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MATERNAL OCCUPATION AND THE NUTRITIONAL STATUS OF CHILDREN AGED 6-24 MONTHS IN THE TAMALE METROPOLIS

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Abstract

Adequate nutrition is essential in early childhood to ensure proper organ formation and function, a strong immune system and cognitive development. The present study sought to assess the influence of maternal occupation on the nutritional status of children aged 6-24 months in the Tamale metropolis. An analytical cross-sectional survey was carried out on 240 women and their children aged 6-24 months who sought child welfare clinic (CWC) services at Tamale West and Tamale Central Hospitals and Nyohini clinic in the Tamale metropolis. A semi-structured questionnaire was used to collect information on mother's socio economic and demographic features, feeding practices and child characteristics. The SECA weighing scale and measuring board was used to measure weight and height respectively. The data was analyzed using the Statistical Package for Social Science (SPSS) version 21. The prevalence of wasting, stunting and underweight were 28.3%, 9.6% and 18.3% respectively. The prevalence of stunting was high among children whose mothers work in the formal sector (18.5%) followed by children of mothers who were housewives (10.8%) and low among those whose mothers work in the informal sector (7.6%). Wasting prevalence was high among unemployed/housewives (37.5%), followed by informal workers (27.4%) and formal workers (14.8%). Stunting was statistically significantly associated with mother's occupational and monthly income. Stunting was about seven (7) times higher among children of mothers who are employed in the formal sector than those of mothers employed in the informal sector. Mother's monthly income was negatively associated with wasting, as mothers who earned less than 500 Ghana cedis were more likely to have stunted children compared to those who earned 500 Ghana cedis or more. Time spent at work by mother was also statistically significantly associated with child wasting and underweight. Formal sector employment and monthly income were identified as determinant of stunting. Also, time spent at work by mothers could influence the nutritional status of their children.

Keywords: Maternal Occupation, Nutritional Status, Children

Introduction

Adequate nutrition is essential in early childhood to ensure proper organ formation and function, a strong immune system and cognitive development. Malnutrition generally implies a state of under nutrition and over nutrition. Malnutrition remains among the most devastating problems currently being faced by the majority of the world's poor people especially children (Wondaferash et al., 2017). Malnutrition among children under five years is one of the most public health problems in developing countries especially sub-Saharan Africa. Under nutrition remains an intractable and most serious but the least addressed development problems of the world especially sub-Saharan Africa (Gulati, 2010). There are three types of under nutrition that are explicit; they include stunting, wasting and underweight. Stunting is a chronic form of under nutrition which reflects long period of insufficient nutrient intake and assimilation. Wasting on the other hand is an acute form of malnutrition. The nutritional status of under five children is a great concern to nutritional scientists because of its interrelated factors such as nutritional, social, health and economic factors that lead to malnutrition (Senthilkumer, Thomas & Suretha, 2018).

Traditionally, a woman's place has been her home and a generation ago, her employment outside her home was looked down by the society (Wondaferash et al., 2017). This situation has changed and women have started

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seeking employment outside their homes in various occupations, which could have both negative and positive effects (Aguree et al., 2016). Firstly, it could increase the family income, give the women some economic independence, status in the society and improve the health and nutritional status of children and family. On the other hand, it could increase her work load and cut into the time that she has to spend feeding and caring for her children. This could make appropriate feeding practices a challenge to care givers. Inappropriate feeding practices are identified as one of the major determinants of malnutrition and contributes to one third of malnutrition cases in the world (Wondaferash et al., 2017). Globally, more than 26% of children below five years are stunted, sub–Saharan Africa and south Asia contribute to 40% and 39% respectively to stunting in under five children globally (Priyanka & Anita, 2015). Maternal and child factors including maternal employment have been implicated in child undernutrition and health (Mindlin, Jenkins & Law 2009). In another study, mothers who were engaged in some form of occupation had 46.15% and 58.97% of their children underweight as compared to 37.8% and 44.8% of underweight and stunted children of housewives (Mittal, Singh & Ahluwalia, 2007). Available data in Ghana suggest high maternal employment in agriculture and public service (Ghana Statistical Service, 2015). However, data on the influence of mother's occupation on the nutritional status of children is scarce in the Tamale metropolis. It is against this background that the study sought to determine the influence of maternal occupation on the nutritional status of children aged 6-24 months in the Tamale metropolis.

Materials and Methods

Study Area

The study was conducted in the Tamale Metropolis in the Northern Region of Ghana. The Tamale Metropolis is one of the 26 districts in the Northern Region.

It is located in the central part of the Region and shares boundaries with the Sagnarigu District to the west and north, Mion District to the east, East Gonja to the south and Central Gonja to the south-west. The Metropolis has a total estimated land size of 646.90180 sqkm. Geographically, the Metropolis lies between latitude 9º16 and 9º 34 North and longitudes 0º 36 and 0º 57 west. From the 2010 PHC, the population of the Tamale Metropolis is 223,252. The number of males is 111,109 (49.7%) and the number of females is 112,143 (50.2%). This shows that there are more females than males in the Metropolis. The proportion of the total population living in the urban areas is (80.8%) and that of the rural areas is (19.1%). In terms of age, sex and locality, there are more males than females living in the urban centers of the Metropolis.

Study Design

Analytical cross-sectional study design was employed. The study was carried out in three health facilities in the Tamale Metropolis in the Northern Region of Ghana.

Study Population

The study population consisted of all mothers with children aged 6-24 months who attended child welfare clinic (CWC) in three health facilities of the Tamale Metropolis. However, mothers with children less than six months and more than twenty-four months were not included to participate in the study.

Sampling and Sample Size Determination

Two hundred and forty women with their children who attended the CWC in the three health facilities namely Tamale Central Hospital, Tamale West Hospital and Nyohini clinic were selected through convenience sampling to participate in the study. Cochran (Chochran, 1963) sample size determination formula was used to arrive at the sample size for this study, using the prevalence of stunting among children in the Tamale metropolis.

$$N = \frac{z^2 p(1-p)}{me^{\wedge}2}$$

Using the above formula, with 0.178 proportion of stunting in the Tamale metropolis and margin of error (0.05) with 5% non-response rate, a total sample of 240 mother-child pairs were obtained.

Data Collection

A semi-structured questionnaire was used to collect information on socio-economic and demographic characteristics of mothers, feeding practices and child characteristics. For the anthropometric measurement, the children's dates of birth, age in months and sex were taken from the health record booklet. But however the weights and heights of the children were measured. All the children were weighed by the Seca weighing scale with the support of their mothers except those who were two years exactly and could stand on their own. All the children were weighed with minimal or light clothing and without their shoes or hats on. The weights were recorded to the nearest 0.1kg.

For measurement of recumbent length, the wooden measuring board was used. The children were laid on the board, with head positioned firmly against the fixed

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headboard and eyes looking vertically. The knees were extended by firm pressure and feet flexed at right angles to the lower legs. All the children were measured lying down. The height of those who were 24 months and could stand were taken in a standing position. All measurements were recorded to the nearest 0.1cm. A 24 hour dietary recall questionnaire was used to collect information on the dietary intake of the children. The WHO seven food groups were used. They include; Grains, cereals and tubers; Legumes and nuts; Dairy products; Flesh foods; Eggs; Vitamin A rich fruits and vegetables; other fruits and vegetables.

Data Analyses

The study variables consisted of occupation of mothers, religion, ethnicity, age, and education of the mother. Also included were minimum dietary diversity (MDD) and anthropometric measures of children such as age, sex, weight and height. Also included were indicators such as wasting, stunting and underweight. The main exposure variable was mother's occupation and other socio demographic characteristics while the outcome variables were wasting, stunting and underweight. The various occupations of mothers were assessed through administered questionnaire. The questionnaire was also used to elicit responses on socio demographic features and the feeding practices. The dietary diversity score (DDS) was computed based on the sum of the World Health Organization (WHO) seven food groups (11) and the MDD computed from the DDS and children who ate greater than or equal to four were considered to have met their requirement while those who ate less than four food groups failed to meet the requirement. Height and weight were measured using a measuring board and 2 in 1 SECA weighing scale. The date of birth and the ages in months was picked from the health records booklet. Also stunting, wasting and underweight was computed when HAZ, WHZ and WAZ was < -2.

All the data collected were entered and analyzed using the Statistical Package for Social Sciences (SPSS version 21) and WHO Anthro. The Z-scores weight for height (WHZ), height for age (HAZ) and weight for age (WAZ) was generated in WHO Anthro. Any Z-score below -2 was classified as wasted, stunted or underweight. Chi-square or Fisher's exact test was used to test for the association between mother's occupational activities and nutritional status of children. Also multiple logistic regression was performed in STATA software on some of the likely predictors of stunting, wasting and underweight. Statistical significance was considered at $p < 0.05$. Percentages and cross tabulations were used to show respondents' response which, were presented in tables.

Results

Socio Economic and Demographic Characteristics of Respondents

The data was collected from 240 mothers and their children at the health facilities in the Tamale metropolis. Results are shown in Table 1. Majority of the mothers were Dagombas (74.6%), followed by minority ethnic groups (Ashantis, Ewe, Bimobas, Fulani and Frafras) (19.6%) with Gonjas as the least (5.9%). Most of the mothers were within the ages of 20-29 years (58.3%) , followed by those who were 30 years and above(32.5%) and those who were less than 20 years(9.2%) with an average age of 27 years. Majority of the respondents were Muslims (87.9%) with Christians constituting 12.1%.

In addition, most of the mothers had monogamous marriages (75.8%) followed by those who had polygamous marriages (22.1%) with few as single mothers (2.1%). Also the study revealed that majority of the mothers had no formal education (29.2%) at all, 27.5% had secondary education while 26.3% had basic education. About 85.5% of the mothers mainly decide what the child eats except 7.1% of the mothers who decide what the child eats with their husbands. Also, most of the mothers had to take care of only one child below two years (96.3%) with only 3.3% of them taking care of two children below two years. Husbands were largely heads of the households (75.8%). There were more males (52.5%) than females (47.5%) in the study. Majority of the children were within the age range of 6-8 months (34.6%) and 13-24 months (34.6%), the lowest were within 9-12 months with an average age of 11 months.

The study has also revealed that most of the mothers in the metropolis are engaged in trading or vending (43.8%) as their occupation followed by mothers who were only housewives (23.3%), hairdressers/ seamstresses (22.1%) and only 10% of the mothers were civil and public servants (teachers, nurses and office workers).

Majority of the mothers were engaged or employed in the informal sector (65.8%) followed by mothers who were unemployed (23.3%) and few of them employed in the formal sector (10.8%). Majority of mothers who spent eight hours or more (50.5%) at work in a day, while 49.5% spent less than eight hours. More mothers earn less than five hundred Ghana cedis (GHc500) a month (60.9%) as compared to those who earn five hundred Ghana cedis (GHc500) or more (39.1%).

Feeding Practices and Nutritional Status of Children

Only few of the mothers interviewed were not breastfeeding (2.5%) , the rest were still breastfeeding (97.5%).

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Table 1: Socioeconomic and Demographic

Variable	Freq	(%)
Age of mother		
Less than 20yrs	22	9.2
20-29yrs	140	58.3
Above 30yrs	78	32.5
Religion		
Islam	211	87.9
Christianity	29	12.1
Marital status		
Married (monogamous)	182	75.8
Married (polygamous)	53	22.1
Single	5	2.1
Ethnicity		
Dagombas	179	74.6
Gonjas	14	5.9
Minority groups	47	19.6
Mother's education		
Basic level	63	26.3
SHS/Vocational	66	27.5
Tertiary	41	17.1
None	70	29.2
Head of the house		
Husband	182	75.8
Other Relatives	58	24.1
Decision		
Mother	205	85.4
Both parents	35	14.6
Children under 2yr mother takes care		
1	231	96.3
2	8	3.3
Age of child		
6-8	83	34.6
9-12	74	30.8
13-24	83	34.6
Sex		
Male	126	52.5
Female	114	47.5
Occupation		
Trader/Vendor	105	43.8
Seamstress/Hairdresser	53	22.1
Public and civil servants	26	10.8
Housewife/Nothing	56	23.3
Category of occupation		
Formal	26	10.8
Informal	158	65.8
Housewife/unemployed	56	23.3
How long do you stay at workplace		
8 hours & above	93	50.5
Less than 8 hours	91	49.5
How much do you earn in a month		
Less than GHc500	112	60.9
GHc500 above	72	39.1

Almost all the mothers gave colostrum (98.8%) to the child after delivery except only 1.2% who did not give colostrum. Children were largely fed on demand (90.3%). Also most of the mothers introduced complementary foods to their children at exactly six months of age (80.4%) except (19.6%) who introduced complementary foods after six months. Porridge (74.6%) was mostly the first choice of complementary food introduced to a baby by mothers followed by Cerelac (12.9%) and tuozafi (TZ) (12.6%). Mothers who mostly used cup and spoon (75.1%) to feed their children were more followed by 13.1% who feed their children either from a bowl or plate using a spoon and those who feed with the feeding bottle (11.8%). Most of the children eat three times a day (45.2%), 23.1% eat twice, 16.3% eat more than four times while 15.4% eat four times in a day. Less than half of the children met the recommended minimum dietary diversity (23.1%), the rest could not meet their requirements (76.9%). Majority of the children (65%) were not sick however, 35% were sick. In this study, the prevalence of wasting, stunting and underweight were 28.3%, 9.6% and 18.3% respectively.

Relationships between Maternal Occupation and Nutritional Status of Children

A bivariate analysis was carried out to indicate the relationship between wasting, stunting, underweight on mother's occupation such as the categories of occupation, monthly income and length of time spent at work. The prevalence of wasting was higher among children of mothers who were housewives (37.5%) followed by those of mothers who work in the informal sector (27.4%) and lowest among children of mothers who work in the formal sector (14.8%). Stunting was highest among children of mothers who work in the formal sector (18.5%) followed by children of mothers who were housewives (10.8%) and lowest among those of mothers who work in the informal sector (7.6%). Underweight was high among children of mothers who were in the informal sector (50%), followed by housewives (42.5%), and children of mothers who work in the formal sector (7.4%).

Wasting was higher among children of mothers who received less than GHc500 (29.5%) and lower among those of mothers who earned GHc500 or more (19.4%) a month. Stunting was also lower among children of mothers who earned GHc500 and above (12.5%) and higher among those of mothers who earned less than GHc500 (7.1%) per month. Underweight was also higher in children of mothers who earned GHc500 or less (20.5%) and lower in those of mothers who earned

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Table 2: Feeding Practices and Nutritional Status of Children

Variable		Freq	%
Breastfeeding	Yes	234	97.5
	No	6	2.5
Colostrum	Gave it to baby	237	98.8
	Discard it	3	1.2
How frequently do you feed the child	On demand	213	90.3
	Mother's convenience	23	9.7
Age of complementary	At 6 months	193	80.4
	Above 6 months	47	19.6
First food	Porridge	160	74.6
	Cerelac	31	12.9
	TZ	30	12.6
Meal frequency	Twice	51	23.1
	Three times	100	45.2
	Four times	34	15.4
	More than four times	36	16.3
Feeding equipment	Feeding bottle	26	11.8
	Cup and spoon	166	75.1
	Bowl/plate and spoon	29	13.1
MDD	Yes	51	23.1
	No	170	76.9
Sickness	Yes	84	35
	No	156	65
Wasting	Yes	68	28.3
	No	172	71.7
Stunting	Yes	23	9.6
	No	217	90.4
Underweight	Yes	44	18.3
	No	196	81.7

GHc500 or more (11.1%). Underweight was significantly associated with mother's time spent at work (p-value=0.026) except stunting and wasting. The prevalence of wasting (31.9% vs 19.4%) and stunting (11% vs 7.5%) were higher when mother spends less than 8 hours at work compared to spending 8 or more hours at work.

Predictors of Stunting

Multiple logistic regression analysis was performed on some of the predictors of stunting. The analysis revealed that mothers' occupation and monthly income were statistically significantly associated with stunting. Children of mothers who were engaged in the formal sector were about seven (7) times more likely to have stunted children [OR=6.507; 95%CI (1.078-39.271); p=0.041] (table 4) compared to children of mothers who work in the informal sector. Also, children of mothers who earned less than GHc500 per month were about three (3) times more likely to be stunted compared to those of mothers who earned GHc500 or more [OR=3.365; 95% CI (1.057-10.735); p=0.040] (table 4).

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Table 3: Mother's Occupational Activities and Nutritional Status of Children

Variable		Wasting		Stunting		Underweight	
Occupation category		Freq.(%)	p-value	Freq.(%)	p-value	Freq (%)	p-value
	Formal	4 (14.8)	**0.102**	5 (18.5)	**0.149**	4 (14.8)	**0.542**
	Informal	43 (27.4)		12 (7.6)		27 (17.2)	
	Housewife	21 (37.5)		6 (10.7)		13 (23.2)	
Monthly income	Less than Ghc500	33 (29.5)	**0.128**	9 (12.5)	**0.221**	23 (20.5)	**0.096**
	Ghc500 and above	14 (19.4)		8 (7.1)		8 (11.1)	
Time spent at work	8 hours & above	18 (19.4)	**0.052**	7 (7.5)	**0.417**	10 (10.8)	**0.026***
	Less than 8 hours	29 (31.9)		10 (11.0)		21 (23.1)	

Table 4: Multiple Regression Analysis on Predictors of Stunting

Variable	Odds Ratio	P value	95% Confidence Interval	
Mother's education				
Basic level	.983	0.982	.219	4.404
SHS/vocational	.962	0.959	.230	4.028
Tertiary	.392	0.358	.053	2.879
None	Ref.			
Age of mother				
Less than 20yrs	1 .366	0.373	.040	3.322
30yrs above	3 .693	0.578	.191	2.517
20-29yrs	Ref.			
Religion				
Christianity	1.155	0.894	.138	9.678
Islam	Ref.			
Ethnic group				
Gonja	2.791	0.398	.257	30.261
Minority group	.524	0.468	.091	2.998
Dagombas	Ref.			
Head of house				
Other relatives	.782	0.731	.193	3.173
Husband	Ref.			
Decision				
Both parents	.376	0.247	.072	1.968
Mother	Ref.			
Minimum dietary diversity				
Yes	.321	0.170	.063	1.628
No	Ref.			
Sickness				
Yes	1.434	0.502	.500	4.113
No				
Sex				
Female	1.156	0.782	.413	3.237
Male	Ref.			
Age of complementary				
After six months	.205	0.160	.022	1.872
6 months	Ref.			
Category of occupation				
Formal	6.507	**0.041***	1.078	39.271
Unemployed	1.374	0.601	.417	4.527
Informal	Ref.			
Time spent at work				
8 hours & above	2.187	0.188	.683	7.003
Less than 8 hours	Ref.			
Monthly income				
Less than GHc500	3.368	**0.040***	1.057	10.735
GHc500 above	Ref.			
_cons	.108	0.003	.024	.471

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Table 5: Multiple Regression Analysis on Predictors of Wasting

Variable	Odds Ratio	P value	95% Confidence Interval	
Mother's education				
Basic level	.452	0.110	.170	1.197
SHS/vocational	1.043	0.926	.424	2.565
Tertiary	.312	0.118	.072	1.343
None	Ref.			
Age of mother				
Less than 20yrs	1.494	0.485	.483	4.617
30yrs above	1.404	0.434	.599	3.290
20-29yrs	Ref.			
Religion				
Christianity	.450	0.320	.093	2.172
Islam	Ref.			
Ethnic group				
Gonja	1.044	0.957	.215	5.065
Minority group	.722	0.566	.238	2.191
Dagombas	Ref.			
Head of house				
Other relatives	1.675	0.223	.730	3.844
Husband	Ref.			
Decision				
Both parents	1.079	0.878	.405	2.874
Mother	Ref.			
Minimum dietary diversity				
Yes	.411	0.067	.158	1.065
No	Ref.			
Sickness				
Yes	2.596	**0.008***	1.286	5.239
No	Ref.			
Sex				
Female	.385	**0.011***	.183	.806
Male	Ref.			
Age of complementary				
Above six months	.972	0.958	.350	2.700
6 months	Ref.			
Category of occupation				
Formal	.897	0.894	.182	4.409
Unemployed	2.191	0.059	.969	4.953
Informal	Ref.			
Time spent at work				
8 hours & above	2.873	**0.007***	1.335	6.185
Less than 8 hours	Ref.			
Monthly income				
Less than GHc500	0.534	0.125	.239	1.190
GHc500 above	Ref.			
_cons	.394	0.058	.151	1.030

Table 6: Multiple Regression Analysis on Predictors of Underweight

Variable	Odds Ratio	P value	95% Confidence Interval	
Mother's education				
Basic level	.795	0.690	.258	2.450
SHS/vocational	2.027	0.191	.702	5.854
Tertiary	.572	0.545	.094	3.477
None	Ref.			
Age of mother				
Less than 20yrs	2.733	0.099	.828	9.016
30yrs above	.597	0.372	.192	1.849
20-29yrs	Ref.			
Religion				
Christianity	2.192	0.388	.368	13.034
Islam	Ref.			
Ethnic group				
Gonja	1			
Minority groups	.147	**0.027***	.026	.808
Dagombas	Ref.			
Head of house				
Other relatives	1.511	0.391	.588	3.882
Husband	Ref.			
Decision				
Both parents	.472	0.256	.129	1.722
Mother	Ref.			
Minimum dietary diversity				
Yes	.379	0.124	.110	1.302
No	Ref.			
Sickness				
Yes	1.466	0.359	.646	3.327
No	Ref.			
Sex				
Female	.356	**0.019***	.149	.846
Male	Ref.			
Age of complementary				
Above six months	.858	0.800	.264	2.789
6 months	Ref.			
Category of occupation				
Formal	1.396	0.698	.258	7.553
Unemployed	1.654	0.304	.633	4.316
Informal	Ref.			
Time spent at work				
8 hours & above	3.333	**0.010***	1.340	8.290
Less than 8 hours	Ref.			
Monthly income				
Less than GHc500	0.389	0.062	.145	1.048
GHc500 above	Ref.			
_cons	.220	0.012	.068	.715

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Discussion

The present study sought to find the influence of maternal occupation on the nutritional status of children aged 6-24 months in the Tamale metropolis. It revealed that 43.8% of mothers were traders/vendors, 22.1% were seamstresses/hairdressers and 10.8% were public or civil servants (teachers, office workers and nurses). The percentage of women who were engaged in trading or vending was lower than 51% reported by the Ghana Demographic and Health Survey, of the number of women engaged in sales in Ghana and higher than 22.8% of mothers who engage in sales in the northern region (GDHS, 2014). The present study indicates that, 65.4% of the mothers were employed in the informal sector with 11.3% employed in the formal sector. This finding is consistent with a similar study in northern region which reported 76% and 9.8% of mothers employed in both the informal and formal sectors respectively (Aguree et al., 2016). In all 76.7% of women were employed while 23% were unemployed in the metropolis.

In the present study, the prevalence of wasting, stunting and underweight were 28.3%, 9.6% and 18.3% respectively. The prevalence of wasting is higher than the national prevalence of 5% and the regional prevalence of 6.3% (GDHS, 2014) and equally higher than 8.1% reported in the Tamale Metropolis (Garti, Ali & Garti, 2018. The prevalence of underweight was higher than the national prevalence 11%; lower than the 20% (GDHS, 2014) reported by the Ghana Demographic and Health Survey in the northern region and also higher than 10.3% (Garti, Ali & Garti, 2018) reported in the Tamale Metropolis. Stunting prevalence on the other hand was quite lower than the national prevalence 19%, regional prevalence 33% and 17.8% reported in the Tamale Metropolis (GDHS, 2014). The lower prevalence of stunting and underweight recorded in the present study could be attributed to the fact that, the present study was conducted in an urban area where food security is good compared to other studies conducted predominantly in rural areas in the region where food insecurity is prevalent (Glover-Amengor et al., 2016; Saaka & Galaa, 2016). The lower prevalence also could generally be attributable to the declining levels of child undernutrition in Ghana (GDHS, 2014). On the other hand, the high prevalence of wasting recorded might be attributed to mother's workload (Froukje, 2015-2016). Mothers mostly engage in domestic chores such as sweeping, washing cloths and dishes, fetching of water and food preparation which could potentially reduce the time available for quality care including the appropriate feeding of children Aguree et al.,2016; Froukje, 2015-2016). It could also be attributed to inadequate dietary intake which is supported by the low prevalence of minimum dietary diversity recorded in the present study (Saaka & Galaa, 2016).

The present study establishes a statistically significant association between mother's occupation and stunting. This finding is consistent with a similar study in Rwanda that indicates that mother's occupation was significantly associated with stunting (Habimana & Biracyaza, 2019). However, several other studies have found no association between mother's occupation and stunting. For instance, a study conducted in Ethiopia found no significant association between mother's employment status and stunting (Demissie & Worku, 2013). Hiwot et al. in their study found no significant association between nutritional status and employment status of the mother (Hiwot et al., 2017). A similar study also found no association between maternal employment and nutritional status of children (Fertig et al., 2009).

The present study has indicated that mothers who work in the formal sector were more likely to have stunted children as compared to mothers who work in the informal sector and unemployed mothers or housewives. This is in consonance with a similar study conducted in northern region that indicates higher prevalence of severe stunting and underweight among working mothers than unemployed ones (Behrman & Hoddinitte, 2001). However, the finding of the present study is inconsistent with a different study that indicates that stunting among informal workers was higher as compared to formal workers (Nankinga, Kwagala & Walakira, 2019). Also, it is consistent with another study that recorded low prevalence of stunting among housewives/unemployed as compared to employed workers (Mittal, Singh & Ahluwalia, 2007). The significance of stunting among mothers who were formal workers could be attributed to the fact that mothers spent more time at their work places making them unable to breastfeed properly, attend to the physical and psychological needs of the child (Wondaferash et al., 2017). Stunting among children was significantly associated with mother's monthly income. The prevalence of stunting was much in mothers who earned lower income as compared to mothers who earned higher income. Mothers with low income may experience more difficulty affording adequate food that will provide a nutritious and diverse diet (World Health Organization, 2018). Also, low family income increases the risk of child stunting, as a result of high food insecurity, low access to health care, unhealthy environments and a high risk of infections (World Health Organization, 2018). The study has indicated that the length of time working mothers stayed at the work place was negatively associated with both wasting and underweight. This situation could be attributed to the fact that children whose mothers work longer hours may have less time for food preparation and child care (Garti, Ali &

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Garti 2018). Child sickness also was statistically significantly associated with wasting, as sick children were more likely to be wasted compared to children who were not sick. This finding supports the fact that diseases and infections have direct effect on the nutritional status of children since it affects dietary intake and utilization (Udoh & Amodu, 2016). The study is limited by its cross sectional nature, henceforth it is subjected to recall bias and causal relationship cannot be implied. However efforts were made to assist mothers recall foods given to their children starting with immediate foods given to the child.

Conclusions and Recommendations

Formal sector employment and monthly income were identified as a determinant of stunting. Also, time spent at work by mothers could influence the nutritional status of their children. Mothers who spent more hours at their workplaces were more likely to have wasted and underweight children. We therefore recommend that government should come out with policies and initiatives that seek to enhance the economic prowess of mothers to enable them take quality care of their children. Health workers should also intensify and improve the education given to mothers during child welfare clinic (CWC) services.

Competing Interest

There is no competing interest to declare.

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Ethical Approval

Written informed consent was obtained from the guardians or caregiver of the participants and their respective teachers. Confidentiality was maintained throughout and after the study. Names were not included on the questionnaire for confidentiality reasons; however, unique identifiable numbers were given. Permission was also sought from the Regional Director of Health Services.

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