EFFECT OF SOCIOECONOMIC STATUS ON CAREGIVERS' KNOWLEDGE AND BELIEFS REGARDING CHILD HEALTH CARE IN SAVELUGU NANTON, GHANA

BY

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DECLARATION

I hereby declare that this thesis is as a result of my own research work carried out in the Research Center for Health Promotion, University of Bergen, Norway. This was under the supervision of Professor Maurice Mittelmark. The work has neither in whole nor in part been present in other University except for references to the work done by others, which have been duly cited.

Signed..

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Date..

Approvals

This project has been submitted for assessment with our approval as the candidate's supervisor, HEMIL Centre, Faculty of Psychology of the University of Bergen.

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Professor, Maurice Mittelmark
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Abstract

Overview

A primary caregivers' knowledge about child health can have a significant impact on her practices, which in turn can affect child growth and development. The main objective of the study was to explore the level of caregiver's knowledge and beliefs about the treatment of diarrhoea and child nutrition and to find out whether caregivers' socio-economic status influences their knowledge and beliefs.

Methods

In this study, the data used were from the Savelugu- Nanton Household Survey which was collected by the International Food Policy Research Institute (IFPRI) in collaboration with the Food and Nutrition Security Unit at the University for Development Studies in 2001. It was a cross sectional survey of information collected from caregivers of children from ages 0-38 months (N=1588).The study measured caregivers' knowledge and beliefs which comprised of questions related to treatment of diarrhoea and the identification of micronutrient rich food. Measures of socio-economic characteristics included distance to primary fuel source, distance to primary water source during rainy season, compound cleanliness, total non food household expenditure, total food household expenditures, household per capita expenditure, number of food groups consumed at household level, household experience of food shortages and sleeping density. This study is the first to explore what caregivers know and believe about child nutrition and treatment of diarrhoea in Savelugu Nanton and also the first in that region to examine what social determinants might be associated with caregivers' level of knowledge. The statistical analysis was performed using

SPSS for windows, version 17.0. Descriptive statistics of all the variables were computed. A bivariate comparison was also performed with Pearson's correlations on a two-tailed analysis. A Binary logistic regression analysis was performed to determine the best prediction of a dependent variable from the two socioeconomic factors which were statistically significant with the index knowledge variable.

Results

Distributions of the knowledge score showed that 75 percent of primary caregivers' in the region had high level knowledge, whilst 25 percent of the primary caregivers had low knowledge level on child health care. There was a significant relationship between the socioeconomic indicators in this study and the level of caregivers' knowledge caregivers regarding child health and nutrition. However, among the SES indicators represented by total distance to primary fuel source (r = .069**, n=1588, p<.001) and household experiences food shortages (r = .052*, n=1588, p<.05) had the strongest correlation with knowledge index of caregivers in Savelugu Nanton. Further analysis of these two variables using the binary logistic regression showed that as travelling distance for fuel increases by a kilometre, the likelihood of caregivers having adequate knowledge of child health care decreases .721 times. Moreover, for caregivers who live in households that never experiences food shortages, the likelihood of having high level knowledge regarding child health care knowledge increases by 1.68 times.

Discussion and Conclusions. Results from the studies showed that, knowledge of primary caregivers regarding child health and nutrition was very high in the region suggesting that irrespective of their socioeconomic status, majority of the caregivers in the region are knowledgeable and definitely have an adequate child health care knowledge. This indicates that in Savelugu Nanton, socioeconomic status is not a very good predictor of child health knowledge of caregivers. The result of the study supports the hypothesis that caregivers with high socioeconomic status will score high on the knowledge index question regarding child health care and vice versa. From this study, there was a significant association between SES variables represented by distance to primary fuel source and household experiences food shortages and the level of a primary caregiver's knowledge regarding child health in Savelugu Nanton District, Ghana. These findings in particular are in agreement to most of the general perception held in the literature which concluded that higher SES is associated with better child health and vice versa. The result of the study will help policy makers in designing of interventions programmes on better child health care for caregivers of children in the district. Firstly, health education and skills development programs for primary caregivers should be designed to improve the outreach and effectiveness of child health messages that local health care providers' disseminate. Secondly, community actions such as the use of self help and support group for caregivers' should be formed to empower and encourage the caregivers in gaining the right knowledge and attitudes towards better child health care. Thirdly, health education programs on basic child health care should be taught to all primary school children before they drop out of school.Further studies will therefore be needed in future, to research into how caregivers acquire their health information and to investigate more into the caregivers' who score high on the knowledge score.

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List of Abbreviations

ICBD = Integrated Community Based Development

UNICEF = United Nations International Children's Emergency Fund

UDS = University for Development Studies

IFPRI = International Food Policy Research Institute

PDI =Positive Deviance Inquiry

WHO = World Health Organisation

NGO's = Non-Governmental Organisation

SES= Socioeconomic Status

CHAPTER ONE

1.1 Introduction and Background Information.

Health related knowledge and beliefs are influenced by many factors which include our experiences, the people we mix with such as our social groups, the people we aspire to be like and our beliefs about what they want from us. In addition, our physical and biological environment certainly influences our beliefs and knowledge. Different people often interpret the same identical object or event in quite different ways according to their origins, training and experiences (Worsley, 2002). Basic health knowledge and healthcare are often recognised as basic human rights (WHO and UNICEF, 1978). Health educators and Practitioners in Africa know very little about what mothers understand to be good practice with regard to child health and nutrition. We are thus often in the position of assuming either too little or too much with regard to what mothers know about child health knowledge (Pielemeier, 1985).

According to the 2009 Central Intelligence Agency world fact book, Ghana's total infant mortality rate is 51.09 deaths per 1,000 live births with 55.32 deaths per 1,000 live births for males and 46.74 deaths per 1,000 live births for females (CIA, World Fact Book, 2009). Moreover one in every nine Ghanaian children dies before reaching his or her fifth birthday (Stiff 2004).

Anthropologist working in various primary health contexts, have frequently felt frustrated that the health system and policy makers have appeared to pay little attention to the importance of

understanding the cultural beliefs and knowledge systems of the people they are to serve (Pelto and Pelto, 1997).

A primary caregiver's knowledge about childcare can have a significant impact on her practices, which in turn can affect child growth and development. For example, knowledge about the causes and consequences of malnutrition, diagnosis and treatment of illnesses are important for children's growth (Engle, 1997 cited in Leroy, & Ruel, 2003, pp 30). Children die because their parents are not fully informed about the actions that they could take to save them (Iram and Butt, 2004). As the primary caregivers for children, women tend to be the first to recognize and seek treatment for children's illnesses. The overall health of family members improves when the woman has the freedom of mobility, knowledge of health care practices and the means to access health services (UNICEF, 2007). Mothers and other caregivers play a critical role in the effective management of childhood diarrhoea by correctly recognizing when their children have diarrhoea, and taking appropriate action (Bachrach & Gardner, 2002). Awareness of micronutrient malnutrition has gained substantial prominence in recent years among nutritionists and public health specialists. Iron deficiency, for example, remains the world's most widespread micronutrient deficiency-related disease, affecting well over 2 billion people mostly in developing countries (WHO, 1992). Severe anaemia kills 30 percent of children who enter the hospital with it and do not receive an immediate blood transfusion (World Bank, 1994). Relevant findings from the original analysis report that approximately 60 percent of the primary care givers believe that a child with diarrhoea should be given less water, a practice that can lead to dehydration and further deterioration of the child's health status. However, almost 90 percent of primary caregivers appeared to

know that children should receive more food when recovering from diarrhoea. The original report of the survey conducted in 2001 showed that principal caregivers of young children have uneven knowledge on good health and nutrition practices. Slightly more than half of the caregivers can identify iron rich foods and only 13 percent can identify foods that are rich in vitamin A. Most of them did not know that a child should be given more fluids when he or she has diarrhoea, but almost all knew that a child should be fed more when recovering from diarrhoea. The direct indications of sources of nutrition knowledge suggest a fairly broad set of potential instruments for nutrition knowledge. Potential instruments for nutrition knowledge include the village mean distance to the health centre, maternal years of schooling, whether or not the mother brought her child to the health centre, maternal age, and maternal age squared. These exogenous instruments are plausible determinants of maternal nutrition knowledge based on the mothers' own description of the sources of their knowledge (Block, 2003).

Caregivers play a crucial and dual role as "producers" of child health and as "demander's" of health services. Understanding the behaviour of caregivers provides the key to modifying caregiver behaviour and is thus a crucial process in improving child health outcomes. The education of the caregiver plays a major role, as does the availability of a good water supply and adequate sanitation facilities (Sanders, 2007). Studies by Sanders (2007) reported that one in five caregivers had limited health literacy. However, low-literacy caregivers were more likely to have less high school education and a low socioeconomic status. In most countries, rates of mortality and malnutrition among children continue to decline, but large inequalities between poor and better-off children exist, both between and within countries (Wagsstaff et al., 2004). It is commonly claimed that the most severe nutritional problems are found in

rural communities with low level of productivity. There is a fair amount of evidence to support this hypothesis but the picture needs to be sharpened if well targeted interventions are to be feasible. General poverty, low household productivity and income, maldistribution of food within the household, lack of education or diseases that affect the individual's intake and expenditure of energy are all possible reasons why the people who are found to be undernourished are in these areas (Svedberg, 2000).

There has been a significant lower health gains in Africa over the last 10 to 15 years and this seems to be due to a very low level of progress among the poor. Poorer socioeconomic groups tend to suffer more in many Sub Saharan countries, systematically exhibiting higher infant and child mortality, higher malnutrition and higher fertility than richer groups (World Bank, 2005). On the contrary, in an attempt to investigate whether the effect of nutritional knowledge is higher among households with fewer resources, it was found that level of nutritional knowledge and household's resources were not individually significant. Moreover the point estimate for the interaction term was negative, implying that as income rises the importance of community knowledge decreases (Christiaensen and Alderman, 2004). Even in the poorest districts, not all people or children are undernourished by conventional standards and there are indications of under nutrition in many urban areas too. In light of the above problems, better professional understanding of Caregivers' knowledge on child health and nutrition and their effect on socio economic status can help to improve the clinical management of a child's diarrhoea by increasing staff sensitivity and improving communications to parents. Such information also has potential intervention relevance. The current research seeks to explore in Savelugu Nanton Ghana, whether caregivers knowledge and beliefs on child health and nutrition can be

explained by households socio-economic status and to find out if their caregivers are knowledgeable when it comes child health and nutrition.

Chapter Two

2.1 Literature Review

There are rich arrays of literatures which have focussed on the effect of socioeconomic status on child health and knowledge. Most of these studies use individual education, income and assets as proxies for household SES. However I decided to focus primarily on other SES as household socioeconomic indicators due to the data constraint in the survey used in the current research. One central socio-economic influence which has long been deemed influential is the role of maternal education. Previous researchers often use education as a proxy for socioeconomic status of households as well as characteristics of the community residence (Desai & Alva, 1998). Across many diverse cultural contexts, rising levels of maternal education and literacy are strongly associated with improved child survival. What is less clear however is that, is education simply a proxy for social and economic resources that promote health, or does education lead to improved health knowledge itself and subsequent health behaviours (Stiff, 2004).

Thomas, Strauss, and Henriques (1990) found in a Brazilian sample that nearly all the impact of maternal schooling on child height could be explained by access to media, and that schooling and community health services are substitutes. The value of education may also operate through a person becoming more efficient consumer information. Whether a woman reads a newspaper, listens to the radio or watches television regularly presumably indicates the extent to which the woman is exposed to or seeks information. Significant negative interaction was found to have existed between availability of health facilities and maternal education.

Glewwe (1999) addressed this question with studies conducted in Morocco. He considered three possible mechanisms including the direct teaching of nutrition knowledge in school, the facilitation of gaining nutrition knowledge that comes from the literacy and numeracy learned in school, and exposure to modern society through school. He finds that maternal health knowledge stands alone among these possible mechanisms in contributing to child height, and that such knowledge is gained largely outside the classroom.

Similar studies conducted by Nahikian-Nelms (1997) among 113 caregivers to measure their nutrition knowledge and attitudes in child-care programs and to observe the behaviors of caregivers as they interact with children at mealtime proved there was a statistically significant relationship between level of education and nutrition knowledge, which suggests that those persons with higher levels of education also scored higher on the nutrition knowledge instrument.

The educational level of women who are the main caregivers of children, have a lot of potential positive effect on the quality of care. More educated women are better able to process information, acquire skills, and model more caring behaviours than less educated women. They make better use of health care facilities, interact more effectively with health care providers and comply with treatment recommendations and they are more likely to keep their environment clean. Increased access to safe water, increased education of women and improved status of women and increase availability of access to food at the national level all reduce child malnutrition in developing countries (Smith & Haddad, 2000). Even if the food supply for children is sufficient, diarrhoea hampers the intake of calories and micro-nutrients and thereby

prevents adequate nutritional outcomes and increases the likelihood of infant mortality (Charmarbagwala et al., 2004).

Studies conducted by Variyam et al. (1999) in the US shows that, there was a positive and highly significant effect of mother's educational level on her health and nutritional knowledge. Also, age and employment status affect nutrition knowledge positively, but only on mothers with preschoolers. Studies using the Health and Diet Surveys conducted by the Food and Drug Administration and the National Heart, Lung and Blood Institute between 1983 and 1988 showed that there was increase in nutrition knowledge among middle aged respondent than older or young groups (Levy et al., 1993).

In a related studies by Parmenter et al. (2000), a nutrition knowledge survey was carried out on a cross-section of the adult population in England ($n = 1040$), looking at knowledge relating to current dietary recommendations, sources of nutrients, healthy food choices and diet–disease links. Serious gaps in knowledge about even the basic recommendations were discovered, and there was much confusion over the relationship between diet and diseases. Results showed that respondents in the youngest age group scored lower than people in middle years, with those aged over 65 obtaining the lowest scores. Also respondents who were married or living as married achieved slightly higher scores than those who were single or separated, divorced or widowed. Moreover nutrition knowledge declined with lower educational level and socio-economic status. The above literature considered education as a proxy for household and individual socioeconomic status and almost all concluded that higher education thus results in better child health, increases mothers child health knowledge and eventually resulting in better child care.

These authors below also used different SES indicators. Among them is a case-control analysis of cross-sectional data study conducted by Rahman et al. (1995) among 328 children aged 12–35 months and their mothers in order to identify the factors associated with delayed or non-immunization of their children. Socioeconomic variables included family income, house type, latrine type (sanitary or not), and household assets (TV, radio, etc.) Results from the studies indicated that, delayed or no immunization of children was significantly high with poor socio-economic indicator such as poor housing and toilet type, water supply and low income, maternal illiteracy and lack of mother's knowledge about vaccines preventable diseases. However among these variables lack of mothers knowledge had the strongest association with delayed or no immunization.

In a household survey conducted in Tanzania aimed at assessing inequalities among children younger than 5 years, in the use of child health-care services with respect to sex and socioeconomic status in two districts, it was found that in a very poor area of rural Tanzania, with high morbidity and mortality rates, carers of children from wealthier families had better knowledge about danger signs in child health, were more likely to bring their children to a health facility when ill, and were more likely to have had a shorter journey to the health facility than poorer families. Socioeconomic status was constructed by combining household-level information on assets, income sources, and education. Carers' knowledge of which signs were dangerous was poor in all groups, but improved slightly with higher socio-economic status even within a rural society that may be assumed to be uniformly poor. (Schellenberg et al, 2003).

In an attempt to demonstrate the distinctive contributions of socioeconomic indexes measured at the household versus community level in understanding inequalities in

health and survival among five African countries namely Burkina Faso, Cameroon, Egypt, Kenya and Zimbabwe

Fotso and Kuate-Defo (2005), found out that women from wealthier socio-economic quintile have a higher probability of seeking healthcare services, their children are less likely to be undernourished, and ultimately more likely to survive compared to their counterpart in the lower socio-economic quintile group.

In an attempt to investigate whether child diarrhoea was correlated with households' socioeconomic status or maternal knowledge among households of children under three years old in Savelugu-Nanton, a rural district in northern Ghana, (Leroy 2005) found out that child diarrhoea was regressed on socio-economic status or maternal knowledge and neither was significantly associated with child diarrhoea.

In a study of the interaction between maternal nutrition on knowledge and socio-economic status, Lesotho, 1985-1986 on 921 mother-child pairs and included scores from a nutrition knowledge test, socioeconomic and demographic information, and the child's anthropometric data results showed that as maternal nutrition knowledge scores increase, the weight of children from the wealthier group also increases. While maternal schooling was positively associated with weight-for-age for both wealthier and poorer households, the size of the effect was much larger for the latter group. The effect of maternal schooling on weight-for-age was mediated by the mother's nutrition knowledge only among wealthier households (Ruel, et al .1992).

A study conducted by (Sniff, 2004) to elucidate both what people know about child illnesses as well as how they know it among 2400 participants in Southern Ghana

concluded that, in respect to household and community influences, household SES, measured by our possession index, was positively associated with health knowledge .

Lots of evidence from the above literature point to the fact that higher SES are associated with better informed caregivers on child health knowledge and better child health and well-being of children of caregivers from higher SES households. However, contrary to this literature is the study by Leroy 2005 which did not find any effect of SES on caregiver's health knowledge. Thus poverty has been associated with poor child health and low maternal knowledge and since this lies outside curative medicine, the current research seeks to explore in Savelugu Nanton Ghana, whether caregivers' knowledge and beliefs on child health and nutrition can be explained by households socioeconomic status.

2.2 Aims and Objectives

The overall aim of the study was to examine the relationship between the socioeconomic status of the household and the primary caregiver's level of knowledge about infant health care, after controlling for the age of the infant. The hypothesis tested in this study is: *Caregivers in households with high socioeconomic status will be more likely to have high level knowledge on child health care as compared to caregivers in households with low socioeconomic status.*

2.3 Research questions.

The research questions are:

1. What was the age distribution of the index children in the study sample?

2. What were the distributions and inter correlations of knowledge variable on household socioeconomic status?

3. What was the distribution of a summative, primary caregiver infant health care knowledge index composed of these variables?

   a. When a child has diarrhoea, it should be given much less, about the same or more fluids?

   b. When a child recovers from diarrhoea, it should be given much less, about the same or more foods?

   c. Do you think that fruits and fruit juices are dangerous for children?

   d. Do you think that a child that does not eat well will not be able to attend to his or her studies?

   e. Do you think that as soon as the child starts taking other feeds he or she should be taken off breast?

4. What is the bivariate relationship between the socio-economic status indicators and the knowledge index after controlling for the age of the index child?

2.4 Operational definitions

For the purposes of this study unless otherwise stated, the following definitions pertained to the use of the following words:

- Caregivers: Biological mothers of children between the ages of 0 to 38 months.

- High level knowledge: Caregivers who scored between 2 to 5 on the total knowledge index

- Low level knowledge: Caregivers who scored between the ranges of 0 to -5 on the total knowledge index.

- Socioeconomic status: These included household per capita expenditures, household non-food expenditures, total non food expenditure, distance to primary fuel source, distance to primary water source in dry season, distance to primary water source in rainy season, number of rooms slept in, households per capita expenditures and compound cleanliness

2.5 Relevance of the study to Health Promotion.

The study reveals how child health and nutrition has become a major public health issue in Ghana. Global improvements in child health have been marred with factors which lie outside the domain of curative medicine. Thus despite the investments of substantial resources, less developed countries continue to carry a heavy burden of disease and its attendant problems (Eyiri and Prowse 1999). Understanding the association between knowledge of child health and nutrition with caregiver's socio-economic factors may assist health care providers and public health educators, community health workers in targeting areas where additional resources and parent education are necessary. These findings highlight a need to enhance educational efforts that will empower caregivers to protect their children from diarrhoea and nutrition-associated morbidity and mortality. Empowerment which is a cardinal principle in health promotion is about enabling individuals and communities more power over the personal, socio-economic and environmental factors that affect their

health (Rootman et al 2001). Thus empowerment must be accompanied by building coalitions for poverty reduction (Howard white et. al, 2001) which leads to another key principle of health promotion which stresses the need for multi-sectoral partnership among stakeholders. Even in the poorest regions on earth, some individuals and households manage to cultivate a livelihood that places them securely above the poverty line. Some enjoy robust good health, most families and communities celebrate good tidings, children laugh and play, and many say they are satisfied with their lives. While global efforts continue to struggle to eradicate poverty, promote peace and stimulate good health, some of the solutions quite likely reside at the local level. What are the lessons for living that may be learned by examining the lives of those who flourish despite adversity? (Mittelmark, 2009). The study has the potential of influencing government organisation, Non Governmental organisations, community health educators and health economist in pooling efforts, designing interventions and health education programs to improve the caregiver's health knowledge in Savelugu-Nanton, Ghana.

The current study tends to highlight the issue of equity which is central to promotion of health in populations. Whitehead (1991) defined inequity as 'differences in health which are not only unnecessary and avoidable but, in addition, are considered unfair and unjust'. If equity goals are to be achieved, health policies in Ghana should further be directed at strategies and interventions to reduce poverty and to improve the use of health care and family planning services among the poorer population groups. Solving the problems of inequity cannot be achieved by one level of organisation or one sector but has to take place at all levels and involving everyone as partners in health to meet the challenges of the future (Whitehead, 1991). Thus the study seeks to understand the

socioeconomic disparities with regard to caregiver's health and nutritional knowledge. Through lack of resources, poorer social groups may have little choice but to live in unsafe and overcrowded housing, take up dangerous jobs among other things. The higher rates of ill health experience by these groups will be the result of both socio-economic and environmental factors which are clearly deemed inequitable (Whitehead, 1991). Exploring this difference will help policy makers bridge the gap between the rich and poor and understand the socioeconomic factors which contributes or hinders caregiver's child health and nutritional knowledge

CHAPTER THREE

3.1 Methodology

3.2 Methods and Demographic characteristics

The data used was from the Savelugu- Nanton Household Survey conducted by the International Food Policy Research Institute (IFPRI) in collaboration with the Food and Nutrition Security Unit at the University for Development Studies between May and August 2001. It was a cross-sectional survey that was funded and supported by the United Nations Children's Fund, Ghana, IFRI and the World Bank. The purpose of the survey was that it served as the baseline for an IFPRI evaluation of interventions to increase the micro nutrient content of young children's diets. The research area of the UNICEF/IFPRI/UDS collaborative research was Savelugu- Nanton District of the Northern region of Ghana. It is situated about 15 km away from Tamale, the capital town of Northern Region. The population of the district stands at 91,415 (2000 population census), this represents 4.5% of the Regional population of 1,854,994. This is broken down into 49% male and 51% female. With a land area of 1790.7 sq. km., the population density stands at 51.05 persons per sq. km. Agriculture is the mainstay of the inhabitants of this district. Over 90% of the people are ethnic Dagombas and speak Dagbani. There are 147 communities in the district. Nearly 80% of the populace resides in these rural communities and 20% in the few urban towns. Households are predominantly male-headed. The proportion of female-headed households is 3.1%. The average household size is 8.7 with the smallest household comprising one member and the largest household having 47 members. In the area of health and nutrition there is an uneven distribution of health facilities, low access to

health care, low quality of health care, especially mother and child care. The 2001 baseline report and other reports indicate that illiteracy, poverty and malnutrition rates are comparatively among the highest not only in this region but across the country as well.

3.3 Participants and Instrument

The survey randomly sampled 1684 households and 23,580 individuals (including children, their parents, and other family members) living in 64 communities throughout Savelugu Nanton. The current study focuses on principal caregivers of index children most of whom were biological mothers of the index children. A total of 1588 Caregivers with children from 0 to 38 months participated in the study of the total number of households. A stratified two stage cluster sampling was used to select households for the survey. In choosing an index child, a rapid census was used to enumerate all compounds that had at least one child under the age of three. Where there was more than one child under three, the child whose first name came first alphabetically was selected. The participants in the study are from Savelugu Nanton which is located in the Northern part of Ghana. Agricultural production is their principal economic activity, with the processing of agricultural products being another source of livelihood. The state of environmental health and sanitation is extremely poor. Access to portable water is limited. There is wide spread poverty in the area. Education and literacy level in Savelugu Nanton are very low. Households in the area tend to be large and the structure is based on extended families.

A structured questionnaire was designed specifically for this survey in consultation with previous questionnaires used in other surveys in Ghana. Following a number of pre-test in various communities the questionnaires were translated from English into

Dagbani. The survey included the following questionnaire modules: household roster, age, marital status, education, time allocation and employment, credit roster, household assets, agricultural production, land and labour, crops, tree crops, livestock, fishing household consumption and expenditure, transfers and other incomes, dwelling characteristics, water and sanitation, child feeding practices, feeding roster, feeding and food practices, knowledge and attitudes of primary caregiver, hygiene and sanitation, health of index child. It also had health of primary caregiver, caregiver autonomy, social support, alternative caregivers, mother-infant attachment, sanitation spot-check, maternal and child anthropometry of children under five years, the use of preventive health behaviour and community and local market prices. All modules were based on self reporting interview, except anthropometry and hygiene spot check which was done through observation. Field workers made up of supervisors and interviewers were hired locally and trained for ten and six weeks respectively. All the data were double entered to minimise data entry errors. All completed questionnaires were reviewed by supervisors and feedback and instruction were provided to the interviewers.

3.4 Key variables studied

3.4.1 Knowledge Index:

This index was constructed on the basis of the primary caregiver's responses to a set of five questions. The first two questions relate to treatment of diarrhoea and the last three questions pertain to child nutrition. Descriptive statistics for variables included in the caregiver's knowledge index is added to the appendix of this research. The

survey instrument includes extensive detail on mothers' knowledge of vitamin A, identification of micronutrient rich foods, breastfeeding, its sources and benefits for child health, and the sources of that maternal knowledge. I constructed the proxy measure of nutrition knowledge for the present study based on mothers' knowledge of the child health benefits eating the right food and treating a sick and convalescent child from diarrhea.

The index knowledge comprised of five questions related to child health and nutrition:

1. When a child has diarrhoea, it should be given much less, about the same or more fluids?

2. When a child recovers from diarrhoea, it should be given much less, about the same or more foods?

3. Do you think that fruits and fruit juices are dangerous for children?

4. Do you think that a child that does not eat well will not be able to attend to his or her studies?

5. Do you think that as soon as the child starts taking other feeds he or she should be taken off breast?

3.4.2 Caregiver's Socioeconomic Status

The choice of how to measure SES remains open. Part will depend or be determined by the question being examined, the practical consideration concerning the acquisition of data and part by the population from which the data was collected (Bradley and Corwyn, 2002). A measure of socioeconomic status (SES) was assessed based on items regarding households and community characteristics. Household socioeconomic

status mostly influences its member's health through the income and wealth effect. Each of the socioeconomic factors was treated as an ordered categorical variable and all models. The socioeconomic indicators such as household and community characteristic examined as potential constraint and resource to health knowledge after controlling for Age of index child in months are as follows:

3.4.2.1 Distance to primary fuel source:

Since most of the communities in the study region had no electricity, this variable helped to determine whether the various households travelled short or long distances to collect fuel for energy purposes. This variable was measured by answering the question 'what is the distance to primary fuel source with the distances ranging from less than 2 km and 2km and above. A reverse coding was therefore performed where the various distances to the fuel source were rated on a scale from 0-1 High scores meant short distances while low scores meant long distances. Households who had lower distances to their primary fuel source were considered to have high socioeconomic status while households who had longer distances to their primary fuel source were considered to have low socioeconomic status.

3.4.2.2 Distance to primary water source in dry season

This variable was used as a socioeconomic status measure to determine how far households travel to get water. This variable was measured by answering the question 'what is the distance to primary water source in dry season. The distance options ranged from in the compound, less than 500m, 500m to 2 km, 2km to 5km, more than 5km and don't know. A reverse coding was therefore performed where the various

distances to the water source was rated on a scale from 1-5. High scores meant short distances while low scores meant long distances. Households who had lower distances to their water source were considered to have higher socioeconomic status while households who had longer distances to their water source were considered to have lower socioeconomic status.

3.4.2.3 Distance to primary water source during rainy season

This variable was measured by answering the question 'what is the distance to primary water source in dry season with the distances ranging from in the compound, less than 500m, 500m to 2 km, 2km to 5km, more than 5km and don't know. A reverse coding was therefore performed where the various distances to the water source was rated on a scale from 1-5. High scores meant short distances while low scores meant long distances. Households who had lower distances to their water source were considered to have higher socioeconomic status while households who had longer distances to their water source were considered to have lower socioeconomic status.

3.4.2.4 Compound cleanliness

This variable was constructed by a set of seven questions which are 'The compound needs to be swept? Were human feaces observed in the compound? Were poultry feaces observed in the compound? Was stagnant water observed on the compound? What is the general appearance of the immediate surrounding compounds? Are there open garbage containers in the compound? Is the drinking water (used by the Index Child) covered? All these questions had the responses Yes or No. Households who responded 'Yes' were considered to be living in a cleaned compound and therefore

had to have higher socioeconomic status whilst households who responded 'No' were considered to be living in an unclean compound and are considered to have lower socioeconomic status.

3.4.2.5 Households experience food shortages

This variable was measured by answering the question 'Does households experience food shortages with sometimes and never as the response. Households who never experienced food shortages were considered to have higher socioeconomic status whilst households who experienced food shortages sometimes were distances considered to have lower socioeconomic status.

3.4.2.6 Total non food household's expenditure.

This variable was measured by combing all the non food items that households spends on such as housing, fuel and lighting, utilities, clothing and footwear, personal effects, non-durable household goods, education, transport, communication, recreation and entertainment, ceremonies organized by households and attended, health and miscellaneous. This variable measures household expenditure in terms of monetary value, thereby assessing the level of socioeconomic status of the various households.

3.4.2.7 Total food household's expenditure

This variable was measured by combing all food items that households spends on including cereals, tubers, vegetables, fruits, meat, egg, milk product, fish and sea food, legumes, oil and fats, and sugar, honey and others foods. The assessment of the total food household expenditure was done by looking at the sum of money used for food in the respective households. Per capita household food consumption was

grouped into three main levels; that is low, medium, and high. The average household expenditures (Cedis per year) on food ranged from 12,388 (low), 13,377 (medium), to 16,147 (high). Thus, having a high sum of money allocated for food indicated a corresponding higher standard of living while a lower sum of money used for food showed a lower standard of living. Knowing the general patterns that exist among households was important as it helps to understand how these patterns differ between households that are relatively better off compared to those that are relatively worse off.

3.4.2.8 Sleeping Density

This variable was constructed by using two important variables. This includes the number of people who slept in a room in the compound and the number of rooms used for sleeping. In other to get the percentage of rooms used for sleeping in, the number of rooms used for sleeping was divided by the number of rooms available (for people). Thus, this computation helped to arrive at the variable sleeping density which was the proportion of rooms used for sleeping in out of the rooms' available. The computation of this variable helped in the assessment of the socioeconomic status of the household; where households who used a small proportion of available rooms for sleeping had high socioeconomic status and households who used more rooms for sleeping had lower socioeconomic status.

3.4.2.9 Households per capita expenditure

Computation of household s' per capita expenditure included the values for food and non-food items. Households per capita expenditures help determine socioeconomic status levels of these households. Having high per capita expenditure indicate good

living standards as seen in better off households, whose total budget included spending on clothing and footwear, attending funerals, weddings to mention but a few.

3.4.2.10 *Number of food group's households consumes*

Household food consumption pattern grouped in twelve categories as found in the Savelugu/Nanton District survey was used as a measure of socioeconomic status. The twelve households' food groups include cereals and grains; roots and tubers; vegetables; fruits; meat and offal; eggs; milk products; fish and seafood; pulses and legumes; sugar and honey; and other foods. Households that devote its expenditure on cereals and grains to roots and tubers have lower living standards. By assessing the diversity of food consumption of the households it helped to determine the living standards of the households. Thus, the more food groups that a household is able to eat indicates a higher socioeconomic status while the less food groups a household eats also indicates a lower socioeconomic status.

3.5 Scoring

The general scoring system for knowledge index was allocated a score of -1 for knowledge choices that are harmful to the index child when put into practice. A score of 1 was allocated to answers that are beneficial to the index child when put into practice whereas a value of 0 was given to don't know answers. The knowledge index was therefore the sum of the scores for the five variables. The maximum possible score was +5 and the minimum was -5 for the knowledge index. Practices were considered positive or negative on the basics of current and available scientific

evidence about their risk and benefits. The Total Knowledge index score was finally divided into 2 equal parts such as low and high level knowledge. A total score from -5 through 0 indicates low knowledge index, and a score from 2 through 5 indicate caregivers with high level of Knowledge regarding child health and nutrition.

3.6 Ethical Issues

The data set used in this study was made publicly available and therefore I did not need an institutional review for ethical clearance. Community meetings were held in each of the survey communities at least one week before data collection started in that village. The essence of these meetings was to explain the purpose of the survey and seek the community's consent to conduct the survey and answer any questions. Prior to starting the interview in each household an informed consent form was completed. All information that would allow individuals to be identified was deleted from the file therefore ensuring that anonymity of the participants is guaranteed, while all other information remains in the data files. While great efforts were taken to obtain high quality data, the accuracy or reliability of the data was not guaranteed or warranted in any way. Languages and words that are biased against the participants were not used in this study and final copies of the study were sent to the Food and Nutrition Security Unit at UDS and to IFPRI. None of the participants were named and cannot be traced.

3.7 Data management and statistical analysis

The statistical analysis was performed using SPSS for windows, version 15.0. Data were reverse coded to ensure correct directionality of the variables scores. A

descriptive analysis was run on all the variables in the study. The data set was screened for outliers and missing data. Missing data and outliers were handled through the proper procedure in SPSS. The statistical analysis performed for the various dependent and independent variables were according to the following plan.

1. Computed a descriptive statistics (Mean, standard deviations and range) of all the variables used in construction of total knowledge index of caregivers and socio-economic indicators.

2. A bivariate comparison was also performed with Pearson's correlations on a two-tailed analysis. The level of statistical significance was set at a probability of $P < 0.05$ and $P<0.01$ for all tests.

3. Performed a binary logistic regression analysis to determine the best prediction of a dependent variable from the two socio-economic factors which were significant with knowledge variable after performing that bivariate analysis.

Chapter Four

4.1 RESULTS

4.2 Descriptive statistics for the scales

Table 1 shows descriptive statistics for the various scales going into the regression analysis. Caregivers of index children had higher means on the following SES variables distance to primary fuel source, distance to primary water source in dry season, distance to water during rainy season, compound cleanliness, coded so highest scores are cleanest and number of food groups household consumes. Within the knowledge index variables they showed higher means on questions related to when a child recovers from diarrhoea, they should be given much less, about the same or more foods? Do you think that a child that does not eat well will not be able to attend to his or her studies and do you think that as soon as the child starts taking other feeds he or she should be taken off breast? They showed a lower and negative mean on questions such as 'When a child has diarrhoea, they should be given much less, about the same or more fluids? ' The skewness in the distribution was in the expected direction with positive skewness on when a child has diarrhoea, they should be given much less, about the same or more fluids and do you think that as soon as the child starts taking other feeds he or she should be taken off breast knowledge index variables? They showed negative skewness on when a child recovers from diarrhoea, they should be given much less, about the same or more foods, do you think that a child that does not eat well will not be able to attend to his or her studies and do you think that fruits and fruit juices are dangerous for children? Within the SES variable distance to primary fuel source, distance to primary water source in dry season and

distance to water during rainy season had a negative skewness with all the other variables with a positive skewness. On the other hand, kurtosis value for SES variable compound cleanliness was below 0 indicating a distribution that is relatively flat. Moreover, the kurtosis on the three of the knowledge index variables 'when a child has diarrhoea, they should be given much less, about the same or more fluids, do you think that as soon as the child starts taking other feeds he or she should be taken off breast and do you think that fruits and fruit juices are dangerous for children are all relatively flat. Although kurtosis and skewness can result in an underestimation of variance for the sake of this analysis, the risk was reduced given a rather large number of observations in the sample.

4.3 Distribution of summative primary caregiver infant health care knowledge index.

In total 75 percent and 25 percent of primary caregivers had high and low score with regards knowledge of child health care in Savelugu Nanton respectively. Below is the descriptive score of the individual knowledge variables:

4.3.1 When a child has diarrhoea, they should be given much less, about the same or more fluids?

A total number of 1586 caregivers answered this question ' when a child has diarrhoea, they should be given much less about the same or more fluids'? Out of these 60 percent of Primary caregiver's believe that children with diarrhoea should be given less fluid, 24 percent believe they should be given more and 17 percent believe they should be given about the same amount of fluid. Comparatively, more than half

of the caregivers' belief about the question is a harmful practice according to conventional standard practice.

4.3.2 When a child recovers from diarrhoea, they should be given much less, about the same or more foods?

A total number of 1585 caregivers answered this question ' when a child recovers from diarrhoea, they should be given much less, about the same or more fluids'? Out of these 87.5 percent of caregivers believe children recovering from diarrhoea should be given more fluid, 5.6 percent believe they should be given much less fluid and 6.7 percent believe they should be given about the same amount of fluid. Comparatively, significant number of the caregiver's beliefs about the question is the right and appropriate practice according to conventional standard practice.

4.3.3 Do you think that a child that does not eat well will not be able to attend to his or her studies?

A total number of 1587 caregivers answered this question ' Do you think that a child that does not eat well will not be able to attend to his or her studies? Out of these 84 percent of caregivers believe that a child that does not eat well will not be able to attend to his or her studies and 5 percent did not have any idea about the question whilst 10 percent did not believe that a child that does not eat well will not be able to

attend school. Comparatively, a significant high number of caregivers' beliefs about the question were correct practice according to conventional standard practice.

4.3.4 Do you think that as soon as the child starts taking other feeds he or she should be taken off breast?

A total number of 1587 caregivers answered this question ' Do you think that as soon as the child starts taking other feeds he or she should be taken off breast? Out of these, 68 percent of caregivers disagreed with the fact that as soon as a child starts taking other feeds, he or she should be taken off breast. Whilst 5 percent did not have any idea about the question, 27 percent of caregivers agreed with the fact that children should be taken off breast milk as soon as they start taking other feeds. Comparatively, a significant number of caregiver's beliefs about the question were correct practice according to conventional standard practice.

4.3.5 Do you think that fruits and fruit juices are dangerous for children?

A total number of 1588 caregivers answered the question ' Do you think that fruits and fruit juices are dangerous for children? Out of these, 30 percent of caregivers disagree with the fact that fruits and fruit juices are dangerous for children. Whilst 5 percent did not have any idea about the question, 66 percent of primary caregivers agreed with the fact that fruits and fruit juices are dangerous for children. Comparatively, a significant number of caregivers' beliefs about the question were harmful and wrong practice according to conventional standard practice.

4.4 Bivariate correlations between total knowledge index of primary care givers and socio-economic status.

Table 2. shows the Bivariate and Pearson's correlations between total knowledge index of primary care givers and socio-economic indicators with one-way analysis of variance (ANOVA) on a two tailed test. The correlation between the knowledge index and SES variables for that matter distance to primary fuel source and household experience food shortages were significant at ($p \leq 0.01$) and ($p \leq 0.05$) respectively. Also for the inter item correlation among the SES variables, there seemed to be some significance among them. Age of index child in months correlated significantly with sleeping density at ($p \leq 0.05$). Age of index child in months also correlated significantly with household experience food shortages and total food house expenditure ($p \leq 0.01$). The item sleeping density correlated significantly with total non food households' expenditures, total food households expenditures, number of food group's households consumes at ($p \leq 0.01$). Moreover total non food household expenditure correlated significantly with total food households expenditures, number of food group's households consumes and household per capita expenditure all at ($p \leq 0.01$).

4.5 Regression analysis

Table 3abc show the Binary Logistic regression analysis performed to assess the power of the two SES variables representing distance to primary fuel and household experiences food shortages in predicting the nutrition and child health knowledge of index caregivers. In the dependent variable block knowledge index which was coded as 0 for high and 1 for low was entered as the only explanatory variable. Distance to primary fuel and household experiences food shortages were the only variables entered in the covariates. The results of the binary logistic regression reported in table 3 showed the Cox and Snell pseudo R^2 statistic was .009. The odds ratio titled Exp (B) for distance to primary fuel source and household experiences food shortages were .72 and 1.68 respectively. This means that, for every increase in travelling distance by a kilometre for fuel, the likelihood of caregivers having adequate knowledge of child health care decreases by .721 times. Moreover, after controlling for distance to primary fuel source, caregivers living in households that never experiences food shortages there is a corresponding increases the likelihood of having high level of knowledge regarding child health care knowledge by 1.68 times. The Wald chi square 7.60 for distance to primary fuel source and 5.64 for household experiences food shortages.

Chapter Five

5.1 Discussion

In contrast to most previous studies, which define socioeconomic status exclusively in terms of maternal education, house-hold income and possession of assets, the present study considers the determinants of household socioeconomic status in terms of household characteristics and community infrastructures. Socioeconomic status influences the types of events that one experiences, and there is little doubt that there is an inverse relationship between SES and caregivers' child health knowledge.

Caregivers of children aged 0-38 months with a mean age of 17.5 months were used in this study. Distributions of the knowledge score showed that 75 percent of primary caregivers' in the region had high level knowledge, whilst 25 percent of the primary caregivers fell in the range of low knowledge score. The result of the analysis showed that, among the numerous socioeconomic status variables, distances to primary fuel source and household experiences food shortages were statistically significant with caregiver's knowledge. Further analysis into these two SES variables indicates that in Savelugu Nanton, Ghana, for every increase in travelling distance for fuel by a kilometre, the likelihood of caregivers having adequate knowledge of child health care decreases. This shows that, the farther a caregiver travels to get fuel, the poorer she is and the more likely she is to score low on child health care knowledge. Moreover after controlling for distance to primary fuel source, caregivers' living in households that never experiences food shortages increases the likelihood of having high level of knowledge regarding child health care knowledge. This result is in accordance with previous researches (Schellenberg et al, 2003, Sniff, 2004 and Ruel,

1992) showing that higher SES corresponds to a higher and better child healthcare and for that matter a better child healthcare knowledge of caregivers. It can be noted that since a household that never experience food shortage is considered as wealthy and high in SES, the corresponding increase in the knowledge of caregivers regarding child health care is in line with the hypothesis that higher SES accounts for better health knowledge among caregivers'. However, the current research findings are in contrast to other previous researches, (Leroy 2005 and Christiaensen and Alderman, 2004) who have all found that there is no significant relationship between SES and health knowledge or child health.

5.2 What do Caregivers know about Child health care in Savelugu-Nanton Ghana?

In all, a significant number of caregivers in the study site knew the standard practice when it came to the knowledge index questions about child diarrhoea. More than halve of the primary caregivers knew it was right to give a child who was recovering from diarrhoea more fluids. The remaining caregivers had knowledge about child diarrhoea that was very detrimental to the health of the index child. Giving very little or no water to a child with diarrhoea can have serious health consequences such as dehydration which includes signs of thirst, less frequent urination, dry skin, fatigue, light-headedness and dark-colour urine. Persistent dehydration can lead to the death of the child. However sixty percent of the caregivers thought it was right to give a child with diarrhoea less fluids and this action is also very harmful to the health of the child.

About more that halve of all the caregivers knew and believe that giving fruits and fruits juices to a child is dangerous and harmful to their health. This is a practice which is very detrimental to a child's health according to the conventional standard. Consumption of at least 5 portions of fruit in a day is recommended for children. Eating fruits has a lot of health benefits for children since they contain vitamins and minerals which are vital in a child's developmental process. For a caregiver of a child to believe that fruits and fruit juices are dangerous for a child's health is nothing to be proud of in this study area.

Breasting feeding coverage in Ghana as a whole has been very encouraging, for that matter it was not surprising to find that about sixty eight percent of women in the region knew that a child should not be taken off breast milk as soon they start taking other food. Lastly eighty-four percent of caregivers in the region believe that a child that does not eat well will not be able to attend to his or her studies.

The result goes a long way to prove in the study area that, irrespective of one's socioeconomic status a caregiver can have a high knowledge on child health in Savelugu Nanton. In this study area which is classified as one of the very poorest in Ghana, a primary caregiver of infant can still have a high knowledge when it comes to child healthcare. One possible explanation to these is that, there has been an improved and wide coverage of basic health care and information to most part of the region. Most of these caregivers are provided with essential information on child health by their local community health care providers. In fact, only 25 percent of the caregivers' had low scores on the knowledge variable in the region. In this case one can conclude that, material things or wealth possessions cannot entirely explain the variations in caregivers' level of child healthcare knowledge because even in the poorest region

like Savelugu Nanton primary caregivers were very well-informed with regards to child health care knowledge and practise.

5.3 Limitations of the study

There are few limitations that need to be acknowledged in the study. The first relates to the choice of SES indicators used in the study. One possible explanation could be that there has not been an agreement or fast rule as to what constitute SES variables in most previous researches. Most previous studies used education as a proxy for SES, I could have explored caregivers' education but the data set provided for the current study had very poor and inadequate information on caregiver's education and age respectively. This could have resulted in the result being different from most studies. Secondly, the choice of socioeconomic factors might not be well suited for use in the study area. This claim is supported with the low Cronbach's alpha in the analysis of these variables and a better choice of SES could have resulted in a different findings.

5.4 Implications and conclusion

The debilitating, pervasive, and potentially fatal consequence of low or inadequate maternal child health knowledge is an increasing priority for public health officials in developing countries. This implies that child health issues should be taken more seriously in Savelugu Nanton, Ghana. Analytical support for that effort can provide an added basis for designing effective interventions. This study also contributes to the

findings that caregiver's knowledge of child health and nutrition in Savelugu Nanton, Ghana is not influenced by household socioeconomic status.

This may suggest that specific training in micronutrient food and the proper treatment of children's diarrhoea among poor mothers with little formal education could have large impact on the growth of children living in impoverished environments such as Savelugu Nanton. Although continued effort to improve formal education of mothers is crucial, a complementary short-term approach could include more specific, relevant messages to mothers with currently low levels of education. If the main impact of education comes from directly raising mother's basic health knowledge, then such knowledge should be taught to girls as early as possible before they drop out of school. Also women at child bearing age who have already left school should be taught during special education programs and courses about child health care and nutrition.

The results and their implications may well be applied to other developing countries. If the findings that health knowledge is the key skill for improving child health, in a country where a large proportion of women do not go beyond primary school, basic health education should be added to its primary school curriculum. In addition, if a large proportion of the women do not even attend primary school, health education programs for women of child bearing age should also receive high priority. As formal schooling is often limited among the poor, the potential benefits of specific nutrition training may be substantial.

Positive deviance is a development approach that is based on the premise that solutions to community problems already exist within the community. The positive deviance approach thus differs from traditional "needs based" or problem-solving

approaches in that it does not focus primarily on identification of needs and the external inputs necessary to meet those needs or solve problems. Instead it seeks to identify and optimize existing resources and solutions within the community to solve community problems. Among the numerous factors that affect diet and children's nutritional status, health and nutrition knowledge is one factor which can be manipulated by health authorities through the use of tools such as public health and education campaigns (Sternin, et al 1998).

The result of the study should assist in the designing of effective programs and interventions to improve caregiver's knowledge on child health in Savelugu Nanton. Programs such as the following should be implemented to ensure better child healthcare knowledge in Savelugu Nanton.

- Health education and skills development. Programs such as the use wide range of mass media in delivering of child health information especially developing relationship with local media contacts. The use of local community activities and delivering the child health messages in their native languages should help the caregivers in acquiring more and appropriate practices regarding child health.

- Community actions. The use of self help and support group for caregivers' of children should be formed in order to empower and encourage the mothers to improve their knowledge whilst gaining the right attitude and beliefs regarding child health. Occasions such as local festivals and traditional durbars setting can be a use to inform not only the caregivers' but the whole community.

The study highlighted which of the health knowledge caregivers of index children were deficient and knowledgeable in Savelugu-Nanton. Analysis of the data revealed in the research that caregivers of index children were highly knowledgeable on how much fluid to give a child recovering from diarrhoea, a child who is sick cannot study and also a breastfeeding child should be breast fed even if other foods are introduced. I suggest that through a Positive Deviance Inquiry (PDI), program staff and their community partners can identify the unique practices of some community members that set them apart from others within the same community, and allow them to cope more successfully within the same community. Knowledge is identified as one of the `fundamental social causes' of differences in health, so by empowering people with the knowledge to make appropriate dietary decisions, we can take a step towards ending this pattern of social inequality. (Link and Phelan, 1996, in Parmenter et al, 2000, p 173).

The study attempts to elucidate both what caregivers know about child nutrition and diarrhoea treatment but not how they know it. It suggested that majority of caregivers have the adequate knowledge and beliefs regarding child health and also caregivers with higher socioeconomic status are more likely to have higher knowledge than caregivers with lower socioeconomic background. I recommend firstly that, future studies is needed in this research area to ascertain the sources of health knowledge and beliefs of caregivers in order to direct more attention to the sources that are accessible to them and find ways of making these information sources completely available to local caregivers. Secondly, more research into the background of all the caregivers who seemed to know more in terms of the knowledge questions and further studies is required in order to understand why there are differences in knowledge of caregivers given the same opportunities, geographical location, poverty and the same

harsh environment. The factors associated with those caregivers with high knowledge can also be explored by future researchers. Discovering what those caregivers are doing to achieve better child health knowledge promised to be a pathway for finding sustainable solutions for malnutrition and better child health care that are native to the context where they could be applied.

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Appendix A

Table 1.

Descriptive statistics for variables used in Savelugu Nanton study.

Variables	Range	Mean	S.D	Skewness	Kurtosis
Total knowledge score	0-2	1.06	0.787	-0.109	-1.379
Age of index child in months	0-38	17.47	9.430	0.144	-1.094
SES Variables:					
Sleeping density	0-1	0.28	0.175	0.442	0.222
Distance to primary fuel source	1-5	3.55	0.752	-0.208	0.120
Distance to primary water source in dry season	1-5	3.23	0.816	-0.849	0.223
Distance to water during rainy season	1-5	3.72	0.620	-0.716	1.154
Household experiences food shortages	1-2	1.10	0.295	2.745	5.545
Compound cleanliness, coded so highest scores are cleanest	1-7	4.60	1.318	0.202	-.658
Total non-food household expenditures	72000-66114400	4125071.56	5188465.293	5.041	40.676
Total food household expenditures	213304-31304000	4400969.90	2855913.907	2.564	13.977

Household per capita expenditures	3154536	594247.30	321651.564	2.234	9.113
Number of food groups household consumes (with 12 the maximum)	3-11	6.58	1.318	0.540	0.282

Knowledge index Variables:

When a child has diarrhoea, they should be given much less, about the same or more fluids?	-1-1	-0.37	0.846	0.797	-1.131
When a child recovers from diarrhoea, they should be given much less, about the same or more foods?	-1-1	0.82	0.509	-2.810	6.664
Do you think that a child that does not eat well will not be able to attend to his or her studies?	-1-1	0.74	0.631	-2.200	3.130
Do you think that as soon as the child starts taking other feeds he or she should be taken off breast?	-1-1	-0.41	0.885	0.900	-1.115
Do you think that fruits and fruit juices are dangerous for children?	-1 - 1	0.36	0.908	-0.769	-1.344

[1] Household food and non-food expenditures are all expressed in Cedis.

Table 2.

Bivariate correlations between total knowledge index of primary care givers and socio-economic status

Variables in the analysis	1	2	3	4	5	6	7	8	9	10	11	12
1.Total Knowledge Index of Primary Caregivers on Child Health and Nutrition	1	.023	-.022	.069**	-.030	-.004	.052*	-.005	.016	-.007	.023	.020
2.Age of index child in months		1	.076**	.008	.010	-.005	.060*	-.045	-.022	-.051*	.016	.023
3. Number of rooms slept in out of total,			1	-.064*	-.049	.014	-.019	-.050	-.100**	-.138**	-.067**	.030
4. Distance to primary fuel source				1	-.037	-.024	.016	-.071**	-.039	-.017	.032	-.015
5. Distance to primary water source in dry season					1	.395*	-.008	.008	-.004	.012	-.039	-.033
6. Distance to primary water source in rainy season						1	.007	.009	-.002	-.014	.011	.031
7. Household experiences food shortages							1	-.062*	.049	-.011	.013	.001
8. Compound cleanliness								1	-.048	.036	.083**	.043
9. Total non food households expenditures									1	.408**	.122**	.503**
10. Total food households expenditures										1	.283**	.311**
11. Number of food groups households consumes											1	.245**
12. Households per capita expenditures												1

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 3a. Binary Logistic Regression model with Total knowledge index score as the predictor variable.

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Hosmer and Lemeshow Test
1	1758.165[a]	.009	.013
Chi square			.234
df			1
Sig.			.629

a. Estimation terminated at iteration number 4 because

parameter estimates changed by less than .001.

Table 3b.

Classification Table a

			Predicted		
			Child health care knowledge		Percentage Correct
Observed			High	Lower	
Step 1	Child health care knowledge	High	1176	0	100.0
		Lower	395	0	.0
	Overall Percentage				74.9

a. The cut value is .500

Table 3c.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Distance to Primary Fuel source	-.328	.119	7.600	1	.006	.721
	Household experiences food shortages	.516	.217	5.642	1	.018	1.675
	Constant	-1.420	.213	44.393	1	.000	.242

a. Variable(s) entered on step 1: Distance to primary fuel source, Household experiences food shortages.