

## Research Article



## A Cross sectional Observational Study for Assessing the Knowledge of Mothers on Child Nutrition (0-24 months)

**Snigdha Thakur<sup>1</sup>, Bibha Rani<sup>2</sup>, Deevana Jemima<sup>3</sup>, Dr Sugreev Dwivedi Anuj<sup>4</sup>**

1. Department of Dietetics, HCG Abdur Razzaque Ansari Cancer hospital, Ranchi, 835217, India.
  2. Department of Dietetics, HCG Abdur Razzaque Ansari Cancer hospital, Ranchi, 835217, India.
  3. Department of Nutrition, Isabella Thoburn College, Lucknow, 226007, India.
  4. Clinical Pharmacologist, Department of Clinical Pharmacology, HCG Abdur Razzaque Ansari Cancer hospital, Ranchi, 835217, India.
- \*Corresponding author's E-mail: [anujdwivedi0108@gmail.com](mailto:anujdwivedi0108@gmail.com)

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### ABSTRACT

It is necessary to provide more insight into the relationship between maternal knowledge and child health outcomes. The circumstances under which acquired knowledge is put into practice are all important in deciding on possible interventions. This study attempts to assess this knowledge gap and the purpose of the study, was to assess nutritional knowledge and nutritional status of children 0-24 months. The results of the study would be useful to achieve the objectives and to enhance mothers' nutrition knowledge, improve perception on the importance of immunization and antenatal services. Mothers would better utilise the health facilities that offer routine child survival services, leading to good nutrition of the children, reduce child morbidity and mortality. Vitamin A Supplementation is a very essential child survival service for child growth and protection from frequent infections if received after every six months up to five years of age.

**Keywords:** Nutrition, Child and Mother Health, Immunization, UNICEF.

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### INTRODUCTION

Adequate nutrition during infancy and early childhood is fundamental to the development of each child's full human potential. It is well recognized that the period from birth to two years of age is a "critical window" for the promotion of optimal growth, health and behavioural development. After a child reaches 2 years of age, it is very difficult to reverse stunting that has occurred earlier.<sup>1</sup> The immediate consequences of poor nutrition during these formative years include significant morbidity and mortality and delayed mental and motor development. In the long-term, early nutritional deficits are linked to impairments in intellectual performance, work capacity, reproductive outcomes and overall health during adolescence and adulthood. Thus, the cycle of malnutrition continues, as the malnourished girl child faces greater odds of giving birth to a malnourished, low birth weight infant when she grows up. Poor breastfeeding and complementary feeding practices, coupled with high rates of infectious diseases, are the principal proximate causes of malnutrition during the first two years of life. For this reason, it is essential to ensure

that caregivers are provided with appropriate guidance regarding optimal feeding of infants and young children.<sup>2-3</sup>

Nutrition is important part of child growth and development. Malnutrition still takes the lead in child mortality and morbidity. That's why this research is motivated to assess mother's knowledge on infant and young child feeding and micronutrient. Especially the first two years of life are considered to be the window of opportunity where we can improve the wellbeing of a child. A child needs the right kind of nutrition in order to thrive and attain optimal development.

In many developing countries, malnutrition has remained one of the leading causes of childhood morbidity and mortality. This is particularly important for vulnerable groups, who require adequate nutrition for physical and mental stability to face the new challenge of initiation into academic life.<sup>4-6</sup>

As a national public health recommendation, infants should be exclusively breastfed for the first six months of life to achieve optimal growth, development and health. After 6month exclusive breast feeding and complimentary feeding should be initiated to supplement nutritional requirement.

Complementary foods should provide approximately 25-50% of total daily requirements and 75-100% for phosphorus, zinc and iron. The fundamental role of care to child nutrition has been well-established since 1990 through UNICEF Model of Care. To provide care adequately, caregivers require education (both formal and informal), time, and support (e.g. control of resources).<sup>7</sup>



Among children in developing countries, malnutrition is an important factor contributing to illness and death. Malnutrition during childhood can also affect growth potential and the risk of morbidity and mortality in later years of life. Child malnutrition is generally caused by a combination of inadequate or inappropriate food intake, gastrointestinal parasites and other childhood diseases, and improper care during illness. Child malnutrition has long been recognized as a serious problem in India, but national-level data on levels and causes of malnutrition have been scarce. In 1992–93, the National Family Health Survey (NFHS) collected anthropometric data on the height and weight of children below four years of age from a nationally representative sample. The survey provides a unique opportunity to study the levels and determinants of child malnutrition in India.<sup>8-10</sup>

There are three types of protein- energy malnutrition in children described as follows:

- i. Acute malnutrition is wasting or thinness, acute inadequate nutrients leading to rapid weight loss or failure to gain weight normally.
- ii. Chronic malnutrition refers to shortness caused by inadequate nutrition over a long period of time leading to failure in linear growth.
- iii. Wasting and stunting are very different forms of malnutrition. Stunting is chronic and its causative factors are poorly understood. Stunting usually does not pose an immediate threat to life and is relatively common in many populations in the less developed countries.

Mothers are the foremost providers of primary care for their children. Their understanding of basic nutrition and health measures strongly influences the care they provide. Household socio-economic characteristics also determine to a large extent the nutritional status of children, and a positive relationship between socioeconomic status and the ability of mothers to provide adequate food and primary care has been observed. In the present study, an attempt is made to determine the effects on children's nutritional status of their mothers' knowledge of nutrition while controlling for the effects of the socioeconomic characteristics of the family.

Mother's nutritional knowledge is expected to have positive effect on child's nutritional status and thus, child could reach a proper height and weight as a result of good nutrition.

Women's educational status is a factor that affects the child's life expectancy and nutritional status. Female literacy is a non- health factor that influences child survival and better

nourishment. According to UNICEF, education is an important factor in decreasing child and baby mortality. For this reason, women's education should be supported.

World Health Organization (WHO)/United Nations Children's Fund (UNICEF) emphasizes that optimum

nutrition is a must for children especially during the first 1000 days of life (270 days in-utero and 2 years after birth) as maximal growth and development occurs during this period and suboptimal nutrition during this period can cause significant growth and development retardation. Complementary feeds (CF) are introduced at 6 months as breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk to meet the nutritional needs of the child. Complementary feeding is defined as the process starting when breast milk alone is no longer sufficient to meet the nutritional requirements of infants, and therefore other foods and liquids are needed, along with breast milk. The target age range for complementary feeding is generally taken to be 6 to 24 months of age, even though breastfeeding may continue beyond two years.

A number of underlying factors could be contributing to the rising prevalence of malnutrition in children including poor access to health care, inadequate caring and feeding practices and poor sanitation. Among these, appropriate complementary feeding is very paramount and has been shown to improve nutrition status of children. According to the WHO there are eight core indicators that can be used to assess and guide the feeding practices of young children including: - early initiation of breastfeeding, exclusive breastfeeding under 6 months, continued breastfeeding for 1 year, the introduction of solid, semi-solid or soft foods, minimum dietary diversity, minimum meal frequency, minimum acceptable diet, consumption of iron rich or iron fortified foods. Appropriate complementary feeding refers to the timely introduction of solid, semi-solid or soft foods, minimum meal frequency, minimum adequate diet and minimum dietary diversity. It has been linked to optimal nutrition in infants and young children as it ensures their growth, health and development to attain their full potential. It's been shown to reduce child morbidity and mortality thereby increasing child survival and protection. No wonder the WHO recommends that nutritionally adequate and safe complementary feeding should start from age 6 months with continued breastfeeding up to 2 years of age or beyond. Evidence shows that appropriate complementary feeding rates in developing countries are less desirable and majority of infants and young children do not meet the minimum indicators for appropriate complementary feeding.

United Nations International Children's Emergency Fund (UNICEF) has launched the baby friendly hospital initiative (BFHI) in 1998 to strengthen maternity practices to support breastfeeding. One of the important components of this initiation is to start breast feeding immediately after birth. The frequency, timing, and duration of breastfeeding are also important. Variation in these parameters can have an important impact on child health. Complementary feeding (CF) is another very important component of infant feeding. After 6 months, mother's milk alone is not sufficient for the growing child and CF should be started,



timely and in adequate amounts with good quality. Frequency, quality and number of top feeds given during the weaning period to children are important factors in the pathogenesis of malnutrition. Inappropriate feeding practice during this period is found to be the major cause of malnutrition.<sup>11</sup>

Complementary feeding is required in appropriate quantity, quality, and frequency to fulfil the daily energy needs for growth and development of child. Cultural practices; beliefs and knowledge of parents regarding appropriate feeding practices influence CF. It has been shown in India that only 17.5% of mothers started complementary feeding at recommended time (at 6 month of age), 77.0% had delayed complementary feeding and 5.5% started complementary feeding early.

## MATERIALS AND METHODS

This cross-sectional observational study was conducted using a questionnaire-based interview over a period of five months from March to July 2021 in district Lucknow, city of Uttar Pradesh, India. Study was conducted online via Google Forms because of corona virus pandemic situations and government orders of lockdown and social distancing, survey could not be conducted one on one, but online by the link of the questionnaire was sent to the subjects via social media and e-mail. Their response was recorded into excel sheets for data analysis.

The information was collected from mothers to assess her Knowledge on Child Nutrition (0-24 months) in the Lucknow city. Their knowledge of breastfeeding, various problems faced by them and the help they obtained for those issues. The interview also included questionnaires with multiple choice questions about knowledge of breastfeeding and complementary breastfeeding, the questions under nutrition of infant, young child and breastfeeding knowledge. The individual responses obtained from the mothers were analysed to the demographic factors were also studied to evaluate for factors affecting mother's nutrition and breastfeeding knowledge and practices.

The data was collected in a standard proforma, it was coded using the MS Excel software program and analysed using the Statistical Package for Social Sciences (SPSS; IBM Inc.) version 23 for windows. Frequency and percentages were used for representation of categorical data. Arithmetic mean and standard deviation was conducted. Logistic regression analysis was done to find out factors affecting nutrition and breastfeeding knowledge. P value of <0.05 was considered significant.

### Description of Study Area

The information was gathered from the **Lucknow district** it is a district located in the state of Uttar Pradesh in northern India. The city of Lucknow is the district headquarters and the district is part of Lucknow Division. It also is the capital of Uttar Pradesh. According to the 2011 census Lucknow district has a population of 4,589,838 and

the survey was conducted on the mothers of child aged 0-24 months.

### Study Population

The target population for this study was the 84 mothers of children aged 0-24 months and who were presently residing in Lucknow at the time of study.

### Research Design

A cross sectional descriptive study design was the design that was best suited for this study.

### Sample Size

This research was carried out using 84 mothers in Lucknow with specific criteria as below.

### Criteria

The study was conducted using online questionnaire form, all the information about demographic data of the child 0-24 Months child was given by the mother via Google form online

### Sampling Technique / Research Materials

The sampling technique for the study was a Simple Random Technique. Since, the subjects were selected randomly, the probability of bias was reduced. In this study is made use of google form and questionnaires in order to collect the data for this research.

### Study Period

The research program lasted for the period of 5 months that is from March to July 2021. The time duration included the research and analysis of the topic, formation of the questionnaire, the survey conduction and the analysis of the data.

### Tools and Materials

#### Questionnaire

The questionnaire will be formulated to gather the relevant information. The data was collected by the questionnaire method. The questionnaire was made to get the information such as –

- General information
- Anthropometric measurement
- Clinical Information
- Immunization status of child
- Nutritional Knowledge
- Food frequency of child

A semi-structural questionnaire composed of opened and close-ended was used to collect data. On the questionnaire, there was a short instruction addressed to the respondents, informing them on how to answer the questions. The questionnaire was partitioned into three sections which are listed below



**Section A:** Demographic and Socio-economic Data

**Section B:** Morbidity; Immunization Status; Water, Sanitation and Health Facilities

**Section C:** Nutrition Knowledge; Food Frequency for Children

All the three sections that required answers on questions posed regarding the all specific objectives. All the responses were filled by mother by online form via Google form.

**Section A:** It include all needed information gathered on the demographic status of the respondents like height and weight of the child and socio-demographic data like age of mother, education of mother, sex of child, family type, family size the socio economic data like, monthly income of the household, occupation of mother, income group of the family etc. are also collected in this section.

Independent Variable like age of mother, age of children and sex of children etc.

**Section B:** It include child morbidity, immunization status of children, sanitation, health regarding question like any chid disease, source of drinking water, boiling of water, BCG at birth, OPV and Measles etc. regarding questions.

**Section C:** It include nutrition knowledge and food frequency questions. Nutrition knowledge questions are asked in non open-ended questions with yes/no/don't know options. Food frequency questions was asked to fill in table format with multiple options like daily, once in a week, twice in a week, once in a month, rarely and never.

**RESULTS**

**Descriptive Analysis**

**Socio- demographic characteristics of the population**

Table 1 represents the socio-demographic characteristics of the study population; mothers present age and mothers age at child birth. Out of the total 84 respondents, the mean of the present age of the mother was 30.39 with the standard deviation 4.49 and the mean of the age of mother at child's birth was 28.07 years with the standard deviation 2.9 and 15.5% of mother's present age was of 28 years and 14.3% are of 30 years.

**Table 1:** Socio- demographic characteristics

Age of mother	Arithmetic Mean	Standard Deviation
Mothers' Age (Present)	30.39	4.49
Mothers' Age (At Child Birth)	28.07	2.9

**Socio economic characteristics of the study population**

**Mother's Occupation:** Table 2 showed socio economic characteristics of the respondent mother of age 0-24 Months children. About 55.95% of mother's are housewife; the frequency of housewife was 47 which is

highest among all, 23.81% are teacher, 8.33% were in private job and 1.19% mother's profession was doctor, principal and 3.37% are in nursing.

**Table 2:** Distribution of mother by occupation status

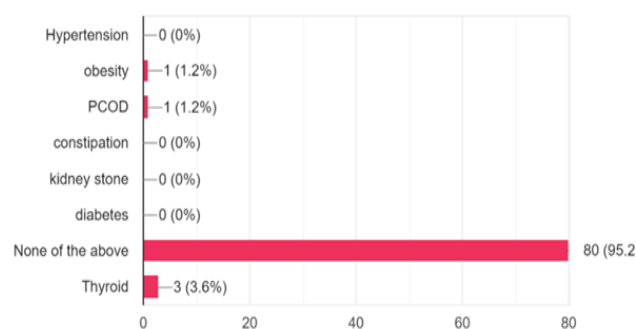
Occupation	n=84	Frequency	Percentage
Banker	84	1	1.19%
Doctor	84	1	1.19%
Housewife	84	47	55.95%
Nursing	84	3	3.57%
PO	84	1	1.19%
Pharmacy	84	2	2.38%
Principal	84	1	1.19%
Private job	84	7	8.33%
student	84	1	1.19%
teacher	84	20	23.81%

**Clinical Information**

In the figure 1. shown that Mothers of the children age 0-24, about 95.2% of them do not have any disease, only 1.2% of mothers had the disease like PCOD and obesity and 3.36% of mothers had Thyroid.

Do you have any disease

84 responses

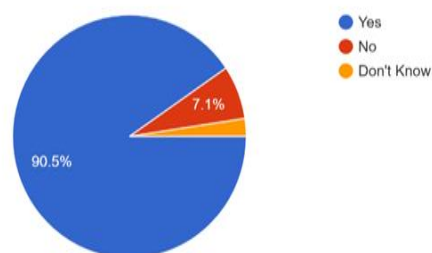


**Figure 1:** Percentage distribution of the subject based on disease

**Nutritional Knowledge of the Mother**

Most vitamins and minerals cannot be made by the human body and must be obtained from the diet

84 responses

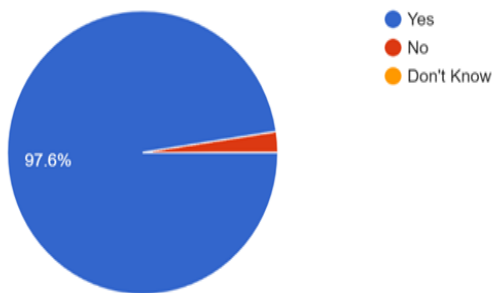


**Figure 2:** Distribution of the mother on the knowledge of vitamins and minerals

Figure 2 shows mother’s knowledge on vitamins and minerals. 90.5% of the mothers knew that the most vitamin and minerals cannot be made by the human body and must be obtained from the diet, 2.4% of mothers had no idea about it while rest of the mother responded no (7.1%) vitamins and minerals cannot be made by the human body and must be obtained from the diet.

Figure 3 shows that the majority of women knew about the relationship between the growth of the children and vitamin and minerals, that means they know that vitamins and minerals are essential for growth of children.

Vitamins and minerals are essential for growth of children.  
84 responses

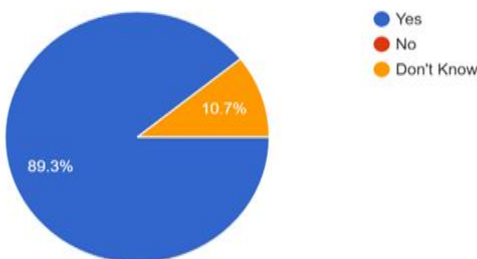


**Figure 3:** Distribution of the mother on knowledge of mineral for growth

Figure 4 is Analysing the knowledge of women about exclusively breastfeeding for the first 6 months, found that

- 1) 89.3% of women agreed that a baby should exclusively breastfed for the first 6 months.
- 2) No women denied that a baby should not exclusively breastfed for the first 6 months
- 3) 10.7% of women don’t know about exclusively breastfeeding for the first 6 months.

A baby should exclusively breastfed for the first 6 months  
84 responses



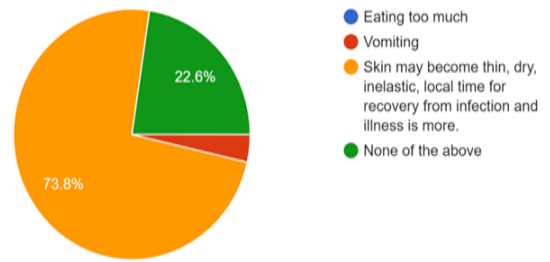
**Figure 4:** Percentage distribution of the knowledge of the mother on protein in milk.

**Mothers' Knowledge on Signs and Symptoms of Malnutrition**

73.8% of the participant identify skin may become thin, dry, inelastic, longer time for recovery as the sign and symbol of malnutrition in children, 3.6% identify vomiting

as the sign and symptoms of malnutrition, while 22.6% did not able to identify any of the sign and symbol.

What are the signs and symptoms of malnutrition?  
84 responses



**Figure 5:** Distribution of mothers’ knowledge of the signs and symptoms of malnutrition

**Food Frequency**

Minimum meal frequency, feeding frequency based on the breastfeeding status of a child 0-24 months is an important indicator of infant and young child feeding practices and an important aspect in complementary feeding. The WHO indicator for this variable was based on the breastfeeding status of the child of children 0–24 months of age. Breastfed infants 6–8 months old should receive solid, semi-solid, or soft foods 2 times per day inclusive of snacks. Whereas those who are not breastfed should receive these foods 3 times per day inclusive of snacks. Breastfed children 9–23 months old should eat semi-solid and or soft foods 3 times per day and those who are non-breastfed 4 times per day inclusive of snacks for non-breastfed children 6–23 months (WHO, 2007).

Majority of the mother give water to their children daily 82 and 2 of them do not give the water to their child daily and 76 (n=84) of mother give their child milk daily. Sugared milk daily intake of the child is 58, breakfast cereals daily intake is 54, some mothers never give their children tea and coffee (67), soy beverages (45), soft drink (37), bread and rolls (41) and cheese (29). Arithmetic mean of the population responded on daily is 25.05, Mean of the population responded on twice in a week, is 6.82, Mean of the population responded on once in a week is 11.88, Mean of the population responded on once in a month is 3.58, Mean of the population responded on rarely is 16.76, Mean of the population responded on never is 19.88.

**Child Morbidity**

Figure 7. shows distribution of the study child by illnesses. The health of the children in the study population was assessed by asking whether the child had any disease, were 7.1% of the children were reported to have suffered from diarrhoea and rashes, 1.2% were suffered from chickenpox, whooping cough, bloody urine. Including 1.2%, (85.7%) majority of children did not show any disease.

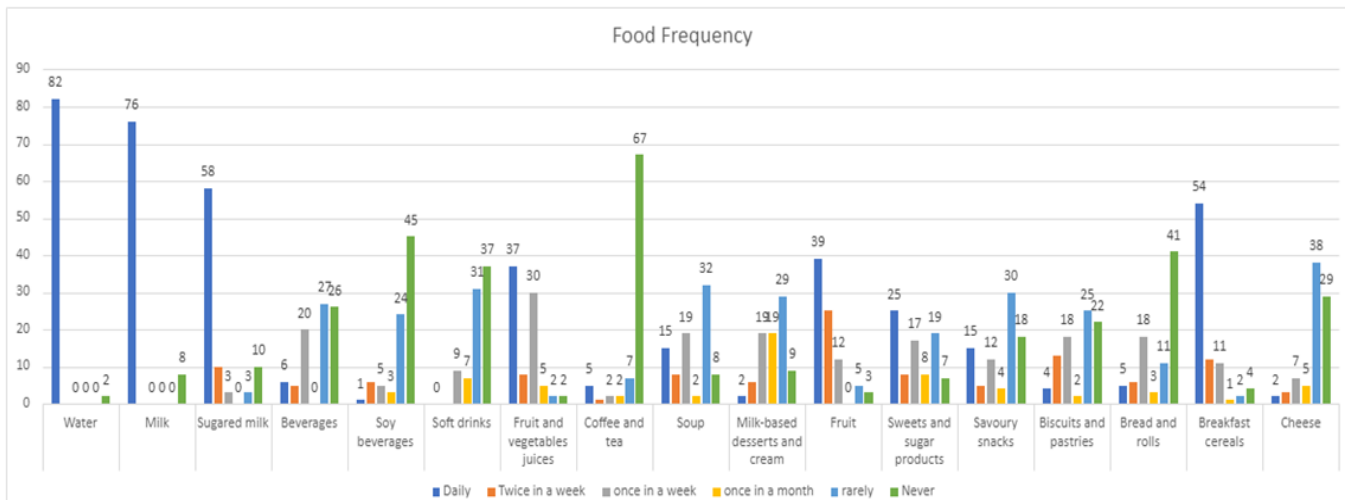


Figure 6: Distribution of the food frequency of the children (0-24 months).

Does child have any disease  
84 responses

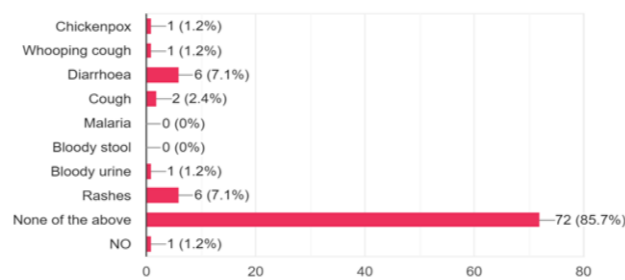


Figure 7: Percentage distribution of the children by disease

**Immunization Status, Vitamin A Supplementation of the Children**

Figure 8. show the immunization status in the study population. Those children who had received BCG at birth were 89.3% and the rest of 10.7% were don't know about BCG immunization.

BCG at birth  
84 responses

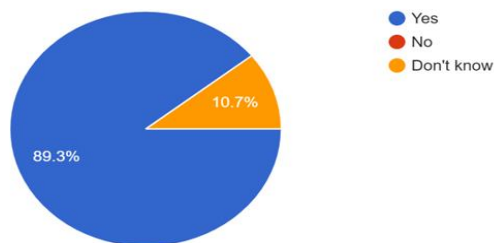


Figure 8: Distribution of percentage of BCG at birth

Figure 9 show the immunization status in the study population. Those children who was fully immunized for age were 69%, 28.6% mothers don't know that the child was fully immunized or not and 2.4% children was not fully immunized for age.

Figure 10 show the vitamin A supplementation status in the study population. Those children who receive the vitamin A in the last 6<sup>th</sup> months were 69%, 11.9% mothers don't know that the child received vitamin A in the last 6<sup>th</sup> months or

not and 19% children were not provided with vitamin A in the last 6<sup>th</sup> months.

Fully immunized for age  
84 responses

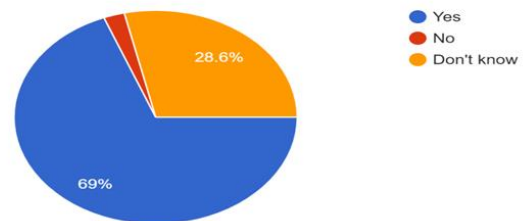


Figure 9: Distribution of percentage of fully immunized for age

Has the child been provided with Vitamin A in the last 6<sup>th</sup> months?  
84 responses

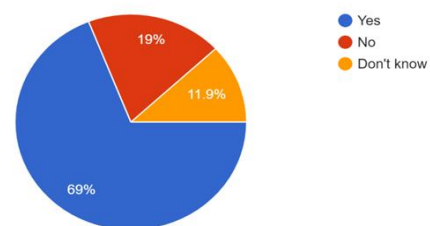


Figure 10: Distribution of percentage of vitamin A supplementation in the last 6<sup>th</sup> months

**DISCUSSION**

**Socio-demographic and Socio-economic Characteristics**

The demographic and socioeconomic characteristics identified in the study population were; Age composition of the study population, Parents occupation, Education of the parents, Household's main economic. This study showed that age and sex were important demographic variables, where the distribution of the population child gender had more persons in the male 51.2% than female 48.8%. The population distribution in this study has more persons in the younger age group than in the older age groups for both sexes.



The current study indicates that the respondents who were mothers were housewives who dependent solely on their spouses to provide money for essential basic needs while a few were self employed. There is need to empower women so as to be able to contribute to the family basket to easy straining in the household basic needs. The findings of this study show a big disparity between men and women in terms of employment an indication that men were the major breadwinners in most of the households. It was observed that most Families income main source were men income private job or business.

The majority of women education status were graduated and postgraduate, and their children show mild and some with no malnutrition symptoms. The lack of attainment of appropriate education levels observed in the respondents who were mothers requires to be addressed if the nutritional status of children has to improve; Indeed an educated woman has a positive impact to the household and national development.

### Maternal Nutritional Knowledge

In this study majority of the mothers had knowledge of vitamins and mineral, breast feeding and child nutrition, while a few of them did not have any knowledge at all, interest was; vitamin A supplementation, deworming and nutrition messages. In this study it was observed that there is need to the more awareness and health facilities to the community level in order to involve those mothers who rarely or never access health facilities at all, as some women seek self-medication when child fall sick, which is not healthy and quite unreliable for the health status of the child.

The study findings showed that majority of mothers were aware of vitamin and mineral source like fortified maize (88.1% women). Majority of the women (90.5%) knows that the most of the vitamins and minerals cannot be made by the human body and must be obtained from the diet and it is essential for the growth of the children. In this study it was observed that majority of households, children 0-24 years were consuming foods daily that are rich in vitamin A, fruits, breakfast cereals, milk, water, sugared milk and take low food frequency of coffee and tea, soft drinks, cheese, etc.

The study findings showed that majority of mothers were aware of the exclusive breastfeeding for the first 6 months (89.3%), about the knowledge of complementary food at 6 months (67.9%) but 25% of the women (n=84) did not know about complementary feeding. The type of care she provides depends to a large extent on her knowledge and understanding of some aspects of basic nutrition and health care. The majority of mothers (8.1%) know about that the meal of the non-breastfed baby require extra meal than just breast milk where by 13.1% have no idea about it, 79.8% of mothers know about that, a baby of 6-23 months of age require a minimum of 4 groups of meal where 20.2% did not know about this knowledge, 83.3% of mothers knows that

the breastfed baby 6-8 months should take complementary food 2-3 times per day.

Majority of women (95.2%) knows that the fruits and vegetables are the best source of vitamins and minerals and 83.3% of women knows that minerals helps to build strong bones and teeth, 77.4% of women knows that most of the vitamins does not store in the body and must be taken in diet daily, 84.5% know that most of the vitamins and minerals are lost during cooking of food and therefore it is clear in this study that the mother's awareness of vitamins and minerals is good in the population.

### Nutritional Status of the Children and Mobidity

The results of this study revealed that prevalence of stunting (Height-for-age) among the children was high. The prevalence of severe stunting was significantly higher among males compared to females. In a report by UNICEF a ten per cent of children in the developing world are severely underweight (UNICEF, 2009). In this study wasting or low weight-for-height was lower than stunting and underweight.

Majority of the mothers sought treatment private clinics (45.2%) and 31% mothers sought treatment by own medication and 7.1% of child was suffering from diarrhoea and rashes, 2.4% from cough and minority of them was suffering from chickenpox, bloody urine (1.2%) In the 2008-09 KDHS, most mothers sought advice or treatment for their children's illnesses from the health facilities (KNBS, 2010). **This study shows that 73.1% of women knows the signs and symptoms of the malnutrition and 22.6% of women did not able to recognize the signs and symptoms of malnutrition in child.**

### Immunization of the Children

Immunization averts an estimated 2.5 million child deaths a year, but despite the successes, millions of children in developing countries-almost 20% of the children born every year-do not get the complete immunizations scheduled for their first year of life (WHO, 2009). Majority of children had received all the immunizations recommended for their respective ages. 90.5% child has received the OPV, 72.6% measles and 89.3% BCG at birth. This study revealed that the study population adhered to the immunization procedures of the children under five years promptly except for few who did not. Although not considered as an immunization, vitamin A supplementation every six months is preceded by the deworming three months before is carried out as routine by 69% of women.

## CONCLUSIONS AND RECOMMENDATIONS

### Conclusion

In a general sense, it can be said that mothers included in the study had a good level of nutritional knowledge. Most of them being housewives and majority had attained graduation levels of education. The knowledge scores increase in parallel with the educational level, which revealed the importance of education. Knowledge also



increases with differs with the level of income and the mother knowledge regarding Vitamin A and minerals were good.

Generally, the nutritional status of the children was normal, except for stunting which was significantly higher than wasting and underweight, though lower than the national coverage. Majority of children suffer from common diarrhoea. necessitating their mothers to seek treatment especially from private clinics than own medication. Majority of children had received their immunizations by the age of 24 months.

### Recommendation

The study recommends the following: There is need to educate women on allocation of income to health care services just as for food to improve on declining child survival and promote growth development.

The Ministry of Health to decentralise the health facilities to the community level nationally, through CHWs in order to involve all mothers who rarely or never access health facilities at all.

There is need for creation of awareness to all mothers about the routine services offered at the health facilities. Further studies based on the results of this study to be carried out to enable assessment and evaluation of the programme both internally and externally.

There is need for further study to establish the reasons why stunting is more prevalent than wasting and underweight in the current study, especially in males than females.

Mass communication and media, non- governmental organizations, universities, policy makers and various other institutions should work together in nutritional education. It will be useful to provide an effective and persistent nutritional education and active involvement could enhance a better outcome.

### ACKNOWLEDGEMENT

We acknowledge all participants who showed interest in the survey and responded for study.

### ETHICAL CONSIDERATION

We obtained patient consent and done our study in the guidance of health experts without harm to the subject.

### CONFLICT OF INTEREST

The authors declare that they have no conflict of interest.

### FUNDING SUPPORT

The authors declare that they have no funding support for this study.

### TRANSPARENCY DECLARATION

The lead author affirms that this manuscript is an honest, accurate, and transparent account of the study being reported.

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