UNIVERSITY OF CAPE COAST

HEALTH EDUCATION AND THE BEHAVIOUR OF PEOPLE IN SELECTED

RURAL COMMUNITIES OF THE CENTRAL REGION OF GHANA

BY

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DISSERTATION SUBMITTED TO THE INSTITUTE FOR DEVELOPMENT STUDIES OF THE FACULTY OF SOCIAL SCIENCES, UNIVERSITY OF CAPE COAST, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR AWARD OF MASTER OF ARTS DEGREE IN HUMAN RESOURCE DEVELOPMENT

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DECLARATION

Candidate's Declaration

I hereby declare that this dissertation is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature: ……………………………   Date: ……………….

Name: Nana Bema Amponsah-Gyima

Supervisor's Declaration

I hereby declare that the preparation and presentation of the dissertation were supervised in accordance with the guidelines on supervision of dissertation laid down by the University of Cape Coast.

Supervisor's Signature: …………………………….   Date: ………………

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ABSTRACT

This research was carried out to determine the effect of community health education on the behaviour of people in selected coastal communities in the Central Region of Ghana between 2002 and 2006. A health centre from each of three study districts and then two communities were selected through simple random sampling. Respondents from the study communities categorized into beneficiaries (Breman, Egyankwa and Simbrofo) and non-beneficiaries (Eguafo, Etsibeedu and Mprumem) were interviewed to determine their sources and levels of knowledge on prevention of malaria, HIV/AIDS, childhood killer diseases and their responsiveness to antenatal care.

Generally it was found that, there were significant differences in knowledge levels of beneficiary and non beneficiary communities with beneficiary communities having relatively higher percentages. The major source of knowledge was the Ghana Health Service Educational fora, followed by NGO outreach.

Contrary to expectations, preventive health behaviour determined by trends in antenatal attendance gap, immunization gap and malaria reported cases were not significant. This means that there was no difference in preventive health behaviour of beneficiary and non beneficiary communities.

It is recommended that health education should be holistically addressed. That is, there is a need for both political and educational action to influence health. Since certain policies must be enforced by law so that with little intervention, positive results will be attained.

ACKNOWLEDGEMENTS

DEDICATION

To my dear husband, William Yaw Amuesi Kodwiw and my son, Willis Ekow Annan Kodwiw.

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ACRONYMS

ADRA	Adventist Development and Relief Agency
CHPS	Community-based Health Planning and Services
DW	Durbin Watson
GHS	Ghana Health Service
GSS	Ghana Statistical Services
GDHS	Ghana Demographic and Health Survey
GoG	Government of Ghana
KAP	Knowledge, Attitude, and Practices
KEEA	Komenda Edina Eguafo Abrem
MoH	Ministry of Health
MPWs	Multipurpose Health Workers
NHIS	National Health Insurance Scheme
NGOs	Non-Governmental Organisations
OPD	Out Patients' Department
SPA	Service Provision Assessment Survey
SPSS	Statistical Product for Service Solutions
TSP	Time Series Processor
WHO	World Health Organisation

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CHAPTER ONE

INTRODUCTION

Background to the study

Rural health improvement is an important area of focus by the government of Ghana in the bid to reduce poverty. This is because ill health, malnutrition and high birth rate are often reasons for poverty in households. However, poverty itself is also a cause of ill health since inadequate financial resources results in poor access to health care, food, water and sanitation which are key inputs to good health (Klugman, 2002). According to Klugman (2002), poor countries and poor people suffer from multiplicity of deprivations which translate into high levels of ill health that far exceed the population average. He adds that it is not only the lack of income that causes the high level of ill health but health facilities serving them are mostly dilapidated, inaccessible, inadequately stocked with basic medicines and run by poorly trained staff. In view of these, health education particularly preventive health education is important.

In 1995, the Government of Ghana (GoG) developed Vision 2020 strategy for poverty reduction with emphasis on economic growth, integrated rural development, expansion of employment opportunities and improved access, especially by the rural and urban poor, to basic public services such as education, health care, water and sanitation, and family planning services (World Bank, 2003). Within the same period, Non-Governmental Organisations (NGOs),

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perhaps cognisant of these intentions continued their activities with similar objectives. Prominent among these were sanitation and health education.

The health of Ghanaians is reported to have improved since independence. Infant mortality rate among Ghanaians has reduced from 133 deaths per 1000 live births in 1957 to 57 deaths per 1000 live births in 1998 whiles under five mortality rate also decreased from 154 deaths per 1000 live births in 1957 to 110 deaths per 1000 live births in 1998 (GSS & Macro International, 1999). The GDHS of 1988, 1993, 1998 and 2003 for five year periods preceding the surveys also indicated under-five mortality rates of 155, 119, 108 and 111 respectively. A multiple indicator cluster survey for 2006 by the GSS showed under-5 mortality of 111 per 1000 live births.

The Ministry of Health (MoH) considering the rates of decline to be slow has made several reforms in the health sector. These include a shift from mainly curative care to preventive care, development of the vision 2020 and the 5-year Medium-term health strategy to guide health development in Ghana, the passage of Act 525 in 1996 to establish Ghana Health Service (GHS) as the implementing body for public sector health services, and finally, the establishment of the health insurance scheme all aimed at improving health care in the country. Currently, the main goal of the health sector is to make health care accessible, acceptable and affordable to all individuals living in the country.

In Ghana, majority of the poor are believed to be in the rural areas and are disadvantaged by the lack of knowledge about preventive health and early seeking of health care. Therefore providing rural communities, access to health

information and services has been the main implementation strategy pursued by both governmental organisations and NGOs to achieve good health. A population data analysis report by Ghana Statistical Service in 2005 reveals that, the formal educational system remains the best means for improving access to information, broadening the horizon of people, preparing them for the life of work and providing the needed tools for all who pass through the system to contribute to the socio-economic development of the country. The report further reveals high illiteracy rates in rural communities, estimated at 55.6 percent compared to 26.9 percent in the urban areas. This is attributed to few schools and inadequate number of teachers.

The 2000 Population and Housing Census of Ghana revealed that Central Region, from which the study communities were selected, has an illiteracy level of 42.8 percent with more illiterate females than males. Also 33.9 percent of the population has never been to school. Informal education therefore appears to be the main way by which awareness is created on various developmental issues. Fortunately informal education can take place anywhere unlike formal education which tends to take place in special institutions like schools. Thus, the uneducated population of the region still has a chance of education on various issues including health. In view of this, NGO's and government agencies have instituted some measures including the use of behaviour change communication strategies through community health education (informal education) to prevent sickness and promote early appropriate health seeking behaviour in communities.

Central Region is classified as the fourth poorest in the country, known for its high malnutrition and child health problems which are some indicators of health. By observation, sanitation is very poor in most communities. From the Regional Health Directorate Report 2005, unemployment rate is estimated at 8.0 percent. Although this is much lower than the national average of 10.4 percent it is still considered high. The issue of child labour poses a problem in a number of districts in the region as 5 percent children less than 15 years are engaged in economic activities. Another important factor that may lead to poor health care is poverty which is believed to be predominant in the region due to the low incomes of the majority of the people whose main occupation is agriculture. Agriculture forms 52.3% of economic activities, followed by manufacturing of 10.5%.

The Population and Housing Census (2000) estimate a population of 1,593,823 and an annual population growth rate of 2.1 percent. The region is the second most densely populated in the country (about 162 inhabitants' per-square kilometres) and an average household size of 4.4 with 62.5 percent of the population living in the rural areas. The population is made up of 52.3 percent females, and 43.2 percent children below the age of 15 years considered as the most vulnerable group in health issues. With such high population density the implications of inadequate health facilities cannot be overlooked.

There are 220 health facilities in the region comprising 108 public, 82 private, 14 mission/quasi and 16 Community/NGO Clinics. Most of these private institutions are located in the district capitals and other big towns. The distribution of health facilities does not favour the large rural majority. It also Includes 26

functional Community-based Health Planning and Services (CHPS) compound in almost all the districts. In all, there are 1,281 outreach points in the region recording an increase of 0.9 percent (1,270) over that of 2004 (Regional Health Directorate Report, 2005). There are four health training institutions at Winneba, Cape Coast, Ankaful and Twifo Praso. The Service Provision Assessment Survey (SPA) by the GSS in 2002 reported that there were only 104 doctors and 1427 nurses with population to doctor ratio of 15,325:1 and population to nurse ratio of 1117:1 in Central Region. However, the Senior Management Report of the Ghana Health Service in August 2008 gave a worse population to doctor ratio of 26,888:1 and population to nurse ratio of 3418:1.

The 2003 Ghana Demographic and Health Survey (GDHS), indicates that infant mortality and under-five mortality rates of Central Region is 50 and 90 per 1000 live births respectively. Although it is an improvement over 1998 and also places the region among the best in the country it is still high. A report from the Central Regional health directorate in 2005 shows a 44 percent incidence of malaria compared to 41.6 percent in 2004. The region also has an average of only 6.3 percent clinics found within its localities and 34.9 percent within 1-5km of reach whiles 1.78 percent of hospitals are found within communities and 16.2 percent within 1-5km (Population and Housing Census, 2000).

From the foregoing, it is evident that health issues are critical in human resource development and poverty reduction particularly in Central Region, for which reason this study attempts to empirically determine how health education is able to influence preventive health behaviour.

Statement of the problem

It is a known fact that doctor-patients' ratio is low and there are inadequate health facilities. Therefore if community health education is profitable, then policy makers can pay much more attention to that, with special emphasis on preventive health care so that Ghana can achieve its health goals and that of the world at large. However, in spite of the operations of both NGOs (Plan Ghana, World Vision, Hunger Project and Adventist Development and Relief Association (ADRA/Ghana) and government agencies in the Central Region to reduce poverty, malnutrition, and improve rural health through community health education or sensitization, rural health does not seem to be improving. There does not seem to be any empirical proof that community health education is improving rural health or preventive health behaviour. Literature on the impact of community health education on health or preventive behaviour is sparse or difficult to obtain.

Documentary proof of change is extremely important to justify the continuation of community health education particularly in rural communities. Indeed lessons from such studies would serve as input for modification in rural health promotion strategies. If there is minimal or no change in preventive health behaviour or rural health status, then the question that is imperative is; is there any justification to continue health education in view of the length of time taken and the large amount of money required to train staff, volunteers, and to reach remote communities?

Objectives of the study

The main objective of the study was to determine the effect of community health education on the behaviour of people in selected rural communities. Specifically, the research sought to:

- Determine the percentage of population of selected beneficiary and non-beneficiary communities with knowledge in the prevention of malaria, the six childhood killer diseases, HIV/AIDS, treatment of diarrhoea, and the source of their knowledge.

- Identify factors, besides health education, that influence patronage of health care services in the beneficiary and non-beneficiary communities.

- Compare the trends in reported malaria cases, attendance for antenatal care and immunization in beneficiary and non-beneficiary communities of health education from 2002 to 2006.

- Make recommendations to agencies in human resource development and for policy planning.

Hypotheses

Hypotheses tested in this study are as follows:

- Null hypothesis (H_o): There is no significant trend in attendance gap for antenatal care for communities which are benefiting and communities which are not benefiting from health education.

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- Alternative hypothesis (H_A): There is a significant trend in attendance gap for antenatal care for communities which are benefiting and communities which are not benefiting from health education.

- Null hypothesis (H_o): There is no significant trend in the attendance to clinic for malaria treatment for communities which are benefiting and communities which are not benefiting from health education.

- Alternative hypothesis (H_A): There is a significant trend in the attendance to clinic for malaria treatment for communities which are benefiting and communities which are not benefiting from health education.

- Null hypothesis (H_o): There is no significant trend in attendance gap for child immunization for beneficiary and non-beneficiary communities of health education.

- Alternative hypothesis (H_A): There is a significant trend in attendance gap for child immunization for beneficiary and non-beneficiary communities of health education.

Scope of the study

The study covered a period of 5 years from 2002 to 2006. It focused on three of the coastal districts in the Central Region. These are Mfantsiman, Komenda Edina Eguafo Abrem (KEEA) and Gomoa West Districts. Rural communities which have had both NGO presence and health promoters of the Ghana Health Service were selected, while rural communities with only health

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education from the Ghana Health service were used to compare. The study covered rural communities, Simbrofo and Mprumem in the Gomoa West District, Etsibeedu and Egyankwa in the Mfantsiman District, and Breman and Eguafo in the KEEA District. The study focused on the most common diseases prone to the areas of study and usually reported at the out-patient departments of the community designated health centres that had adequate and complete records that could be analyzed.

Organisation of study

This study report is organized into five chapters. Chapter one gives the background, problem statement, objectives of the study and the hypothesis to be tested. Chapter Two introduces the concepts used in the discussion and reviews literature relevant to the study. A brief of outlook variables under study and research methodology forms Chapter Three. Chapter Four follows with the discussion of results and finally, Chapter Five gives a summary of findings, conclusions and recommendations.

CHAPTER TWO

REVIEW OF LITERATURE

Introduction

This chapter gives an explanation of the concepts used or the context in which some words are used in the study. It also reviews some models of analysis and their relevance to the study as well as literature related to relevant studies on health education.

Health education

Health education is one of the eight critical essential pillars of the primary health care adopted by WHO member countries in 1978; a term which means different things to different people in the changing trend of health delivery systems worldwide is a health promotion strategy (Antwi, 1996). Health education has been defined as: "any combination of learning experiences designed to facilitate voluntary actions conducive to health" (Green & Kreuter, 1999). It can be conducted through the mass media and interpersonal channels of communication. Health education aims primarily at learning experiences and the voluntary actions people can take individually or collectively, for their own health, the health of others, or the common good of the community. Health education is a systematically planned activity, and can thus be distinguished from incidental learning experiences. Further, this construction of health education

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draws attention to voluntary behavioural actions taken by an individual, group, or community with the full understanding and acceptance of the purposes of the action either to achieve an intended health effect or to build capacity for health. Tones and Tilford (1994) have also defined health education as, "any intentional activity which is designed to achieve health or illness related learning: Effective health education may, thus, produce changes in knowledge and understanding of ways of thinking; it may influence or clarify values; it may bring about some shift in belief or attitude; it may facilitate the acquisition of skills; it may even effect changes in behaviour or life style". Pisharoti (1975) also described it as, "a process leading to programmed planning, utilizing available resources, modifying health behaviour, breaking down barriers of ignorance, prejudice and misconceptions after an intelligent and thoughtful consideration of relevant health knowledge. It is a translation of what is known about health into desirable, individual, family and community behaviour patterns by means of an educational process".

Health promotion

Health education can be seen as enveloped by health promotion, with its aim of complementary social and political actions that can achieve the necessary organisational, economic, and other supports that enable the conversion of individual actions into health enhancements and quality-of-life gains. In essence, the task for health promotion, beyond health education, is how to make more health-gaining choices easier choices for people to make. The commitment to an

educational approach to health promotion is part a practical necessity, part political expediency, and part philosophical commitment to provide for informed consent and voluntary change before attempting to change social structures and ecologies. According to the World Health Organisation (WHO) Charter for Health Promotion 1980, it is a systematic means of making it possible for people to have control over their own health and take positive action to increasingly improve upon their health. The charter stresses that promotion of health goes beyond just providing health services. It involves peace, housing, education, good income, a sustainable environment, social justice and equal opportunities for the achievement of better health for a community. However, Kelly (1990), while recognizing its practical implications, is disturbed by the definition's strong orientation towards action for change for the better, which he considered as misleading because targeting for future achievement may distract attention from present health promotion needs in existing communities. He therefore, concluded that 'health promotion should not be portrayed as an exclusive alternative to medicine, but must work with it towards understanding the origins of health in addition to abuses of diseases'. Green and Raeburn (1988) are similarly convinced of the added scope and purpose of health promotion, but feel that bureaucrats and politicians who formulate and carry out health promotion policies in their countries might quietly ignore the concept.

Green and Kreuter (1999) also define health promotion as "any combination of educational and environmental supports for actions and conditions of living conducive to health". The actions or behaviours in question may be those

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of individuals, groups, or communities; or of policymakers, employers, teachers, or others in organisations whose actions or practices control or influence the determinants of health.

Ewles and Simnett (1992) explain health promotion using five integrated elements to suggest that there is no one 'right' approach to health but multiple, including (1) Medical - which aims at freedom from medically defined disease and disability; (2) Behaviour change - that ensures that individual behaviour is conducive to freedom from disease. (3) Educational - provides individuals with knowledge and understanding, enabling them to take well-informed decisions and act upon them; (4) Client centred - which aims at working with clients on clients own terms; and (5) Societal change - which works on the physical and social environment that enables choice of healthier lifestyle.

Tannahill et al (1990) introduce a simplified combinational approach to health promotion quite similar to Ewles and Simnett (1992) as shown in Figure 1.
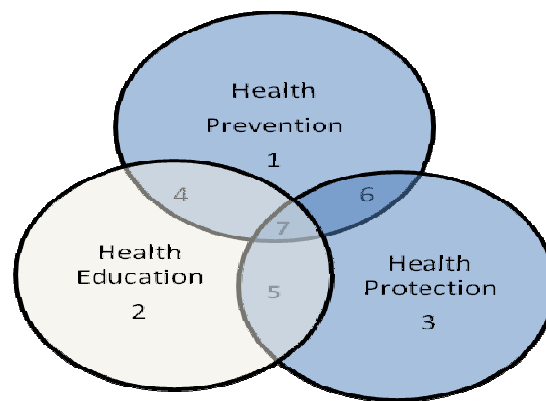
Figure 1: The Tannahill Model of Health Promotion

Source: Tannahill et al, 1990

Key: 1=Positive Health Prevention, 2=Positive Health Education 3= Positive Health Protection

4= Preventive Health Education, 5= Health Education Aimed at Positive Health Protection,

6= Preventive Health Protection and 7= Health Education for Preventive Health Protection

Tannahill et al, (1990) defined health promotion as comprising 'efforts to enhance positive health and prevent ill-health through the overlapping spheres of health education, health prevention and health protection'. The model works in an integrated fashion with the three strategies intersecting in a form of Venn diagram to generate four additional areas of cooperation to achieve unity of purpose in health promotion.

The Tannahill model with its seven domains suggests empowerment as the cardinal principle of health promotion. This means health education seeks to empower by providing the necessary information and helping people to develop skills and an acceptable level of self-esteem, so that they come to feel that significant control resides in them, rather than feeling threatened by external forces. Thus, the provision of good preventive services and the shaping of a healthful environment through health protection also contribute to this empowerment process (Friedman, 1992). Agreeing with this Antwi (1996) explains that the implicit assumption underlying health education is that it is a worthwhile activity and, in some way, good for the public.

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Health promotion therefore is a term used to draw attention to the need for both educational and political action to influence health. Health promotion, encompassing health education, has achieved a shift in the locus of initiatives for health from medical institutions and health professionals to individuals, families, schools, and worksites.

Informal education

Informal education according to Smith (1997) is seen as learning that goes on in daily life. Others view informal education as the learning projects that we undertake for ourselves. Many view informal education as the learning that comes as part of being involved in youth and community organisations. In these settings there are specialist workers or educators whose job it is to encourage people to think about experiences and situations. Such conversations and activities can take place anywhere. Like friends or parents they may respond to what is going on but, as professionals, these workers are able to bring special insights and ways of working. Informal education' may well be described in Scotland as Community Education or Community Learning, in Germany as Social Pedagogy, and in France as Animation. These contrast with formal education which tends to take place in special settings such as schools.

Generally informal education works through, is driven by conversation, involves exploring and enlarging experience and can take place in any setting (Smith, 1997). Hubley (1993) states the differences between interpersonal channels of communication and mass media should be carefully considered when

choosing a channel for informal education. An analysis of the relative effectiveness of the methods is shown in Table 1.

Table 1: Relative effectiveness of mass media and interpersonal channels of communication

Characteristics	Mass Media	Face-Face
Speed to cover large population	Rapid	Slow
Ability to select particular audience	Difficult	Can be highly selective
Direction	One-way	Two-way
Ability to respond to local needs of specific communities	Limited	Can fit to local need specific communities
Feed-back	Only indirect feed-back from surveys	Direct feedback possible
Main effect	Increased knowledge and awareness	Changes in Attitudes and behaviour

Source: Hubley, 1993

A study which was conducted by Bhattacharya et al (1997) to evaluate the impact of different methods of health education on rural mothers in India with regard to oral re-hydration therapy and to assess the association between changes of knowledge, attitude, and practices (KAP) through the various methods of health education revealed that, mothers who received the standard case management of childhood diarrhoea from multipurpose health workers (MPWs)

with interpersonal communication and group discussion had improved KAP with significantly greater change, than mothers' who had only the standard case management of childhood diarrhoea from multipurpose health workers (MPWs). However, there were significantly greater changes in attitude and practice in mothers who received education from MPWs together with interpersonal communication than those with education from MPWs together with group discussion. The study also found a significant positive correlation between attitude and practice, but not between knowledge and practice, nor between knowledge and attitude. This study agrees with one of the characteristics of interpersonal communication identified by Hubley (1993) which makes interpersonal communication a very effective means of health education.

Models of health education and promotion

Three important models of health education and health promotion are: The Preventive Model, The Radical-Political Model and The Self-Empowerment Model (NHLMC-HRDD, 2002).

The preventive model

Many illnesses have been linked to habitual and sometimes harmful ways of living which could be reduced if individuals practice certain preventive health behaviours. The purpose of this model is to persuade people to take responsive decisions to help prevent diseases at primary, secondary or tertiary level. Kasl and Cobb (1966) identified three types of health behaviour: preventive health

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behaviour, illness behaviour, and sick-role behaviour. Preventive health behaviour is any activity undertaken by an individual who is healthy for the purpose of preventing ill health. Illness behaviour and sick-role behaviour, on the other hand, are concepts that encompass behaviours that occur in response to specific symptoms or illness. These behaviours are aimed at minimizing the effects of illness". This is evident in some rural areas in Ghana where herbal preparations are consumed once in a while and seem very effective in building immunity against some diseases.

Preventive health behaviour generally follows from a belief that such behaviour will benefit health. An obvious example is quitting smoking to reduce the chances of early morbidity and mortality. It does not follow, that all beliefs on which preventive behaviours are based are well founded, nor that the resulting behaviours will have the desired outcomes. However preventive actions can reduce, but not eliminate, the chances of acquiring a disease or illness (Lowe & Clavarino, 2002).

Again, preventive health-related behaviours are also undertaken specifically to improve or enhance health. These types of behaviour include primary prevention, early detection and tertiary. Primary prevention behaviours aim to prevent the incidence of disease (the number of new cases occurring within a given time frame). While early detection (or secondary prevention) behaviours aim to prevent early forms of disease from progressing. This involves people who have already developed a preclinical disease or risk factors for disease but in

whom the disease has not yet become clinically apparent. Tertiary prevention aims at rehabilitation and involves change in lifestyle and retraining.

Many theories have been developed to explain, and influence health-related behaviour but there is no one theory or concept that explains why people exhibit certain behaviours like consuming unhealthy products and not seeking health care when needed. Although these theories contribute substantially to our understanding of individual behaviour, they are often limited because the broader social and environmental context in which an individual lives is not taken into account.

According to Lowe and Clavarino (2002), theories that assist our understanding of preventive health behaviours can be divided into three categories:

- Theories that describe the health behaviour and behavioural change of individuals. Common among them are: the health belief model; the theory of reasoned action; the trans-theoretical (or stages of change) model; and social cognitive theory.

- Theories that describe the behaviour of communities and environmental changes, such as the diffusion of innovation theory and the communication-behaviour change model.

- Theories that help people understand different approaches to societal change, such as community organisation theories.

These and other theories help to explain "why we do what we do and when we do it." Their common thread is the belief that if a person performs a

health-related behaviour, the chances of acquiring a disease or an illness will decrease. It is against this background that most educational interventions are undertaken by both government and non-governmental organisations, with the view that it would be more sustainable in producing the desired impact in beneficiary communities.

A study conducted by Pawlowski et al (2001) to find the impact of health education on knowledge and prevention behaviour for congenital toxoplasmosis revealed that after educational activities for the period of six years, knowledge of toxoplasmosis and its prevention was almost doubled within 4 years and the proportion of women testing for toxoplasmosis significantly increased.

Measuring preventive health behaviour

The strength of the cause and effect relationship between certain behaviour like the use of treated bed net and the health problem (malaria) one is trying to prevent will determine the impact which performing the behaviour (i.e. sleeping in the bed net) will have on reducing the risk (Kasl & Cobb, 1966). This impact is measured in terms of 'attributable risk'. Attributable risk is a measure of the chance of acquiring a disease if the risk factors for it are eliminated or preventive health behaviour is engaged in. Most people are aware that if you are bitten by mosquitoes you have an increased risk of getting malaria. The foundation of this study is mainly based on this theory.

Factors influencing preventive health behaviour

Although individual actions contribute to a person's health behaviour, socio-cultural and environmental aspects of a person's life also influence preventive health behaviour, and these factors can have minimal to great effect in determining whether preventive health behaviour is performed. According to Kasl and Cobb (1966), some preventive health-related behaviour occurs for reasons unrelated to health. Cultural, traditions, attitudes, and beliefs can play an important role in the ways in which people behave. In Mediterranean countries, the traditional diet has been found to be an important preventive diet. The traditional meal is often cooked in olive oil, which may help in preventing heart disease. In the northern part of Ghana for instance, increased addition of variety of leaves in their diet relative to the central region helps reduce malnutrition and prevent certain diseases.

Moreover, social, economic, and cultural determinants of behaviours are closely linked. For many years it was unfashionable for women to smoke cigarettes. In the decades since this taboo was removed, there have been substantial gender-related changes in the overall burden of smoking-related diseases. It is becoming increasingly recognized that individual 'unhealthful' behaviours reflect the social, cultural, and environmental contexts within which they occur. In the rural communities, people usually eat what they grow or what is found in their locality but since most plant protein are not grown in the Central Region, they depend on the fish they catch from sea which is seasonal. Furthermore, because of economic gains most of the fish are processed and sold

outside the region causing scarcity or high price relative to areas where fishing is not done. Because of this socio-economic problem coupled with the cultural practice of depriving or giving children very little animal protein, certain preventable diseases and conditions such as malnutrition are still prevalent.

It has almost become a fashion for most teenagers in the study region especially communities very close to the sea to give birth indiscriminately. Peers tend to laugh at those who have 'passed' the age of giving birth; they give them all kinds of name compelling them to join in this unhealthy practice resulting in unwanted pregnancies, single parenthood with its effect on the health and nutrition of the child. Most of these teenage mothers do not attend antenatal clinics for lack of money or stigma. When they give birth, their woes are further deepened with the competition of sewing new clothes, buying umbrellas and other accessories for attending postnatal and child welfare clinics. At the same time these mothers do not have any gainful employment and the fathers of the children often abandon them, leaving them to survive on the little income of the mothers.

The preventive health model however remains the most common intervention as far as health education is concerned but attitudinal change is very difficult to achieve. It needs persistence and dedication from the change facilitating agency. Because of these constraints, health education through the preventive model seems not to have made the expected impact because of people's resistance to change. A major factor likely to induce change however, is the extent to which people are motivated to adopt a preventive behaviour. This

depends to a large extent on the level of sensitization, implying the need for frequent presence of health educational workers in a target community.

Radical-political model

This model requires a community or society to get to the roots of the health problem by changing socially and environmentally through political action. The limitation of this model is that its purpose is geared towards effecting only changes in unfavourable policies and ideologies. Health promotion involves more than simply educating individuals about healthy practices. It includes efforts to change organisational behaviour as well as the physical and social environment of communities. It is also about developing and advocating for policies that support health such as economic incentives. An example of this model may be the national health insurance scheme to replace the "cash and carry" system, a system that requires the patient to make payment before receiving treatment. Unfortunately however, many of the poor who were targeted because they could not afford the cash and carry system are still those who are not registering with the scheme making the impact derogatory. It is therefore proposed that the scheme should be strictly mandatory. This model therefore needs strong political will to implement to make an impact.

In this study, free immunization of infants less than 5 years old may be seen in the light of a political will for implementation. This is because in spite of it being free, some people still refuse to comply. This study therefore carries out

its analysis on the basis of the effect of sensitization which is more sustainable than compulsion.

Self-empowerment model

This model aims at encouraging or helping individuals and communities to make informed choices by providing the necessary information that will build them up and create a positive self esteem enabling them make choices for positive health. This model involves the physical, mental and social factors affecting the individual and community. It makes efforts to provide the factors that will let individuals make informed choices. It is also participatory and duly recognizes the capability of the individual and thus prevents the educator from acting as the "expert" and community members as "lay people".

This model is of relevance to the current study because it assesses the level of knowledge of beneficiaries and non beneficiaries and their access to information on health issues as a form of empowerment.

Summary

As reviewed in the literature, the Preventive Health and the Self Empowerment models provide the foundation on which most interventions to promote rural health by both government and non-governmental organisations are based. This study identifies with these models and is of the view that if such interventions work, impact on health can be directly measured, in terms of the reduction in disease situation evidenced in the reported cases of malaria and other

diseases at health centres. Its impact on knowledge can be assessed in terms of levels of awareness among communities for improvement in sanitation and other disease prevention strategies. Its impact on preventive behaviour can be determined from changing (increasing) trends in patronage of health services such as immunization, antenatal and postnatal care and prompt seeking of medical attention at a health centre. Indeed explanations of why people adopt a preventive behaviour derive from their knowledge. Thus as a first step, knowledge level is assessed in this study to give an indication of the possible preventive behaviour of community inhabitants in combating diseases. This study therefore evaluated the awareness creation by the health service agency or NGO or other channels

CHAPTER THREE

METHODOLOGY

Introduction

This chapter gives a brief outlook of the variables under study, explains the research design, sampling and data collection procedure and the analytical methods. It explains the procedure used in describing the trends in the reported malaria cases, immunization of children against childhood killer diseases and antenatal care. The procedure used to test hypothesis and to derive growth rates are also explained.

Socio-Economic and Demographic Outlook of the Study Area

Three of the coastal districts namely Komenda-Edina-Eguafo-Abrem (KEEA), Mfantsiman and Gomoa West Districts form the study area.

The Komenda-Edina-Eguafo-Abrem according to the 2000 Ghana Population and Housing Census estimate its population at 112,435 with about one hundred and sixty settlements, and most of them having population of less than five hundred people. The district has a growth rate of 2.3 percent

There are four health centres and two specialist hospitals in the district. The key developmental problems in the district are Malnutrition, Prevalence of communicable/preventable diseases, Poor environmental and Personal Hygiene,

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Inadequate Health Facilities and Personnel, Poor drainage and Waste Management, Teenage pregnancy, Drug abuse, Low education of HIV/AIDS, Low communal spirit, Apathy, Resistance to change, Poor and unreliable database and Illiteracy.

According to the 2000 Population and Housing Census, the Mfantsiman district also has a total population of 152,264 found in 168 settlements. The district has a growth rate of 2.8%.

Health facilities in the District include a District hospital and four public health centres. There are also few clinics and other health care facilities privately run. Inadequate health facilities/institutions, Doctor / Paramedical staff –patience ratio unfavourable, Presence of quack doctors/ health practitioners, Prevalence of communicable diseases, sexual impotence – Nsanfo Area Council, Low nutritional levels (especially in pregnant women and children),Inadequate funding for HIV/AIDS activities, High population growth, Unwillingness of the populace to offer themselves for voluntary testing, High incidence of rural- urban migration, High population density in urban centres are the developmental problems

For the third district Gomoa, the 2000 Population and Housing Census recorded a population of 194,792, with a higher population density than the region and the nation.

The overall utilization of health services in the district could be said to be low. The causative factors of low utilization levels are economic and socio-cultural in nature. These factors are Poor accessibility to higher order health services, High

transport costs from remote parts of the district, Inconsiderable charges at the highest order health centre, Unavailability of Drugs, Although there has been general improvement in the health conditions in the district, malaria continues to be the fundamental cause of sickness, followed by acute Upper Respiratory Infections, skin diseases, diarrhoea diseases and Gastro Intestinal Tract Disorders.

Most of the five topmost diseases in the district are related to extreme poverty and poor environmental conditions. Sexually transmitted diseases (STDs) with IDS as the most killer disease is spreading fast in spite of efforts to minimize the incidence.

There is only one district hospital that is St Jude's Catholic Hospital at Apam. There are other complementary health facilities which are privately run. In addition, the district has two health centres and eight community clinics.

Variables under study

Attendance gap

Antenatal health care refers to the preventive and prophylactic healthcare given to pregnant mothers to ensure the safe delivery of a healthy baby and the safety of both mother and the unborn baby from diseases. From the clinics, it was learnt that pregnant mothers are to make at least four visits to a clinic or health centre for antenatal health care before delivery. The study investigated the extent to which the compliance of communities with this minimal requirement has been over the study period and tries to link it to health education. Monthly data for antenatal health care attendance was aggregated into quarterly data to obtain

actual aggregate quarterly attendance. Quarterly attendances was used because it is not realistic to expect so many women to get pregnant each month and for that matter seek health care monthly, given that a full term of pregnancy is nine months and four visits is the minimum required per pregnant female. The expected quarterly attendance was obtained by multiplying the total number of females found pregnant each quarter by four. The difference between expected quarterly attendance and actual quarterly attendance for antenatal health care was determined for each quarter throughout the study period for all communities. This is what is referred in this study as "attendance gap". Ceteris paribus, the attendance gap is expected to decline, or at least faster for beneficiary communities than for non beneficiary communities. The coefficient of the trend variable for attendance gap is therefore expected to be negative. The attendance gap is preferred to actual attendances because, actual attendance is principally related to the number of female who are actually pregnant at each time. It would therefore be wrong to presume that attendance would increase due to health education. The preventive health behaviour of the study communities is assessed through changes in this variable over the study period. This study does not concentrate on attendance for post natal health care even though it is acknowledged as important. The study rather focuses on the infant health care which is another variable under investigation.

Malaria cases

This refers to the number of malaria cases irrespective of sex or age diagnosed at the clinics every quarter. The study tries to determine the trend in number of malaria cases quarterly for all communities. All things being equal, this is expected to show a negative trend. This is because, if indeed sensitization from health education made an impact then the number of cases should reduce over time. This situation is expected to be more pronounced in beneficiary communities. Indeed if there is a positive trend in non-beneficiary communities, it would not be surprising, but consistent with the study expectations. The percentage decline in total number of cases is expected to be higher in beneficiary communities than non-beneficiary communities. The effect of health education on health status is assessed through changes in this variable over the study period.

Immunisation gap

This refers to the difference between the expected total quarterly attendance at the clinic for child immunizations and the actual attendance for child immunization, for the number of infants below age 5 within the study period. This was what is referred to as "immunization gap." All things being equal this is also expected to show a negative trend. This is because if indeed sensitization from health education made an impact then more children would be immunised as expected and thus the immunization gap would reduce over time. This situation is expected to be more pronounced in beneficiary communities. From the hospitals it was revealed that the number of immunizations per infant

was supposed to be at least ten for the various childhood killer diseases. This was therefore multiplied by the number of children under five per quarter to obtain the expected number of immunizations per quarter. In collecting the data precaution was taken to avoid double counting of infants. The actual attendance each quarter was obtained by aggregating the monthly child immunization data from the hospital records for each community. The preventive health behaviour of the study communities is also assessed through changes in this variable over the study period.

Knowledge level

"Good knowledge" as used in the analysis, refers to respondents who were able to answer two or more of the questions asked on each disease prevention or treatment methods from the primary data collection guide. "Little knowledge or no knowledge" on the other hand, refers to a respondent who was able to answer only one or none of the questions asked.

Research design

The study design involved both cross-sectional and longitudinal analytical studies. This is because the study utilised both primary data collected from a cross section of the study population at a point in time, August 2007 and also secondary data covering the period January 2002 to December 2006 in order to achieve the study objectives.

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Cross-sectional studies, also known as Cross-sectional analysis form a class of research methods that involve observation of some subset of a population of items all at the same time, in which, groups can be compared in respect of independent variables. Cross-sectional analysis studies the relationship between different variables at a point in time, and like a snapshot, "freezes" a specific moment in time with the aim of finding the same kind of relationships that might be shown by a specific group to see if an activity referred to here as the independent variable, say health education is related to the effect being investigated (Coggon et al., 1997). The advantage of cross sectional analysis is that data on many variables, attitudes and behaviour can be assessed hence its use in the study.

Longitudinal analytical survey on the other hand, employs time series or trend analysis. Data are easy to collect and easily presented in graphs and interpreted. A longitudinal design collects data over long period of time. Measurements are taken on each variable over two or more distinct time periods. This allows the researcher to measure change in variables over time. Time series designs are useful for establishing a baseline measure, describing changes over time, keeping track of trends and forecasting future short term trends (Trochim, 2006).

The fundamental difference between cross-sectional and longitudinal studies is that cross-sectional studies take place at a single point in time and that a longitudinal study involves a series of measurements taken over a period of time. Both are types of observational study (Trochim, 2006).

Analytical research is carried out when hypotheses are to be tested and there is a formal comparison between two or more groups. Analytical survey was employed because two groups of communities labelled beneficiary and non beneficiary were being compared to determine reasons for the causes or reasons for existing differences in their behaviour or status. Typically it aimed at quantifying certain qualitative variables in the study population. It involved comparison of communities for differences in independent variables based on selected individuals within (NHS, 2009). The dependent variables under the study were: Malaria cases, Immunization, Antenatal attendance, and Knowledge levels. The independent variables were health education and time, measured in months over a period of five years.

This study design was used because it offered the best opportunity to achieve the study objectives.

Study population

The study population comprised the inhabitants of Simbrofo and Mprumem in the Gomoa West District, Etsibeedu and Egyankwa in the Mfantsiman District, and Breman and Eguafo in the Komenda-Edina-Eguafo-Abrem District. Three Health Centres covered within the three study districts were Noguchi Memorial Health Centre in the Gomoa West District, Otuam Health Centre in the Mfantsiman District and Agona Health Centre in the Komenda, Edina, Eguafo, Abrem District.

Sampling procedure

To obtain the sampling population of respondents the following procedure was used. The Central Region has seven coastal districts. Out of these seven, the Cape Coast Metropolitan Assembly and the Awutu Efutu Senya Municipal were excluded since they are both predominantly urban and have major hospitals to which many people even from the rural communities preferred to attend making it difficult to trace OPD attendance. Out of the remaining five, Gomoa West, Gomoa East, Mfantsiman, Komenda-Edina-Eguafo-Abrem and Abura Asebu Kwamankese Districts, of which three were selected through simple random sampling. All the public health centres in these three strata or districts were then listed and one health centre selected at random for each study district. Incidentally the health centres chosen were found to be strategically placed, that is, far from major hospitals and with good coverage. One health facility was selected in each district in view of the overwhelming data collection implications associated with selecting more health centres for the study.

The communities which the selected health centres served were then listed and it was ascertained from the District Assemblies, which ones have had NGO presence in the communities to carry out health education in the five year period under study. This was confirmed by some NGOs in the region and also at the communities through preliminary investigation by interviewing the assembly men and sometimes, unit committee members, drug store operators or any person resident in the community through group interview. It was observed that there were no communities which have not benefited community health education but

the intensity made a lot of difference since government alone was constrained in making the necessary impact. For each health centre, communities feeding it for which health education had been carried out by NGOs and those for which it had not been done were listed separately and given numbers. The numbers for each community within a group were written on pieces of paper and folded. Folded papers representing the numbers of communities were randomly selected one after the other. The first number to be drawn randomly in each category for each health centre was used as the study community.

As mentioned earlier, the study communities were grouped into two. Communities which have benefited from community health education organized by both governmental and non-governmental organisations for the past 5 years and within 1-5 km radius of a health centre formed one group and communities which have benefited from only governmental organisations for the same period but also within the same 1-5km radius of health centres also formed the second group. It was found out that the communities selected for the research have similar occupational patterns. The communities have majority of its inhabitants being fishermen and farmers.

In each of these communities the Assemblymen were contacted and asked to assist in the enumeration of households in the communities from which a target of 35 respondents were selected using simple random sampling from the numbers allotted to each household. From each household either the male or female household inhabitants were interviewed. Not more than one respondent was interviewed per household. Thus a sample of 210 respondents targeted for all 6

communities was used. A total of 105 respondents were sampled from communities benefiting from reinforced or intensified health education as a result of NGO presence, referred to in this study as "beneficiary communities", and the other 105 from communities which did not benefit from it, referred to as "non-beneficiary communities".

Pre-test

The data collection instrument was pre-tested in Dwabor in the KEEA district and questions for which answers could not be obtained were restructured to obtain the final interview guide. It was also ascertained from the records department of Elmina urban health centre whether there were records of each community accessing health care and the type of diseases they report for the period under study.

Data collection

Primary data were collected from communities through observation, interviews using an interview guide, in order to get a wide range of views and to ascertain reasons for observed trends. Informal group discussions were earlier carried out to obtain preliminary information from the study community meant to confirm NGO presence of the health education fora and the objectives in the study communities and to announce the next visit to collect data from selected households. There were six group discussions in the six communities and 210 individual interviews made up of 35 household heads or their spouses randomly

selected in each of the 6 communities.   Primary data was collected in August and September 2007.

Secondary data from the Ghana Statistical Service (GSS), Ghana Health Service (GHS) and Out Patients Department (OPD) information from the records departments of Agona Health Centre in the KEEA district, Otuam Health Centre in Mfantsiman District and Nougochi Memorial Health Centre, Onyadze in Gomoa West District. The time series data collected, included monthly attendance for malaria, antenatal care and immunization for the aggregate of the six childhood killer diseases at the selected health posts.

Data analysis

Primary data analysis was based on the estimates generated from the interviews held in each community. This was used alongside personal observations and focus group discussions in the description and explanation of community situations. The evidence of causality was meant to give an indication of how effective a change in the operations of government organisations and NGOs (as a matter of policy) will, all things being equal, impact on preventive health behaviour of rural communities. Summary data presented in the tables were generated using Statistical Product for Service Solutions (SPSS).

Secondary data were obtained from OPD records of the various clinics patronized by the study communities. These data were analysed by running linear regressions using the Time Series Processor (TSP) as follows:

Assessing knowledge of study communities in prevention of common diseases

To achieve the first objective of the study, the knowledge level of study communities in disease prevention and control was assessed from all respondents in the community. This was collated from primary data obtained from respondents in respect of HIV/AIDs, Immunization against childhood killer diseases, Diarrhoea and Malaria Prevention. For each community, their knowledge was collated from individual interview guide into percentages of those with "good knowledge" or "little or no knowledge" based on the procedure already described. The averages for beneficiary and non-beneficiary communities were then estimated, and then percentage knowledge calculated. Inferences were then drawn from the results.

Assessing sources of knowledge and communicating channels of health issues

To further achieve the first objective of the study, the sources of knowledge of study communities on health issues was also assessed from the ranking values assigned to the various sources of knowledge by individual respondents in each study community. The highest ranked source of knowledge was assigned a figure corresponding to the number of options that was given to the respondent to evaluate, and the lowest ranked was assigned a figure of one. For each community the sum of all rankings for each source were obtained. The sum of the rankings for Beneficiary and non-beneficiary communities were then calculated from the community totals. The aggregate rankings for each option based on the separate summations for beneficiary and non-beneficiary

communities were then deduced, with the highest total being highly ranked as "1".

Identification of factors affecting patronage of health care at health posts

The second objective of this study is aimed at identifying factors besides health education that induce preventive health behaviour, by influencing patronage of health care services in the beneficiary and non-beneficiary communities. To achieve this objective, an argument is made here that, although the central issue being addressed is the extent to which health education has contributed to improved knowledge, preventive health behaviour and health status, the study was carried out bearing in mind that there are other factors that may possibly exert the same or greater influence on the variables under study namely, OPD attendance for antenatal care, childhood immunization for the six childhood killer diseases, and cases of malaria. Therefore in order to be able to objectively attribute any change in community preventive health behaviour or health status to their improved knowledge of health issues from informal education, other factors that determine patronage at health facilities by the communities were identified and examined. Individual respondent knowledge acquired from education on issues relating to antenatal care, malaria prevention, child immunization, were assessed.

Data from interview guides were processed into frequencies of occurrence and percentages. Among factors that affected patronage of health services, respondents were required to tick all factors relevant to them. A relevant factor

chosen by a respondent was recorded as 1 and that which was not selected was recorded as 0. The frequency of all "1" corresponding to the number of respondents who selected that factor was computed and those for all "0" corresponding to those who did not select it were also computed. After that, percentages were computed for each factor for each community, and then aggregated to determine the average percentage for beneficiary and non-beneficiary communities. The relative importance of the various factors was subsequently inferred from the relative magnitudes of the estimated percentages.

Describing trends

The third objective of the study seeks to determine the trends in reported malaria cases, OPD attendance for antenatal care and child immunization in beneficiary and non-beneficiary communities of health education from 2002 to 2006. Whereas the trends in OPD attendance for antenatal care and child immunization will enable deductions to be made about any changes in the preventive health behaviour of study communities, trends in reported malaria cases will be used as a proxy indicator to make inferences about the effect of health education on health trends over the period of study.

In describing the trends, data obtained from the three health posts serving the study communities namely, Agona Health Centre (K.E.E.A District), Otuam Health Centre (Mfantsiman District) and Nogouchi Memorial Health Centre (Gomoa West District), were examined on community basis. Communities for which significant trends were estimated for variables under study, trend graph was

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drawn for the time profiles of the variable: OPD attendances for antenatal care, child immunization and malaria cases on quarterly basis for 5 years.

The fitted functional forms of the trend equations for the double log, linear and exponential forms were specified respectively as follows:

$$\ln X_i = \lambda_0 + \lambda_i \ln T + u \qquad\qquad (1)$$

$$X_i \quad = \quad \lambda_0 + \lambda_i T + u \qquad\qquad (2)$$

$$\ln X_i = \quad \lambda_0 + \lambda_i T + u \qquad\qquad (3)$$

X_i represents the OPD attendance, antenatal health care attendance, child immunization, malaria cases and diarrhoea cases, λ_0 is the intercept term, λ_i is the coefficient of the time variable on the OPD attendance variables, T represents time and u is the error term which obeys the normal regression assumptions.

Regression technique of the OLS was used to estimate the trend equations. The various functional forms of the models as stated above were fitted and the best among them eventually chosen for discussion.

Model specification

The choice of the most appropriate equation was guided by the following rules:

- The estimating equation does not contradict the theoretical and "a priori" expectations of the direction of influence and the signs of the parameters.

- The estimated regression coefficients are significant as indicated by the Student's t-test.

- The coefficient of multiple determination is such that the equation provides a 'good fit' to data and is most significant as measured by the F- test.

- The residuals are not serially correlated as tested by the Durbin Watson statistic.

The adequacy of the OLS procedure used was tested for absence of serial correlation in the error process by use of the Durbin-Watson statistics. The Cochrane - Orcutt Iterative technique was used to correct for first order serial correlation. The parameter estimates of the explanatory variables were analyzed for statistical significance in the equations.

Testing the formulated hypotheses

The specific hypotheses tested have already been specified in Chapter 1. The student's t test was employed in testing the hypotheses. The variables under study were chosen because, health education might lead to increase eagerness of pregnant women and nursing mothers to seek preventive health care. Thus, all things being equal, attendance for antenatal care and child immunizations would increase, thus indicating a decline or a negative sign of the estimated parameters: "attendance gap", "immunization gap" and malaria cases. On the other hand, increases in diarrhoea and malaria cases may be due to continuous disregard for environmental cleanliness and other preventive steps to curb these diseases.

Thus, if health education really works, then all things being equal the trend should fall, and the sign of the estimated parameters should be negative.

Test of significance

The standard Student's t test was employed in testing each null hypothesis against its alternative hypothesis. The calculated t value thus:

$$t^* = \frac{\hat{\alpha}_i - \alpha^*}{S\hat{\alpha}_i} \qquad (4)$$

was compared with the tabulated $t_{(0.05, N-K)}$. Where t* is greater than the critical tabulated value of $t_{(0.05, N-K)}$., the null hypotheses H_O is rejected and H_A accepted. On the other hand, if t* is less than the critical tabulated value of $t_{(0.05, N-K)}$, H_O is accepted. The symbols $\hat{a}_i$, α^* and $S\hat{a}_i$ are the least squares estimate of the parameter, the hypothesized value of the parameter, and the standard error associated with the estimated parameter respectively. N represents the number of observations, and K represents the number of parameters. N-K represents the degrees of freedom.

Growth rates

The average growth rate of the various OPD attendance variables over the period of study was estimated from the chosen functional forms that gave the best fitted trend that was significant.

The average growth rate in attendance variable (GRx$_i$) can be expressed as:

$$GRx_i \quad = \quad x_i^{-1} \, (\partial x_i / \partial T) \tag{5}$$

Where x$_i$ represents OPD attendance variable and T is time.

Average growth in attendance was derived from equations 1, 2, and 3 as follows:

$\lambda_i T^{-1}$, $\lambda_i x_i^{1}$ and λ_i. The symbol λ_i is as previously defined.

Limitations of the study

The major constraint of the study was with data collection as OPD records for past years were difficult to find. The books were torn, creased and the writings were not clear enough making it very cumbersome. Therefore only six communities were used in the study which is not very representative of communities assessing health from the health centres. There was not an easy access to information as some health centre heads, 'chief' felt that OPD records were very confidential and sensitive thereby becoming bureaucratic. Respondents could not also remember lots of things in the pasts easily therefore it took a long time to interview one respondent.

CHAPTER FOUR

RESULTS AND DISCUSSION

Introduction

This chapter presents the empirical results of the fitted trend for child immunization, malaria, and antenatal health care in health-education beneficiary and non beneficiary communities. It discusses knowledge levels and the sources of acquisition of their knowledge on health care, the factors that influence patronage of health care and their perceptions of health education. It also discusses the general trend and growth rates of these variables for the various communities over the study period.

Knowledge of study communities in prevention of common diseases

The computed percentage knowledge of respondents in the community collated from primary data obtained from respondents in respect of HIV/AIDs, immunization against childhood killer diseases, diarrhoea and malaria prevention are presented in Tables 2 to 5. Knowledge levels that is, "Good knowledge" and "Little or no knowledge" were arrived at by the percentage of respondents who were able to answer two or more of the questions asked on each disease prevention or treatment methods and respondents who were able to answer only one or none of the questions asked respectively from the primary data collection guide. Also presented are the average knowledge in the preventive or treatment

methods for the groups and the overall knowledge level for each community and the entire group.

Table 2: Respondents in beneficiary communities with good knowledge in some preventive health practices

Variables	Percentage of respondents with good knowledge in treatment/ prevention in beneficiary communities			Average
	Breman	Egyankwa	Simbrofo	
HIV/ AIDS	54.3	57.1	40	50.5
Diarrhoea	57.1	51.4	25.7	44.7
Malaria	48.6	40	40	42.9
Six Childhood Killer Diseases	22.9	28.6	17.1	22.9
Overall average knowledge level	45.7	44.3	30.7	40.3

Source: Fieldwork, 2007

Table 2 shows that generally, beneficiary communities which are Breman, Egyankwa, and Simbrofo had a higher aggregate percentage of people with good knowledge in HIV/AIDs prevention, diarrhoea and malaria prevention and treatment as expected, with average values of 50.5, 44.7 and 42.9 percent respectively, compared to 40.9, 31.5 and 30.5 percent respectively from non beneficiary communities namely, Eguafo, Etsibeedu and Mprumem in Table 3.

The overall average knowledge level in the last cell 40.3 of table 2 is higher than that of table 3 which is 33.6. It means that beneficiary communities are well informed on preventive practices than non beneficiary communities as expected in the study.

Table 3: Respondents in non beneficiary community with good knowledge in some preventive health practices

Variables	Percentage of respondents with good knowledge in treatment/ prevention in non beneficiary communities			Average
	Eguafo	Etsibeedu	Mprumem	
HIV/ AIDS	40	40	42.9	40.9
Diarrhoea	42.9	28.6	22.9	31.5
Malaria	28.6	34.3	28.6	30.5
Six Childhood Killer Diseases	28.6	37.1	28.6	31.4
Overall Average Knowledge level	35.0	35.0	30.8	33.6

Source: Fieldwork, 2007

Contrary to expectations that knowledge levels should be higher in beneficiary than non beneficiary communities, the non beneficiary communities had a higher percentage of respondents with knowledge in prevention of childhood killer diseases, that is 31.4 percent compared with 22.9 percent for beneficiary communities. The reason for this trend is that, many people in

Simbrofo, a beneficiary community, which contributed to this low percentage, were generally apathetic. According to the staff of the clinic serving them, it is a 'difficult community'.

With regard to knowledge on community basis, Table 2 indicates as expected that, beneficiary communities had relatively more respondents with good knowledge in HIV/AIDs, diarrhoea and malaria prevention. For childhood killer disease prevention however, individual non-beneficiary communities had either a relatively higher or equal percentage of respondents with knowledge in the practice. This is not surprising, because community health personnel of the Ministry of Health are required to pay routine monthly visits to all communities to weigh infants and take the opportunity to immunize kids needing to be immunized. Although this is not an educational exercise, indirectly people are sensitized to patronize it by the continued presence of the health personnel.

Tables 4 and 5 show that more respondents in the non-beneficiary communities had little or no knowledge as expected, with an overall average aggregate of 66.4 percent compared to 59.8 percent in beneficiary communities. The difference which is not so wide may be explained by the fact that, sensitization and education notwithstanding, the attitudes of the people, the socio-cultural and community interests play a very large part in facilitating the societal value placed on health information acquired. Thus the full effect of sensitization may be attenuated.

Table 4: Respondents in beneficiary communities with little or no knowledge in some preventive health practices

Variables	Percentage of respondents with little or no knowledge in treatment/ prevention in beneficiary communities			Average
	Breman	Egyankwa	Simbrofo	
HIV/ AIDS	45.7	42.8	60.0	49.5
Diarrhoea	42.8	48.5	74.3	55.3
Malaria	51.4	60.0	60.0	57.1
Six Childhood Killer Diseases	77.2	82.9	82.9	77.1
Overall Average Knowledge level	54.3	58.6	69.3	59.8

Source: Fieldwork, 2007

Table 5: Respondents in non beneficiary communities with little or no knowledge in some preventive health practices

Variables	Percentage of respondents with little or no knowledge in treatment/ prevention in non beneficiary communities			Average
	Eguafo	Etsibeedu	Mprumem	
HIV/ AIDS	60.0	60.0	57.2	59.1
Diarrhoea	57.1	71.5	77.2	68.5
Malaria	71.4	65.7	71.4	69.5
Six Childhood Killer Diseases	71.5	62.8	71.4	68.6
Overall average Knowledge level	65.0	65.0	69.2	66.4

Source: Fieldwork, 2007

The results shown for knowledge in HIV/AIDs prevention indicate that there are not very large differences between beneficiary and non-beneficiary communities, even though the results are slightly higher for beneficiary communities with respect to level of knowledge. This may be due to individual attitude or interest in communities irrespective of whether it is a beneficiary community or not. In addition, sensitization on prevention of HIV/AIDs is a national issue addressed through so many avenues including the radio.

A large percentage of respondents in both beneficiary and non beneficiary communities had no or little knowledge in the essence of the immunization exercise when assessed, as shown in Tables 4 and 5, 77.1 percent and 68.6 percent respectively. All six communities had little knowledge in childhood killer diseases. Although immunization figures were increasing due to nationwide publicity and other incentives provided during the programme, parents did not really know why their children were immunized and against what kind of diseases. The practice has become a formality or a way of life therefore parents do not take pains to know which immunization is given at what time. The only immunization that was well known was polio; it may be due to its unique way of administration.

Malaria has always been a sensitive national issue and lately some donors have given money to support its prevention. However, there is more to be done since in all of the beneficiary and non beneficiary communities studied, less than half of respondents had good knowledge in the prevention of this disease. As shown in Table 4 and 5, the percentage of people with little or no knowledge ranged from 51.4 percent in Breman to 71.4 percent in both Eguafo and Mprumem communities.

Generally, the majority of respondents in both beneficiary and non beneficiary communities had just a little knowledge of all practices as shown in Table 4 and 5 with values of 59.7 and 66.4 percent respectively. This may imply that the sensitization programmes had either not been adequate or effective. The relative percentages are, however, in line with the study expectations.

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Sources of knowledge and communicating channels of health issues

The aggregate frequencies per respondents in each study community for each information source or channel are presented in Tables 6 and 7. Also shown are the corresponding overall ranks of each source or channel based on the relative magnitudes of the aggregate frequencies. The highest rank was given a mark of 5 and the least 1. Sources which were not ranked by respondents had a magnitude of 0.

The major source of acquisition of knowledge on these preventive practices were through GHS durbars, community outreach programmes and health talks during visit to hospitals for both beneficiary and non beneficiary communities.

Table 6: Aggregate rank frequencies of various information sources or channels for beneficiary communities

Summation of rank frequencies by respondents for	Beneficiary communities			Total	Aggregate rank
	Breman	Egyankwa	Simbrofo		
GHS	146	136	150	432	1
NGO outreach	112	145	131	388	2
Radio	76	75	49	200	3
Print Media	22	4	0	28	4
Other Sources	7	10	10	27	5

Source: Fieldwork, 2007

This finding is in conformity with results presented by Pawlowski et al (2001) which states that educational role of medical personnel especially those practicing in outpatient clinics was the most effective to almost double the rate of knowledge on toxoplasmosis when measured at early pregnancy and shortly after delivery. The two major factors which may have a negative effect on educational programmes in medical institutions are medical staff having no time or interest for promoting health education and a lack of high quality health educational materials developed using modern promotional technologies.

Health education through print media was ranked among the least by both groups. Other Sources of health education enumerated by respondents in order of prevalence were; through friends and relatives, schools, church conventions, durbars or visit from prominent people during festivals.

NGOs outreach remained the second channel for beneficiary communities Health education through print media was ranked among the least but Breman in the Komenda Edina Eguafo Abrem (KEEA) district had higher rank frequency of 22 which could be due to the level of development.

Radio was the second source of information for non beneficiary communities. Information through the print media was ranked among the lowest, however; Eguafo also in KEEA district had higher rank frequency of 36. The statistical service report for the Central region indicates that the KEEA district is relatively developed than the Mfantsiman and Gomoa districts.

Table 7: Aggregate rank frequencies of various information sources or channels for non beneficiary communities

Summation of rank frequencies by respondents for	Non beneficiary communities			Total	Aggregate rank
	Eguafo	Etsibeedu	Mprumem		
GHS	133	130	147	410	1
NGO outreach	39	22	9	70	3
Radio	112	110	88	310	2
Print Media	36	0	4	40	4
Other Sources	22	0	12	34	5

Source: Fieldwork, 2007

Since development is in tandem with literacy it might be the reason why there is more patronage for print media in the two communities in KEEA district. The opinion seems to be true that patronage of written educational material depends on the intellectual level of the population and individual motivation to learn more healthy lifestyles.

Although health education through radio (mass medium) was ranked among the highest, community members preferred face to face communication channels. The reasons given are that unlike radio, you get to ask questions and you get convincing answers at no cost. There are no language barriers since most of these community health education programmes are conducted in the local dialects for all members to understand. It addresses specific needs of communities and not general issues as on radio. The reasons given by community members are

in conformity with the characteristics of face to face (interpersonal) as opposed to the mass medium channel of communication enumerated by Hubley (1993).

In the toxoplasmosis study from 1991-1999 by Pawlowski et al (2001), information on toxoplasmosis was reportedly obtained from multiple sources. About 60 percent of women questioned had heard about the disease through television and magazines. Radio, daily newspapers and health services providers were the reported sources for fewer than 40 percent of respondents. Books and other people were less frequent source of information.

Importance of community health education

To assess the importance attached to the activities of health personnel by communities with respect to health education, responses were evaluated from the interview guide. All respondents for both beneficiary and non beneficiary communities agreed to the importance of community health education and they backed their answer with the following reasons.

- Information on health improves lives because scarce money is saved for food and other things, there is peace of mind and development.
- It is the source of gaining and improving knowledge, increasing awareness and acting as reminders for reinforcement.
- Information gained on disease control helps prevent diseases and reduce panic caused by diseases.
- Community members are able to correct themselves and likely to change attitude.

- It is the main source of in-depth information because you get to ask questions and get convincing answers

- Because of illiteracy, community education is more effective for clarification and most often there is no language barrier unlike radio.

When asked of the most important activity done in the communities so far to further ascertain where health education has been placed in terms of development, the following responses were given. 48.6 percent of beneficiary communities stated health education while 30.5 percent of respondents in non beneficiary communities stated both health education and growth monitoring of children using the weighing scale and immunization as the most important things and10.5 percent of both beneficiary and non beneficiary communities stated the provision of facilities such as boreholes, wells, toilets, schools and community clinics.

About thirty four percent of beneficiary communities stated the provision of facilities as important things that must be done and 20 percent stated compliance to health education. There cannot be a permanent change in behaviour if there are no basic facilities like toilets, good drainage systems and even hospitals with basic equipments where people can report illness on time and gain the needed attention.

Health education is very necessary because it creates attitudinal change so that there can be a permanent change in behaviour. For non beneficiary communities, 34.3 percent stated that continuous health education was an important thing that should be done while 31.4 percent stated compliance with

what has been taught. According to Petersen (1992), health education is generally accepted as an important and inexpensive primary preventive measure. The importance of health education cannot be overemphasized.

Patronage of health care besides health education

When respondents were questioned about where they sought for health care, all respondents in Breman, (100%) indicated that they reported sicknesses to a health centre, 94.3 percent of respondents in both Eguafo and Mprumem reported illness to health centres, while 88.6 and 82.9 percent of respondents in Etsibeedu and Egyankwa respectively attended health facilities when ill. As usual, Simbrofo had the least percentage (80) of respondents reporting diseases to health facilities. In general, 87.6 percent of respondents in beneficiary communities reported illnesses to health centres while contrary to expectations, a relatively higher percentage of 92.4 of respondents in non-beneficiary communities did likewise. The reason is due to the low patronage of Simbrofo a beneficiary community to health centres.

Generally, 73.3 percent of respondents with children below 5 years in beneficiary communities and 69.5 percent of respondents in non-beneficiary communities had sought antenatal care during pregnancy. All female respondents with children below five years in Breman, and Egyankwa, both beneficiary communities and Etsibeedu a non-beneficiary community attended antenatal clinic when they were pregnant. Also all male respondents in these communities with children five years or below claimed to have supported their wives

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financially and ensured that they attended antenatal clinic during the period of pregnancy.

Some of the specific factors that also influenced antenatal attendance that provided some evidence of preventive health behaviour were as follows:

- The importance attached to the need for the pregnant mother to seek good health for herself and the unborn baby since she cannot tell what is going on inside, to get all the needed drugs to prevent diseases during pregnancy and obtain also advice to ensure safe delivery.

- Awareness created by health workers during weighing and educational sessions including sensitization from some NGOs.

- Some attended because they fell ill during the period of pregnancy.

- Coercion by their husbands or mothers to seek antenatal care sometimes with financial backing.

- It had become common knowledge and generally accepted as a requirement to attend antenatal clinic, through societal sensitization. Thus peer persuasion and neighbours' sensitization of pregnant females induced them to attend antenatal to ensure child is well.

Only 2.9 percent of respondents with children under five did not seek antenatal care in Eguafo and Mprumem which are non-beneficiary communities. Once again, contrary to expectation that preventive health behaviour must be more pronounced in beneficiary community than non beneficiary community, Simbrofo a beneficiary community had a percentage of 25.7 not seeking antenatal care during pregnancy. The reasons given from all communities were; lack of

money, preference for traditional medicine to orthodox medicine and the fear of injections particularly at Simbrofo.

Table 8: Summary of factors that influence patronage to health centres among beneficiary communities

Percentage (%) of respondents influenced by	Beneficiary Communities			Average
	Breman	Egyankwa	Simbrofo	
Short distance to health facility	37.1	0.0	57.1	31.4
Cost of health care	20	0.0	17.1	12.4
Health staff attitude/ Services / Waiting time	14.3	22.8	5.7	14.3
Awareness from health education	14.3	42.9	22.9	26.7
Ease of getting transport	20	28.6	20	22.9
National Health Insurance (NHIS)	34.3	17.1	0	17.1
Severity of disease	40	65.7	48.6	51.4
Other reason	14.3	0.0	0.0	4.8

Source: Fieldwork, 2007

Table 8 shows the summary of the results obtained from interviews of respondents in beneficiary communities for the various factors that influence their patronage of health services. The major factors that influenced patronage to health

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centres were long distance of communities to health centres, lack of transport, poor attitude of health staff and long waiting time, non registration with NHIS and most disappointingly, the severity of disease which is 51.4 percent. It was evident that respondents went to health centres only after the self prescribed medication had failed to work and a complication arising.

Table 9: Summary of factors that influence patronage to health centres among communities

Percentage (%) of	Non Beneficiary Communities			Average
Respondents influenced by	Eguafo	Etsibeedu	Mprumem	
Short distance to health facility	0	17.1	25.7	14.3
Cost of health care	20	5.7	5.7	10.5
Health staff attitude/ Services / waiting time	5.7	57.2	11.4	24.8
Awareness from health education	20	8.6	20	16.2
Ease of getting transport	0	45.7	25.7	23.8
National Health Insurance (NHIS)	17.1	0	5.7	7.6
Severity of disease	57.1	65.7	54.3	59
Other reason	14.3	0	11.4	8.6

Source: Fieldwork, 2007

Table 9 also shows the summary of the results obtained from interviews of non beneficiary respondents. The major factors that influenced patronage to health centres were the same as beneficiary communities but there was a higher percentage of 59 respondents indicating the severity of disease as a push factor to health centres.   It is possible that the lower percentage for beneficiary communities is as a result of improved preventive behaviour due to health education. This is buttressed by the response of 26.7 percent of respondents that their patronage of health services is due to awareness created by health education compared to 16.2 percent in non-beneficiary communities. It is also not surprising that beneficiary communities seemed to have embraced the National Health Insurance with 17.1 percent compared to 7.6 percent in non-beneficiary communities.

Choice of health centre depended on quality of care, availability of laboratory service, ease of obtaining vehicles to health centre, severity of illness, husband's will, closeness of community to health centre, promptness of health care because of number of patients and attitude of health personnel.

Trends in the variables under study

This section presents Trends in Antenatal Attendance Gap in Beneficiary and Non-Beneficiary Communities.
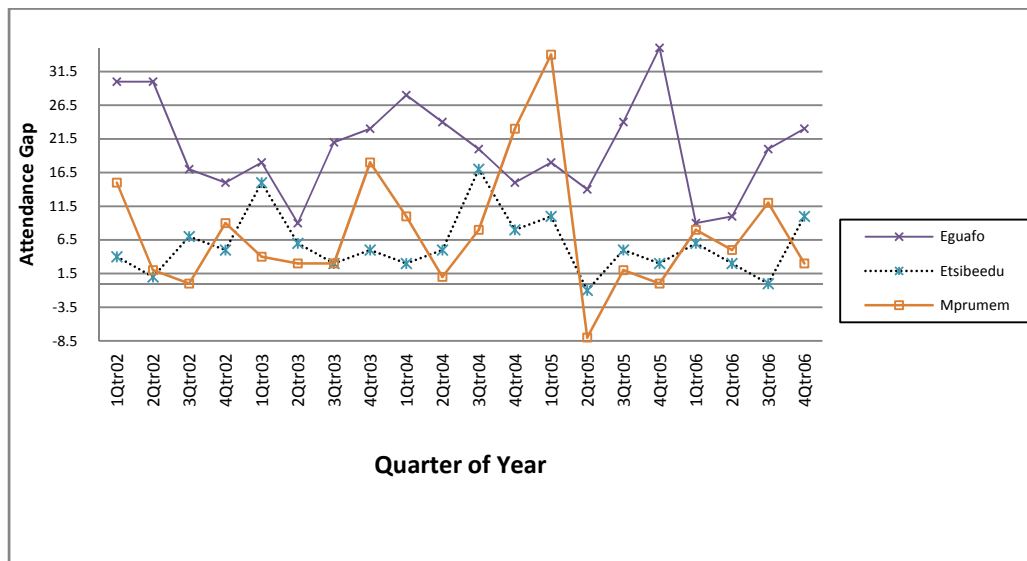
Figure 2: Time profile of attendance gap for antenatal care in non beneficiary communities

Source: Fieldwork, 2007

Figure 2 shows the trend in attendance gap for antenatal care at the health centres of study by pregnant women from non-beneficiary communities over the period January 2002 to December 2006. The trends in attendance gap in all three non-beneficiary communities have fluctuations with marked effects in Mprumem but lesser swings in Etsibeedu. These swings are more likely to be related to the attitudes of the community folk under their peculiar circumstances. For instance, although all female respondents in Etsibeedu and 69.5 percent of female respondents in Mprumem and Eguafo claimed to have sought antenatal

care during pregnancy, it was evident from the hospital records that in almost all cases, their frequency of attendance was less than the required number of visits. Indeed some of the visits were mainly motivated by the fact that the mothers felt sick during the period of pregnancy.
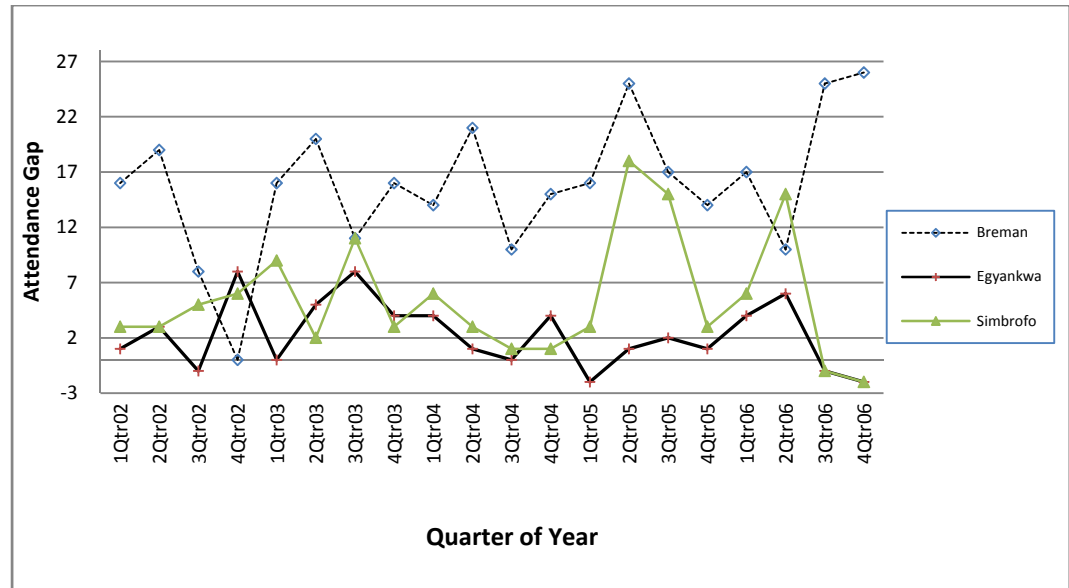
Figure 3: Time profile of attendance gap for antenatal care in beneficiary communities

Source: Fieldwork, 2007

Figure 3 shows highly volatile trends in antenatal attendance gaps for all three beneficiary communities as was observed for non-beneficiary communities. The large upward and downward swings in the trend although less pronounced for Egyankwa, are contrary to study expectations of a persistent drop in attendance gap each quarter. A few persistent drops in attendance gaps are noticeable for Simbrofo and Egyankwa only between the first quarter of 2004 and the third

quarter of 2003. The predominant upward swings indicate large defaults in antenatal care. For Simbrofo, which seemed to have lower volatility in trend before 2004, it could be explained by the fact that majority of them never reported pregnancy to hospital (74.3%) even for the first time, therefore only the few dedicated pregnant females sought antenatal care with lower attendance defaults. For Breman there seemed to be a slight upward trend within the haphazard swings, but this is contrary to the study expectations of continuous downward trend.

Regression results of trends in antenatal attendance gap of study communities

Summary statistics on key variables used in the study are shown in Appendix 7, Table 8 shows the regression coefficients, the coefficient of determination (R^2), the Durbin Watson statistics (DW) and the F statistic, obtained for each of the variables for each community. The term C denotes the constant term and T denotes the time.

The results are obtained for the various functional forms of the equations after correcting for serial correlation in cases where serial correlation was found in the original equations. The double log forms reported for Etsibeedu and Egyankwa, and the linear forms reported for Breman and Eguafo were the most appropriate. For Simbrofo and Mprumem, the Log linear (exponential) forms were the most appropriate. These were therefore selected for discussion. The DW of the selected equations for Egyankwa and Eguafo after correcting for autocorrelation indicates no autocorrelation. For Simbrofo, the DW fell in the

inconclusive region of autocorrelation but was selected because it was much better than the result not corrected for autocorrelation.

Table 10: Regression results of trends in antenatal attendance gap for communities

Double-Log Form	C	Trend	R^2	F	DW
Etsibeedu	1.13**	0.29	0.09	1.67*	2.05
	(0.50)	(0.23)			
Egyankwa^	1.85	-0.37	0.09	11.87***	2.03
	(1.29)	(0.53)			
Linear Form					
Breman	11.00***	0.37*	0.08	1.74*	2.26
	(3.37)	(0.28)			
Eguafo^	19.45***	-0.03	0.06	63.73***	1.87
	(4.85)	(0.39)			
Exponential Form					
Mprumem	1.75***	0.01	0.45	0.07	2.21
	(0.56)	(0.05)			
Simbrofo^	1.16***	0.04	0.08	21.61***	1.89
	(0.05)	(0.05)			

Source: Fieldwork, 2007

The joint significance of the explanatory variables was at the 10 percent level for Etsibeedu and Breman as revealed by the F statistic of the selected

equations and at the 1 percent level for Egyankwa, Eguafo and Simbrofo. The explanatory variables of the selected equations for Mprumem, a non-beneficiary community, were not jointly significant even at the 10 percent level as shown by the F of 0.07. The equations show very low degrees of explanatory power for the communities. This is indicated by the range of the R^2 of between 8 percent and 45 percent. The estimated coefficient of 0.37 for the trend variable for Breman was the only variable that was significant though at the 10 percent level but had a positive sign, and thus contrary to study expectations of a negative trend. These results buttress the trend graphs already discussed. Re-specifications of the models with different lag lengths yielded essentially the same results.

The estimated coefficient of 0.37 for the trend variable of the selected linear equation of the antenatal attendance gap for Breman was 2.4 percent. This indicates that the average quarterly growth rate in attendance gap over the period was 2.4 percent. Thus, for every 1 percent increase in time trend there is a corresponding 2.4 percent average increase in antenatal attendance gap at Breman a beneficiary community. This is inconsistent with the expectations of the study, that over the period of the study, there would be a fall in the gap between in actual antenatal attendance and the expected antenatal attendance in spite of intensified health education. The estimated growth rate was based on the equation $\lambda_i X_i^{-1}$ from the procedure described in Chapter 3. X_i represents the mean of antenatal attendance gap for Breman of 14.9. For the other beneficiary communities namely, Simbrofo and Egyankwa the insignificant trend is also contrary to expectations of the study. These results indicate that over the period of study the

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preventive health behaviour in respect of antenatal health had not improved significantly or has rather worsened in the case of Breman. The possible reasons could be due to the attitudes of the inhabitants of those communities. Particularly Simbrofo where some pregnant girls claimed they were afraid to take injections and had not been attending the clinic. This, therefore, calls for intensification of the sensitization process to include attitudinal change. The poor explanatory power however of the regressors with R^2 of 8% suggests that there are other explanatory variables beyond the scope of this research which need to be assessed in future research. For the non-beneficiary communities, the insignificant trend is not surprising and is consistent with the expectations of the study.

In conclusion it can be said that there is no significant downward trend as expected in spite of health education. The results are similar for both beneficiary and non-beneficiary communities.
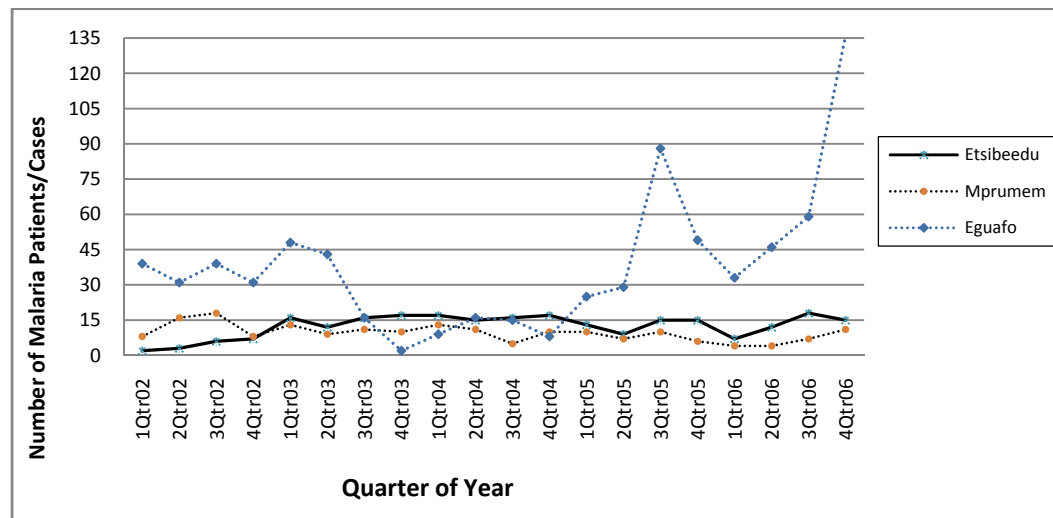
Figure 4: Time profile of malaria cases in non beneficiary communities

Source: Fieldwork, 2007

Figure 4 shows the trend in reported malaria cases at the health centres of study by non-beneficiary communities over the period January 2002 to December 2006. The trends in malaria cases seemed more stable in Mprumem and Etsibeedu over the period with Mprumem exhibiting a slightly overall downward trend. For Eguafo, reported malaria cases rose slightly between the first quarter of 2002 and the first quarter of 2003, and then fell persistently till the end of 2003, thereafter rising gradually and then exhibiting a very volatile trend from the second quarter of 2005 to peak at 136 cases in the third quarter of 2006. The trend in Eguafo seemed to fall in line with the general upward trend in malaria cases nationally.
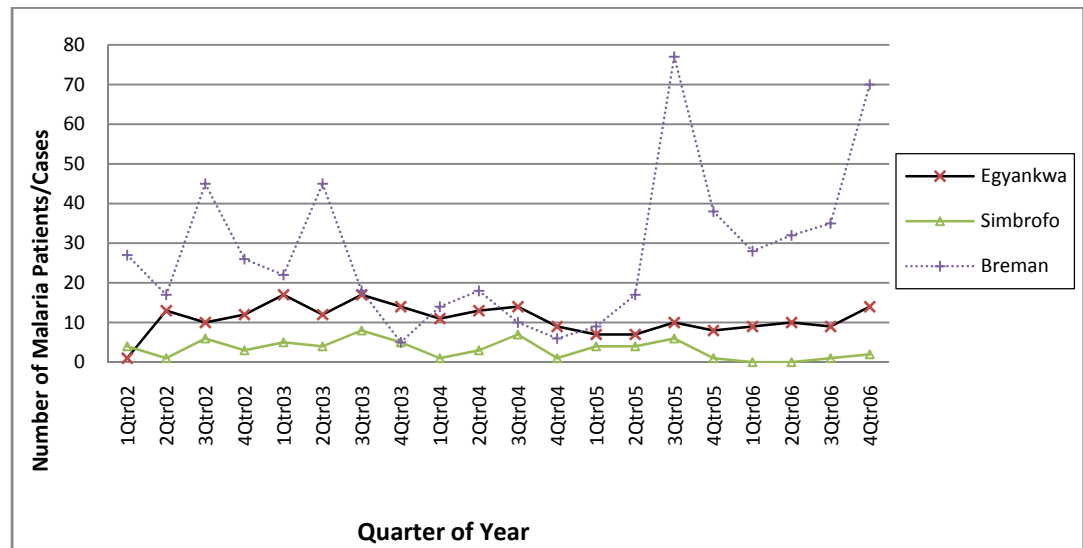
Figure 5: Time profile of malaria cases in beneficiary communities

Source: Fieldwork, 2007

Figure 5 shows the trend in reported malaria cases at the health centres of study by beneficiary communities over the period January 2002 to December 2006. Egyankwa and Simbrofo seemed to exhibit a slightly downward trend with less volatility compared to Breman which showed a very volatile trend in an unclear direction. The trend observed for Breman is possibly attributed to the socio cultural practices which health education is unable to influence immediately. Indeed if personal hygiene and preventive behaviour was spontaneous after health education, it is likely to have been short-lived if the educational process was not done continuously over the period.

Regression Results of Trends in Reported Malaria Cases at Health Centres

Table 10 shows the double log forms of the trend equation for malaria cases reported for Simbrofo and Eguafo, and the linear form reported for Egyankwa. For Breman, Etsibeedu and Mprumem, the Log linear (exponential) forms were the most appropriate.

The DW for the selected equations after correcting for autocorrelation indicated no autocorrelation except Egyankwa for which the DW fell in the inconclusive region of autocorrelation. However, this result is much better than the result not corrected for autocorrelation. The joint significance of the explanatory variables are at the 1 percent level for all communities except Simbrofo for which it was not significant even at the 10 percent level as shown by the F of 0.08, although it is a beneficiary community.

Table 11:   Regression results of trend in malaria cases for communities

Double-Log Form	C	Trend	R^2	F	DW
Simbrofo	1.33**	-0.08	0.52	0.08	2.32
	(0.60)	(0.27)			
Eguafo^	-3.79	2.72	0.44	20.45***	1.87
	(9.22)	(3.28)			
Linear Form					
Egyankwa^	14.51***	-0.28**	0.23	46.65***	1.67
	(1.86)	(0.14)			
Exponential Form					
Breman^	2.39***	0.06	0.29	18.44***	1.74
	(0.77)	(0.06)			
Etsibeedu^	2.56***	0.03	0.57	4.21***	2.38
	(0.49)	(0.03)			
Mprumem	2.59***	-0.04**	0.26	6.33***	1.83
	(0.01)	(0.02)			

Source: Fieldwork, 2007

*** indicates significance at 1% ** indicates significance at 5% and * indicates significance at 10%. Standard errors are in parenthesis. C denotes constant. The 'hat' (^) indicates results have been corrected for autocorrelation (Cochrane Orcutt's iterative technique) See Appendix 4 for results not corrected for autocorrelation.

The equations show very low degrees of explanatory power for the communities although relatively higher than what was obtained for antenatal attendance. The R^2 ranged from 23 percent to 57 percent. The estimated coefficient of 0.04 for the trend variable for Mprumem and 0.28 for Egyankwa were the only ones that were significant both at the 5 percent level and also with the expected negative signs. The coefficients for Simbrofo, Eguafo, Breman and Etsibeedu were insignificant. Re-specifications of the models with different lag lengths yielded essentially the same results. These results confirm the trend graphs already discussed.

As mentioned earlier, the estimated coefficient of -0.04 for the trend variable for Mprumem (log linear) a non beneficiary community and -0.28 for Egyankwa (linear) a beneficiary community were the only ones that were significant. The estimated growth rates of -0.4 percent and -2.6 percent from these coefficients for Mprumem and Egyankwa respectively indicate the average quarterly fall rate in attendance over the period. Thus, for every 1 percent increase in time trend there is a corresponding 0.4 percent and 2.8 percent fall in clinic attendance for malaria treatment for Mprumem and Egyankwa respectively. The higher percentage fall in reported malaria cases for Egyankwa is expected. The result for Mprumem relative to the other beneficiary communities that did not show significant results, though unexpected, is a high possibility due to community peculiarities, and attitudes as earlier mentioned. The one significant factor is the warm nature of the staff at the hospital which may be a factor that induces attendance. The coefficients for Simbrofo, Eguafo, Breman and Etsibedu

were insignificant. Surprisingly Simbrofo benefits from the same clinic facility as Mprumem but has a serious attitudinal problem as mentioned earlier. The situation for Breman can be explained with primary data collected from the community which indicated the difficulties in obtaining transport to the hospital at Agona, this not withstanding malaria cases are high. This may be due to the fact that the educational process was not inducing sufficient preventive practices.

Malaria prevalence does not seem to be decreasing even though a lot of campaigns are going on. Although the situation in Central Region was better than eight regions, there was a rise in number of cases from 150,608 in 2001 to 235,044 in 2002 (56%). This was followed by a slight fall to 224,597 in 2003 (-4.4%) and then a greater fall to 175,433 in 2004 (21.9%). In general, however, malaria prevalence increased nationwide from 2001 to 2003 but reduced almost by 2% in 2004 as measured by out-patient visits (GSS, 2007). During that period, Central Region recorded the least number of malaria case of 50608 in 2001 compared to other regions. Central Region accounted for an annual average of 6.9 percent of the annual total malaria cases during the period. This was believed to be due to hyped activities of NGOs in the area.

The cancellation effect of the rises and falls in malaria cases in Central Region, may result in an unclear direction of change as was observed in the results of many of the study communities. Whereas the falls in malaria cases could be accounted partly for by the effect of education, the overall effect is likely accounted by other factors including changes in the weather, environmental and sanitation. which are not within the study scope. In general the trends shown in

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beneficiary communities were almost similar to those shown in non-beneficiary communities indicating that, either health education did not have any impact on preventive behaviour, or if it did, it did not significantly improve health status (using malaria incidence as a basis) over the period, compared to non-beneficiary communities. However a study of Malaria and Development in Africa by the American Association for Advancement in Science (1991) attributed the high prevalence of malaria and its resultant impact on productivity to a number of factors. These included, already overburdened health services, patterns of malaria transmission, environmental and cultural factors which vary so greatly throughout the continent that difference in prevalence and incidence occur even between neighbouring villages. Overall development can have an impact on transmission of malaria. Agricultural development, water resource management, industrial and infrastructural project sites, and household and community environments can create habitats favourable for mosquito breeding.

Trends in immunization gap in beneficiary and non-beneficiary communities

Figure 6 shows the trend in Immunization gap against childhood diseases at the health centres of study by non- beneficiary communities over the period January 2002 to December 2006.

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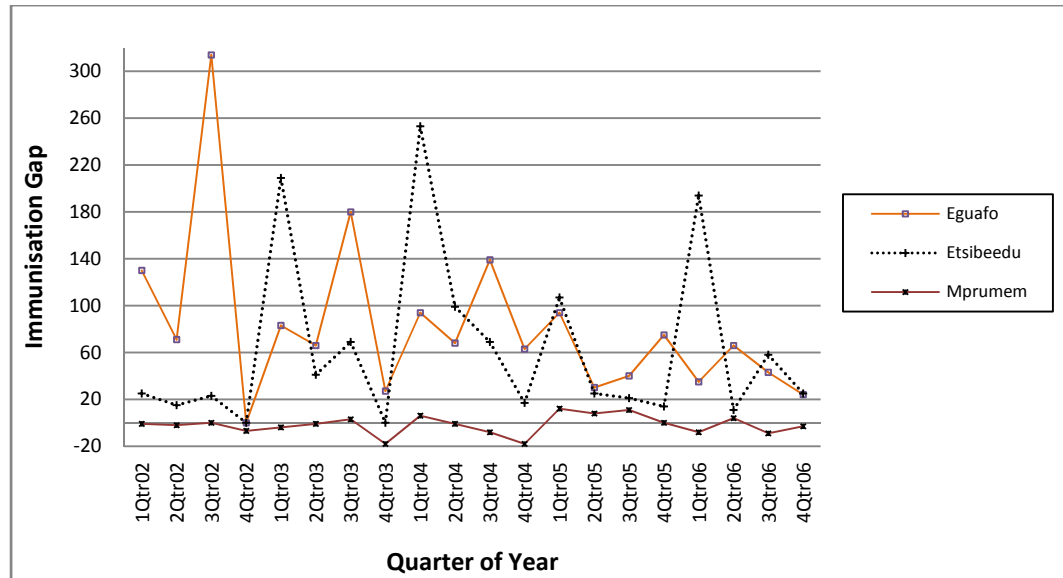
Figure 6: Time profile of immunization gap for childhood killer diseases in non-beneficiary communities

Source: Fieldwork, 2007

The trend exhibited by Mprumem community shows a relatively stable movement with a net negative immunization gap due to carry over effect. The highly volatile trends exhibited by Etsibeedu and Eguafo are inexplicable although there is a somehow encouraging downward trend for Eguafo.

Figure 7 also shows the trend in Immunisation gap against childhood diseases at the health centres of study by beneficiary communities over the period January 2002 to December 2006.

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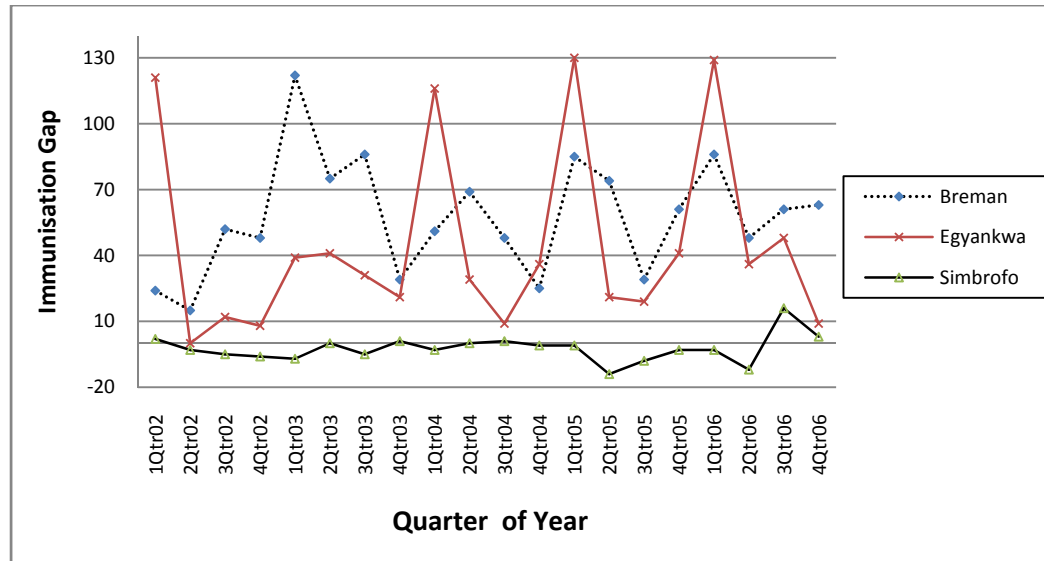
Figure 7: Time profile of immunization gap for childhood killer diseases in beneficiary communities

Source: Fieldwork, 2007

Similar to the situation in the non beneficiary communities, Breman and Egyankwa exhibited highly volatile trends but in no clear general direction: The large swings in the trend represent large inconsistent defaults in immunization year after year in spite of benefiting from health education. Simbrofo exhibited a generally stable trend but in an almost indistinct upward direction. This can be explained by the fact that, in view of their general apathetic attitudes on preventive health care issues and the fact that some have even declared that they do not go to health centre, extra effort was put in by health personnel at the health centre to force them to get their kids immunized for the sake of the future of the kids.

Regression results of trends in infant immunisation gap in study communities

Table 12: Regression results of trends in infant immunization gap for communities

Double-Log Form	C	Trend	R^2	F	DW
Breman	3.37***	0.27**	0.17	3.73***	1.93
	(0.31)	(0.14)			
Etsibeedu	3.56***	0.10	0.08	0.12	2.22
	(0.68)	(0.29)			
Mprumem	0.09	0.71	0.21	1.03	1.67
	(1.76)	(0.70)			
Linear Form					
Egyankwa	39.59**	0.49	0.05	0.08	2.11
	(20.34)	(1.69)			
Exponential Form					
Simbrofo	-0.09	0.09	0.35	1.64*	2.73
	(0.92)	(0.07)			
Eguafo	4.98***	-0.07***	0.37	9.77***	2.93
	(0.27)	(0.02)			

Source: Fieldwork, 2007

*** indicates significance at 1% ** indicates significance at 5% and * indicates significance at 10%. Standard errors are in parenthesis. C denotes constant. The results were not auto correlated except for Mprumem which fell in the inconclusive region. See Appendix 6 for results corrected for autocorrelation.

Table 12 shows the double log forms of the trend equation for immunization gaps for Breman, Etsibeedu and Mprumem, and the linear form for

Egyankwa. For Simbrofo and Eguafo, the Log linear (exponential) forms were the most appropriate. The DW for the selected equations after correcting for autocorrelation indicates no autocorrelation for all except Mprumem for which the DW fell in the inconclusive region of autocorrelation.

The joint significance of the explanatory variables is at the 1 percent level for Breman and Eguafo and at the 5 percent level for Simbrofo. The variables were jointly insignificant for Etsibeedu, Mprumem and Egyankwa. Again the equations show very low degrees of explanatory power for the communities with the R^2 ranging between 5 percent to and 37 percent.

The estimated coefficient of 0.27 for the trend variable for Breman was significant at 5 percent but without the expected negative sign and thus inconsistent with study expectations. The coefficient of -0.07 for the trend variable for Eguafo was significant at 1 percent and with the expected negative sign. For the other communities, the trend variable was insignificant. Re-specifications of the models with different lag lengths yielded essentially the same results. The results confirm the trends described in the graphs already discussed in Figure 5 and Figure 6.

A growth rate of 2.6 percent is estimated for Breman, a beneficiary community based on its significant coefficient. This indicates that for a 1 percent increase in time trend there is a 2.6 percent increase in child immunisation gap which is contrary to the study expectations. Instead for Eguafo a non-beneficiary community, the calculated growth rate indicates that for a 1 percent increase in trend, there was a 7 percent decline in the child immunisation gap.

With respect to knowledge gained it is evident that NGO presence increased knowledge levels. However, the findings make it difficult to attribute any changes in preventive behaviour over the period to health education. It is believed that there are other factors beyond the scope of this study more likely to explain the effect. Moreover, the effects of health educational activities as explained by Foulon et al. (1994) cannot be separated from other on-going social developments which may have a preventive impact. They contend that Health Education itself is a long-term process which can hardly be completely evaluated within a few years of observation. Indeed some of the developments may even have an added or accelerating impact.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Introduction

This final chapter gives a recap of the whole study, conclusions drawn from results and recommendations for stakeholders of health education.

Summary

The study was carried out to mainly determine the effect of health education on the behaviour of people in selected rural communities. During the study however, it was found that communities could not be divided into beneficiary and non beneficiary on the bases of the presence or absence of health education but rather the intensity. Almost all communities in the study area had some kind of health education from Ghana Health Service (GHS). Therefore, the non beneficiary communities were those with occasional health education from GHS while the beneficiary communities are those with health education from both NGOs and GHS. The effect of health education of beneficiary and non-beneficiary communities is evaluated in terms of the perceptions of respondents of its importance, and the trends in their patronage of health centres.

The study therefore, as a specific objective, examined whether there was any difference in knowledge levels in the prevention of some common diseases namely; malaria, the six childhood killer diseases (i.e. measles, polio, tetanus,

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whooping cough, dysentery and diphtheria), HIV/AIDS, treatment of diarrhoea, and the source of their knowledge. This was done for both beneficiary communities of NGO intensified health education and non-beneficiary communities. The results from the analysis of primary data collected from the study communities used to evaluate their knowledge levels indicated that there were relatively higher knowledge levels among beneficiary communities.

The next objective was to identify factors besides health education that influenced patronage of health care services in the beneficiary and non-beneficiary communities. It was evident that the most important factor that induces people in both beneficiary and non-beneficiary communities to attend a health centre is the severity of the disease when ill, as shown by the estimated values of 51.4 percent and 59 percent of respondents respectively. The lower percentage for beneficiary communities could be attributed to improved preventive behaviour from health education buttressed by the response of 26.7 percent of respondents that their patronage of health services is due to awareness created by health education compared to 16.2 percent in non-beneficiary communities. It is also therefore not surprising that beneficiary communities seemed to have embraced the National Health Insurance with 17.1 percent relevance compared to 7.6 percent in non-beneficiary communities.

The study also described and compared the trends in reported malaria cases, attendance for antenatal care and child immunization in beneficiary and non-beneficiary communities of health education from 2002 to 2006. The aim was to draw a relationship between health education and preventive health behaviour

and health trends, in order to make inferences about the effect of health education. Unstable trends were observed for all variables studied for both beneficiary and non beneficiary communities in an almost similar fashion.

Econometric analysis of the trends in the variables buttressed the graphical trend profiles described. For reported malaria cases the results gave a coefficient of -0.04 for the trend variable for Mprumem a non-beneficiary community: and as expected, a relatively higher coefficient of -0.28 for Egyankwa a beneficiary community. The coefficients for Simbrofo, Eguafo, Breman and Etsibeedu were insignificant. For antenatal attendance gap, the trend variable did not yield any significant results for all communities. For child immunisation gap, the estimated coefficient of -0.07 for the trend variable for Eguafo was the only one that was significant and with the expected negative sign. Eguafo however is a non-beneficiary community.

Generally the equations showed very low degrees of explanatory power for all communities for the variables examined, as indicated by the R^2 of between 8 percent and 45 percent. But for the exceptions mentioned, the results were similar for both beneficiary and non-beneficiary communities. Thus it was inconclusive that health education had a marked positive effect on beneficiary communities compared to non-beneficiary communities of intensified NGO health education.

Conclusions

Evaluation of the effectiveness in health education was sporadic because of difficulties in measuring its impact. Moreover, the effects of health educational activities cannot be clearly separated from on-going socio-economic developments which may have a preventive impact. Health education is a long term process, which can hardly be evaluated in terms of few years of observation. It is upon these sources of potential biases that the following conclusions from the study are drawn with caution.

- Communities that have benefitted from health education have more knowledge in the prevention of malaria, six childhood killer diseases, HIV/AIDS and the treatment of diarrhoea than non beneficiary communities.

- The major factor that induces people from both beneficiary and non-beneficiary communities to attend a health centre is the severity of the disease when sick and more people in beneficiary communities attributed their attendance to health centres to health education, compared to non-beneficiary communities (16.%).

- Actual evidence of behavioural change which was measured in terms of trends in patronage of health centres for antenatal care and infant immunisation against childhood killer diseases over the period of the study, did not show any difference between beneficiary communities and non-beneficiary communities.

Econometric analysis indicates that for every 1 percent increase in time trend, there was a corresponding 0.4 percent and 2.6 percent fall in clinic attendance for malaria treatment for Mprumem and Egyankwa respectively over the period January 2002 to December 2006. There is a greater decline in the reported malaria cases at the OPD for Egyankwa a beneficiary community which subtly defines the effect of health education on the behaviour of people.

- The effect of health education has got little to do with the body organizing it, that is whether GHS or NGO. Rather it depends on the intensity of education, and therefore human and financial resources devoted. This is because attitudes of rural community inhabitants play a major role in forming their preventive health behaviour which was evident in the study. Health education was occasional and therefore not sufficient in all communities. Indeed indirect education was more of the case when community health personnel visited the communities to carry out monthly weighing of infants.

Recommendations

After the study, a number of recommendations have been outlined to help make health education very effective and also core to everyday life and development.

Because of the problem of inadequate staff, logistics and numerous responsibilities of health education practitioners, their impact was almost not felt therefore certain policies must be enforced by law so that with little intervention, positive results will be attained. In view of this

1. Health education should be holistically addressed by all stakeholders. That is, all three Preventive, Self-Empowerment and Radical Political models must be considered. Though preventive health model remains the commonest while the radical-political model is almost neglected, there is a need for both political and educational action to influence health.

2. Environmental health officers should be empowered by the District Assemblies to enforce strict sanitation in communities.

3. The government should make health insurance mandatory like the pension scheme so that people will not deny themselves of health care because they cannot afford the cost.

4. The government must pay exceptional attention to preventive health care by dedicating a big chunk of the health budget for intensive continuous education. This must be done after having assessed the benefits to central government in spending money on preventive health care relative to importing drugs, training of medical personnel and provision of facilities to combat diseases when they occur.

5. Similarly, NGOs in health education should intensify their activities making sure to include chiefs, unit committees of communities, groups and associations as key players responsible for sanitation issues and

continuous education, since they are more capable of monitoring and ensuring compliance.

6. The government must continue to provide basic health care facilities but managed by well trained and motivated staff so that people will be encouraged to report illnesses early and also have the assurance of getting quality care.

7. The duties of community health nurses which includes health education is often distracted by other pressing and 'quick results' needs therefore a section of health staff of GHS must be solely responsible for health education.

8. Health education must be taken as a profession for specialists and not anybody with little knowledge in human dynamics and behaviour change to practice. This will help them cope with the discouragements and manage all associated difficulties.

9. Other factors, including attitudes that influence preventive health behaviour were beyond the scope of study. It is recommended that any educational process should focus also on issues of attitudinal change. It should also examine specific community situations that influence behaviours and therefore responsiveness to development interventions in order for specific effective strategies to be evolved for "stubborn Communities".

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APPENDICES

APPENDIX 1

OLS REGRESSION RESULTS OF TRENDS IN ANTENATAL

ATTENDANCE FOR COMMUNITIES

Double-Log Form	C	Trend	R^2	F	DW
Breman	2.58***	0.08	0.04	0.74	2.36
	(0.22)	(0.09)			
Egyankwa	0.98***	-0.11	0.18	0.02	1.40
	(0.56)	(0.25)			
Simbrofo	1.06**	0.27	0.06	0.97	1.63
	(0.59)	(0.27)			
Eguafo	3.21***	-0.14	0.08	1.57	1.59
	(0.26)	(0.11)			
Etsibeedu	1.13**	0.29	0.09	1.67	2.05
	(0.50)	(0.23)			
Gomoa	1.74**	0.07	0.24	0.03	2.21
	(0.77)	(0.34)			
Linear Form					
Breman	11.00***	0.37*	0.08	1.74*	2.26
	(3.37)	(0.28)			
Egyankwa	3.68***	-0.11	0.05	0.94	2.10

	(1.32)	(0.11)			
Simbrofo	5.10**	0.11	0.01	0.20	1.45
	(2.89)	(0.24)			
Eguafo	22.28***	-0.24	0.04	0.67	1.48
	(3.53)	(0.29)			
Etsibeedu	6.53**	0.04	0.92	0.02	2.23
	(3.69)	(0.31)			
Gomoa	8.13	0.19	0.36	0.064	2.01
	(9.03)	(0.75)			

Exponential Form

Breman	2.58***	0.02*	0.03	1.56	2.47
	(0.16)	(0.01)			
Egyankwa	1.22***	-0.01	0.01	0.18	1.44
	(0.44)	(0.03)			
Simbrofo	1.15**	0.05	0.08	1.40	1.67
	(0.44)	(0.04)			
Eguafo	3.06***	-0.01	0.04	0.82	1.54
	(0.19)	(0.02)			
Etsibeedu	1.42***	0.03	0.05	0.86	194
	(0.38)	(0.03)			
Gomoa	1.75***	0.01	0.45	0.07	2.21
	(0.56)	(0.05)			

CORC REGRESSION RESULTS OF TRENDS IN ANTENATAL

ATTENDANCE FOR COMMUNITIES

Double-Log Form	C	Trend	R^2	F	DW
Breman	2.59***	0.09	0.12	3.85***	2.33
	(0.23)	(0.09)			
Egyankwa	1.85	-0.37	0.09	11.87	2.03
	(1.29)	(0.53)			
Simbrofo	0.98	0.16	0.06	21.79	1.87
	(0.96)	(0.24)			
Eguafo	3.02***	-0.06	0.05	8.91	1.84
	(0.43)	(0.19)			
Etsibeedu	0.93	0.38	0.08	19.13	2.02
	(0.77)	(0.36)			
Gomoa Mprumem	0.023	0.82	0.14	20.44	1.90
	(1.67)	(0.71)			
Linear Form					
Breman	10.21***	0.42*	0.13	63.54***	2.02
	(2.98)	(0.24)			
Egyankwa	4.18***	-0.14	0.10	45.74	1.96
	(1.23)	(0.10)			

Simbrofo	6.29	0.40	0.05	60.63	1.85
	(4.20)	(0.34)			
Eguafo	19.45***	-0.03	0.06	63.73	1.87
	(4.85)	(0.39)			
Etsibeedu	7.13*	-0.54	0.01	65.66	1.95
	(3.49)	(0.28)			
Gomoa Mprumem	6.51	0.31	0.08	82.75	1.98
	(9.52)	(0.78)			

Exponential Form

Breman	2.57***	0.01*	0.17	3.41*	2.41
	(0.14)	(0.01)			
Egyankwa	1.37***	-0.03	0.08	11.87	1.92
	(1.32)	(0.11)			
Simbrofo	1.16*	0.04	0.08	21.61	1.89
	(0.05)	(0.05)			
Eguafo	2.93***	-0.51	0.05	8.93	1.85
	(0.26)	(0.02)			
Etsibedu	1.49**	0.03	0.04	18.11	2.09
	(0.54)	(0.05)			
Gomoa Mprumem	1.19	0.06	0.07	19.61	1.83
	(0.82)	(0.07)			

CORC REGRESSION RESULTS OF TRENDS IN MALARIA CASES FOR COMMUNITIES

Double-Log Form	C	Trend	R^2	F	DW
Breman	1.89	0.51	0.26	18.76	1.76
	(20.7)	(0.84)			
Egyankwa	3.01***	-0.27**	0.21	8.02	1.53
	(0.35)	(**0.15**)			
Simbrofo	1.07**	0.08	0.10	19.88	1.79
	(0.52)	(0.24)			
Eguafo	-3.79***	2.72	0.44	20.45	1.87
	(9.22)	(3.28)			
Etsibedu	2.40*	0.80	0.57	4.21	2.35
	(1.31)	(0.50)			
Gomoa Mprumem	3.10***	-0.40***	0.34	11.24	1.87
	(0.32)	(0.13)			
Linear Form					
Breman	12.04	1.46*	0.16	81.88***	1.81
	(13.41)	(1.08)			
Egyankwa	14.51***	-0.28	0.23	46.65	1.67
	(1.86)	(0.14)			

Simbrofo	5.52**	-0.10	0.02	58.85	1.94
	(2.52)	(0.21)			
Eguafo	-41.10	6.78	0.42	86.9	1.54
	(89.57)	(6.25)			
Etsibedu	11.53***	0.16	0.36	50.77	2.12
	(3.97)	(0.29)			
Gomoa Mprumem	14.44***	-0.41***	0.36	48.76	1.89
	(1.39)	(0.11)			

Exponential Form

Breman	2.39***	0.06	0.29	18.44	1.74
	(0.77)	(0.06)			
Egyankwa	2.68***	-0.02	0.19	4.02	1.41
	(0.18)	(0.01)			
Simbrofo	1.31***	-0.68	0.10	19.91	1.80
	(0.34)	(0.03)			
Eguafo	1.88	0.12	0.44	20.32	1.70
	(1.31)	(0.09)			
Etsibedu	2.56***	0.03	0.57	4.21	2.38
	(0.49)	(0.03)			
Gomoa Mprumem	2.71***	-0.5***	0.34	7.06	1.79
	(0.18)	(0.01)			

APPENDIX 4

OLSQ REGRESSION RESULTS OF TRENDS IN MALARIA CASES FOR COMMUNITIES

Double-Log Form	C	Trend	R^2	F	DW
Breman	2.99***	0.04	0.16	0.03*	0.95
	(0.49)	(0.22)			
Egyankwa	1.67***	0.27*	0.13	2.62	1.21
	(0.38)	(0.16)			
Simbrofo	1.33*	-0.08	0.52	0.08	2.32
	(0.60)	(0.27)			
Eguafo	3.13***	0.07	0.04	0.07	0.72
	(0.62)	(0.27)			
Etsibeedu	1.17***	0.57***	0.57	24.4	0.86
	(0.26)	(0.11)			
Gomoa	2.68***	-0.22	0.18	3.82	1.70
	(0.26)	(0.11)			
Linear Form					
Breman	16.88**	0.1.04*	0.09	1.97	1.41
	(8.92)	(0.74)			
Egyankwa	11.50***	-0.08	0.01	0.24	1.22

	(1.87)	(0.15)			
Simbrofo	5.27*	-0.09	0.09	0.16	2.16
	(2.57)	(0.21)			
Eguafo	13.75***	2.26*	0.19	4.13	0.88
	(2.26)	(1.11)			
Etsibeedu	8.11***	0.39	0.22	5.04	0.93
	(2.11)	(0.17)			
Gomoa	13.32***	-0.33*	0.24	5.82	2.07
	(1.64)	(0.14)			

Exponential Form

Breman	2.80***	0.03	0.04	0.80*	0.98
	(0.35)	(0.03)			
Egyankwa	2.11***	0.01	0.02	0.27	1.18
	(0.29)	(0.02)			
Simbrofo	1.45***	-0.03	0.03	0.52	2.39
	(0.44)	(0.03)			
Eguafo	2.83***	0.04	0.07	1.42	0.76
	(0.43)	(0.03)			
Etsibeedu	1.79***	0.06***	0.29	7.39	0.60
	(0.24)	(0.02)			

APPENDIX 5

OLSQ REGRESSION RESULTS OF TRENDS IN INFANT

IMMUNIZATIONS   FOR COMMUNITIES

Double-Log Form	C	Trend	R^2	F	DW
Breman	3.37***	0.27**	0.17	3.73	1.93
	(0.31)	(0.14)			
Egyankwa	3.62***	-0.06	0.03	0.05	1.91
	(0.66)	(0.29)			
Simbrofo	0.24	0.32	0.12	0.41	2.51
	(1.18)	(0.50)			
Eguafo	5.19***	-0.45***	0.30	7.21	2.65
	(0.38)	(0.17)			
Etsibedu	3.56***	0.10	0.08	0.12	2.22
	(0.68)	(0.29)			
Gomoa Mprumemu	0.09	0.71	0.21	1.03	1.67
	(1.76)	(0.70)			
Linear Form					
Breman	49.90***	0.73	0.03	0.49	1.80
	(12.43)	(1.04)			
Egyankwa	39.59**	0.49	0.05	0.08	2.11

	(20.34)	(1.69)			
Simbrofo	-3.83**	0.13	0.02	0.31	1.99
	(2.93)	(0.24)			
Eguafo	135.89***	-5.12**	0.19	4.23	3.09
	(29.86)	(2.49)			
Etsibedu	61.88**	0.18	0.002	0.03	2.45
	(35.23)	(2.94)			
Gomoa Mprumemu	-2.97	0.11	0.06	0.11	2.20
	(3.88)	(0..32)			

Exponential Form

Breman	3.66***	0.03	0.08	1.64	1.75
	(0.24)	(0.02)			
Egyankwa	3.44***	-0.04	0.01	0.01	1.93
	(0.46)	(0.03)			
Simbrofo	-0.09	0.09	0.35	1.64	2.73
	(0.92)	(0.07)			
Eguafo	4.98***	-0.07***	0.37	9.77	2.93
	(0.27)	(0.02)			
Etsibedu	3.92***	-0.01	0.06	0.09	2.23
	(0.51)	(0.04)			
Gomoa Mprumemu	1.28*	0.05	0.11	0.52	1.63
	(0.85)	(0.06)			

CORC REGRESSION RESULTS OF TRENDS IN INFANT

IMMUNIZATIONS FOR COMMUNITIES

Double-Log Form	C	Trend	R^2	F	DW
Breman	3.5***	0.21*	0.08	12.86	1.92
	(0.41)	(0.17)			
Egyankwa	2.63***	0.35	0.04	20.61	1.89
	(0.95)	(0.39)			
Simbrofo	5.10**	0.11	0.01	0.20	1.45
	(2.89)	(0.24)			
Eguafo	5.22***	-0.45***	0.41	17.03	2.03
	(0.30)	(0.12)			
Etsibedu	3.18***	0.19	0.05	18.26	2.32
	(0.68)	(0.27)			
Gomoa	8.13***	0.19	0.36	0.064	2.01
	(9.03)	(0.75)			
Linear Form					
Breman	56.99***	0.22*	0.09	88.19	2.06
	(14.11)	(1.14)			
Egyankwa	22.30*	1.79*	0.12	95.26	2.04
	(15.58)	(1.27)			

Simbrofo	-5.18*	0.23	0.04	60.94	2.01
	(3.02)	(0.24)			
Eguafo	135.57***	-5.07***	0.42	102.17	2.22
	(16.97)	(1.41)			
Etsibedu	68.02*	-0.21	0.6	107.96	2.02
	(29.09)	(2.4)			
Gomoa	-3.41	0.14	0.02	66.63	2.02
	(3.73)	(0.30)			

Exponential Form

Breman	3.81***	0.01	0.04	13.21	2.01
	(0.28)	(0.02)			
Egyankwa	3.21***	0.02	0.01	20.81	1.89
	(0.52)	(0.04)			
Simbrofo	5.10**	0.11	0.01	0.20	1.45
	(2.89)	(0.24)			
Eguafo	4.90***	-0.06***	0.51	15.44	2.22
	(0.17)	(0.01)			
Etsibedu	3.57***	0.04	0.02	18.48	2.32
	(0.47)	(0.03)			
Gomoa	8.13***	0.19	0.36	0.064	2.01
	(9.03)	(0.75)			

APPENDIX 7

UNIVARIATE STATISTICS

Attendance gap, Number of Observations: 20

Community	Mean	Std.Dev	Minimum	Maximum
BRA	14.90000	7.39772	-2.00000	26.00000
EKA	2.55000	2.85574	-2.00000	8.00000
SMA	6.25000	6.10328	-2.00000	18.00000
EGA	19.75000	7.53850	9.00000	35.00000
ETA	6.95000	7.75598	-1.00000	34.00000
MPA	10.15000	18.96888	-8.00000	85.00000
TRD	10.50000	5.91608	1.00000	20.00000

Community	Sum	Variance	Skewness	Kurtosis
BRA	298.00000	54.72632	-0.70491	0.63102
EKA	51.00000	8.15526	0.40177	-0.48281
SMA	125.00000	37.25000	0.83081	-0.40437
EGA	395.00000	56.82895	0.23440	-0.66190
ETA	139.00000	60.15526	2.50763	7.61149
MPA	203.00000	359.81842	3.51860	14.07882
TRD	210.00000	35.00000	0.00000	-1.20000

Malaria, Number of Observations: 20

Community	Mean	Std Dev	Minimum	Maximum
BRM	27.85000	19.68776	5.00000	77.00000
EKM	10.70000	3.94835	1.00000	17.00000
SMM	4.35000	5.41222	0.00000	25.00000
EGM	37.50000	30.96263	2.00000	136.00000
ETM	12.25000	4.99342	2.00000	18.00000
MPM	9.85000	3.95068	4.00000	18.00000
TRD	10.50000	5.91608	1.00000	20.00000

Community	Sum	Variance	Skewness	Kurtosis
BRM	557.00000	387.60789	1.23184	1.29512
EKM	214.00000	15.58947	-0.62978	0.83098
SMM	87.00000	29.29211	3.13977	11.90683
EGM	750.00000	958.68421	1.88554	4.70950
ETM	245.00000	24.93421	-0.79595	-0.63624
MPM	197.00000	15.60789	0.41968	-0.35244
TRD	210.00000	35.00000	0.00000	-1.20000

Immunisation gap, Number of Observations: 20

Community	Mean	Std Dev	Minimum	Maximum
BRI	57.55000	26.41665	15.00000	122.00000
EKI	44.80000	42.73000	0.00000	130.00000
SMI	-2.40000	6.21035	-14.00000	16.00000

EGI	82.10000	69.51706	0.00000	314.00000
ETI	63.75000	73.81975	0.00000	253.00000
MPI	-1.80000	8.15379	-18.00000	12.00000
TRD	10.50000	5.91608	1.00000	20.00000

Community	Sum	Variance	Skewness	Kurtosis
BRI	1151.00000	697.83947	0.46653	0.36816
EKI	896.00000	1825.85263	1.27400	0.22846
SMI	-48.00000	38.56842	0.92353	3.47726
EGI	1642.00000	4832.62105	2.15674	5.99966
ETI	1275.00000	5449.35526	1.57567	1.54794
MPI	-36.00000	66.48421	-0.32860	0.086846
TRD	210.00000	35.00000	0.00000	-1.20000

INTERVIEW GUIDE USED FOR PRIMARY DATA COLLECTION

University of Cape Coast- Institute for Development Studies, Interview Guide to
Solicit Views of Community members on Health Education and the Behaviour of
People in Selected Rural Communities of the Central Region of Ghana

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District_____ **Community** _____

Name……………………………………………………………………………..

Age…………..   Sex …………….   House Number ……………………..

Contact No………………………………

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1. How many children do you have under five years? _____

2. How many of them have been immunized? _____

a) Why did you not immunize child [   ] or did you not complete immunization [   ]?

b) Does not have any knowledge about immunization   [   ]

c) It is not necessary   [   ]

d) Facility not available   [   ]

e) Other reason, specify _____

f) Not Applicable   [   ]

3. Did you (or your wife) seek antenatal care during pregnancy?

   a)Yes [   ]   b) No [   ]   c) N/A [   ]

4. Give reasons for your answer_____

_____

5. How frequently does malaria affect any member of your family?

a) Once a month   [   ]

b) More than once a month   [   ]

c) Once every three month   [   ]

d) Once every six months   [   ]

e) Other, specify _____

6. How frequently does any member of your family have diarrhoea?

a) Once a month   [   ]

b) More than once a month   [   ]

c) Once every three month   [   ]

d) Once every six months   [   ]

e) Other, specify _____

7. Do you report illness to a health facility?

a) Yes   [   ]   b) No [   ]

8. If No, why? ………………………………………………………………

   If Yes, which one? _____ How far?_____

9. Has any government agency or NGO educated you or your community within the last 5 years on

a) Prevention of HIV?   Yes [   ]   No [   ] Number of times

b) Treatment of diarrhoea?   Yes [   ]   No [   ] Number of times

c) Prevention of malaria?   Yes [   ]   No [   ] Number of times

d) Child immunization?   Yes [   ]   No [   ] Number of times

e) Sanitation?   Yes [   ]   No [   ] Number of times

10. State the HIV/AIDs prevention practices you know

a) Respondent has good knowledge of practices   [   ]

b) Respondent has just a little knowledge of practices [   ]

c) Respondent has no knowledge of practices   [   ]

   NB: three or more correct Answers = a) One or two correct answers b) respondent

   has no idea or wrong answers = c)

11. State the diarrhoea treatment practices you know

a) Respondent has good knowledge of practices   [   ]

b) Respondent has just a little knowledge of practices [   ]

c) Respondent has no knowledge of practices   [   ]

   NB: three or more correct Answers = a)   One or two correct answers b)

   respondent has no idea or wrong answers = c)

12. State the Malaria prevention practices you know

a) Respondent has good knowledge of practices   [   ]

b) Respondent has just a little knowledge of practices   [   ]

c) Respondent has no knowledge of practices   [   ]

NB: two or more correct Answers = a)   One correct answer b) respondent has

no idea or wrong answers = c)

13. State the childhood killer diseases and preventive practices you know

a) Respondent has good knowledge of practices   [   ]

b) Respondent has just a little knowledge of practices   [   ]

c) Respondent has no knowledge of practices   [   ]

NB: one practice and three or more correct diseases = a),   wrong   practice   but

one or two correct diseases= b),   wrong answers = c)

14. Rank the following in order of importance in helping you to acquire the

knowledge on the health issues you have just stated

a) Radio discussion programme   [   ]

b) Health education by NGO   [   ]

c) Health education by Government (Min of Health)   [   ]

d) Posters, magazines and books   [   ]

e) Other source,

specify_____

15. Which of these factors below encourage you and your family members to attend a

    health facility?

a) Distance to health facility   [   ]

b) Cost of health care   [   ]

c) Attitude of health workers and Quality of service   [   ]

d) Waiting time due to number of staff   [   ]

e) Awareness from health education to attend health facility to prevent disease or

    death   [   ]

f) Ease of getting transport   [   ]

g) National Health Insurance   [   ]

h) Severity of disease

i) Other reason, specify_____

16. Do you think health education in communities is necessary?

a)   Yes   [   ]   b)No   [   ]

17. Give reasons for your answer

_____

18. What in your opinion do you think is **the most important thing** that has so far

    been done to improve your community's health status?

_____

19. What in your opinion do you think is **the most important thing** that must be been done to improve health status?

_____

20. Do you think peoples attitude to sanitation and health issues has improved within the past 5 years?

If No, why?

_____

If Yes, why?

_____

APPENDIX 9

CHECKLIST FOR FOCUS GROUP DISCUSSION

The objective of this guide is to obtain community collective views on the issues raised and to enable explanations to the findings from the individual interview guides to be made

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1. Has there been any NGO or government organisation in the community to educate you on environmental and health issues within the past 5 years?

2. When was it?

3. What was the objective of their visit?

4. How often did they come here?

5. For how long did they stay to work?

6. What did they achieve?

7. Prior to their entry, what was the attitude of people on preventive health issues?

8. What was the attitude of people with respect to attendance when sick or pregnant?

9. Has there been any change since they visited the community?

10. Would you attribute any improvement to their presence?

11. What other development could any change in patronage of health services or preventive behaviour by people in the community be attributed to? (e.g. improved access roads, new clinic, health staff etc).

12. Do people still refuse to attend health centres when they need to, in spite of health education?

13. What must be done to change or improve on the existing situation?