

**FACTORS CONTRIBUTING TO THE
HIGH LEVEL OF MALNUTRITION
IN THE ASSIN DISTRICT**

BY

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DECLARATION

I declare that this dissertation has been the result of my own field research. Where other peoples work have been cited, this has been duly acknowledged in the references.

This dissertation has not been submitted towards the award of any degree nor is it being submitted concurrently in candidature for any other degree.

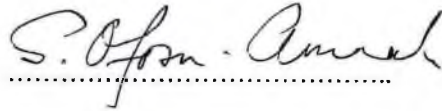
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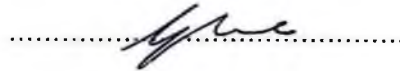

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DEDICATION

This work is dedicated to my teachers.

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LIST OF ABBREVIATIONS

DHMT	District Health Management Team.
GDHS	Ghana Demographic and Health Survey.
HAz	Height for Age Z-score.
KVIP	Kumasi Ventilated Improved Pit Latrine
MOH	Ministry of Health.
NCHS	National Centre for Health Statistics.
PEM	Protein energy malnutrition.
UNICEF	United Nations Childrens Fund .
WAZ	Weight for Age Z-score.
WHZ	Weight for Height Z-score.
WHO	World Health Organisation.

ABSTRACT

A study into some factors contributing to the high level of malnutrition among children aged less than five years was carried out in the Assin district of the Central Region of Ghana. It was a cross sectional descriptive study involving a sample size of 326 children aged between three and five years . A questionnaire was administered to the mother/caregiver of each child selected for the survey. Anthropometric measurements of weight and height were taken for each child. The anthropometric measurements were analysed using Epi info and compared to the United States National Center for Health Statistics reference figures.

There was 34.2% and 26.0% moderate and severe wasting respectively. Moderate underweight was 31.6% while severe underweight was 18.9%. Moderate stunting was 10.2% with severe stunting being 4.1%.

Factors contributing to undernutrition in the district include poor child care and feeding practices, the scarcity/high cost of food items and illness.

It is recommended that health workers should improve on the health information and education offered to mothers on the proper nutrition and care of their children. Home visiting should be undertaken by health workers to identify specific factors in the child's environment which impact on his/her health , so appropriate solutions can be effected. Efforts should be made to improve on household income and the availability of food throughout the year.

Water supply and sanitation should be improved throughout the district.

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CHAPTER 1

1.0 INTRODUCTION

Protein-energy malnutrition contributes significantly to morbidity and mortality among children aged less than five years. The World Health Organisation (WHO) estimates that about one-third of the world's children are affected by protein-energy malnutrition (P.E.M). About 21% of these children are found in Africa (The World Health Report, 1998). In Ghana, it is estimated that mild to moderate underweight contributes to 29% of under-five mortality beyond early infancy while severe underweight contributes to 16% of under-five mortality (Ghana PROFILES Analysis, 1997).

Childhood is a vulnerable period, particularly in the tropics where infectious/communicable diseases abound and sanitation is poor. The ability of children to overcome the challenge of infection depends among others on their immune status. Protein is needed to synthesize antibodies (immunoglobins), which play an important role in the body's response to infection. Thus a malnourished child is at a greater risk of succumbing to most of the childhood diseases..

The synergistic relation between malnutrition and infection is well known. A study to quantify the role of malnutrition in child deaths has concluded that over half of the 13 million deaths in the under fives each year are associated with malnutrition. Further, more than three quarters of all these malnutrition- related deaths are linked not to severe malnutrition but to mild and moderate forms (Pelletier, 1995).

The developing brain is very susceptible to the effects of undernutrition. Since many developmental events in the brain have only one opportunity to occur at certain

chronologically defined times, if conditions for their successful accomplishment are not optimal at the appropriate time, the brain will remain permanently deficient in the particular respect. The immensely intricate developmental sequence in the brain unfortunately provides little opportunity for the achievement of compensation for disturbances during its course (Commeey, 1990). Malnutrition has negative effects on the cognitive and intellectual development of children, thus having a long-term impact on human resource development. Hence malnutrition is not only a health issue but a developmental one as well.

Low-cost methods of reducing all forms of malnutrition are available and have been shown to work. Actions on both fronts-to improve nutrition and to protect against disease could save many more lives (and be far more cost-effective) than action on either front alone (UNICEF, 1994).

Nutrition education given by health workers has been an integral part of antenatal, postnatal and Child Welfare Clinics in the country. However it has been identified that conflicting messages are given to clients. This is due to the fact that there are no guidelines to follow in dealing with specific nutrition situations. Awareness of the need to begin supplementary feeding at six months is high but knowledge about the type of food and how frequent it should be given is low (Policy and Strategies for Improving the Health of Children Under-five in Ghana, M.O.H, 1999).

In Ghana, the Demographic and Health Survey of 1998 found that 25.9% of children aged three to thirty five months were stunted while 24.9% were severely underweight. In the Assin District of Ghana, malnutrition is the third leading cause of death among children, (Annual Report, 1999). A nutritional survey conducted in the district in 1996 showed a high

prevalence of malnutrition with 30% stunting, 27% underweight and 12% wasting among under five children.

Despite increased efforts by the District Health Administration and its collaborators to improve on the situation, there is evidence to suggest that the nutritional status of children has not improved.

1.1 Objectives of the Study.

The main objective therefore was to identify some factors contributing to malnutrition among children aged less than five years in the Assin district.

Specific Objectives.

These were to:

- i. Assess the knowledge of caregivers on the early signs of malnutrition.
- ii. Study the feeding practices in the district for under fives.
- iii. Document foods available locally (e.g. on the market).
- iv. Determine the role of health workers in preventing malnutrition.

1.2 Description of study area.

The Assin district is the largest of the twelve districts in the Central Region, with a total land surface area of 2375 square kilometres. It covers 25% of the Central Region. The district is bounded to the north by Adansi East district (Ashanti Region), Abura-Asebu-Kwamankese and Mfanstiman districts to the south, Asikuma-Odoben-Brakwa, Ajumako-Enyan-Essiam

and Birim South (Eastern Region) districts to the east. It shares boundaries to the west with the Upper Denkyira and Twifo-Hemang lower Denkyira districts. The district capital is Assin Foso.

It is a predominantly rural district (85%) and has a population of 194,000. There are eight sub-districts for purposes of health administration.

The Assin district is situated in the wet semi-equatorial climatic region. The average annual rainfall is between 125 to 200cm. There are two peak seasons of rainfall; the main is from May to July and the minor from September to October. The original vegetation is moist semi-deciduous rain forest.

Most of the people in the district engage in farming. They produce mainly cocoa, oil palm, cassava, plantain, cocoyam and citrus fruits for local consumption and for sale outside the district. There are small-scale manufacturing and processing activities such as palm oil extraction, soap making and cassava processing. Mining, lumbering and saw-milling also take place in the district.

The Cape Coast to Kumasi trunk road cuts across the north and south of the district. The feeder roads leading to many communities in the district are not tarred and most are in a deplorable state. During the rainy season these roads become difficult to travel on, thus making the health-service outreach into some communities arduous to undertake.

The Accra-Takoradi railway line passes through the district with a railway station at Assin Foso. Assin Foso has telephone facilities but the service is unreliable.

Electricity supply from the national grid is available only in the southern part of the district and in the towns along the main trunk road.

The main sources of water supply are boreholes, hand dug wells, streams and rivers, as well as harvested rain water.

The district has a Catholic hospital at Assin Foso. The seven other subdistricts each have a health centre. There are 150 trained T.B.A's, three registered private maternity homes and clinics, 66 chemical stores and eight homeopathic clinics.

CHAPTER 2

LITERATURE REVIEW

2.1 MALNUTRITION

The term malnutrition is used to refer to a number of diseases, each with a specific cause related to one or more nutrients (for example, protein, iodine or calcium) and each characterized by cellular imbalance between the supply of nutrients and energy on one hand, and the body's demand for them to ensure growth, maintenance, and specific functions, on the other (WHO, 1996.).

Leinwand, G. (1985) defines malnutrition as a condition in which the body does not obtain a sufficient supply of the essential nutrients. Even people who do not generally experience hunger can be malnourished if they do not have balanced diets.

The most vulnerable to malnutrition are children under the age of five. "Malnutrition, mostly in mild or moderate forms contributes to half of all child deaths" (UNICEF, 1997).

2.2 Causes of malnutrition.

The causes of malnutrition in children are complex but can be divided into three- immediate, underlying and basic. Immediate causes are inadequate dietary intake and disease. Inadequate dietary intake may be due to insufficient and poor variety of food, too few meals or foods being too bulky. Diseases such as diarrhoea, acute respiratory infections, measles, malaria and worms cause malnutrition by reducing appetite and absorption from the gut so the body gets fewer nutrients, and by increasing the rate at which the body uses nutrients.

Underlying causes of malnutrition are inadequate care of women and children, poor health services and sanitation, and not enough food in the home. The basic causes of malnutrition are the political, economic and cultural situations, which affect the underlying causes. (Kavishe, 1996).

Ighogboja (1992) studied a number of risk factors contributing to protein-energy malnutrition in the middle belt of Nigeria. He found poverty, family instability, poor environmental sanitation, faulty weaning practices, illiteracy, ignorance, large family size and preventable infections as the main factors responsible for malnutrition. He proposed strategies for health education emphasising the importance of breastfeeding, family stability, responsible parenthood and small family sizes as part of strategies for dealing with the problem. There is the need to improve weaning methods through nutrition education, growth monitoring and food demonstration with community participation.

2.3 The role of care in nutrition.

The role of inadequate care has received considerable attention as an underlying cause of malnutrition among children, together with inadequate household food security and inadequate access to health services (Engle, 1992).

Care has been described as the provision in the household and community of resources in the form of time, attention, love and skills to meet the physical, mental and social needs of nutritionally vulnerable groups (Longhurst, 1992).

2.4 Caregiver response to anorexia.

In many developing countries, caretakers are generally passive in their feeding mode, allowing children to set the pace. Food is offered on the basis of specific signals children send, such as crying or grabbing for food. When a child sends a “ food reject” signal, a common response is to give in to the child’s will.

Most parents have a mental construct of what a “normal” child’s appetite should be and recognize that anorexia- a child’s refusal to eat is not normal (Dettwyler, 1989). However, parents may not have ideas about how to cope with anorexia, and may be convinced that the primary solution is to administer vitamins or tonics to improve the child’s appetite. They place the burden of eating on the child, often taking cues from their infants about when and what foods should be offered.

2.5 Care practices during illness.

Reduction of food intake during an illness may be due to a child’s anorexia, or maternal food-withholding behaviour, or both (Martorell et al., 1980). The two main driving forces that determine nutritional care of the sick child in the home are advice from health-care providers (mainly physicians) and the mothers’ own beliefs; a third determinant of care is the social support network available to mothers or social pressure to act in a determined way. (Homero and Tomkins,1995). It is more likely that mothers will follow the recommendations given by the health care system if these conform to cultural norms and the explanatory model of disease held by the community.

A study of 131 Peruvian infants having episodes of fever or diarrhoea showed a significant decrease in total energy intake. This represented a decrease of 20% to 30% of energy intake. This decrease was due to reduced consumption of non-breastmilk foods. Structured

observations in the homes of 40 Peruvian children aged 4 to 36 months revealed that anorexia reduced a child's acceptance of food, despite the mother's encouragement to eat (Bentley et al, 1991). In Guatemalan children aged 15 to 60 months, diarrhoea was found to be associated with an average reduction in daily intake of nearly 20%, equivalent to 175kCal and 4.8g of protein (Martorell R et al, 1980).

2.6 Women's education and status.

Across the developing world women play key roles in maintaining household food security and in caring for children on a day-to-day basis, both of which are extremely important factors influencing a child's nutritional status. Women, depending on the region, are often highly involved in food production and acquisition, thus boosting food security. Women are naturally the primary caregivers at the beginning of a child's life, carrying out such functions as breastfeeding. Women are most often the people who feed and bathe children, seek health care when they are sick, protect them from exposure to danger, and support their cognitive and social development. Given these key roles, women's knowledge and abilities and their own physical well being and decision-making power are crucial to children's health (Smith and Haddad, 2000). The report finds women's education and status relative to men's to be strongly associated with child malnutrition in developing countries. It is estimated that improvements in female secondary school enrolment rates are responsible for 43% of the total 15.5% reduction in the child underweight rate of developing countries during the period 1970 to 1995.

Many Ghanaian mothers appear to be unaware of what optimum growth should be while fewer still think that the quality of food is important (Commeey, 1990). Furthermore,

mothers in general do not seem to be adequately aware of the amounts of food that children should eat or should be eating. While the frequency of feeding is low, the quality and amount of meals also tend to be low, so that the diet of most children across the country is inadequate in every respect to maintain health and growth. However, Jennifer et al (1977), in their study of the value of the Ghanaian traditional diet in relation to the energy needs of young children, found out that the traditional Ghanaian diet as eaten by non-affluent families, permits a wide range of energy intakes by young children. The Ghanaian diet, though described as bulky is certainly able to support growth in young children.

2.7 National food availability and health environment quality.

Food security is achieved when a person has access to enough food to lead an active and healthy life. It is thus a prime determinant of a child's nutritional status. The quality of the health environment, such as water cleanliness, sanitation, and access to health services, is also known to be a prime determinant of children's nutrition. Improvement in safe water access is an important factor in reducing child malnutrition (Smith and Haddad, 2000.).

2.8 Infections.

Many studies from all regions of the developing world have documented a significant negative relationship between infections and children's growth. Diarrhoeal diseases consistently had the greatest, and often the only, significant influence on growth. The effect was more consistently observed in relation to weight gain than to linear growth (Brown, 1991).

CHAPTER 3

3.0 METHODS

3.1 Type of Study

It was a cross-sectional descriptive study.

3.2 Sample Size (n)

A sample size of 323 households was obtained considering an expected prevalence of 30% (District Survey, 1996.) and using a sampling error of 0.05 and working at 95% confidence interval (Annex A).

3.3 Sampling.

The district was divided into two clusters: rural and urban. The eight sub districts were categorized into urban or rural. One sub district in each category was randomly selected, using the balloting method. The Foso subdistrict was selected by simple random sampling to represent the urban category whilst the Anyinabrim subdistrict was selected to represent the rural category. Seven communities from the two subdistricts of Foso and Anyinabrim were selected by simple random sampling using a list of the communities and applying the balloting method.

The selected communities were Foso, Dominase, Dompin and Odumasi in the Foso subdistrict and Anyinabrim, Nsuta and Akrofour in the Anyinabrim subdistrict.

The final households in each community were selected by purposive sampling.

3.4 Community Entry/ Ethical Clearance

Permission for the study was obtained from the Assin District Assembly and the traditional authorities of the selected communities. The rationale of the study was explained and confidentiality of all information was assured. Individuals included in the study did so on their own volition without being coerced.

3.5 Data collection

The main caregiver in each household was interviewed with a questionnaire. One child per household had his/her height and weight measurements taken. The children included in the study were aged between three and five years. The age of each child assessed was obtained. The weight was measured using a Seca toddlers scale with a minimum reading of one kilogramme. The weight was measured with minimal clothing on the child who was also barefooted. The height was measured using a Seca microtoise (Design No. 1013522), with a minimal reading of one millimetre. The height was measured without the child's shoes on. The feet were together with the heels against the measuring board. The child stood erect and the top of the ear and the outer corner of the eye (Frankfurt plane) were parallel to the floor. The horizontal bar of the microtoise was lowered to rest flat on the top of the head and the reading taken. The weighing and measurement of height were done on a flat surface. The results obtained were compared with the NCHS reference tables to determine the nutritional status of the child.

The instruments for data collection were the following:

1. A Seca weighing scale for measuring the weight of children.
2. A microtoise for the measurement of height.

A structured questionnaire administered to the main care- giver (e.g. mother).

An interview guide was used to interview some health workers.

Four research assistants were trained to assist in the data collection.

. market survey was undertaken to ascertain the types of foodstuff available on the market and their prices. The average price of the various foodstuffs was recorded.

visits were paid to Child Welfare Clinics at Anyinabrim, Foso and Nsuta to observe how the health staff interacted with the mothers/caregivers attending the clinics. The way health information and education was carried out during the session was noted.

3.6 Data Analysis.

The survey data was coded and entered onto a computer and SPSS programme (version 9) used for data analysis. The anthropometric data were analysed using EPI INFO Anthro programme.

Qualitative data were analysed and described under specific topics e.g.:

knowledge of care givers on malnutrition.

CHAPTER 4

4.0 RESULTS

A total of 326 children comprising of one hundred and seventy eight (178) males and one hundred and forty eight (148) females, aged between three to five years, were enrolled in the study. However, as a result of some errors in measurements, valid z-scores obtained were as follows: Height-for-age(n=315), weight-for-age(n=316) and weight-for-height(n=319). Using the z-scores with the following cut off points:

≥ -2 Standard Deviation (SD): Well-nourished and mild malnutrition

$< -2SD$ to $\geq -3SD$: Moderate malnutrition

$< -3SD$: Severe malnutrition, the following anthropometric indices of wasting, underweight and stunting were obtained (Nutrition in emergencies, WHO,2000).

Table 4a Weight for height (wasting)

Normal and mild wasting($\geq -2SD$)	127(39.8%)
Moderate wasting(< -2 to $\geq -3SD$)	109(34.2%)
Severe wasting($< -3SD$)	83(26.0%)
Total	319(100%)

About 34% of the children were moderately wasted and 26% were severely wasted.

Table 4b Weight for age (underweight)

Normal and mild underweight($\geq -2SD$)	156(49.5%)
Moderate underweight(< -2 to $\geq -3SD$)	100(31.6%)
Severe underweight ($< -3SD$)	60(18.9%)
Total	316(100%)

About one third of the children were moderately underweight with 18.9% being severely under-weight.

Table 4c Height for age (stunting)

Normal and mild stunting($\geq-2SD$)	270(85.7%)
Moderate stunting (<-2 to $\geq-3SD$)	32(10.2%)
Severe stunting($<-3SD$)	13(4.1%)
Total	315(100%)

Height for age scores showed 10.2% moderate stunting with 4.1% being severely stunted.

4.1 Level of education of mother/caregiver.

Of the mothers interviewed, 27% had no schooling while 21.2% had completed primary school. About 48% had completed middle school/Junior secondary school with only 4% having had secondary or commercial education.

Table 4d

Educational level of mother and degree of stunting of the child

Level of maternal education	Normal/mild Stunting	Moderate stunting	Severe stunting	Total
No schooling	68(25.2%)	13(40.6%)	6(46.2%)	87
Primary	54(20%)	5(15.6%)	4(30.8%)	63
J.S.S and above	148(54.8%)	14(43.7%)	3(23.1%)	165
Total	270(82.8%)	32(9.8%)	13(4.0%)	315

4.2 Occupation

The major occupation of the people was farming (40.2%) with trading constituting 38%. Professions such as dressmaking, teaching and the civil service made up 12% of respondents.

Table 4e. Main occupation of respondents

Occupation	Frequency	Percent (%)
Farmer	131	40.2
Trader	124	38.0
Homemaker/ Unemployed	32	9.8
Other	39	12.0
Total	326	100.0

The major occupation of the people was farming (40.2%) with trading constituting 38%. Professions such as dressmaking, teaching and the civil service made up 12% of respondents.

About 50% of respondents had between 1-3 children while 39.4% had 4 to 6 children. Those having 7 or more children constituted 8.7% of the respondents.

4.3 Feeding practices.

There was no restriction on the type of food given to the child by 276 (85.4%) of mothers/caregivers. Forty five (45) respondents do not give certain kinds of food to their children. The foods include rice and beans (14.3%), beans (6.1%) and fufu (28.6%).

Reasons for not giving a particular food to the child are shown in the table below.

Table 4f Reasons why child is not given particular foods*.

Reason	Frequency	Percent (%)
Child does not like the food	30	66.7
Food causes diarrhoea	8	17.8
Food causes allergy	4	8.9
Taboo	3	6.7
TOTAL	45	100

*The total of 45 represents those respondents whose children are not given particular foods.

Regarding foods the child should eat, the main ones mentioned were banku (20.5%), fufu (24.0%), ampesi (29.5%) and rice (23.2%). Other foods such as kenkey, rice and beans constituted 2.8%.

Reasons for food preference were that it is the staple or food eaten by the family (26.7%), it is nutritious or that it is readily available (17.5%).

4.4 Breastfeeding

Most of the children were breast-fed for periods between 13 to 24 months (80.1%). Only 3.4% were breast-fed for less than 6 months. However 69.4% started supplementary feeding before 6 months of age. Foods introduced to the child were mashed kenkey, plain koko, koko with milk, weanimix and banku.

4.5 Current feeding habits.

Most children are fed 3 times a day with 12.9% being fed more than thrice in a day. Only 5% feed their children twice or less in a day. Most children (93.1%) wash their hands before eating. 89.4% of the children eat by themselves. About two-thirds of respondents said they

encourage the child to eat as much as he/she can when meals are served. However, about a third said they are passive in their attitude towards feeding, leaving the child to eat what he/she can.

About 19% of mothers prepare all the child's meal at home while the majority (58.4%) sometimes buy cooked food for the child.

In most cases leftover food is stored after it is heated and covered. Some keep it in a safe or cupboard (8.5%) whilst 10.7% store it in a refrigerator.

Problems faced by care-givers in ensuring that the child is well fed include the high cost of food items (47.2%), and the non-availability of food to buy. One hundred and seventy nine children (54.9%) had been sick within the past four weeks preceding the study. Fever was the main complaint (71.9%) followed by diarrhoea (8%).

4.6 Child care during an illness.

Most respondents said that they decrease the quantity of food given to the child during an illness (81.3%). Only 2.1% increased the amount of food given to the child during an episode of illness. There was no change in the quantity of food fed by 8% of caregivers to children during an illness.

4.7 Child Welfare Clinics

Most of the caregivers reported sending their child to child welfare clinic sessions on a regular basis (94.4%). About 34% of the respondents said they knew that the weighing card is used to record and chart the weight of the child. One respondent (0.3%) said it was for

recording the immunisations received by the child. A few (3.8%) said the weighing card is a requirement for pre-school admission.

Most of the respondents (72.4%) were able to tell whether or not their child was gaining weight by looking at the weighing card.

4.8 Reasons why a child may not be gaining weight.

Some of the reasons given were illness, improper feeding, eating an un-balanced diet and loss of appetite. A few respondents said that weight loss is normal in a growing child (0.8 %).

Table 4g Reasons for child not gaining weight*

Reasons for child not gaining weight	Frequency of responses	Percent (%)
Improper feeding	132	27.2
Illness	239	49.3
Unbalanced diet	29	6.0
Loss of appetite	39	8.0
Normal part of growing	4	0.8
Improper care	32	6.6
Don't know	10	2.1
Total	485	100

***Multiple responses were provided hence the total responses are greater than 326.**

Asked what could be done to improve on weight loss in children, 55.2% of respondents said the child should be sent to a hospital or clinic while 10% said multivitamins/blood tonics should be bought for the child. About 18% said the child should be given nutritious foods with 1% mentioning exclusive breastfeeding as being important in preventing weight loss.

4.9 Caregivers knowledge on signs of malnutrition.

Most of the caregivers knew some of the signs to look for in a malnourished child. Signs like a protruded abdomen (43.3%), pallor (2.5%) and oedema (2.1%) were mentioned. However 31.6% of the respondents said they did not know what to look out for in a malnourished child.

Table 4h Signs in a malnourished child

Sign	Frequency	Percent (%)
Protruded abdomen	141	43.3
Thin legs	12	3.7
Small size for age	31	9.5
Oedema	7	2.1
Pallor	8	2.5
Diarrhoea	2	0.6
Silky yellow hair	22	6.7
Don't know	103	31.6
TOTAL	326	100

4.10 Advice given at child welfare clinics.

According to the respondents, the advice given by health workers at the child welfare clinics are on food hygiene (23.2%), lessons on balanced diet (40%) and preparation of weanimix (12.7%). Others mentioned exclusive breastfeeding (6.3%). Most of those attending the child welfare clinics (84.6%) said that they are able to practice what they are taught by the health workers while 15.4% said they had problems practising what they are taught.

Reasons given for putting the advice into practice were mainly to prevent illness in the child and to ensure it's proper growth. Those who could not practice what they had been taught gave financial difficulties and the child not liking the food prepared as some of the reasons. Others mentioned illness (breast abscess) as a reason for not being able to practice exclusive breastfeeding.

4.11 Sanitation and water supply

The majority of the respondents obtain water from wells or boreholes while a few fetch water from streams or rivers.

4i Sources of drinking water.

Source	Frequency	Percent(%)
Well/borehole	291	89.5
Stream/river	32	9.8
Stored rain water	2	0.6
Total	235	100

The commonest means of refuse disposal was by crude dumping (71%) in the surroundings. About a quarter of the respondents used a community approved refuse dump while 3.4% dug pits into which the refuse was dumped.

Pit latrines and K.V.I.P were the commonest types of toilet facility in use (about 40% each). Some respondents said they defecated in the surrounding bushes (15.1%).

4.12 Health workers role in preventing malnutrition.

Talks are given at the child welfare clinics and antenatal clinics on nutrition, with emphasis on exclusive breastfeeding. The nutrition education talks are on the use of locally available nutritious foods. Samples of such foods are displayed at the clinic. The mothers are taught how to prepare foods like weanimix and "apapransa" using soya bean powder. The feeding of mashed kenkey to babies is a common practice in the district so the mothers are discouraged from doing so.

During growth monitoring sessions, children who are not gaining weight or are less than 60% of their expected weight are identified. The nurses find out why the child is not gaining weight, and the caregiver is counselled and sometimes referred to the nutrition officer. Some factors contributing to the high level of malnutrition, according to the health workers, are poverty and poor childcare practices. Many caregivers have financial difficulties. As a result they are not able to buy the foods they have been taught to give to the children. Some caregivers leave for work (e.g. to the farm) very early without making adequate provision for the child's feeding.

Some observations made at child welfare clinics showed that the health talks are given at the beginning of the clinic session. However some mothers arrive late and so miss out on the talk. Others are only eager to have their children weighed and immunized, and so may not pay attention to what is being said.

4.13 Foods commonly available on the market.

A survey of the market in Assin Foso was carried out to assess the availability of some food items and their prices. The following table indicates the items and prices.

Table 4j Price list of some food items.

FOOD ITEM	UNIT OF MEASURE	PRICE(In Cedis)
Beans	"Margarine tin"	1200-2000
Groundnuts	"Margarine tin"	2000
Yams	One tuber	4000
Maize	"Olonka tin"	12000
Meat	One kilogram	8000
Palm oil	625 ml(one bottle)	2500
Smoked fish	4 medium sized	2000
Cassava	Approx. 1kg	4000
Plantain	One bunch	12000-18000
"Kontomire"	Approx. 100g	200

NB. The prices were obtained during the "lean season" when food is generally hard to come by.

CHAPTER 5

5.0 DISCUSSION

5.1 Nutritional status of children.

The three anthropometric indices of weight for age (underweight), weight for height (wasting) and height for age (stunting) were used to assess the nutritional status of the children in this study.

The prevalence of moderate wasting was 35.9% with severe wasting being 24.9%. These values are high compared to the national average of 9.5% and Central Regional value of 10.5% for severe wasting (GDHS, 1998). A nutritional survey in the Assin district (1996) found the prevalence of severe wasting to be 12%. A study of malnutrition among children in Southern Ethiopia found the prevalence of severe wasting to be 12%(Gusga, 2000). This means that the rate of severe wasting in Assin district is higher than that found in the other studies. Wasting indicates the failure to receive adequate nutrition during the period immediately preceding the survey. It may be the result of recent episodes of illness or acute food shortage.

The prevalence of moderate underweight in the study was 31.8% compared to the national figure of 5.2%(GDHS, 1998). The prevalence of severe underweight in the Assin district was 18.7% compared to 24.3%(national) and 26.3%(Central Region). In Ethiopia, Gusga found a prevalence of 17.8% for severe underweight in his study. Compared to the GDHS (1998) figures, the prevalence of severe underweight in the Assin district is lower.

The study found moderate stunting of 7.4% and severe stunting of 2.6%. These figures are lower than those obtained by the GDHS (1998) which were 25.9% and 9.3% respectively. Stunting of a child's growth may be the result of a failure to receive adequate nutrition over a long period of time or the effects of recurrent or chronic illness. It is a measure of chronic malnutrition. Stunting increases with increasing age of the child.

5.2 Maternal education.

Maternal education has an influence on child growth and development. Of the children with normal height- for -age scores, about 55% had mothers who had completed at least Junior Secondary School compared to 25% who had no schooling.

5.3 Knowledge of caregivers on the early signs of malnutrition.

Most of the caregivers in this study knew some of the signs to look for in a malnourished child. The signs commonly mentioned however are those of advanced malnutrition such as protruded abdomen, pallor and oedema. This suggests that mild cases of malnutrition may not be detected early enough by the caregivers and the appropriate intervention sought.

5.4 Feeding practices in the district.

Most caregivers in the study do not place restrictions on the type of food given to the child. The child eats the adult family diet. Reasons for selecting these foods are its availability or being the common staple food in the area. Majority of the children (93%) were fed at least three times a day. Jennifer et al (1977) found the importance to the young child of at least three meals daily. Children have a limited gastric capacity and hence low feeding frequency and insufficient energy density of foods consumed may restrict the calories available to the

child. Five percent of the respondents said their children were fed twice a day. These children may be at risk of malnutrition because they may not receive enough calories to meet the body's need for growth and development.

About a third of respondents were passive in their approach to child feeding. The child was dished the food and allowed to eat what he/she could, without any encouragement from the caregiver. Most of the caregivers in the study reported actively encouraging the child to eat more, as suggested by Jennifer et al (1977). This finding, however, is in contrast to the finding by Dettwyler (1989) that most caregivers in developing countries are passive in their feeding behaviour, offering little physical or verbal encouragement to eat.

During an episode of illness, about eighty percent of respondents decreased the quantity of food fed to the child. A sick child is usually anorexic and may not be interested in eating. However the increased metabolic activity brought on by the illness and the decreased absorption of nutrients from the gut (especially in cases of diarrhoea) means that the child may have a deficit of calories. Thus reducing the child's food intake may predispose him/her to undernutrition.

5.5 Growth monitoring.

Growth retardation is one of the first symptoms of dietary inadequacy. Growth monitoring can help to identify children at risk of malnutrition and thereby contribute to its prevention. Growth monitoring is especially useful in detecting mild to moderate malnutrition. It is a screening device, which can detect undernutrition where severe clinical manifestation has not yet developed (Hasan, 1999).

Most of the caregivers reported sending their child to child welfare clinics on a regular basis. However only 34% knew that the weighing card is used to record and chart the

weight of the child. Considering the high level of attendance at child welfare clinics, caregivers could be educated on the importance of growth monitoring in ensuring that children with problems are detected at an earlier stage for appropriate intervention. Most of the caregivers knew some signs of severe malnutrition but were not aware of the mild to moderate forms hence the importance of growth monitoring as an effective tool in the detection and control of malnutrition. Observations made at some child welfare clinic sessions showed that although overall attendance was high, not all mothers/caregivers were present at the beginning of the session when health talks are given. Thus late comers were likely to miss important health information. Some of those present at the clinics also do not pay attention to what is being discussed.

5.6 Health seeking behaviour and malnutrition.

Majority of the respondents (49.3%) associated low body weight with illness while about one third linked it to the diet and feeding practices. Most of the respondents reported that they would either send the child who is malnourished to a health facility or improve on the diet fed to the child. Ten percent said multivitamins or blood tonics should be bought for the child. Kolsteren et al (1997) in a study on the causes of malnutrition in Nepal found that most of the people did not perceive malnutrition as a health problem. Therefore they do not seek medical intervention in such cases. Rather malnutrition was thought to be due to supernatural causes so the child was sent to traditional healers for rituals to be performed. The link between malnutrition and diet was also not made by the community in Nepal.

5.7 Food availability

The Assin district is a predominantly rural area with farming as the major occupation but there is scarcity of food during the “lean season”. Most of the people are subsistence farmers producing to feed themselves and selling the surplus. A substantial portion of the food crops produced is sold to traders from some of the major cities and towns in the south of the country. This has led to a situation of relative high prices of food items. During certain periods of the year there is actually a shortfall in the supply of food. This situation impacts negatively on the nutrition of the people, particularly children. Some of the problems mentioned by caregivers in ensuring that their children were well fed included the high cost of food items (58.3%) and the non-availability of some foods to buy (9.5%). Ensuring a good supply of food and improving the household incomes may lead to better access to adequate nutrition. Food consumption by individual household members is closely related to food availability. Pinstrup-Anderson and Garcia (1990) showed that the adequacy of energy intake was greater in adults than for pre-school children. Thus in situations of food scarcity, children are more at risk of malnutrition. Van Esterik (1984) however demonstrated that children received a greater proportion of their recommended dietary allowance than adults.

CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.0 CONCLUSION

The study found a high level of wasting and underweight among the children compared to the national average. Most of the caregivers knew some causes and presentation of malnutrition. However the early signs are not known to most of them. This implies that caregivers may not be able to detect a child at risk of malnutrition early enough and thereby delay in seeking intervention.

Many caregivers are passive in their approach to the feeding of their children. The child is left to eat as much as he/she can without verbal or physical encouragement. During episodes of illness when the child is anorexic, food intake is usually decreased.

Food was scarce during the period of the study. The prices of foods available on the market were relatively high. As a result some caregivers are not able to ensure adequate feeding of their children.

The attendance to child welfare clinics is high in the district so the health workers have an opportunity to improve on the information, education and communication of improved child care practices and nutrition.

Most of the mothers/caregivers had had no formal education or had only completed Junior Secondary school. Only 4% had completed Senior Secondary or Commercial school. Maternal education had an influence on the degree of stunting(chronic malnutrition). The higher the level of education of the mother, the lower the degree of stunting in the child.

6.1 Recommendations

There is the need for the Ministry of Education and the District Assembly to improve on female education in the district. Parents should be encouraged to help their daughters complete their schooling. Improved female education will enable mothers to take better care of their children and make the optimum use of available health resources in ensuring the child's growth and development.

The health workers should improve on the nutrition education emphasising on the use of locally available nutritious foods. Home visiting by health workers should be intensified in the district. This will enable information on nutrition and health to be tailored to the family's special situation. Some children at risk of malnutrition may be identified earlier for appropriate interventions to be instituted.

Besides the general talks given during the Child Welfare Clinic sessions, one on one counselling of mothers/caregivers should be undertaken. The health worker will have the opportunity to tell the mother about the child's progress and address some of the special concerns she may have. This will make the services client friendly and engender confidence in the mothers.

There should be an improvement in the sanitation and water supply situation in the district. The communities and their leaders should be helped to appreciate the link between poor sanitation and the incidence of common childhood illnesses. The effect of illness on a child's nutritional status should be emphasised.

Improvement in the food security and household incomes will enable most of them the children receive adequate nutrition, thereby minimising the prevalence of malnutrition in the Assin District.

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ANNEX A

SAMPLE SIZE (n) CALCULATION:

A sample size of 323 households was obtained by using the formula:

$$n = \frac{Z^2 [P(1-P)]}{D^2}$$

Where P =expected prevalence=30%

D =sampling error of 0.05

Z = Reference normal distribution for the desired confidence interval (1.96 for 95% confidence interval).

ANNEX B

QUESTIONNAIRE ON FACTORS CONTRIBUTING TO MALNUTRITION IN THE

ASSIN DISTRICT

Name of community...:.....

Compound number.....

Date of interview.....

Name of child.....

Age of child.....

Weight of child.....

Height of child.....

Sex of child : Male..... Female...

Mother/ Caretaker

1.Age:

- 2.Marital Status a) Single
 b) Married
 c) Separated or divorced
 d) Widowed.

3.What is your main occupation?

- i) Farmer
ii) Trader
iii) Homemaker / Unemployed
iv) Other.....

4.What level of schooling did you complete?

- i) None
ii) Primary
iii) Middle school /J.S.S.
iv) Secondary /Commercial
v) Tertiary /Polytechnic

5.How many children do you have?

19. How is your child fed when he /she is sick?
- i) Increase the quantity of food
 - ii) Decrease the quantity of food
 - iii) No change in the quantity of food.
20. Is the child encouraged to eat as much as he/she can? Yes No
21. Do you send your child regularly for “ weighing” Yes No
22. Do you know what the “weighing card” is used for?
23. Are you able to tell whether your child is gaining or losing weight (from the weighing card)
24. What are some of the reasons why a child may not be gaining weight? List them:
25. What can be done to improve on the above
26. What other signs do you look for in a malnourished child?
27. What advise about diet are you given at child welfare clinics? List them:
28. Are you able to practice what you are taught? Yes No
Why?
29. What is your source of drinking water?
- i) Pipe
 - ii) Well/borehole
 - iii) Stream /river
 - iv) Other.....
30. How do you dispose of refuse?
31. What type of toilet facility do you use
- i) K.V.I.P
 - ii) Pit latrine
 - iii) Water closet
 - iv) Other.....

THANK YOU FOR YOUR COOPERATION.

ANNEX C

Interview guide for health workers

1. What are some contributing factors to malnutrition in under five children in this district?
2. What measures are in place to minimise the incidence of malnutrition?
3. How do you identify and rehabilitate a child with malnutrition?
4. What resources are available in the district to improve on child nutrition?