12	40 (28.0)
13-18	18 (12.6)
19-24	8 (5.6)
≥24	11 (7.7)

Table 2. Feeding Practices

Initiation of breastfeeding	No(%)
<30minutes	83 (58.0)
30min-6hours	24 (16.8)
>6hours-24hours	10 (7.0)
>24hours	26 (18.2)
Exclusive breastfeeding	46 (32.2)
Age stopped breastfeeding infants (months)	
0-5	1 (0.7)
6-10	2 (1.4)
11-15	5 (3.5)
16-24	33 (23.1)
>24	102(71.3)
Age at weaning (months)	
<4	32 (22.4)
4-6	65 (45.5)
≥7	46 (32.2)

Table 3. Reasons for late initiation of breastfeeding

Reasons	No(%)
Colostrum dirty	60 (42.0)
Insufficient breast milk	36 (25.2)
Mother's illness	25 (17.5)
Child's illness	12 (8.4)
No reasons	6 (4.2)
NR	4(2.8)

NR= non response

Table 4. Reasons for weaning

Reasons	
Breast milk not sufficient	60 (42.0)
Mother feels like doing so	41 (28.7)
Mother sick	17 (11.9)
Mother's work	28 (19.6)
Child refused to suck	15 (10.5)
Advice from the hospital	6 (4.2)
Child old enough.	49 (34.3)

***Multiple answers allowed**

Table 5. Weaning diets

Diets	No (%)
Plain pap	38 (26.6)
Pap with milk	15 (10.5)
Animal milk	42 (29.4)
Formula milk	21 (14.7)
Family diet	23 (16.1)
others	4 (2.8)

Table 6. Socio-demographic characteristics of mothers influencing the practice of EBF

Level of education	Practice of EBF		Test statistics
	Yes	No	
Formal	14	34	$X^2=0.127$; df=1; P=0.721
Non formal	32	63	
Age (years)			
<30	20	67	$X^2=7.54$; df=1;P=0.006
≥ 30	26	30	
Occupation			
Full time house wife	30	60	$X^2=0.041$;df=1;P=0.889
Civil servant/Business	16	37	

Table 7. Educational status of mothers and weaning practices

Educational status	Weaning practices			
	Early	Late	Normal	Total
	n	n	n	n
Formal	17	15	16	48
Informal	15	31	49	95
Total	32	46	65	143

$X^2=7.84$; $df=2$; $P=0.0198$ (Significant)

Table 8. Time of Initiation of breastfeeding and weaning practices by mothers

Initiation of breastfeeding	Weaning practices			
	Early	Late	Normal	Total
	n	n	n	n
<30min	22	29	32	83
≥30min	10	17	33	60
Total	32	46	65	143

$X^2=4.05; df=2; P=0.12$