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Research article

Nutritional knowledge and practices of mothers/caregivers and its impact on the nutritional status of children 6–59 months in Sefwi Wiawso Municipality, Western-North Region, Ghana

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ABSTRACT

Background: Good maternal/caregiver nutrition knowledge protects the child from events that lead to low weight-for-age z-score (WAZ) and low height-for-age z-score (HAZ). Indicators of good child nutritional status have traditionally been low in cocoa-growing areas. This paper aimed to explore the relationship between maternal nutrition knowledge and practices and its effect on the nutritional status of children 6–59 months in the Sefwi Wiawso municipality; a predominant cocoa-growing area in Ghana.

Methodology: A cross-sectional study design was used to assess nutrition knowledge, nutritional practices of mothers and dietary adequacy and nutritional status of their children using 24-hour dietary recall and anthropometric measures.

Results: A total of 226 caregiver-child pairs were recruited for the study. The level of nutritional knowledge was average (61.5%) among caregivers/mothers. Most caregivers (92.3%) initiated breastfeeding within 1 hour of giving birth. A total of 66% of mothers practiced exclusive breastfeeding. Complementary feeding was initiated at 6 months in 83.6% of the cases. The prevalence of underweight, wasting, and stunting were 8.29%, 10.23%, and 16.74% respectively. There was no significant association between mother/caregiver's nutrition knowledge and child malnutrition status although the risk of wasting reduced with increasing nutritional knowledge of caregivers ($p = 0.118$).

Conclusion: There was no association between maternal nutrition knowledge and the nutritional status of children even though wasting showed a pattern of decrease with increasing nutritional knowledge. The prevalence of malnutrition in children in the study was comparatively lower than the national average. Underweight was statistically significantly higher in children whose mothers/caregivers were farmers hence appropriate nutrition education with a focus on infant and young child feeding practices should be promoted during antennal care and child welfare clinic services within these communities. Family planning services targeted particularly at teenage girls should be instituted to prevent teenage pregnancies as malnutrition is more likely to occur in children born to teenage mothers.

1. Introduction

The first 1000 days of life, starting from conception to the infant's second birthday, are crucial for development. This period offers the basis for laying foundations for good health, growth, and neurological development. Unfortunately, this critical window period is trivialized especially in low-middle income countries which bear the greatest burden of child malnutrition with accompanying high rates of morbidity and mortality (Cusick and Georgieff, 2017). The findings of Agdeppa et al. (2019) showed that a child's nutritional status will improve significantly if the mother's/caregiver's knowledge, attitude, and practices improved. To address malnutrition in children under 5 years, there has been a paradigm shift in maternal nutrition knowledge and health-seeking behaviors (Kuzma, 2013; Ekwochi et al., 2015; Karnawat et al., 2015). Children benefit the most when mothers who are their primary caregivers improve their nutritional knowledge and practices (Black et al., 2013; Leroy et al., 2014). Other studies reported that ensuring caregivers have good understanding of foods appropriate for children is crucial in

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improving the nutritional conditions of children (Bhutta et al., 2013; Black et al., 2013).

Several studies conducted here in Ghana have shown positive link between caregiver nutritional knowledge and child nutrition outcomes. A significant association between maternal knowledge of childcare and height-for-age z-score was established among children between 6-36 months in the Northern region where mothers with low nutritional knowledge had difficulty practicing appropriate complementary feeding leading to low height-for-age z-scores (Saaka, 2014). An earlier study conducted by Appoh and Krekling (2005) in the Volta region, documented the nutritional knowledge of caregivers on optimal breastfeeding and when to introduce complementary feeding as well as food choice, texture, and frequency of feeding during periods of diarrhoea. Results indicated that the nutritional knowledge of mothers had a significant impact on a child's nutritional status. Another study carried out in Accra, Ghana, to ascertain child feeding knowledge and practices among women who attend growth monitoring and promotion clinic found that infant feeding knowledge of mothers was associated positively with appropriate feeding practices ($p < 0.01$) (Gyampoh et al., 2014).

In a systematic review conducted on food-related interventions among preschool children, a key variable was to determine factors that influence the eating behavior of school children. The study concluded that the nutritional knowledge of caregivers, especially maternal nutritional knowledge had a significant influence on the eating behavior of children, therefore, caregivers/mothers were important in encouraging or discouraging particular eating behaviors (Sirasa et al., 2020). An epidemiological research further indicates poor transition to complementary foods which stems from a lack of maternal nutritional knowledge and is responsible for the high prevalence of stunting in children 12–35 months (Badake et al., 2014). Overall, it has been recognized that good maternal/caregiver nutrition knowledge protects the child from events that lead to low weight-for-age z-score (WAZ) and low height-for-age z-score HAZ (Badake et al., 2014; Fadare et al., 2019). The study of Debela et al. (2017) on maternal and child nutrition outcomes in urban Kenya, found that HAZ of children and adolescents was significantly associated with maternal nutrition knowledge of food ingredients. The same study found strong evidence linking the HAZ of children to maternal knowledge and the health implication of not following recommendations on dietary practices. Another study conducted in the southern town of Worabe in Ethiopia sought to investigate predictors of optimal breastfeeding practices among mothers and reported that mothers who attained good nutritional knowledge were 5.5 times (AOR = 5.5 95% CI 1.6 to 18.1) more likely to practice optimal breastfeeding compared with those with poor knowledge (Awoke et al., 2020). Azeze et al. (2019) reported that postnatal care attendance was a major predictor of exclusive breastfeeding and that 90% (AOR = 1.91, C.I = 1.083, 3.370) of women that reported for postnatal care were likely to practice exclusive breastfeeding; attributing the association between postnatal care attendance and breastfeeding to counseling services they received during postnatal attendance.

Cocoa-growing areas have typically been poor despite the significant contributions to the economy of countries. The farmers do not no derive optimal livelihoods from the efforts they put into farming this commodity. A study conducted to determine factors that influence undernutrition among under 5-year-old children in cocoa-growing areas of Bougainville found malnutrition to be higher than the national average. The study revealed that 36.5% of children were stunted, 4.7% were wasted and 15.9% were underweight (Hall et al., 2020), much higher than regional averages for the Western Pacific region (6.2% for stunting, 2.1% for wasting and 2.4% for underweight) (Spencer et al., 2017).

The seasonality of cocoa and other cash crops such as plantain and cocoyam which are predominantly cultivated by cocoa farmers results in food insecurity during the lean season in such areas. In a study conducted at the end of the rainy season at Nyinahin; a cocoa-growing area in the Ashanti region of Ghana, individual dietary diversity score was 4.29, lower than the minimum of 5 (de Vries, 2015).

Despite past studies looking into the nutritional knowledge of caregivers and its impact on the nutritional status of children in general, little has been done with cocoa farmers as the target group with records of high food insecurity and poor dietary diversity. It is therefore imperative for research to be conducted on the nutritional knowledge of cocoa farmers and how their knowledge affects nutritional status of their children.

This paper, therefore, aimed to determine the nutritional knowledge of mothers, child feeding practices, and the nutritional status of their children aged 6–59 months in a cocoa-growing community. It also aims to establish the relationship between maternal/caregiver nutrition knowledge and the nutritional status of their children 6–59 months.

This study will create a contextual framework for understanding the nutritional needs of the target group based on their geographical and socio-demographic characteristics.

2. Materials and methods

2.1. Study design

A cross-sectional study design was employed to collect anthropometric, dietary consumption, and sociodemographic characteristics data of children as well as sociodemographic characteristics of caregivers/mothers at the child welfare clinics of the St John of God Hospital located in Sefwi Asafo, and Sefwi Asawinso Health centre all in the Sefwi Wiawso municipality of the Western North Region, Ghana.

2.2. Study site

The study sites are among the largest hospitals with high OPD turnout in the Sefwi Wiawso municipality. Sefwi Asawinso and Asafo Sefwi have the highest and third-highest population respectively, in the municipality. The major occupation in the study arear are cocoa farming and trading. The 2010 population and housing census of the municipality revealed that, 41,611 (29.9%) females reside in the municipality aged 15–49 years with a total fertility rate of 3.7 (Ghana Statistical Service, 2012, 2014).

2.3. Determination of sample size

The sample size was calculated using an estimated optimal feeding prevalence (**P**) of 15.3% among children in the Western region part of which is now the Western North region (Ghana Statistical Service, 2011), with a margin of error of 5%, and a confidence interval of 95% for which z = 1.96.

Inputting the various variables in the formula, $N = \frac{Z^2P(1-P)}{D^2}$

$$= \frac{1.96^2 * 0.153(1 - 0.153)}{0.05^2} = 199$$

The calculated sample size was 199. However, total of 226 participants were recruited for the study. Additional 27 (14%) respondents recruited were to make up for incomplete data.

2.4. Study population

The study population was mothers/caregivers with their children aged 6 months–59 months attending child welfare clinic for growth monitoring at two health facilities namely the St. John of God hospital located in Sefwi Asafo and Sefwi Asawinso Health centre.

2.5. Inclusion criteria and exclusion criteria

Mothers/caregivers with children 6–59 months were included in the study. Caregivers/mothers should be responsible for their child's feeding to qualify to partake in the study. Children who were sick and or had any congenital condition such as cleft palate that will interfere with feeding

were excluded. Caregivers/mothers who did not consent were also excluded.

2.6. Collection of data

A convenient sampling technique was used to recruit participants for the study. Mothers/caregivers who were attending child welfare clinics at the two study sites with their children from 6-59 months who were eligible for recruitment into the study were recruited.

Convenience sampling was used because the researchers could not obtain a sampling frame for the study population due to the nature of child welfare clinic (CWC) attendance. Caregivers are given an appointment date for the next CWC attendance during their previous attendance. They may choose to attend on the scheduled date or postpone to their convenient time The time of attendance also varies among the study population therefore probability sampling method could not be used. However, the researchers did not have any influence nor did they influence which mothers attend the child welfare clinic on a particular day.

The mothers/caregivers who reported to the Child Welfare Clinic for growth monitoring of their children were approached and the study aims and processes were explained to them. Only caregivers/mothers who were totally responsible for feeding and caring for the children were contacted. If an individual consents to participate, then enrolment was done. Data was then collected from the consented, caregiver/mother and child after which the next attendee who is willing to participate in the study is enrolled. This approach was adopted throughout the data collection phase. Data were collected once a week from each study site until the sample size was attained.

Data were collected on sociodemographic characteristics, feeding practices, knowledge of mothers, and history of the sickness of children using a structured questionnaire adapted from (Ahumah, 2017) and modified. The diet history and anthropometry of all the children were also taken. There was a pre-testing of the data collection instrument to ensure the accuracy of the data. Twenty participants were recruited from a hospital within the municipality and the data collection instrument was administered to them to ascertain its validity and reliability. Adjustments were made to questions that did not elicit intended responses. Data from participants were collected by the lead investigator and two trained research assistants.

The variables used to answer the research questions were carved to elicit responses in relation to the knowledge of caregivers/mother and its impact on the nutrition status of their children. The variables are:

1 nutritional knowledge of mothers/caregivers
2 infant and young child feeding practices of mothers
3 nutrition status of the children.

2.7. Anthropometry

The weight of the children was taken with a Seca digital infant weighing scale. The weighing was done with minimal clothing or with the child being naked and weight was recorded to the nearest 0.1kg. For children less than 2 years, their recumbent lengths were taken using an infantometre. Length/height measurement was done and recorded to the nearest 0.1cm. All anthropometric measurements were done per best practices as recommended by the World Health Organization (WHO, 2008).

2.8. Dietary assessment

Data was collected on the number of times each child ate from particular food groups over the past seven days using a food group frequency questionnaire. The seven food groups were based on the FAO's food group categorization which includes; grains/roots/tubers; legumes/nuts; dairy; flesh foods; eggs; vitamin A-rich fruits and vegetables; other fruits and vegetables (FAO, 1989). Caregivers/mothers recalled the number of days their children had eaten from the seven food groups.

2.9. Nutritional knowledge

The knowledge of mothers/caregivers was tested using a structured questionnaire adapted from FAO (Marías and Glasauer, 2014). They were asked questions regarding breastfeeding, colostrum, and complementary feeding practices, as well as the functions of some selected foods. A scale was constructed to grade their responses as low, medium, and high. A total of 10 questions were asked and if a mother/caregiver obtained a score of 0–4, 5–7, 8–10, it was designated as poor, average, and high nutritional knowledge respectively.

2.10. Data analysis

Dataset was checked on a daily basis for completeness and erratic data entered were corrected at the end of each field work. Data was then entered into Statistical Package for Social Sciences (SPSS) version 23 and cleaned before analysis. Descriptive statistics were used to analyze sociodemographic characteristics of caregivers, anthropometry, and dietary practices of children, and results were presented in frequencies and percentages. Nutritional knowledge of caregivers and dietary diversity scores of the children were calculated. A Chi-square test was performed to test associations between categorical variables. Pearson correlation analysis was used to ascertain associations between the nutrition knowledge of caregivers and the nutritional status of their children. Statistical significance was established at $p < 0.05$.

Ethical approval

The Committee for Human Research, Publication and Ethics; School of Medical Sciences, Kwame Nkrumah University of Science and Technology, and Komfo Anokye Teaching Hospital granted clearance for the study (CHRPE/AP/178/20). Permission was obtained from the Municipal Health Directorate of Sefwi Wiawso (SW/MHD/01/20) and the management of Saint John of God Hospital, Sefwi Asafo before data collection began.

3. Results

3.1. Sociodemographic characteristics of mothers/caregivers and children

As shown in Table 1, almost three-quarters of mothers/caregivers (73.5%) were within the age group of 20–33 years. About half of the children (48%) were within the age group of 12–24 months. All the caregivers interviewed were females. The majority of the respondents were married and had at least a secondary school education. Over three-quarters of the caregivers were traders (40.6%) with an average monthly salary of less than GH¢200 ($39.4).

3.2. Nutritional knowledge of caregivers

Results from the survey showed that 61.5% of the caregivers interviewed had average nutritional knowledge, more than a quarter (32.7%) of them also had high nutritional knowledge and only 13 (5.8%) had a low level of knowledge in nutrition (Table 2).

3.3. Feeding habits of children

The study found that most mothers or caregivers (93.8%) have ever breastfed or were breastfeeding their children at the time of the study (Table 3). More than three-quarters initiated breastfeeding within 30 min after birth and 66% of them practiced exclusive breastfeeding. Approximately 96% of mothers breastfed their infants on demand and up to seven times a day. Again, about 33.1% said they breastfed their infants about four times during the night, followed by those who breastfed five times (31.1%) and three times (21.7%). More than half of the children (55.1%) met their recommended dietary diversity score while 36.1% of

Table 1. Sociodemographic characteristics of mothers/caregivers and children.

Variable	Frequency	Percentage (%)
Age of caregiver		
<20 years	12	5.3
20–33 years	166	73.5
34+	48	21.2
Mean ± Standard deviation	28.451 ± 6.931	
Age of children (months)		
< 12	62	27.3
12–24	109	48.0
25–35	30	13.2
36+	23	10.1
Missing	2	1.4
Mean ± Standard deviation	19.25 ± 11.587	
Marital status of caregivers		
Single	27	12.0
Married	189	83.6
Cohabitating	5	2.2
Divorce/Separated	5	2.2
Highest level of education attained		
None	30	13.3
Primary School	33	14.6
Junior High School	93	41.2
Senior High/Vocational/Technical School	63	27.9
Tertiary education	7	3.1
Occupation of mothers/caregivers		
Farming	54	30.7
Trading	71	40.3
Public/civil servants	12	6.8
Others	39	22.2
Income		
Less than GH¢200	89	50.6
GH¢200 - GH¢500	53	30.1
GH¢500 - GH¢1000	20	11.4
GH¢1000 - GH¢1500	11	6.3
Above GH¢1500	3	1.7

them met their minimum meal frequency; only 31 (19.6%) of them met their minimum acceptable diet at the time of the survey.

3.4. Nutritional status of the children

Analysis of the nutritional status of the children revealed 10% were lean for their height (wasted), whereas 89.8% were normal. The results further showed 8.3% of the children were underweight and the rest were of normal weight. On the other hand, children that were found to be too short for their age constituted 16.7% of the study sample and the rest were normal (Table 4).

3.5. Association between maternal nutritional knowledge and nutritional status of the children

A chi-square analysis to determine the relationship between maternal/caregiver nutrition knowledge and the nutritional status of their children found no significant association. Statistical significance

Table 3. Feeding habits of children.

Variables	Frequency	%
Breastfeeding/Breastfed		
Yes	212	93.8
No	14	6.2
Total respondents	226	100
Exclusive breastfeeding		
Yes	140	66
No	72	34
Total respondents	212	100
Initiation of breastfeeding		
Within 30 min after birth	153	78.5
Within 1 h after birth	27	13.8
Within 2 h	10	5.1
Others	5	2.6
Total respondents	195	100
Age at initiating complementary feeding		
Six months	187	88.2
Five months	12	5.7
Other months	13	6.1
Total respondents	212	100
On average how many times do/did you breastfeed your child in a day		
Six times	46	21.8
Seven times	26	12.3
Eight times	33	15.6
Nine times	28	13.3
Ten times	51	24.2
Other	27	12.8
Total respondents	211	100
How many times do you breastfeed during the night?		
Two times	30	14.2
Three times	46	21.7
Four times	70	33.0
Five times	66	31.1
Total respondents	212	100
Age at weaning		
<18 months	22	31.4
≥18–23 months	28	40.0
≥24 months	20	28.6
Mean ± Standard deviation	19.06 ± 4.32	
Dietary diversity		
Adequate diversity	87	44.9
Inadequate diversity	71	55.1
Total respondents	158	100
Minimum meal frequency		
Met	57	63.9
Unmet	101	36.1
Total respondents	158	100
Minimum acceptable diet		
Met	31	19.6
Unmet	127	80.4
Total respondents	158	100

*Others in respect of initiation of breastfeeding refer to any other time above 2 h.

Table 2. Nutritional knowledge of caregivers.

Variable	Frequency	%
High nutritional knowledge	74	32.7
Average nutritional knowledge	139	61.5
Low nutritional knowledge	13	5.8

Table 4. Nutritional status of the children.

Variable	frequency	%
Wasting	22	10.2
Underweight	18	8.3
Stunting	36	16.7

Table 5. Association between maternal nutritional knowledge and nutritional status of the children (wasting, Stunting, and Underweight).

Variable/Category	Wasting status		F/x^2 (p-value)
	Wasted	Normal	
Maternal Nutritional Knowledge			
Poor nutritional knowledge	3 (27.3)	8 (72.7)	4.276 (0.118)
Average nutritional knowledge	14 (10.5)	119 (89.5)	
High nutritional knowledge	5 (7.0)	66 (93.0)	
	Stunting status		
	Stunted	**Normal**	
Maternal Nutritional Knowledge			
Poor nutritional knowledge	1 (9.1)	10 (90.9)	0.591 (0.744)
Average nutritional knowledge	22 (16.5)	111 (83.5)	
High nutritional knowledge	13 (18.3)	58 (81.7)	
	Underweight status		
	Underweight	**Normal**	
Maternal Nutritional Knowledge			
Poor nutritional knowledge	1 (8.3)	11 (91.7)	2.744 (0.254)
Average nutritional knowledge	8 (6.0)	126 (94.0)	
High nutritional knowledge	9 (12.7)	62 (87.3)	

A bivariate chi-square test.

was pegged at $p < 0.05$ to ensure there was less than a 5% probability the results were random or coincidental (Table 5). This p-value level is acceptable for most health-related research. Although not statistically significant, wasting was found to decrease with increasing nutritional knowledge ($\chi2 = 4.276$, $p = 0.118$).

4. Discussion

The average age of the caregivers/mothers was 28.5 ± 6.9 years. About 70% of the respondents were between the ages of 20–33 years. The educational level of caregivers/mothers is integral in the provision of appropriate care for children. The findings of the study however showed that only 31% of the respondents have secondary school education and above. The result is similar to a study conducted in slum areas of Bahir Dar City, Ethiopia where they reported that 39.9% of respondents have at least secondary education (Demilew, 2017). The slight differences may be due to geographic differences between the two study areas. Whereas this study was conducted in a rural setting, the other was conducted in a regional capital albeit a slum. Caregivers who have a low level of education may tend to pay less attention to nutrition education as the focus may be shifted towards obtaining daily bread for survival. They may also not be exposed to other learning resources such as television, radio, and print media. In a study by Debela et al. (2017) and Fadare et al. (2019) education was positively associated with higher maternal nutrition knowledge.

The prevalence of wasting was higher among children whose mothers/caregivers were younger than 20 years compared with any other age group. This could be attributed to the fact that most of these women (under 20 years) were teenage mothers and likely to face financial difficulties as a result of being unemployed or underemployed and thus could not afford nutritious foods for their wards leading to an increased risk of malnutrition. However, the difference observed among the age groups was not statistically significant ($\chi2 = 2.129$, $p = 0.295$).

High nutritional knowledge is very essential in promoting good nutrition and preventing malnutrition, especially in children (Ongosi, 2011). Improving the nutritional knowledge of caregivers/mothers is one key area for nutrition-promoting intervention programs (Williams et al., 2012). Numerous studies have been conducted to correlate maternal nutritional knowledge and the nutritional status of children. Christian et al. (2016) in their work found that dietary diversity score positively correlates with the number of years of formal education of caregivers ($P < 0 \cdot 001$). A positive correlation was also documented by Negash et al. (2015) between weight-for-height z-score and maternal education ($p < 0.001$). The chances that a mother with no education would have a stunted child was 1.51 times (AOR = 1.51; 95%CI: 1.19, 1.91) vis-à-vis children of a mother with up to secondary education or higher. In the same manner, the odds of mothers with primary education having stunted children were 1.42 times (AOR = 1.42; 95% CI: 1.13, 1.78) compared to children whose mothers had higher educational status (Dessie et al., 2019). This study found that 61.5% of the caregivers have average nutritional knowledge. The knowledge is reflected in the practice of optimal breastfeeding and complementary feeding by caregivers as 92.3% of mothers who breastfed initiated breastfeeding within 1 h after birth and 66% went on to practice exclusive breastfeeding. On complementary feeding, 83.6% of the mothers/caregivers introduced complementary feeding at 6 months. The finding of this study conforms with Peiris and Wijesinghe (2010) who found satisfactory maternal nutritional knowledge regarding breastfeeding and complementary feeding in Peradeniya, Sri Lanka. In Kenya, Debela et al. (2017) also recorded an average maternal nutritional knowledge score of 59%. Fadare et al. (2019) indicated that higher education of mothers translated into higher nutrition knowledge and was significantly positively associated with a child's HAZ and WAZ.

Education above the primary level was again found to have a strong positive correlation with maternal nutritional knowledge as mothers with education above the primary level were 2.5 times more likely to have good knowledge of IYCF recommendations (Demilew, 2017). In this study, 72.1% of mothers/caregivers had education above the primary level. As a result, the average nutrition knowledge recorded by the majority of participants in this study corroborates with the findings of most Ghanaian researchers (Nketiah-Amponsah et al., 2013; Sakeah et al., 2017; Manyeh et al., 2020) who all linked higher education to ANC attendance and by extension CWC attendance where nutrition education and healthy lifestyle education are offered to pregnant women and lactating mothers/caregivers.

On the flip side, Chege and Kuria (2017) in a similar study conducted in Kenya found that 57.2% of caregivers had minimal nutritional knowledge while 35.5% obtained very low nutritional knowledge scores. The low nutrition knowledge scores in the study by Chege and Kuria (2017), may have been so because of the low educational level of the participants as only 19.6% had education above the primary level. In Gichana, (2013) study, it was noted that the majority of mothers could not accurately state the sources of vitamin A and protein foods. Some also had misconceptions about certain food groups leading to the non-consumption of simple protein foods such as eggs among children.

A chi-square test was performed on the level of maternal nutritional knowledge and nutritional status of their children. The results showed that the nutritional status of the children was independent of maternal nutritional knowledge. It was however, realized that wasting decreases with increasing maternal nutritional knowledge but this relationship was not significant.

The findings of the study reaffirm the long-held position by these researchers (Claeson and Waldman, 2000; Lee and Garvin, 2003; Black et al., 2008; Gyampoh et al., 2014). They held the view that unless other convergent socio-economic factors are improved, maternal/caregiver nutrition knowledge alone may not achieve any functional purpose, especially for children. In Indonesia, however, a significant association between maternal nutrition knowledge and wasting but not stunting was found by Web and Block, (2003). They argued that stunting and wasting have different etiologies and therefore, cannot be addressed by similar or the same interventional approaches. Stunting results from chronic malnutrition and becomes irreversible if interventions are not timely offered compared with wasting which can be corrected at any age.

The universal health coverage and access made possible by the implementation of the National Health Insurance Scheme (NHIS) has increased accessibility to and utilization of free healthcare. The NHIS allows subscribers to pay a token ($3) to access free healthcare for a year. Membership in the scheme is renewed every year. The premium covers a wide range of common diseases that affect a majority of the Ghanaian society. This may have ensured early diagnosis and prompt treatment of diseases that increase the risk of malnutrition. As articulated by Walker et al. (2013) and Ferreira et al. (2015) diseases such as diarrhea, pneumonia, and acute RTI result in malnutrition and death in severe cases. Yisak et al. (2015) showed that children with diarrhea had higher chances of being stunted compared with children who did not have diarrhea [COR = 1.53, 95 % CI (1.02–2.3)]. Many other studies have drawn a positive correlation between diarrhea and malnutrition; wasting in particular (Paudel et al., 2012; Gilbert and MaK, 2014; Asfaw et al., 2015). Thus, the NHIS may have had a positive impact on child health care by ensuring prompt diagnosis and treatment of childhood diseases that may have malnutrition in particular wasting as a complication.

5. Conclusion

The study found that majority of the participants had below secondary school education. However, the level of nutritional knowledge among the majority of the respondents was average. Breastfeeding and complementary feeding practices even though not at the desired levels, were higher than the national averages.

Indicators of malnutrition in children were lower than national averages except for wasting which was more likely to occur in children of mothers younger than 20 years. Underweight was statistically significant among children whose caregivers were engaged in farming. The association between the nutritional knowledge of caregivers and the nutritional status of children was not statistically significant even though the prevalence of wasting decreased with increasing nutritional knowledge.

This study is the first of its kind in the Sefwi Wiawso municipality and the newly created Western North region. The findings should therefore serve as a resource to policymakers particularly health authorities in the Municipality and the region at large. Appropriate nutrition education with a focus on infant and young child feeding practices should be targeted at every client during child welfare clinic services. The Municipal Health Directorate should equip all health facilities with appropriate resources for relevant and professional assistance to caregivers. Public health education that focuses on family planning services and is targeted particularly at teenage girls will also help prevent teenage pregnancies and the resultant poor health outcomes of children born to such girls. Skills and job opportunities should be created and targeted at unemployed mothers especially teenage mothers to enhance their economic fortunes.

5.1. Limitation

Most of the responses given were recalled therefore could lead to recall biases. Some of the participants may also have falsified their responses, especially about breastfeeding and complementary feeding practices for their responses to appear acceptable.

Declarations

Author contribution statement

Godsway Forh: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data.

Charles Apprey: Conceived and designed the experiments; Wrote the paper.

Nana Ama Frimpomaa Agyapong: Analyzed and interpreted the data; Wrote the paper.

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Data availability statement

Data will be made available on request.

Declaration of interest's statement

The authors declare no competing interests.

Additional information

No additional information is available for this paper.

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