

Effect of Maternal Age and Occupation on Feeding Habits and Nutritional Status of under Five Children in Kibiya and Dala Local Government Areas, Kano Nigeria

A. M. Gadanya^{1*}, M. Auwal¹, S. M. Abubakar² and L. Mudassir³

¹Department of Biochemistry, Bayero University, Kano, Nigeria.

²Africa Centre of Excellence in Population Health and Policy, Bayero University, Kano, Nigeria.

³Department of Biochemistry, Mewar University, Gangrar, Chittorgarh, Rajasthan, India.

Authors' contributions

This work was carried out in collaboration among all authors. Author AMG designed the study, wrote the protocol and wrote the first draft of the manuscript. Author MA performed the statistical analysis. Author SMA managed the analyses of the study. Author LM managed the literature searches. All authors read and approved the final manuscript.

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ABSTRACT

Background: Children less than five years worldwide are known to be vulnerable and susceptible in many respects, especially on matters on health. Nutritional deficiencies and malnutrition generally affect children more than any other group. Poor nutrition occurs in developing countries, as well as in more prosperous areas of the world.

Objective: The objective of this study focused on the effect of maternal Occupation and Age on feeding habit, and nutritional status of under-five children in Kibiya (rural) and Dala (Urban) local government areas of Kano State Nigeria,

Study Design: A descriptive research design was adopted by this study to assess the level of nutritional status of under-five-children and to determine the relationship between age, occupation, economic status, attitudes and practices of mothers. Structured questionnaire was used to collect

*Corresponding author: E-mail: amgadanya.bch@buk.edu.ng

data on nutritional status, knowledge, attitudes and nutrition-related practices for a limited time period.

Place and Duration of the Study: The study was conducted in two local government areas in Kano State, DALA and KIBIYA LGA, between February, 2019 to July, 2019.

Methods: Descriptive research design was used for data collection. 198 and 170 mothers with their children from Kibiya and Dala respectively, were used for the study. Data generated was analyzed using Spss, Excel and was presented using frequency table, percentage, mean, standard deviation and correlation.

Results: In Kibiya, there was a very weak, positive correlation between maternal age under-five nutritional status with the exception of weight-for-height, which was found to be statistically significant ($p < 0.005$). In Dala, the relationship was a very weak negative correlation with the exception of height-for-age which is positive correlated ($p < 0.005$). Majority of the children were severely stunted with 44.1% in Dala and 56.1% in Kibiya, but there was no significant difference in the prevalence of severe stunting between the two LGAs. Furthermore, majority of the under-fives were within the range of adequate weight: 45.5% Dala and 58.2% Kibiya. However, the prevalence of severely underweight children in Kibiya is 11.2%. This is significantly higher compared to Dala with 2.4% which means severe underweight children in Kibiya is almost five times that in Dala. Prevalence of wasting (mild, moderate and severe) among under-five children were significantly higher in Dala compared to Kibiya ($p < 0.01$).

Conclusion: The findings from this study shows that maternal Age is a significant factor that affect the nutritional status of the children in both local government but maternal Occupation has less impact on nutritional status of the children.

Keywords: Age; occupation; nutritional status; children under five.

1. INTRODUCTION

Nutritional deficiencies and malnutrition generally affect children more than any other group. Poor nutrition occurs in developing countries, as well as in more prosperous areas of the world. WHO Progress Report (2002) indicates that hunger and malnutrition remain the most devastating problems to the world's poor and needy [1]. More than half the childhood deaths in developing countries are related to malnutrition [2]. Nearly 30% of humanity suffers from one or more of the multiple forms of malnutrition [3]. Child growth is therefore internationally recognized as an important public health indicator [4].

Under nutrition is not simply as a result of food insecurity. Many children in food secure environments and from fair socio-economic backgrounds are undernourished probably as a result of inadequate knowledge of breast feeding and complementary foods, age of the mother, maternal and paternal occupation, poor feeding practices and food restrictions due to cultural beliefs. These factors are often greater determinants of malnutrition than even the food availability itself [5].

In addition to predisposing children to death, under nutrition affects their immune system

predisposing them to infections and if the under nutrition is not addressed early and corrected, these children could suffer irreversible physical and cognitive damage thereby impacting their future health, welfare and economic well-being. Prevention of under nutrition would be averting at least one third of childhood mortality and morbidity [6].

Mothers are the main caregivers and play important role in prevention of under nutrition [7]. Unable to look after themselves which maybe as a result of lack of experience due to early marriage (age less than 18 years) and poor source of income which is mostly common in northern part of Nigeria. The children completely depend on their mothers for their nourishment which is limited to what their mothers provide [8]. The objective of this study focused on the effect of maternal Occupation and Age on feeding habit, and nutritional status of under-five children in Kibiya (rural) and Dala (Urban) local government areas of Kano State Nigeria.

2. MATERIALS AND METHODS

2.1 Materials

A weighing scale to take the child weight, stadiometer to measure the child length, MUAC

tape, a measuring tape to know the head and chest circumference was used for anthropometric data.

2.2 Study Area

The study was conducted in two local government areas in kano state, DALA and KIBIYA LGA.

2.3 Research Design

A descriptive research design was adopted by this study to assess the level of nutritional status of under-five-children and to determine the relationship between age, occupation, economic status, attitudes and practices of mothers. Structured questionnaire was used to collect data on nutritional status, knowledge, attitudes and nutrition-related practices for a limited time period.

2.4 Study Population

The population of the study area in Dala LGA consisted of 418,759 population. While kibiya, has an area of 404 km² and a population of 138,618 at the 2006 census from National Population Commission Kano.

Dala LGA	KIBIYA LGA
Gender (C 2006)	Gender (C 2006)
Male: 237,943	Male: 70,942
Female: 180816	Female: 67676

2.4.1 Sample size

The sample size for Dala and Kibiya LGA were determined using Yamane Formula

$$n = \frac{N}{1 + N(e)^2}$$

Where:

- N= population size
- n = sample size
- e = the acceptable error = 7%

2.5 Type of Sample

Mothers were randomly selected using random sampling technique, While the samples of children used for assessment of nutritional status were selected from the mothers who were willing to participate and allowed their children (convenient sampling).

2.6 Measurement and Data Collection

The instrument was able to obtain information based on the specific objectives constructed by the researcher. The anthropometric measurement was taken using World Health Organization [9] acceptable standard. The instrument for weight measurement was bathroom scale. The scale was adjusted to zero and the subject made to climb without shoes, wrist watch, cap and other things. A structured and comprehensive questionnaire was prepared in English language. The questionnaire was administered to the respondents and filled through face to face interview.

2.7 Data Analysis

Data from the questionnaire and Measurements were checked for completeness and consistency over the period of the research. Data were then analyzed using SPSS statistical software and Microsoft office. Excel 2010 were used for data analysis and plotting graphs. Descriptive statistics such as frequency, percentage, mean and standard deviation and correlation were used to describe dependent and independent variables. Regression analysis had been used to check for association between dependent and independent variables [10]. In all cases P value less than 0.05 was considered statistically significant.

3. RESULTS AND DISCUSSION

3.1 Results

A total of 366 women participated in the study: 170 from Dala Local Government Area (LGA) and 196 from Kibiya LGA. The age of the participants ranged from 13 to 50 years. Table 1 shows that majority of the women were aged between 18 to 24 years, however, the mean age of mothers in Kibiya was significantly lower compared to those in Dala: 18.9% of mothers in Kibiya were aged 18 years and below compared with 0.6% of mothers in Dala ($p < 0.01$). 12.3% of mothers in Kibiya had given birth more than 7 times. This was significantly higher than the percentage of mothers in Dala who have had more than 7 births (4.7%, $p = 0.00$).

Majority of the index children were males (58.2%). Dala had the highest proportion of male children accounting for 65.3% compared to Kibiya which had 52%. The opposite is the case for females, Kibiya having a significantly higher

proportion of female children. With regards to age of the index children, those in Kibiya were significantly younger compared to those in Dala (Table 1).

Though majority of the participants were first wives in their homes, Kibiya had a significantly higher proportion of mothers who rank 2nd or 3rd in their homes which is 28.4% compared to 8.2% in Dala. Majority of the mothers have received formal education up to primary (n = 139, 38%) and secondary level (n = 119, 32.5%). Among those who had no formal education, Kibiya had a significantly higher proportion accounting for 39.3% compared to 4.1% of the mothers in Dala. Concerning mother's occupation, majority are traders (n = 145, 39.6%), closely followed by housewives (n = 93, 25.4%). The difference in maternal occupation between the two LGAs was not statistically significant.

Concerning their husband's educational status, a significantly higher proportion of husbands without formal education was found in Kibiya: 47.4% compared to 5.3% in Dala. On the other hand, 58% of husbands in Dala have received post-secondary education. This is significantly higher than their counterparts in Kibiya – 8.7%.

The major occupation of husbands in Kibiya was farming (86.1%), while that of Dala was business (67.5%). The difference in husband's major occupation between the two LGAs was statistically significant (Table 2).

Feeding habit reported revealed that majority of the mothers do not practice exclusive breastfeeding: the proportion being significantly higher among mothers in Dala. Amongst mothers who practice exclusive breastfeeding, a significantly higher proportion were from Kibiya (Table 3). The index children were breastfed for a mean duration of 15.17 (SD:5.11) months and 13.08 (SD:7.20) months by mothers in Dala and Kibiya respectively.

Majority of the mothers (n = 229, 62.6%) could not give a reason for stopping breastfeeding. 111 (30.3%) reported that the child was too old/matured. The remaining indicated that the child wished to eat. There was a significant difference between reasons given by mothers in Dala and Kibiya as presented in Table 3. Question which assessed the knowledge of breastfeeding showed that mothers in Kibiya possess poor knowledge compared to their counterparts in Dala.

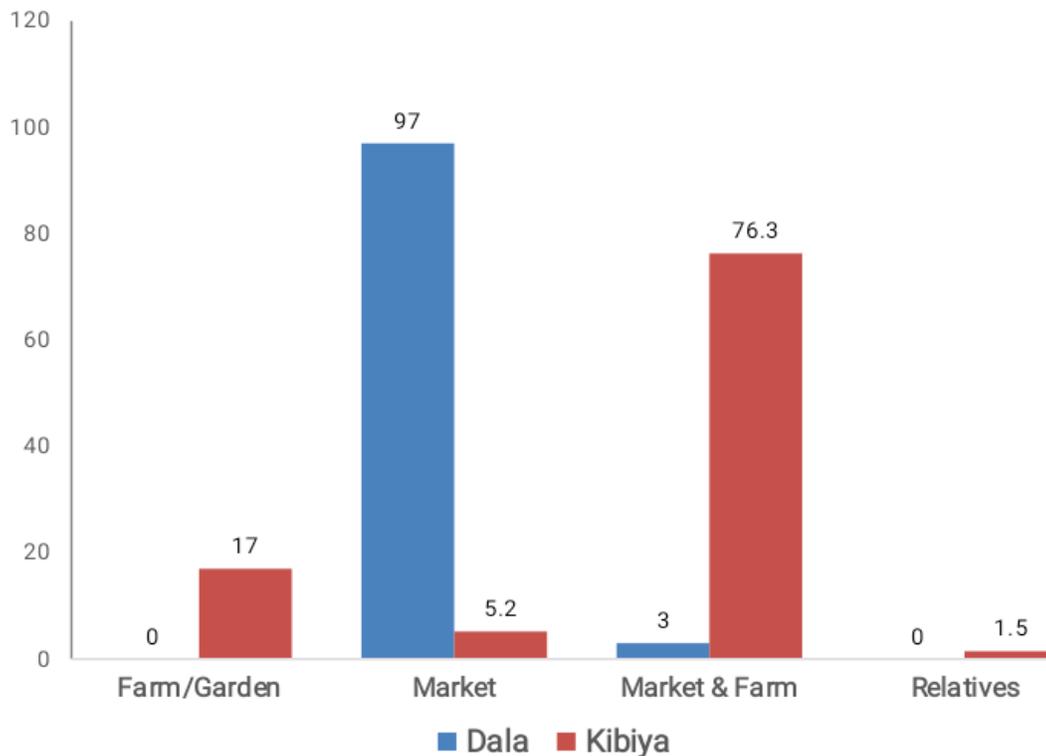


Fig. 1. Main source of food for mothers in Dala and biya LGA Kano, 2019

Table 1. Sociodemographic characteristics of mothers and under-five children in Dala and Kibiya local government areas, Kano, 2019 (n = 366)

Characteristics	Dala	Kibiya	P-value*
Mothers' age (years)	Frequency (%)	Frequency (%)	0.00
<18	1 (0.6)	37 (18.9)	
18 to 24	72 (42.6)	83 (42.3)	
25 to 30	74 (43.8)	39 (19.9)	
31 to 35	17 (10.1)	20 (10.2)	
>35	5 (3)	17 (8.7)	
Mean (\pm Sd) age	25.98 (\pm 4.54)	24.28 (\pm 7.54)	0.01
Parity			0.00
1 to 2	44 (25.9)	81 (41.5)	
3 to 4	91(53.5)	51 (26.2)	
5 to 7	27 (15.9)	39 (20)	
>7	8 (4.7)	24 (12.3)	
Index child gender			0.01
Male	111 (65.3)	102 (52)	
Female	59 (34.7)	94 (48)	
Index child age (month)			0.01
\leq 6	14 (8.2)	26 (13.3)	
7 to 12	33 (19.4)	57 (29.1)	
13 to 18	16 (9.4)	22(11.2)	
19 to 24	39 (22.9)	46(23.5)	
25 to 36	38 (22.4)	24(12.2)	
>36	30 (17.6)	21(10.7)	
Mean age	24.61 (\pm 13.35)	19.65(\pm 13.28)	0.00
Mean fathers' age	34.77 (\pm 7.08)	35.59(\pm 9.68)	0.37

*P-value determined using Chi-square and T-test for categorical and continuous variables respectively

Child nutritional status indicators: height-for age (HAZ), weight-for-age (WAZ) and weight-for-height (WHZ) were calculated using WHO igrowup z-scores calculator (https://apps.cpeg-gep.net/igrowup_cpeg/). The mean score for Height-for-Age and Weight-for-Height were significant different between the two local government areas. Under-five children in Kibiya were more stunted than their counterparts in Dala. On the other hand, under-five children at risk of wasting were more in Dala compared to Kibiya. The mean score for Weight-for-Age (underweight) in Dala and Kibiya did not significantly differ from each other (Table 4).

Z-scores for child nutritional status indicators were classified according to WHO child growth standards (2006) into Adequate, Mild, Moderate and Severe [11].

Majority of the children were severely stunted: Dala had 44.1% (95% CI=36.6% to 51.6%), while Kibiya had 56.1% (95% CI=49.1% to 63%). But there was no significant difference in the prevalence of severe stunting between the two LGAs (Table 5).

Furthermore, majority of the under-fives were within the range of adequate weight: 45.5% Dala and 58.2% Kibiya. However, the prevalence of severely underweight children in Kibiya is 11.2% (95% CI=6.8% to 15.6%). This is significantly higher compared to Dala with 2.4% (95% CI=0.1% to 4.7%), that is the rate of severe underweight among under-five children in Kibiya is almost five times that in Dala (Table 5).

Prevalence of wasting (mild, moderate and severe) among under-five children were significantly higher in Dala compared to Kibiya ($p < 0.01$) (Table 5).

The percentage of children with a low height for age (stunting) reflects the cumulative effects of undernutrition and infections since and even before birth. This measure can therefore be interpreted as an indication of poor environmental conditions or long-term restriction of a child's growth potential. The percentage of children who have low weight for age (underweight) can reflect 'wasting' (i.e. low weight for height), indicating acute weight loss, 'stunting', or both. Thus, 'underweight' is a

composite indicator and may therefore be difficult to interpret [12].

How are they defined?

- Underweight: weight for age < -2 standard deviations (SD) of the WHO Child Growth Standards median.
- Stunting: height for age < -2 standard deviations (SD) of the WHO Child Growth Standards median.
- Wasting: weight for height < -2 standard deviations (SD) of the WHO Child Growth Standards median.
- Overweight: weight for height > +2 standard deviations (SD) of the WHO Child Growth Standards median.

The relationship between maternal age and nutritional status of under-five children (as measured by HAZ, WAZ and WHZ) was determined using Pearson correlation coefficient. In Kibiya LGA, there was a very weak, positive correlation between maternal age and under-five

nutritional status. This implies that lower the age of the mother, the lower the scores of each nutritional indicator, that is, younger mothers are more likely to have malnourished under-five children. With the exception of WHZ, this relationship was found to be statistically significant i.e. true of the population of mothers in Kibiya LGA ($p < 0.05$) (Table 6).

In Dala LGA, the relationship was a very weak negative correlation: younger mothers had under-five children with adequate nutritional status. The exception was HAZ (stunting) which had a positive correlation. Only with WHZ (wasting) was the relationship true of the population of mothers with under-five children in Dala LGA ($p < 0.05$): younger mothers are less likely to have wasted under-five children (Table 6).

A one way analysis of variance (ANOVA) between-groups was conducted to explore the effect of maternal occupation on nutritional status of under-five children.

Table 2. Socio-economic characteristics of mothers and their husbands in Dala and Kibiya LGA, Kano, 2019 (n =366)

Characteristics	Dala	Kibiya	P-value
Number of wives	n (%)	n (%)	0.00
One	132 (77.6)	78 (39.4)	
Two	31 (18.2)	79 (39.9)	
Three	7 (4.1)	31 (15.7)	
Four	0 (0.00)	10 (5)	
Rank among wives	1 (1)	2 (1 to 2)	0.00
First	156 (91.8)	139 (71.6)	
Second and above	14 (8.2)	55 (28.4)	
Mother's Edu. Level			0.00
No formal Edu.	7 (4.1)	77 (39.3)	
Primary	38 (22.4)	101 (51.5)	
Secondary	106 (62.4)	13 (2.6)	
Post- secondary	19 (11.2)	5 (2.6)	
Mother's occupation			0.19
Housewife	59 (35.5)	34 (25.4)	
Business	78 (53.8)	67 (46.2)	
Public service	7 (4.2)	10 (7.5)	
Artisan	22 (13.3)	23 (17.2)	
Father's Edu. Level			0.00
No formal Edu.	9 (5.3)	93 (47.4)	
Primary	23 (13.6)	54 (27.6)	
Secondary	39 (23.11)	32 (16.3)	
Post-secondary	98 (58)	17 (8.7)	
Father's occupation			0.00
Farming	4 (2.4)	167 (86.1)	
Public service	15 (8.9)	11 (5.7)	
Business	114 (67.5)	11 (5.7)	
Artisan	36 (21.3)	5 (2.6)	

Table 3. Knowledge and practice of breast feeding among mothers in Dala and Kibiya (n = 366)

Variables	Dala	Kibiya	P-value
Breastfeeding Status	n (%)	n (%)	0.00
Currently breastfeeding	100(58.8)	118(59.6)	
Stopped breastfeeding	70 (41.2)	80 (40.4)	
Mean (\pm SD) duration of breastfeeding (months)	15.17 (\pm 5.11)	13.08 (\pm 7.20)	0.00
Reason for stopping breastfeeding			
Child wish to eat	0 (0.00)	24 (12.4)	
Child is matured	69 (40.6)	42 (21.6)	
No reason	101 (59.4)	128 (66)	
Appropriate time to introduce babies to food is from 6 months			0.00
Correct	167 (98.2)	173 (89.2)	
Incorrect	3 (1.8)	21 (10.8)	
From 6 months and above, breast milk alone cannot supply all the nutrient required for growth			0.00
Correct	170 (100)	170 (86.7)	
Don't know	0 (0.00)	26 (13.3)	

*P-value determined using Chi-square and T-test for categorical and continuous variables respectively

Table 4. Average z-scores for Height-for-Age (HAZ), Weight-for-Age (WAZ) and Weight-for-Height (WHZ) for under-five children in Dala and Kibiya LGA Kano, Nigeria (n = 366)

Indicators	N	Dala Mean	SD	N	Kibiya Mean	SD	t-value	P-value
Height-for-Age (stunting)								
Male	111	-2.99	3.08	102	-4.14	3.56	2.56	0.01
Female	59	-2.53	2.34	94	-3.99	3.33	3.19	0.00
Total	170	-2.83	2.85	196	-4.08	3.44	3.79	0.00
Weight-for-Age (underweight)								
Male	111	-1.16	1.15	102	-0.78	1.93	1.71	0.09
Female	59	-0.57	1.03	94	-0.69	2.03	0.49	0.62
Total	170	-0.96	1.14	196	-0.74	1.97	1.29	0.20
Weight-for-Height (wasting)								
Male	108	0.66	2.46	97	2.53	4.19	3.83	0.00
Female	58	1.15	2.50	88	2.73	4.10	2.91	0.00
Total	166	0.83	2.48	185	2.62	4.14	4.99	0.00

Table 7 shows that in Kibiya LGA, there was no statistically significant difference in nutritional status among the various categories of mother's occupation, in other words maternal occupation does not impact nutritional status of under-five children.

Concerning mothers in Dala LGA, among the three nutritional status indicators, only WHZ (wasting) recorded a significant difference among various categories of mother's occupation. Post-hoc comparisons test indicated that the mean score for women involved in trading (M = 1.25, SD = 2.71) is significantly different from women who are public servants (M = -1.56, SD = 0.45): business mothers have

adequately nourished under-five children compared to mothers in public service.

3.2 Discussion

3.2.1 Socio-demographic characteristics of mothers and under-five children in Dala and Kibiya local government areas

According to the results of this study, there are three factors that are likely to influence the nutritional status of the under-five-children. These are the age of the mother, child parity, and index child age (months). It was evident from the findings that the age of the mother had a strong relationship with the nutritional status of the child.

Teenage pregnancy, mothers below age 18 years, might have been in the plight as a result of role identification crisis. This results from peer influences and wanting to be seen to be also capable of behaving like adult [13]. This psychological attitude exposes them to early sex. This is not to suggest that they are not biologically prepared to conceive [14], rather, that they are socially and economically incapable

of controlling and managing the demands of child rearing. Such young women may not have been married and therefore would gain little or no social and financial support from their partners. In addition to this social dynamics is the issue of the risk of given birth to an underweight child at that age if the necessary nutritional requirements during pregnancy are not met?

Table 5. Nutritional status of under-five children in Dala and Kibiya LGA Kano, (n = 366)

Indicators	Dala (n=170)			Kibiya (n=196)			p-value
	N	Prevalence	95% CI	N	Prevalence	95% CI	
Height for Age (stunting)							0.11
Adequate	39	22.9%	16.6-29.2%	30	15.3%	10.3 - 20.3%	
Mildly stunted	26	15.3%	9.9-20.7%	25	12.8%	8.1- 17.4%	
Moderately stunted	30	17.6%	11.8-23.3%	31	15.8%	10.6 - 20.9%	
Severely stunted	75	44.1%	36.6 - 51.6%	110	56.1%	49.1-63.0%	
Weight for Age (underweight)							0.00
Adequate	78	45.9%	38.4 - 53.4%	114	58.2%	51.3%-65.1%	
Mildly underweight	67	39.4%	32.1 - 46.7%	36	18.4%	13.0-23.8	
Moderately underweight	21	12.4%	7.4 - 17.3%	24	12.2%	7.6%-16.8%	
Severely underweight	4	2.4%	0.1 - 4.7%	22	11.2%	6.8%-15.6%	
Weight for Height (wasting)							0.00
Adequate	124	74.7%	68.2 - 81.2%	166	89.7%	85.4 - 93.9%	
Mildly wasting	28	16.9%	1.5 - 7.1%	8	4.3%	1.5 - 7.1%	
Moderately wasting	10	6.0%	2.4% - 9.6%	4	2.2%	0.1-4.2%	
Severely wasting	4	2.4%	0.1 - 4.7%	7	3.8%	1.1%-6.5%	

Table 6. Correlation between maternal age and nutritional indicators for under-five children in Dala and Kibiya LGA Kano, 2019

Nutritional indicators	Maternal age (years)	
	r	P-value
Dala LGA		
Height-for-Age	0.127	0.10
Weight-for-Age	-0.065	0.40
Weight-for-Height	-0.159	0.04
Kibiya LGA		
Height-for-Age	0.172	0.02
Weight-for-Age	0.207	0.00
Weight-for-Height	0.006	0.93

r=Pearson correlation coefficient

Table 7. Relationship between maternal occupation and nutritional indicators for under-five children in Dala and Kibiya LGA Kano

Maternal occupation	N	Mean	SD	F	P-value
A) Dala LGA					
Nutritional status					
HAZ					
				0.41	0.74
Housewife	59	-2.58	2.28		
Business	78	-2.96	2.48		
Public service	7	-4.39	7.37		
Artisan	22	-2.51	3.29		
WAZ					
				2.52	0.06
Housewife	59	-1.16	1.07		
Business	78	0.74	1.13		
Public service	7	-1.67	1.29		
Artisan	22	-0.97	1.18		
WHZ					
				5.72	0.00
Housewife	58	0.36	2.23		
Business	77	1.25	2.71		
Public service	6	-1.56	0.45		
Artisan	21	1.08	2.00		
B) Kibiya LGA					
HAZ					
				0.38	0.76
Housewife	34	-4.76	4.89		
Business	67	-4.03	3.43		
Public service	10	-4.24	2.20		
Artisan	23	-3.80	2.91		
WAZ					
				0.92	0.43
Housewife	34	-0.19	1.73		
Business	67	-0.68	2.15		
Public service	10	0.14	1.92		
Artisan	23	-0.70	1.56		
WHZ					
				0.90	0.44
Housewife	31	4.06	4.80		
Business	63	2.86	4.58		
Public service	10	4.32	5.28		
Artisan	23	2.52	2.97		

HAZ=Height-for-Age, WAZ=Weight-for-Age, WHZ=Weight-for-Age

In the context of this study, children delivered by women of this age could be stunting, and underweight, a risk factor for malnutrition. The tendency to give birth at this teenage age may be attributed to several factors among which are social perspectives of the number of children that a woman should have, culture, and religion as it happens that all of the respondents are Muslims.

3.2.2 Maternal occupation and nutritional status of under-five-children

It is evident that the occupation engaged by the respondent had a significant association ($p=0.05$) with the nutritional status of the child (as shown in table 7). It shows that, mother's occupation affects all the nutritional parameters (indicated as HAZ, WAZ, and WHZ) in both

LGAs. In the study areas, women in their early reproductive age (16-30 years) rarely engage in wage earning employment. This is either due to cultural and religious practices or lack of employment opportunities. Most of the newly married mothers were in the category of housewives and were totally dependent on their husbands financially. Their status was determined to a large extent by their husbands or relatives who demanded that they stay at home as culturally and traditionally expected of new brides. The arrival of young children who need a lot of attention causes the mother to be at home most of the time, especially in the absence of an older sibling, extended family (e.g., grandmother) or an alternative caregiver. However, the pressure of increasing needs coupled with more demands from the extended families "forces" the

mother to practice farming, business, public service or artisan. This agrees with [15] findings which state that farming among the Digo's is regarded as a form of indignity therefore it is usually carried out when a mother has little or no options.

Older mothers who are no longer strictly tied down by the religious and cultural beliefs step out of their homes to engage in income generating activities. Older women in this muslim community are seen as being less socially threatened or endangered because of their age, so their husbands can allow them to go to the market to carry out their business while their younger counterparts are secluded and veiled [16]. Occupation status seems to be dynamic, depending on the age of mother and proximity to the market. On the other hand, some mothers were inhibited from getting involved with income generating activities by proximity to a market venue. In such a situation mothers tended to be involved in farming and sold their farm produce like groundnut, beans, maize, millet and fruits when there was demand at a neighbouring market place. This study shows no significant difference between maternal occupation and nutritional status of under-five-children, in other words maternal occupation does not impact nutritional status of under –five-children with the exception of Dala having wasting recorded for respondents who are public servants. This is in line with studies For example, a study at Surabaya, Indonesia [17] found significantly lower height-for-age Z-scores (HAZ) for IYC with working versus non-working mothers. Weight-for-age z-scores (WAZ) and HAZ were also significantly lower for IYC with mothers who worked versus non-working mothers. A study in Mali [18] found that young children aged 12–36 months had lower HAZ if their mothers were involved in income generating activities. However, maternal involvement in cash crop production was found to be positively associated with WAZ scores in IYC, and there was a negative correlation with energy intake from non-breast milk foods [18]. Nakahara et al. [19] investigated the association between childcare support availability and nutrition outcomes of young babies aged 10–24 months in a peri-urban setting in Nepal.

The lack of adult childcare support was linked to an increased risk of malnutrition in children from working and non-working mothers; however, the risk of malnutrition was higher in young children with working mothers. Yeleswarapu et al. [20]

investigated the nutritional status of young children with employed and unemployed mothers in urban slums in Andhra Pradesh, India. They found that weights and heights were significantly higher in children younger than five years of age from families with employed versus unemployed mothers. Mothers are unlikely to enjoy the full benefits of interventions due to the absence of alternative childcare support at home and/or work, long working hours, limited capacity and opportunities to use civic facilities, and negligence or lack of nutritional knowledge in proxy caregivers. Similarly, a qualitative study by Nair et al. in rural settings in the Dangarpur district of Rajasthan, India [21] indicated that mothers' employment required compromises in infant care and feeding, such as breastfeeding and timely feeding. Furthermore, infants cared for by a family member (e.g. mother-in-law) had a higher chance of being neglected and having impaired nutritional outcome.

3.2.3 Nutritional status of children in Dala and Kibya LGA

Under nutrition is not simply as a result of food insecurity. Many children in food secure environments and from fair socio-economic backgrounds are undernourished probably as a result of inadequate knowledge of breastfeeding and complementary foods, age of the mother, maternal and paternal occupation, poor feeding practices and food restrictions due to cultural beliefs. These collective factors are often greater determinants of malnutrition than even the food availability itself. In addition to predisposing children to death, under nutrition affects their immune system predisposing them to infections and if the under nutrition is not addressed early and corrected, these children could suffer irreversible physical and cognitive damage thereby impacting their future health, welfare and economic well-being. Prevention of under nutrition would be averting at least one third of childhood mortality and morbidity. Nonetheless, how this relationship plays out among the urban poor compared with the rural poor has not yet been settled in scientific literature. Poverty has been identified as a major underlying factor for stunting in Nigeria [22]. With respect to this study it has been shown that occupation does not impact nutritional status of under five children with the exception of mothers in urban settlement who engage in public service had little significance difference in Dala ($p < 0.05$), which is in line with the report of [19] findings that are consistent with global studies that found that

mothers' employment without adequate alternative care (from a family member or at the work place) negatively impacted nutrition status in IYC. This is due to the fact that mothers working as civil servant have fewer times for the care of their children. Most of the mothers have enough food to feed their children, but time constraint for child care has become a hindrance to good nutritional status. Mothers mostly left their children in day care and primary schools since morning up to evening time of which by then they are seriously tired and exhausted and have little time to concern about wellbeing of the children. Furthermore children are left with a female housekeeper' while the mother is not around the food left for the child is been eaten by the housekeeper or the proteinous part of the food leaving little or less nutrititious part of the food for the child. Sometimes when the child is crying for food or maternal care, the caregiver tends to put her finger to baby's mouth to stop him from crying out, which reduces the child's immunity. At times the children were taking to family house in which they are fed with unhygienic food and contaminated water which makes them susceptible to water-borne diseases such as cholera and non-communicable diseases. Similarly, in this study, the stunting level in the urban community was 3 times higher than in the rural community, where stunting level was lowest. This is contrary to the general notion that rural children are more disadvantaged than their urban counterparts in terms of nutritional status. Generally stunting is a serious problem that has been affected by under five children in both study areas.

4. CONCLUSION

Conclusively, the objective of this study focused on the effect of maternal Occupation and Age on feeding habit, and nutritional status of under- five children in Kibiya (rural) and Dala (Urban) local government areas of Kano State Nigeria. The findings from this study shows that In Rural, there was a very weak, positive correlation between maternal age and under-five nutritional status. This implies that lower the age of the mother, the lower the scores of each nutritional indicator, that is, younger mothers are more likely to have malnourished under-five children. In Urban, the relationship was a very weak negative correlation: younger mothers had under-five children with adequate nutritional status. The exception was HAZ (stunting) which had a positive correlation. This confirmed that, maternal age is a significant factor that affect the

nutritional status of the children in both local governments. this is because, at the relative youthful age, the mothers gets to engaged in work to be seen as responsible, unfortunately their earnings are not enough to reflect on the nutritional status of the children even though from their perspective the job is giving them adequate earnings. But maternal occupation has less impact on nutritional status of the children, probably due to variations in age of mothers and proximity to the market.

5. RECOMMENDATION

There is need for similar studies to be conducted throughout Kano State and the entire nation to explore its effect more especially on the health being of under-five children. Mothers should be educated on nutrition and its impact in their well-being. Also, government should enforce a law that support maternal protection on breastfeeding and care in place of work and mothers should be able to continue breastfeeding and caring for their children after they return to paid employment. This can be accomplished by implementing maternal protection legislation and related measures consistent with ILO Maternity Protection Convention, 2000 No. 183 and Maternity Protection Recommendation, 2000 No. 191. Maternal leave, day-care facilities and paid breastfeeding breaks should be available for all women employed outside the home.

CONSENT AND ETHICAL APPROVAL

The Ethical clearance to conduct the research was obtained from primary health care management board Kano. The Ethical clearance was also obtained from the Patients inform of Written informed consent after the purpose and importance of the study were explained before data collection commenced.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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