## **Determinants of Infant Feeding Practices among** Working and Non-working Mothers in Kano, Nigeria

Surayya Murtala Sunusi,¹ Aminatu Kwaku Ayaba,¹ Usman Muhammad Ibrahim,¹ Muhktar Mahmud,¹ Aisha Aliyu Abulfathi,¹ Fatimahlsmail Tsiga-Ahmed, Rabiu Ibrahim Jalo, Nuraddeen Abubakar, 3 Rayyan Muhammad Garba<sup>1</sup>

Corresponding Author: rabiuibrahimjalo@yahoo.com

#### **ABSTRACT**

**Background:** Growth during the first year of life is greater than at any other time after birth. Good nutrition during this period of rapid growth is vital to ensure that infant develops both physically and mentally to the fullest potential.

Objectives: This study assessed determinants of feeding practices among working class and non-working class mothers in Kano, Nigeria.

Methodology: Using a comparative cross-sectional study design, interviewer-administered questionnaire was used to collect information from 310 mothers (155 in each group) with their infants' aged 0 – 12 months.

Results: Working mothers had a significantly higher level of knowledge of the recommended infant and young child feeding practices (t=4.69, p < 0.001) and overall practice performance score was significantly higher among the working group (t=3.44 p=0.001). Up to 94.5% working mothers had good knowledge of recommended infant feeding practices compared to 74.0 % of non-working mothers (p=0.001). Haven lost a child, currently being married and vaginal delivery were determinants of appropriate feeding practices among working mothers, while formal education, having five or more children and receiving infant feeding advice were determinants among non-working women.

Conclusion: The study found a good knowledge of infant feeding practices among working mothers as compared to the non-working mothers and it also revealed a gap between knowledge and practice of adequate breastfeeding. Context specific health education messages should target both working and non-working class mothers so as to promote, protect and support infant and young child feeding practices in Kano, Nigeria.

**Keywords:** Infant, feeding practices, mothers, breast-feeding, Kano

## **INTRODUCTION**

Adequate nutrition is essential for children's growth, health and development. Normal growth and development is observed only in the presence of proper nutrition, absence of recurrent episodes of infections and freedom from adverse environmental influences.(1) World Health Organisation (WHO) and United Nation

Children's Fund (UNICEF) global recommendations for optimal infant feeding envisioned that mothers put newborns to breast milk within one hour of birth, exclusive breastfeeding for 6 months and nutritionally adequate and safe complementary feeding starting from the age of 6 months with continued

<sup>&</sup>lt;sup>1</sup>Department of Community Medicine, Aminu Kano Teaching Hospital, Kano

<sup>&</sup>lt;sup>2</sup>Department of Community Medicine, Bayero University/Aminu Kano Teaching Hospital, Kano

<sup>&</sup>lt;sup>3</sup>Department of Biochemistry, Federal University Dutse, Jigawa State

breastfeeding up to 2 years of age or beyond (2,3,4,5). The Innocenti declaration on breast feeding called for the creation of an enabling environment for all women to practice exclusive breastfeeding (EBF) and all infant to feed exclusively on breast milk from birth to 4 to 6 months of age and thereafter to continue with breastfeeding and complementary foods for up to 2 years or beyond.(5)

The benefits of breastfeeding regarding nutrition, immunological protection and child spacing have been well documented.(6,7) These benefits are particularly important and life saving in developing countries, where economic and hygienic conditions do not always assure safe replacement feeding.(8) Breastfeeding benefits the child, mother and society by reducing risk of illness and death. This benefit is also associated with reduced cost in health care and a decrease in the burden of diseases linked to poor infant feeding practices. (9,10) Malnutrition is a direct cause of about half of the more than 10 million child deaths in the developing world each year.(11) Globally, 165 million children younger than 5 years were stunted, more than 100 million were underweight and 52 million were wasted.(12) A recent analysis of Demographic and Health survey (DHS) data from twenty one countries revealed that poor complementary feeding of children aged 6-23 months contributes to the characteristics negative growth trends observed in developing countries.(13) Malnourished children, particularly those with severe acute malnutrition, have a higher risk of death from common childhood illness such as diarrhoea, pneumonia and malaria. Nutrition related factors contribute to about 45% of deaths in children under 5 years of age.(14) Undernourished children are prone to poor mental, physical and physiological development, and are at increased risk of infections and death due to nutrient deficiencies.(15) In Nigeria, complications from malnutrition remain a major health problem with prominent levels of stunting (37%), wasting (18%) and underweight (12%), in infants and young children.(16)

The 2018 NDHS noted that of the under 5 children in the country, 37% were stunted, 7% were wasted and 22% were underweight with only 17% of children less 6 months of age exclusively breastfed.(17)Overall, only 55.4% of

children age 0 - 23 months were breastfed appropriately based on recommended infant and young child feeding (IYCF) practices.(17) According to Multiple Indicator Cluster Survey in Nigeria (2016-17), only 23.7% of children aged 0 - 5 months were exclusively breast fed, 85.9% continued to breastfeeding at 1 year with 79.1% of infants age 6-8 months receiving solid, semisolid or soft foods.(18) Over the past several decades, an increasing number of mothers have become involved in the labor market around the world. Two-thirds of mothers in the United Kingdom (UK) are employed outside the home, and almost one-third returned to work within 5 months of birth.(19) Mothers resuming paid employment postpartum are less likely to continue breastfeeding than mothers who do not have formal employment. (19) Researchers have proposed that lack of suitable facilities outside of the home, inconvenience, conflicts at work, family pressure and ignorance adversely affect the willingness of women to practice EBF.(20) Many mothers experience barriers to maintaining a breastfeeding relationship with their infants upon returning to work and consequently, terminate breastfeeding earlier than recommended or intended.(21) Mothers have expressed fears surrounding the difficulties of expressing, storing and transporting breast milk at work.(21) In a study in Hong Kong, 85% of participants resumed formal employment within 10 weeks postpartum, over 90% worked fulltime and almost 30% worked 50 hours or more per week with only 32% of participants were able to continue breastfeeding after resuming their job.(19) In a study among working mothers in Jordan, one third (31.6%) attributed early breastfeeding cessation to work and only 64 (18.6%) respondents stated they had a designated area for breastfeeding at their workplaces.(22)

Understanding work-related factors that lead to premature cessation of breastfeeding and implementing breastfeeding-friendly policies in the workplace could significantly influence women's abilities to successfully sustain breastfeeding. Furthermore, most studies on maternal employment and breastfeeding have been conducted in western countries where working patterns and maternity leave provisions often differ from what obtains in sub-Saharan African. The breastfeeding pattern and health

behaviour generally, of women in employment is significant because employed women are important role models for other women in the community. Employed women in most developing countries constitute the major reservoir of female knowledge and skills in the society and their contribution to national development is important. (23) This study assessed knowledge, infant feeding practices and determinants of feeding practices among working class and nonworking class caregivers in Kano, Nigeria. The results of this study could be useful for health care providers and policy makers when planning effective breastfeeding promotion programs and creating breastfeeding-friendly workplaces.

## Materials and methods Study site

Kano State is located in the north-western geopolitical zone of Nigeria and lies on latitude 13°N in the north and 11°N in the south and longitude 80°W in the west and 10°E in the east. The 2018 Nigeria Demographic and Health Survey showed that North-western Nigeria where Kano is located has an infant mortality of 67/1000 live births and only 39% of women delivered in a health facility.(17) The prevalence of ever breastfeed was 97% and overall only 10% of children aged 6-23 months are fed appropriately based on recommended infant and young child feeding (IYCF) practices.(17)

#### Study design and population

The study design was a comparative crosssectional and the study population comprised of working mothers (work outside home for income) and non-working mothers (not engaged in paid employment). All women with a live birth in the last one-yearand women whose infant was aged 0 - 12 months were included. However, women whose infants were critically sick at the time of this study and women who were sick or absent during the study were excluded.

## Sample size determination

The minimum sample size was determined using formula for comparing two proportions (24). Using a proportion of working mothers who practiced EBF of 28.5%, proportion of nonworking mothers who practiced EBF of 49%, power of 80%, and tolerable error of 5%.(25,26) The final sample size of 155 for each group was obtained after adjusting by 10% to account for

#### non-response. Sampling technique

A four-stage sampling technique was used to select the respondents. Four LGAs were selected out of the eight LGAs in Kano metropolis by balloting. One ward was selected from each of the four sampled LGAs. One settlement from each of the sampled wards was selected by balloting. House numbering in each of the selected settlements was done to obtain a sampling frame while systematic sampling technique was used to select houses. A woman (working or non-working) living in the household who had given birth in the last one year was approached to participate in the study. If the household had both working and non-working mothers, both were administered a questionnaire. In a household with more than one eligible respondent, one of the women was selected through a one-time ballot. In the sampled houses with no eligible respondent, the next house was selected.

## **Study instrument**

A pre-tested interviewer-administered semistructured questionnaire was used to collect data from the respondents. The questionnaire was adapted after reviewing previous studies with relatively similar objectives.(22,26,27,28) The content was revised in line with the guidelines of the National policy on infant and young child feeding in Nigeria and indicators for assessing infant and young child feeding practices in NDHS.(17)

## **Outcome variables**

Knowledge level was assessed as a composite of 12-item questions mainly addressing the key IYCF recommendation on early infant feeding practices, exclusive breastfeeding, introduction of solid/semi-solid food and continued breastfeeding. The scoring and grading system was adopted from a similar study. (29) The scoring involved assigning a score of one mark for all correct responses and zero for wrong responses. Hence, the possible scores a respondent could get ranged from 0 to 12. The total score obtained by each respondent was graded into three categories; good (8 - 12 points), fair (4 -7) and poor (0 - 3).(29)

Infant feeding practice was assessed using ten questions on recommended infant feeding methods as reported by WHO guidelines.(1) Each correct response was allocated one mark, while zero was given for a wrong response. The total score was then converted to percentage and the result was dichotomized as either "inappropriate" for all scores below 50% or "appropriate" for scores of 50% and above.

## **Explanatory variables**

These are socio-demographic characteristics of the caregivers and the infants which include age, marital status, religion, family type, parity, ethnicity, income, marriage duration, highest level of education, age of infant, ANC attendance, sex of infant, nature of delivery and type of delivery.

#### **Statistical Analysis**

Data collected were entered into Microsoft excel spreadsheet and analysed using IBM SPSS Statistics version 20. Age and income of respondents were calculated and presented using mean, standard deviation, median and range while frequencies and percentages were used to summarise categorical variables. Chisquare test and Fisher's exact test (where appropriate) were used to analyse factors associated with infant feeding practices in both groups. At multivariate level, all variables found to have p < 0.10 and those found to be predictors of infant feeding practices from literature review were entered into the binary logistic regression model.(30) Binary logistic regression analysis was used to obtain crude and adjusted odds ratio with 95% confidence intervals for predictors of infant feeding practice. In all tests of significance, p < 0.05 was considered statistically significant.

#### **Ethical considerations**

Ethical approval was obtained from the Health Research Ethics Committee of the Kano State Ministry of Health, Kano (Nigeria). Formal permission was obtained from traditional rulers/village heads of the selected settlements. Consent was sought from participants and participation was voluntary.

#### Results

One hundred and fifty-five questionnaires each were administered to working and non-working mothers in the four LGAs. One hundred and forty five (145) and 146 questionnaires were completed among working and non-mothers, giving response rates of 93.5% and 94.2% respectively.

The mean (±SD) ages of respondents in both working and non-working groups were 32.4  $(\pm 5.9)$  and 27.4  $(\pm 6.0)$  respectively. Respondents in the working group were significantly older than their non-working counterparts (t=7.03, p<0.001). Most of the women were currently married; 97.2% in the working and 97.9% in the non-working group. Many of the women in the working group (91.0%) had tertiary education whereas less than a quarter (19.2%) of their nonworking counterparts had tertiary education. More than half (52.7%) non-working mothers had secondary education. The monthly income in the working group ranged from ₦10,000 to 4390,000 (median = 445,000) while that of the respondents in the non-working group ranged from ₩0 to ₩100,000 (median of ₩1200). The median income of the women in two groups was statistically different (Mann Whitney U test; p <0.001). Other socio-demographic characteristics of the mothers are shown on table

There was relatively similar sex distribution of the index children. The majority of the index children in both groups were aged 7-12 months with a mean ( $\pm$ SD) of 8.1 ( $\pm$ 3.1) months for the working mothers and 7.1 ( $\pm$ 3.3) for the non-working group. There was no statistically significant difference for sex distribution, ANC attendance and nature of delivery across the two study groups. However, age and place of delivery were significantly different (table 2).

Majority of the mothers in both groups knew breast milk should be the first meal for the baby (93.8% for the working group and 84.9% for the non-working group). A relatively lower proportion knew that breastfeeding should start immediately after birth (87.6% for the working group and 76.7% for the non-working group).

# Knowledge of mothers on recommended infant feeding practices

The knowledge level of the two study groups related to early infant-feeding practices differed significantly. A higher proportion of the working mothers (95.9%) knew that EBF should be practiced for six months compared to slightly over two third (79.5%) of non-working mothers. More than two-third of mothers in both groups knew the appropriate age to introduce complementary feeds. Less than a quarter of working mothers

knew that breastfeeding should be continued till infant age of 24 months or more, compared to only about one-tenth of mothers of non-working mothers who knew of such recommendation. Overall, the working mothers expressed a higher mean knowledge score  $(9.3 \pm 1.3)$  compared to the non-working mothers (with a mean score of  $8.5 \pm 1.8$ ) and the difference was statistically significant (t=4.69, p<0.001) with up to 94.5% working mothers having good knowledge of recommended infant feeding practices compared to 74.0% of non-working mothers (p = 0.001) (table 3).

## Infant feeding practices of mothers

Up to 84.8% working mothers had appropriate feeding practices, which is higher than that of their non-working (71.9%) counterparts (table 4). Marital status, child lost and nature of delivery were found to be independently associated with appropriate infant feeding practices among the working group mothers (table 5). Mothers who were currently married were almost 17 times more likely to practice appropriate infant feeding than those that were not married (AOR = 16.7, 95% CI; 1.37 – 203.51). Mothers who had not lost a child in the past were 4 times likely to practice appropriate feeding (AOR 3.9, CI; 1.17 – 13.02) More so, women who delivered vaginally were five times more likely to practice appropriate infant feeding than those who delivered via caesarean section (AOR =5.3, CI; 1.87 - 15.05). Table 6 shows that educational status, parity and infant feeding were the determinants of appropriate infant feeding practice among nonworking group. Women who had formal education were four times more likely to practice appropriate infant feeding practices (AOR = 3.5, 95% CI; 1.25 - 9.67) and mothers who had five or more children were about three times more likely to practice appropriate infant feeding (AOR = 2.5, 95% CI; 1.04 - 6.1).

## Discussion

The overall knowledge level of recommended infant feeding practices differed significantly across the two groups in this study, with working mothers having a mean higher score compared to non-working mothers. This was not surprising, considering that a higher proportion of the working mothers had tertiary education. The finding in this study agreed with a cross sectional study conducted in Abuja where working mothers

were found to have higher level of knowledge on safe infant feeding practices.(31) On composite knowledge scale, more than two third of the respondents had adequate knowledge of the recommended practices. This finding may not be unexpected, given that the high prevalence of formally educated among the participants in both study groups. This is in contrast to findings from a study in Lagos (Nigeria) where less than one third had adequate knowledge and that of United States where one in five women did not know the breastfeeding national recommendations.(32,33) The high level of knowledge found in this study was more pronounced with respect to EBF where as 9 in every 10 mothers in working group and 7 in 10 women in the non-working group knew the correct definition of EBF and its recommended duration of six months. This suggests how much emphasis health workers place on this particular practice during health talks at ANC and postnatal visitations. More, so mass media campaigns about EBF is very common in the urban areas of Kano.

With regards to breastfeeding initiation more than two-third in both study groups knew that breastfeeding should be initiated within one hour of delivery. This finding was higher than the reported figures across India.(31,34) The findings in this study revealed specific gap in knowledge of the recommended practices, despite the high level of overall knowledge in both groups. Among working mothers, less than two-third (29%) knew that infants should be breastfed till 24 months of age or beyond, even among non-working mothers, the scores on these recommended practices were relatively low compared to the other recommendations. This could imply lesser emphasis on later feeding practices during health talks on infant feeding by health workers, considering the high level of awareness of the other recommendations or rather, the higher level of contacts with the health system during the earlier child age due to routine immunization visit schedules which gives more opportunity for strengthening the transfer of knowledge on the earlier recommended practices.

The overall infant feeding practices performance based on WHO recommendations was significantly higher among working mothers compared to non-working mothers. The adoption

Table 1: Socio-demographic characteristics of respondents

	Working mothers	Non-working r			
Variables	n=145 (%)	n=146 (%) (χ²)		P-value	
Age group (years)					
15- 24	8 (5.5)	47 (32.2)			
25 - 34	87 (60.0)	71 (48.6)			
35 - 44	43 (29.7)	28 (19.2)	39.44	<0.01*	
≥45	7 (4.8)	7 (0.0)			
Marital status					
Married	141 (97.2)	143 (97.9)			
Divorced	3 (2.1)	2 (1.4)	0.21	0.90	
Widowed	1 (0.7)	1 (0.7)			
Religion					
Islam	134 (92.4)	143 (97.9)			
Christianity	11 (7.6)	3 (2.1)	4.86	0.03*	
Family type					
Monogamous	120 (85.1)	120 (83.9)			
Polygamous	25 (14.9)	26 (16.1)	0.07	0.78	
Parity					
1 -4	115 (79.3)	112 (76.7)			
≥ 5	30 (20.7)	34 (23.3)	0.29	0.59	
Ethnicity					
Hausa	99 (68.3)	118 (80.0)			
Fulani	10 (6.9)	10 (6.8)			
Yoruba	16 (11.0)	3 (2.1)	13.33	0.01*	
Igbo	7 (4.8)	2 (1.4)			
Other	13 (9.0)	13 (8.9)			
Income (N)					
≤ 18000	17 (11.7)	136 (93.2)			
> 18000	128 (88.3)	10 (6.8)	193.45	< 0.01*	
Marriage duration					
1 – 10 years	104 (73.8)	103 (72.0)			
11 – 20 years	37 (26.2)	40 (28.0)	0.11	0.74	
Highest level of education					
Tertiary	132 (91.0)	28 (19.2)			
Secondary	13 (9.0)	77 (52.7)			
Primary/ informal	0(0.0)	41 (13.0)	154.11	<0.01*	

<sup>\*</sup>Statistically significant difference

Table 2: Socio-demographic characteristics of the index children

	Working mothers	Non-working mothers		
Variables	n=145 (%)	n=146 (%)	(χ²)	P-value
Age group (months)				
0 - 6	41 (28.3)	57 (39.0)		
7 - 12	104 (71.7)	89 (61.0)	3.78	0.050
Sex				
Male	74 (51.0)	76 (52.1)		
Female	71 (49.0)	70 (47.9)	0.30	0.862
ANC attendance				
Yes	144 (99.3)	144 (98.6)		
No	1 (0.7)	2 (1.4)	-	1.000†
Nature of delivery				
Spontaneous vaginal	104 (71.7)	115 (78.8)		
Assisted vaginal	10 (6.9)	13 (8.9)	4.39	0.111
Caesarean	31 (21.4)	18 (12.3)		
Place of delivery				
Home	15 (10.3)	48 (32.9)		
Hospital	130 (89.7)	98 (67.1)	21.77	< 0.001

<sup>\*</sup>Statistically significant, † Fisher's Exact Test

Table 3: Knowledge of recommended feeding practices among the study groups

	Working	Non-working			
Knowledge	n (%)	n (%)	Total (%)	p-value	
Good (8 - 12)	137 (94.5%)	108 (74.0)	245(84.2)		
Fair (4 - 7)	8 (5.5)	36 (24.7)	44(15.1)		
Poor (0 -3)	0 (0.0)	2 (1.4)	2(.7)	0.001*	

<sup>\*</sup>Statistically significant

Table 4: Infant feeding practices among the study groups

Variable	Working n(%)	Non-working n(%)	Total	p-value
Feeding practice				
Appropriate	123(84.8)	105(71.9)	228(78.4)	
Inappropriate	22(15.2)	41(28.1)	63(21.6)	0.01*

<sup>\*</sup>Statistically significant

Table 5: Determinants of infant feeding practices among working mothers

Variable	Crude OR (95% CI)	Adjusted OR (95% CI)	P- Value
Marital status			
Married	3.1 (0.43 - 23.20)	16.7 (1.37 - 203.51)	0.027*
Not married	1	·	
Child lost			
No	5.3 (1.84 - 15.15)	3.9 (1.17 – 13.02)	0.027*
Yes	1 `	·	
Nature of delivery			
Vaginal	4.05 (1.55 - 10.59)	5.3 (1.87 – 15.05)	0.020*
Caesarean	1		

<sup>\*</sup> Statistically significant

Table 6: Determinants of infant feeding practices among non-working mothers

Variable	Crude OR (95% CI)	Adjusted OR (95% CI)	P- Value
Educational Status			
Formal	3.9 (1.54 - 10.03)	3.5 (1.25 - 9.67)	0.02*
Informal	1		
Parity			
1 - 4	1		
≥ 5	1.5 (0.67 - 3.80)	2.5 (1.04 - 6.1)	0.04*
Nature of delivery	,	,	
Vaginal	1.7 (0.63 - 4.91)	2.5 (0.83 - 7.55)	0.1
Caesarean	1 `	•	
Received infant feeding			
advice			
Yes	0.4 (0.66 - 0.90)	2.6 (1.1 - 6.69)	0.05*
No	1		

<sup>\*</sup>Statistically significant difference, OR = Odds Ratio

of the recommendations was more prevalent among the working mothers for almost all the key recommendations. This could imply that their higher knowledge level could have favoured them as well as peer group influence at work place. Initiation of timely breastfeeding initiation was 47.6% for working mothers and 37% for nonworking mothers. This was slightly higher than the national and regional estimates of 32.8% and 31.8% respectively.(35) However, the finding was lower than what was reported in Benin city, Nigeria.(36)

There was significantly higher EBF rate among working mothers (53.8%) compared to their non-working counterparts (32.2%). The findings disagree with what was reported from another comparative study in India, where 15.9% of

working mothers and 46.7% of non-working mothers practiced EBF while similar study in the same country (India) reported significant difference among working mothers (16%) and non-working mothers(62%) with regards to EBF.(37,38) The observed EBF rates for both the study groups is higher than NDHS 2018 estimate of 29%.(17) Most of the recently reported EBF rates among working mothers in Nigerian studies are very low compared to the finding in this study.(20,25,33,39)The disparity in the prevalence is probably because of differences in educational status, differing cultures and access to health education in these communities within the same country. Furthermore, social desirability bias might have influenced the finding of this survey as we used healthcare workers for data collection.

Delayed or early introduction of complementary food was found to be a common practice in this study with both study groups having low proportions of mothers that introduced family diet at the appropriate infant age of six months, despite the high level of knowledge. This is corroborated by studies in Sokoto and Cross River states.(40,41) This suggests that efforts to promote appropriate complementary feeding practices continued to lag behind those for earlier feeding practices. The chances of higher contact to health information during early infancy through routine immunization visits could explain this difference. However, the significant role that inappropriate complementary practices play in malnutrition means more need to be done in this regard. The introduction of complementary feeds before six months of age is associated with increased incidence of neonatal and infant morbidity and mortality while late introduction puts the infant at risk of under-nutrition and poor growth.(41,42)

A significant difference exists between the two groups of mothers with regards to factors associated with appropriate infant feeding practices. Among working mothers: marital status, child lost and delivery nature were found to be determinants of appropriate feeding practice. Women who had vaginal delivery were more likely to have appropriate infant feeding practiced than those who delivered via caesarean section. This agrees with what was reported in a study in Ghana.(43) This finding is similar to the finding from a study in Australia, where marital status was found to have association with appropriate infant feeding practice.(42)Social support these mothers receive from their partners might influence this practice. Educational status was found to be a determinant of appropriate feeding practice among non-working mothers. Women with formal education had higher odds of practicing compared to those who did not. The more educated a woman is the more likely she is to have access to health information and healthcare services which can influence the practice of health promoting behaviours. This was similar to what was reported in Ethiopia and Nepal.(13,44) Parity was also found to be associated with appropriate practices, where mothers with higher parity were more likely to practice appropriate infant feeding methods. This is contrary to the finding from a study in Bangladesh where parity was found to have no association with appropriate infant feeding practice.(45)

The most common reasons cited by working mothers for not exclusively breastfeeding were work schedules and time. An unfavourable working environment that is not supportive makes it difficult for mothers to practice optimal breastfeeding recommendations. These include absence or unavailability of a hygienic crèche, lack of breastfeeding break, reduction of hours of work, short maternity leave and lack of support from other colleagues. Similar findings were reported across several studies within and outside Nigeria.(21,42,46,47)The most common challenges for inappropriate practices among non-working mothers were issues related to decision making, lack of family support, insufficient breast milk supply because of mothers inadequately food intake, financial difficulties, pregnancy and ill health. (48,49,50)

#### Conclusion:

The study found a good knowledge of infant feeding practices among working mothers as compared to the non-working mothers and it also revealed a gap between knowledge and practice of adequate breastfeeding. Context specific health education messages should target both working and non-working class mothers so as to promote, protect and support infant and young child feeding practices in Kano, Nigeria.

## Financial support and sponsorship: Nil

**Conflicts of interest:** There are no conflicts of interest

## References

- World Health Organisation. (2012). Infant and young child feeding practices: Model Chapter for textbooks for medical students and allied health professionals. 1-165 p.
- World Health Organisation. (2018).Infant and young child feeding. Switzerland. Available from https://www.who.int/news-room/factsheets/detail/infant-and-young-childfeeding.
- 3. Cai X, Wardlaw T, Brown DW. (2012).

- Global trends in exclusive breastfeeding. *Int Breastfeed J*, 7(12):1–5.
- 4. United Nations Children's Fund. (2017). Improving breastfeeding, complementary foods and feeding practices. Available fromhttps://www.unicef.org/nutrition/index-breastfeeding.html.
- Okolo SN, Adewunmi YB, Okonji MC. (1999). Current Breastfeeding Knowledge, Attitude, and Practices of Mothers in Five Rural Communities in the Savannah Region of Nigeria. J Trop Pediatr, 45:323–6.
- Ganu D, Nyaranga K. (2015). Assessing Exclusive Breastfeeding Knowledge and Practices among Breastfeeding Mothers at Kajiado County of Kenya: A Community-Based Study. J Appl Med Sci,4(2):9–16.
- Xu F, Qiu L, Binns C, Liu X. (2009).
   Breastfeeding in China: a review. Int Breastfeed J, 4(6):1–15.
- Yeo EA, Laurence B, Ekouevi D, Michael K. (2005). Attitudes Towards Exclusive Breastfeeding and Other Infant Feeding Options A Study from Abidjan, Cote d 'Ivoire. J Trop Pediatr, 51(4):223–6.
- United Nations Children's Fund. (2016). Adopting optimal feeding practices is fundamental to a child 's survival, growth and development, but too few children benefit.1–6. Available from: http://data.unicef.org/nutrition/iycf.htm
- Caulfield LE, Richard SA, Rivera JA, Musgrove P, Black RE. (2016). Stunting, Wasting and Micronutrient Deficiency Disorders.1-23.
- Akanbi FOM, Anyarsor C. (2014). Growth monitoring: the key to child survival strategy in Nigeria. J Res Nurs Midwifery,3(2):31–8.
- 12. United Nations Children's Fund.(2016). From the first hour of life: Making the case for improved infant and young child feeding everywhere. New york, USA. A v a i l a b l e f r o m https://www.unicef.org/publications/ind ex.93027.html
- 13. Kassa T, Meshesha B, Haji Y, Ebrahim J.

- (2015). Appropriate complementary feeding practices and associated factors among mothers of children age 6-23 months in Southern Ethiopia, 2015. BMC Pediatr, 16(1):1–10. Available from: http://dx.doi.org/10.1186/s12887-016-0675.
- 14. World Health Organisation. (2019). Children: reducing mortality. Geneva, Switzerland. Available from https://www.who.int/news-room/factsheets/detail/children-reducingmortality
- Gyampoh S, Otoo GE, Nii R, Aryeetey O. (2014). Child feeding knowledge and practices among women participating in growth monitoring and promotion in Accra, Ghana. BMC pregnancy and child birth,14(180):1 to7.
- Ogbo FA, Page A, Idoko J, Claudio F, Agho KE. (2015). Trends in complementary feeding indicators in Nigeria , 2003 – 2013. Br Med J, 5(10):1-12.
- Federal Ministry of Health. (2018).
   National Demographic Health Survey.
- National Bureau of Statistics. (2018).
   Multiple Indicator Cluster Survey 2016-2017. Federal Republic of Nigeria National Bureau of Statistics. Abuja, Nigeria.
- Li D, Daniel B, Tak Y, Tarrant M. (2014). Factors Associated with Breastfeeding Duration and Exclusivity in Mothers Returning to Paid Employment Postpartum. Matern Child Health. 1–10.
- Ekanem IA. (2012). Attitude of Working Mothers to Exclusive Breastfeeding in Calabar Municipality, Cross River State, Nigeria. J Food Res, 1(2):71–5.
- 21. Dinour LM, Szaro JM. (2017). Employer-Based Programs to Support Breastfeeding Among Working Mothers: A Systematic Review. Breastfeeding medicine, 12(3):131–41.
- Altamimi E, Al Nsour R, Al Dalaen D, Almajali N. (2017). Knowledge, Attitude, and Practice of Breastfeeding among Working Mothers in South Jordan. Work, Health and Safety,65(5):210–8.

- Bamisaiye A, Oyediran MA. (1983). Breast-Feeding Among Female Employees At A Major Health Institution In Lagos, Nigeria. Social sci Med,17(23):1867–71.
- 24. Charles H. Julie E. (1987). Epidemiology in medicne. Lippincott, 1(1):261.
- Osibogun OO, Olufunlayo TF, Oyibo SO. (2018). Knowledge, attitude and support for exclusive breastfeeding among bankers in Mainland Local Government in Lagos State, Nigeria. Int Breastfeed J, 13 (38):1–7.
- Nb E, Db A, Hn C, Pou A. (2018). Exclusive Breastfeeding among Women in Rural Suburbs of Federal Capital Territory, Abuja, Nigeria. Int J of Med Res Health Sci,7(1):53–64.
- 27. Emmanuel A, Clow SE. (2017). A questionnaire for assessing breastfeeding intentions and practices in Nigeria: validity, reliability and translation. BMC Pregnancy and Childbirth, 17:174.
- Cotelo MCS, Movilla-Fernández MJ, Pita-García PNS. (2018). Infant Feeding Attitudes and Practices of Spanish Low-Risk Expectant Women Using the IIFAS ( Iowa Infant Feeding Attitude Scale ). Nutrients,3(2):1–15.
- 29. Isam AM, Sultan AN, Abdelqadir AA, Darwish E MA, Rajah J. (2018). Knowledge, attitudes, and practices of breastfeeding among women visiting primary healthcare clinics on the island of Abu Dhabi, United Arab Emirates. Int Breastfeed J, 13(26):1–14.
- Katz MH. (2011). Multivariable Analysis

   a practical guide for clinicians and public health researchers. Cambridge: University.38-139 p.
- Sriram S, Soni P, Thanvi R, Prajapati N, Mehariya KM. (2013). Knowledge, Attitude and Practices of Mothers Regarding Infant Feeding Practices. Natl J Med Res, 3(2):147–50.
- Wallenborn JT, Ihongbe T, Rozario S, Masho SW. (2012). Knowledge of Breastfeeding Recommendations and Breastfeeding Duration: A Survival Analysis on Infant Feeding Practices II. Breastfeed Med, 12(3):1–7.

- Akinyinka M. (2016). Breastfeeding Knowledge and Practices among Mothers of Children under 2 Years of Age Living in a Military Barrack in Southwest Nigeria. Int J Mch Aids, 5(1):1–13.
- 34. Hala S, Afaf M, Afnan S, Wadaa A-A. (2013). Breastfeeding knowledge, attitude and barriers among Saudi women in Riyadh. *J Nat Sci* Res,3(12):6–13.
- National Bureau of Statistics. (2018).
   Multiple Indicator Cluster Survey,
   2017;205. Available from:
   http://www.unicef.org/statistics/index\_2
   4302.html.
- 36. Sadoh AE, Sadoh WE . (2011). Breast Feeding Practice among Medical Women in Nigeria. Niger Med J,52(1):7–12.
- 37. Polineni V, Boralingiah P, Kulkarni P, Manjunath R. (2016). A Comparative Study Of Breastfeeding Practices Among Working And Non-Working Women Attending A Tertiary Care Hospital, Mysuru. Natl J Community Med,7(4):235–40.
- Shuba DB, Angadi N, Nagarajachari A. (2016). Infant and young child feeding practices of working and nonworking mothers in urban slums of Davangere city. J Med Sci Public Heal, 5(03):420–4.
- 39. Abigail AH, Envuladu EA, Adams HS, Inalegwu E, Okoh EA. (2013). Barriers and facilitators to the practice of exclusive Breast feeding among working class mothers: A study of female resident doctors in tertiary health institutions in Plateau State. J Med Res, 2(1):112–6.
- 40. Udoh EE, Amodu OK. (2016). Complementary feeding practices among mothers and nutritional status of infants in Akpabuyo Area, Cross River State Nigeria. SpringerPlus, 5:1–19.
- 41. Nneka CO, Oche MO, Mansur OR, Ben O, Ismail R. (2017). Influencing complementary and weaning practices among women in rural communities of Sokoto state, Nigeria. Pan Afr Med J,8688:1–12.
- 42. Omuemu VO, Adamu SA. (2019). Assessment of breastfeeding knowledge and practices among working mothers in

- the federal capital territory Nigeria. Int J Community Med Public Health, (1):20–9.
- 43. Dun-dery EJ, Laar AK. (2016). Exclusive breastfeeding among city-dwelling professional working mothers in Ghana. *Int Breastfeed J*, 11 (23):1–9.
- Gautam KP, Adhikari M, Khatri RB, Devkota MD. (2016). Determinants of infant and young child feeding practices in Rupandehi, Nepal. BMC Res Notes, 9(1):1–7.
- 45. Islam MJ, Baird K, Mazerolle P, Broidy L. (2017). Exploring the influence of psychosocial factors on exclusive breastfeeding in Bangladesh. Arch Womens Ment Health, 20(1):173–88.
- 46. Anyanwu JO, Maduforo AN. (2014). Mothers beliefs and obstacles as limitations in promoting exclusive breastfeeding among working class mothers attending infant welfare clinic at university of Nigeria teaching hospital, Enugu State. Clin Med Res, 3(4):105–11.

- 47. Moraa D. (2018). Predictors of exclusive breast feeding among women in formal employment attending child welfare clinic teaching and referral hospital. European Journal of Pharmaceutical and Medical Research, 5(12):300-309.
- 48. Diji AK, Bam V, Asante E, Lomotey AY, Yeboah S. (2017). Challenges and predictors of exclusive breastfeeding among mothers attending the child welfare clinic at a regional hospital in Ghana: a descriptive cross-sectional study. Int Breastfeed J, 12(13):1–7.
- Sari YP, Yosi S, Nella V. (2015). The exclusive breastfeeding experiences of working mothers in West Sumatera ( Sumbar) Peduli ASI community. Int J Res Med Sci,3(10):2599–604.
- Agunbiade OM, Ogunleye O V. (2012).
   Constraints to exclusive breastfeeding practice among breastfeeding mothers in Southwest Nigeria: implications for scaling up. Int Breastfeed J,7(1):5.