KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY.

COLLEGE OF HEALTH SCIENCES

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ASSESSING THE DROPOUT RATE OF THE EXPANDED PROGRAMME ON IMMUNISATION IN ASUTIFI DISTRICT.

BY:

HANSON MENSAH AKUTTEH

NOVEMBER, 2008

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ASSESSING THE DROPOUT RATE OF THE EXPANDED PROGRAMME ON IMMUNISATION IN THE ASUTIFI DISTRICT OF BRONG AHAFO REGION, GHANA

A DISSERTATION SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES (KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY) IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE MASTER OF PUBLIC HEALTH DEGREE IN THE HEALTH SERVICES PLANNING AND MANAGEMENT.

BY:

HANSON MENSAH AKUTTEH

NOVEMBER 2008

DECLARATION

I hereby declare that, with the exception of references to other people's works and publications, which has been duly acknowledged, this work is the result of my own independent research.

I hereby also declare that, this work has neither wholly nor in part been presented for any degree or other academic honours anywhere else.

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DEDICATION

This work is dedicated to my wife, Bernice Mensah Akutteh, my children Gad and Gilford Mensah Akutteh, my mother Grace Akutteh and father Emmanuel Akutteh who have been supportive throughout this project.

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ABBREVIATIONS AND ACRONYMS

BCG	Baccillus Camille Guerin
CHPS	Community Based Health and Planning Services
DDHS	District Director of Health Services
DHMT	District Health Management Team
DPT	Diphtheria Pertussis Tetanus vaccine
EPI	Expanded Programme on Imminisation
GAVI	Global Alliance for Vaccines and Immunisation
GDHS	Ghana Demographic and Health Survey
GHS	Ghana Health Service
Hep B	Hepatitis B
Hib	Haemophilus influenza b
OPV	Oral Polio Vaccine
UNICEF	United Nations Children's Fund
VPI	Vaccine Preventable Infection
WHO	World Health Organization

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ABSTRACT

The induction of an immune response to infectious disease by vaccination has become a widely applied and acceptable public health intervention. For immunisation to be effective as a long-term global childhood disease control strategy, it is essential that parents continue to present their children for vaccination. A recent study in assessing the dropout rate of immunization has shown that, immunization coverage in Asutifi District has been high with percentage of fully vaccinated children ranging between 95% in the district and 90% to 97% in the sub-districts. There is an account of high dropout rate of eligible children receiving the vaccines in the sub-district above the National and WHO, recommended level of dropout rate less than 10% (WHO, 2005).

The aim of the study was to determine the dropout rate of the Expanded Program on Immunization to assess the ability of the service to hold on to the number of children who started the vaccination.

A descriptive cross-sectional survey among a representative sample of 300 children between the ages of 12-23 months from households with varying socio-economic status from both urban and rural sub-districts was done to illicit information on the immunization coverage. Approximately 95% of children under the age of two had been completely vaccinated. Averagely about 40% of eligible children in the district had timely received vaccines during EPI programme. Seventy seven percent of children receive their vaccination at the outreach post. The vaccination schedule showed that 4.4% who started BCG vaccination dropped out as at the time of receiving measles vaccine. The dropout rate for DPT1 and DPT 3 was 0.67%.

More than 62% of mothers do not present their children for vaccination because they are busy with their economic activities and 31.25% of household are unaware of the need to return for subsequent doses. These shortcomings are affecting the sustainability of routine immunisation programmes and are promoting the growth of a large number of partially immunised children. To protect the continued operations and to enhance the coverage of

routine vaccination programmes, it is important that the dropout rate and these difficulties be addressed.

The dropout rates for children in the sub-district are between 5% and 10% signifying differences in how each sub-district is able to hold the number of eligible children who were targeted for vaccination. Generally the dropout rate indicates that the efficiency of the service delivered during EPI programme in the sub-district differ from one sub-district to another.

The difference that exist in the dropouts within the sub-districts demonstrate a service delivery gap and suggest that greater efforts are required by government and the district health management team to rethink of resource allocation and strengthening processes to improve immunization coverage among rural poor.

CHAPTER ONE

1.0 INTRODUCTION

1.1 BACKGROUND INFORMATION

At birth, children have protection against certain diseases, because they receive antibodies from their mothers. After birth, breastfed babies get the continued benefits of additional antibodies in breast milk. However, in both cases, the protection is only temporary (WHO, 2002).

Globally 1.4 million children under- five die each year from diseases that could have been prevented by vaccination. This represents 14% of global total mortality in children under-five years (WHO, 2008). One in four infants is still at risk from vaccine- preventable diseases and each year, twenty-seven million (27million) children are not properly immunised. Twenty -six million, three hundred (26.3 million) children under- one year did not receive DTP3 vaccine (WHO, 2008). Globally, three thousand (3000) children under-two, die per day. Ten million, five hundred (10.5 million) children under- five years die before their fifth birthday in Sub-Saharan Africa. One in five children under- two years in West and Central Africa die before the age of five (UNICEF, 2006).

The fourth United Nations Millennium Development goal (MGD 4) targets to decrease the under-five mortality rate by two thirds over the period 1990-2015 in Ghana (WHO- Ghana, 2002).

The national policy on Expanded Program on Immunisation states that, each child should receive one dose of bacilli camel gullet (BCG) at birth, three doses of diphtheria, Pertussis, tetanus, hepatitis B and Haemophilus influenza vaccines (DPT-HepB+Hib vaccine|) at six(6), ten(10), and fourteen(14) weeks, four doses of Oral polio Vaccine (OPV) at birth, six(6), ten(10), and fourteen(14)weeks and one dose of measles at nine(9) months and one dose of yellow fever at nine(9) months. Every woman of child- bearing age (12-44 years) should receive five (5) doses of tetanus toxoid (WHO Ghana, 2001)

The existence of schedules allows the construction of more refined monitoring indicators. In addition, DPT coverage by age can be monitored to assess age appropriateness coverage. The multiple dose standards also enable calculation on dropout rate, which indicates what proportion of children receive one but not two, or two but not three doses of the DPT vaccine.

For immunisation to be effective in preventing morbidity and mortality, every child should be completely immunised. A number of ways exist, to measure the efficiency of immunisation: Immunisation coverage per vaccine which compares the number of doses given to the number of children under- two eligible to receive them and by measuring drop-out rate, which compares the number of children under -two years that started receiving immunisation to the number of children under- two years who received all needed doses of vaccines (WHO, 2002).

Monitoring the dropout rate has distinct advantages over measuring immunisation coverage, which typically relies on poor census data and inaccurate definition of catchment areas. The

dropout rate can be calculated by knowing the reported number who began the vaccination series and the number that completed it (Krishna and Saddiqi, 2004).

Dropout rate are estimated for the following vaccine doses: BCG to DPT; BCG to measles; DPT 1 to DPT 3; DPT 1 to measles (WHO, 2002).

Dropout rate is used as an indicator of health system's ability to deliver service requiring multiple visits. Dropout rate shows the ability of a health system to provide the recommended number of doses of vaccines that require multiple doses. It indicates whether mothers, who have visited a clinic for an initial vaccination, return for subsequent ones (Eduard et al, 2000).

Two ways to measure the efficiency of immunisation are by measuring immunisation coverage by each vaccine, by comparing the number of doses given to the number of infants eligible to receive them and finally measuring dropout rate, by comparing the number of infants who received all needed doses of vaccines (Eduard et al, 2000).

Coverage levels of DPT vaccine are considered one of the best indicators of health system performance. Immunisation coverage is the most cost effective and highest impact health intervention, reducing hospitalization and treatment cost through prevention (Ramalingaswami, 1989).

By convention, the success of routine immunisation programme has been measured by the coverage achieved with the third dose of DPT-3 among children aged twelve to twenty three (12-23) months. Coverage levels of DPT vaccine are considered one of the best indicators of a health system's performance. (WHO, 2006).

Globally immunisation coverage has increased during the past decade to levels of around 78% for DTP-3. However, WHO Africa region has consistently fallen behind, reaching only 69% DTP-3 coverage by 2004 (WHO, 2005).

A dropout rate of 10% or less is acceptable. A higher dropout rate above 10% and negative dropout rate are considered unacceptable coverage for immunisation. The EPI program's success depends on the administration of the full course of the vaccines at the right dose rate of the antigen at the right age (Prabhakaran, 1993).

Asutifi District is a semi urban and rural setting according to the Ghana Statistical Service, 2005. The district has sixteen health facilities that provide immunisation services and a large proportion of its population reside in remote areas linked with a bad road network.

1.2 PROBLEM STATEMENT

Immunisation coverage in Asutifi district has been high, however increasing infant mortality rate of 1.8/1000 live births and 3.0/1000 live births in 2005 and 2007 respectively suggested a performance gap where a number of children remain incompletely immunised. It is therefore important to look at the service delivery with respect to the vaccination schedule to ascertain whether or not the quality of vaccination programme is a problem in the district.

In the Asutifi District, immunisation coverage for the various antigens has generally been above 100% however the dropout rate are unacceptable negative values between -4% to -15% for DPT and above WHO recommended value of 11% to 15% for BCG and measles vaccine over the past two years from 2006 to 2007. The district cumulative Penta-3 vaccine coverage was 102% for 2007, however only two sub-districts- Hwidiem and Dadiesoaba reported coverage above 95%, and the rest reported coverage between 80% to 95% (Asutifi DHMT Annual Report, 2007).

Among children aged 12-23 months in the Asutifi district 713 eligible children represents 19% were left out during measles immunisation as well as 335 children (9%) were not vaccinated for DPT vaccine. The number of children who did not complete immunisation by one year was 767 (19.1%) (Asutifi DHMT Annual Report, 2007).

The World Health Organisation reports that some 70% of the world's children under- one are now being immunised against the six vaccine preventable diseases, however, 2.6 million children still die from the diseases each year and some 2 million are disabled (WHO, 2005).

Among children under- five in Ghana, 99% were vaccinated with BCG vaccine and 84% in Penta-valent vaccine in 2007. The number of reported cases for pertussis in the country rose from 35 to 487 from 2006 to 2007. This indicates that a good number of eligible children, dropout during immunisation which has significant impact on morbidity. The proportion of districts in the country reporting on Penta- valent coverage greater or equal to 90% are 58; from 80% to 89% are 26 and from 50% to 79% are 16. This reveals a service

coverage gap, which calls for a rethink on resource allocation and strengthening process to improve immunisation coverage among the semi urban and rural communities. This also indicates inter- district variations of immunisation coverage in which districts with scattered communities have a high left out rate (WHO-UNICEF, 2008).

In the last two years, the target population for the district grew by about 5%. Most of this growth was due to migration brought about by recent mining activity in the district. With this rapid growth of the district, an impending threat of outbreak of vaccine preventable diseases exists always due to the high population density, continuous influx of a new pool of infective agents with the migratory population, and a high dropout rate in the communities. In view of this, it is necessary to understand the dynamics of utilization of immunisation service by the communities in the sub- districts. The study sought to assess the dropout rate of immunisation and to describe the various reasons for the sub optimal dropout rate in the sub- districts.

Immunisation coverage in the sub-districts of Kenyasi, Hwidiem, and Acherensua is 75.4%, 87.5% and 89.4% respectively as compared to 108% and 95% in Dadiesoaba and Gambia for 2006. The District cumulative immunisation coverage is 91% indicating inter sub-district variations of immunization coverage. The percentage of children fully immunised is low in some sub-districts as compared to the overall district immunisation coverage for the children under- one. This difference is less marked in better performing sub-districts like Hwidiem and Dadiesoaba whose high coverage figures pull along other trailing sub-districts creating the picture of a well performed district (Asutifi DHMT Annual Report, 2006-2007).

Another area of great concern is the dropout rate using Penta.1-Penta.3 and BCG-measles as indicators. The cumulative district dropout rates in 2007 for Penta1 to Penta3 is -4.3% and BCG to measles is 15% respectively. The inter sub-district dropout rate for Penta.1 to Penta.3 is -15% in Dadiesoaba and 34.3% for BCG to measles for the same sub-district. Acherensua sub- district has a dropout rate of 10.2% for BCG to measles. It is clear that the sub-district dropout rates are higher than the cumulative district value. This unexplained variance in the inter sub-district dropout rate is a significant challenge to the District Management Team (Asutifi DHMT Annual Report, 2007).

Clearly, the benefits of immunisation do not reach all the children in the district and there is an urgent need to develop new and innovative strategies to immunise more children, especially those in hard-to-reach, very hard- to- reach and vulnerable areas. The reason why children in the district begin the vaccination schedule and do not complete it may differ from country to country. Consequently, there is a need to utilize local data to identify local problems, develop, and implement different strategies for improving routine immunisation coverage.

1.3 RATIONALE OF STUDY

The rationale behind the study was to:

1. Find out if mothers who are suppose to bring their children for vaccination really do respond to the schedule activity.
2. Verify if health workers responsible for vaccination programme, do it efficiently.

3. To know if facility distribution and human resource availability had impacted in the district outreach EPI schedule.
4. Suggest better prudent measures that will enhance immunisation coverage.

1.4 RESEARCH QUESTIONS

1. What proportion of the children under- two completes the immunisation schedule?
2. What are the dropout rates using DPT1 to DPT3 and BCG to measles vaccines as indicators?
3. What are the reasons for the variations that exist in the sub-district coverage ?
4. What are the reasons for children not completing the full schedule for immunization?

1.5 OBJECTIVE

1.5.1 Main objective

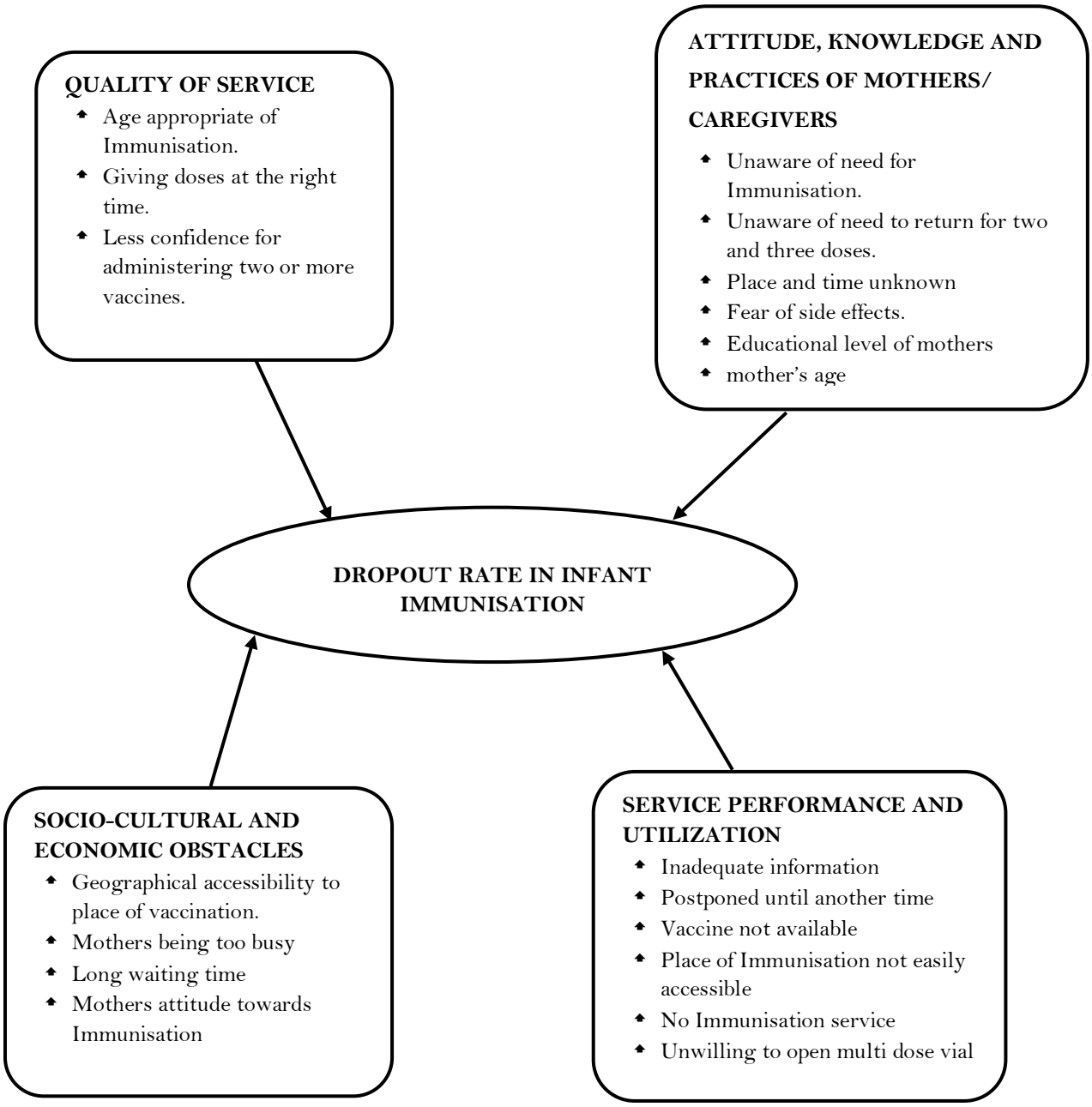
To assess the dropout rate of the Expanded Program on Immunisation, in Asutifi District.

1.5.2 Specific Objectives

- To assess the immunisation coverage and status among children aged 12 to 23 months.
- To determine the dropout rate of infant immunisation.
- To examine the reasons for immunisation failure in eligible infants.
- To examine the variations in the inter sub-district utilization of vaccines against the six killer diseases between children of the Asutifi District

- To recommend strategies to improve immunisation coverage.

Fig.1.1 Conceptual framework on factors related to infant immunisation and dropout.



1.7 PROFILE OF THE STUDY AREA

Asutifi District is one of the nineteen (19) districts in the Brong Ahafo Region in Ghana. The district is located at the south western part of the region sharing boundaries with Asunafo North and South Districts in the south west, Dormaa district to the north -west, Sunyani Municipal in the north, Tano south to the north- east and Ahafoano- north district (Ashanti) in the south -east. The total land surface area of the district is estimated at 1500square kilometers (150sq. km). Kenyasi is the district capital that is about 50km from the regional capital Sunyani.

The Asutifi District in the Brong Ahafo Region is divided into six sub-political divisions known as, the Kenyasi, Hwidiem, Acherensua, Gyedu, Dadiesoaba and Gambia.
The total population was 84,485 with an annual growth rate of 2.1%. Females constitute 51.6%,(Ghana Statistical Service, 2005). The Total population for each sub-district as at august 2007 are Kenyasi-28119, Hwidiem- 26111, Dadiesoaba-15064, Gyedu-7030, Acherensua-11047 and Gambia-13055 as determined by the Health Survey report (Health Survey Report 2003).

Crude birth rate is 30.27 births/1,000 populations. Total fertility rate is 4.8 and Child Survival rate, 82.44%. All estimates are based on the Census data 2000 projections. Fertility levels in the District have been declining over the years. In 2003 it was estimated to be 5.1 (Demographic and Health Survey, 2003) a decline from 6.0 according to the 2000 census.

The main ethnic groups are Akan, 66.8%, Mole Dagbon 12.2%, Ewe 6.4 % and Guma 3.9%. The major religion is Christianity constituting 70.9%, 16.1% of the population being Muslim, and traditionalists and others, 13.0%.

The main economic activity for the people in the district is farming. Agriculture employs about 77.6% of the district's labour force, which is dominated by crop farming. Animal rearing contributes about 51% of the total income in the district.

Forty point three percent (40.3%) of the population who is 6 years and above, are literate and 37.8% of the population of both sexes, have never attended school. Literacy rate for males is 41.4 % whilst that of the females is 39.4%.

1.8 SCOPE OF THE STUDY

The study covers the EPI programme in the Asutifi District of the Brong Ahafo Region. Specifically, Kenyasi, Acherensua, Hwiediem, Gyedu, Gambia and Dadiesoaba sub-districts in the Asutifi district.

For want of time 30 communities in the district were selected by cluster and 300 eligible children chosen randomly as study population. In each of the study area mothers with children aged 12-23 months were assessed for immunization coverage. At the sub-districts 10 mothers and a health worker were interviewed. At the district the disease control supervisor was interviewed.

1.9 ORGANIZATION OF THE REPORT

The study was organized under five main chapters. The first chapters, which is the introduction dealt with the background of the study, statement of the problem, rationale for the study, research questions, study objectives, scope of the study and organization of the study.

The main focus of chapter two is the review of literature, relevant to the research. It dealt with the theoretical and empirical aspects of immunization. The third chapter discusses the research methods employed in the study. The chapter looks at the study design and type, study population, sampling technique and sampling size, data collection technique and tools, data handling and analysis.

Chapter four provides information on the results and analysis of the data from the results and chapter five, which is also the final chapter, is devoted to the conclusion and recommendation for the research.

CHAPTER TWO

2.0 LITERATURE

2.1 PREAMBLE

The Expanded Program on Immunisation (EPI) Policy in Ghana is to support for routine immunisation, accelerate control of vaccine preventable diseases, surveillance for vaccine preventable diseases, cold chain and vaccine management as well as injection and waste management practices.

The policy also states that each child should receive one dose of BCG at birth, three doses of DPT, at six, ten and fourteen weeks, four doses of OPV at birth, six, ten and fourteen weeks and one dose of measles at 9 months and one dose of yellow fever at 9 months. Every woman of childbearing age, (12-44 years) should receive five doses of tetanus toxoid. The immunisation system in Ghana consists of immunisation services, vaccine management, logistic including cold chain support, surveillance of Vaccine Preventable Infection (VPI) and advocacy and social mobilization. The components of immunisation include routine immunisation, Accelerated Disease Control comprising supplement immunisation activities, and vaccine preventable diseases surveillance (GHS, 2003).

The main EPI delivery strategies involve static, outreach, mini-mass (mop-up) and campaigns. Static delivery is the routine immunisation services undertaken daily at the health facilities, Outreach services are offered to remote communities, based on district and sub-district plans and catchment location. Mini-mass are occasional activities in selected districts to capture defaulters and also reach out to children who missed out vaccination

during routine services. Campaigns are mostly national activities conducted to reach large populations in a given period as a supplementary activity to the routine immunisation to increase immunity (WHO, 2005).

In 2002, Ghana replaced DPT in the same scheme with the pentavalent vaccine (DPT-Hib-HeB). Pentavalent vaccine is therefore used as the indicator for service performance of immunisation of infants and for assessing the dropout rate of immunisation (GHS EPI 5YPOW, 2000-2006).

2.2 IMMUNISATION

2.2.1 Introduction

Achieving high levels of coverage is, by itself, not a sufficient indication of the effectiveness of a health centre system, as deficiencies in other areas could be widespread. However, lack of progress in moving towards high levels of coverage is a strong indication of failure to provide essential services to protect the health of the most vulnerable in a population. For diphtheria, pertussis, tetanus (DPT), a minimal coverage goal of 80 percent of children under-two years receiving three doses by 2005 had been proposed by the Global Alliance for Vaccines and Immunisation (GAVI), to be achieved in all districts in all countries. Countries across the world, at different levels of income, have shown that this is achievable with sustained efforts (Eduard et al, 2000)

Immunisation is a health output with a strong impact on child morbidity, child mortality and permanent disability. The usefulness of immunisation coverage is not simply as a

direct measure of the effectiveness of one health programme, but as a proxy for the performance of the health system to focus on important health issues (Eduard et al, 2000). The target group consists of the cohort of zero-and one-year old children and the members of the group therefore change annually. Immunisation coverage is therefore a sensitive indicator, if measured annually, it can provide timely evidence of improvement and deterioration in current service. Measurement of immunisation coverage can be relatively straightforward and inexpensive, and results in valid and verifiable information. However, issues related to the accuracy of measurements exist and need to be addressed (Eduard et al, 2000).

Immunisation against a number of childhood diseases is a universally recommended, cost-effective public health priority, for which internationally adopted targets exists. Immunisation is always part of the recommended minimum package of health interventions. Immunisation coverage rates are frequently available at the sub national level, including at the district level. When data are collected at health facilities and aggregated at the district level, differences in coverage rates among districts can be readily assessed to identify which districts are lagging in achieving national goals. As health reform frequently includes decentralization, this is an important advantage for monitoring of impact and for targeting of service delivery. Immunisation coverage rates are useful to monitor progress in expanding essential health services in adverse health settings (i.e. to answer the question, "are targets being reached?"), and as "safeguard" indicators when health system reforms are changing delivery or financing of health services in settings in which immunisation coverage has already achieved high levels ("Are high levels of immunisation coverage

sustained?"). For these reasons, immunisation coverage data can be a powerful tool to assess trends in health sector performance (Eduard et al, 2000).

2.3 IMMUNISATION COVERAGE

Cutts and Smiths (1994) report that Cameroon could not attain its target of 80% coverage due to a poor vaccination system that lacked a method for finding unvaccinated children, had little information about immunisation and bad experiences with vaccinations and poor socio-economic factors.

In Ethiopia, poor health infrastructure, low number of trained work force, high turnover of staff and lack of donor funding continue to affect the EPI programme (Gedlu et al, 1997).

In Thailand the rate of completion of immunisation by eligible children under- one increased from 65% to 89% for mothers who received regular information from village health communications and village health and remained unchanged for non-intervention areas. High immunisation areas were highly correlated with high level of village health volunteers and village health knowledge about infectious diseases. Both the frequency of contact between health workers and mother's knowledge of infectious diseases and immunisation were significantly correlated with immunisation status (Limtragool et al, 1989).

In the Gambia immunisation coverage for the various antigens have generally been above 90%. However, coverage has declined over the past five years. The DPT3 coverage has dropped from a high of 96.7% in 1998 to 74.4% in 2000. The proportion of children fully

immunised has also dropped from 80% in 1998 to 68.6% in 2000. The major primary reason given by both management and service providers for the decline in coverage is the frequent interruption of services. Services have been interrupted because of unavailability of vaccines since funding for vaccines have in the past depended heavily on external support. The 'new' vaccines (DPT-Hib and Hep B) introduced into the program over the past ten years was fully funded by external partners. Intermittent supplies had led to shortages of vaccines in districts frequent breakdown of transport used for outreach services. Sixty-per cent of immunisation services are delivered using the outreach services (Gambia, Department of State For Health and Social Welfare, 2001).

According to Streefland and Chowdhury, for immunisation to be effective, it is important to provide good quality vaccination services. Studies carried out in three countries in Asia (Bangladesh, India, Philippines) and two countries in Africa (Ethiopia and Malawi) show that, there are a number of serious shortcomings in the quality of the routine vaccination services. These shortcomings and strains at the interface of vaccination providers and users detract from sustainability and promote growth of pools of unvaccinated and partially vaccinated children. The findings recommend paying more attention to both quality and sustainability and introduce improvement and solutions (Streefland et al, 1999).

A survey of 651 children aged 12-23 months in Zone 3 of Dhaka city revealed that 51% of them had fully completed the series of childhood immunisations. Immunisation coverage in slum households was only half that in non-slum households. Other characteristics strongly associated with the completion of the entire series of childhood immunisations includes the following: educational level of the mother, number of children in the family household,

mothers employment status, distance from the nearest immunisation site and number of home visits from family-planning field workers. The findings point to the need to improve childhood immunisation promotion and service delivery among slum populations (Perry et al, 1998).

According to Chawla et al (2006) in Alwar district of Rajasthan state of India, less than one third (28.9%), of children aged 12-23 months were fully immunised with BCG, 3 DPT, 3 OPV and measles vaccine. Around a quarter (26.5%), had not received even a single vaccine and a little less than half (44.5%), were found partially immunised. 55.9% of eligible children were vaccinated for BCG and 43.6% for measles. Though nearly two- thirds (66.8%), were covered with the first dose of DPT and OPV, about one third of these children dropped out of third dose of DPT and OPV for various reasons. The main reason for dropping out or non-immunisation was lack of information about the immunisation programme.

A cross sectional survey done in the rural north India to estimate the immunisation coverage rate of eligible children aged 12-23 months shows that of the 747 eligible children 94.8% were fully immunised. The main reason for incomplete immunisation was parental indifferences or migration of child or family (Singh et al, 2007).

According to Thardarson et al, the WHO's Expanded Program on Immunization was conducted in the Monkey Bay head zone, Malawi in 2005. The Immunization coverage by card or history was 97% for BCG, and 99%, 95% and 85% for DTP1, DTP2 and DTP3 respectively. Coverage of OPV1, OPV2 and OPV3 by card or history was 99%, 93% and 85% respectively. Coverage for measles by card or history was 78%. Fully immunized children by card or history were 70%. Two children had not received any immunizations.

Dropout rate from DTP1 to DTP3 vaccination by immunization card or history was 14.5%, and drop-out from DTP1 to Measles by card or history was 21%. This indicates that access to health services is adequate. However, the coverage of measles appears to be insufficient to prevent outbreaks, and must be improved. The efficacy in delivering immunization can be improved and enhanced utilization of the services offered should be sought (Thardarson et al, 2005).

2.4 DROPOUT RATE

DPT3 coverage rates are the most common vaccines frequently used to monitor immunisation coverage levels and trends. The WHO recommended schedule is to administer the vaccine at three different times during the first year of life (often at around 6, 10 and 14 weeks, but this varies from country to country). The developing countries in Africa, South Asia, and East Asia and the Pacific observe this schedule. A four-dose schedule, with a booster dose administered in the second or third year of life is typical in European countries, while a five-dose schedule (two booster doses) is typical in the Latin American region. The existence of schedules allows the construction of more refined monitoring indicators: in addition to coverage with one, two, or three doses of DPT, coverage by age can be monitored to assess age appropriate coverage (WHO and UNICEF, 2002)

The multiple dose standard also enables calculation of dropout rates, which indicate what proportion of children receive 1 but not 2, or 2 but not 3 doses of the vaccine. Dropout rates can be used as indicators of a health system's ability to deliver services requiring multiple visits. Incidence of the diseases prevented by these vaccines varies across countries,

and the use of coverage measures should take these differences into account. Therefore, as an indicator of routine service delivery effectiveness, OPV3 coverage rates are less suitable. Measles has virtually disappeared from the Americas and periodic mass campaigns targeting young children irrespective of immunisation history have become an important strategy, but in Africa and Asia, where measles remains an important cause of child mortality, monitoring coverage levels is still essential. BCG monitoring is less frequently used, because the vaccine is delivered once often by midwives and other birth attendants, rather than by immunization programs. Yellows fever is endemic only in many countries in equatorial Africa and in some countries in South America. Hib and Hepatitis B are too new and not in use in many countries (Eduard et al, 200).

In most settings where full immunisation coverage is low, most children receive at least one dose of DPT, but the proportion that received the needed second and third dose drops steeply. Dropout rates are calculated as the percentage point difference between successive doses of a vaccine, expressed as a percentage of the first dose: the dropout rate between the first and second dose of DPT is: (DPT1-DPT2)/DPT1. Dropout rates may also be calculated as the difference between one vaccine and another (i.e., BCG and DPT3) (Eduard et al, 2000).

Observation of the follow up of vaccination showed that 65.5% of 127 children who started BCG vaccination dropped out as at the time of receiving measles vaccination. Reasons advanced for failure to immunized or complete immunization of the children included obstacles in 47%, lack of information 40.7% and lack of motivation in 11.6% (Bolagun et al, 2005).

According to Khan, (2005) routine immunisation coverage in Dhaka among children by 12 months of age and by card plus history was 97% for BCG, 97% for Diphtheria, Pertussis and Tetanus(DPT 1) and Oral Polio Vaccine(OPV 1), 75% for DPT 3 and OPV 3 and 67% for measles. Sixty six percent of all children surveyed had received valid doses of all vaccines by 12 months. DPT 1 to DPT 3 and DPT 1 to measles dropout rate were 5% and 13% respectively. Major reasons for incomplete vaccination was lack of knowledge regarding subsequent doses contributing 46%. The findings revealed that access to child immunisations were good, but high dropout rate and invalid doses reduces these percentages of fully immunised child to 66%.

2.5 INTER SUB-DISTRICT VARIATIONS IN THE UTILIZATION OF VACCINES

EPI cluster surveys or routine data may be used to identify vaccination coverage in poor or high-risk districts or regions, and can be used in geographic information systems (GIS) and combined with other socioeconomic databases. Overall targets can then be specified as reaching certain levels nation-wide, as well as certain minimum levels for poorer districts or regions (Eduard et al, 2000).

Siddharth, (2005) reported that 60% of the children aged 12-23 months in urban India were fully immunised, coverage among urban poor children is a dismal 43%. The inter-state variations of immunisation coverage in urban areas reveal a service coverage gap, inadequate primary care facilities and low staffing. Immunisation services scarcely reach slums, which calls for a rethink on resource allocation and strengthening process.

According to Prabakaran (1993), a study on the immunisation coverage relating to the six vaccine preventable diseases were carried out in urban, semi urban and rural areas in Kerala State, India. The percentage of children (12-23) who were fully immunised was above 75% in all the three areas. The percentage of unimmunised children was 4.2% in urban, 1.9 in semi urban and less than 1% in the rural area, indicating that children are more likely to be unimmunised in the urban area than the other areas. The percentage of partially immunised children was 18.3% in urban, 21.4% in the semi urban and 21.8% in the rural areas which shows that partial immunization was less common in the urban area than the other areas. The dropout rates for DPT and OPV were greatest in the rural area. The leading reason for failure to have a child immunised in all the three areas was child illness while fear of side effects was a big concern in the urban area.

Dasgupta (2005) reported on routine primary immunisation status in two districts, Birbhum and Purba Medinipur of West Bengal, India. BCG coverage was found to be 79.69% at Birbhum and 84.38% at Purba Medinipur. Only 62.81% children at Birbhum and 67.81% children at Purba Medinipur received all the three primary doses of DPT. Measles vaccine coverage was very poor in both districts; 55.94% at Birbhum and 62.5% at Purba Medinipur. Full immunisation was observed in 53.13% and 61.56% of eligible children in Birbhum and Purba Medinipur respectively. A high dropout rate was identified as a major deficiency in both districts.

2.6 REASONS FOR FAILURE TO VACCINATE CHILDREN

A national survey in Cameroon found that 37% and 34% of children were fully immunised in 1998 and 2000. These results correlated with both the mother's level of education and the household's economic status. It was noticed that, maternal educational level was a stronger predictor of positive immunisation status than is relative economic status. Children of mothers with secondary education or higher education were three times more likely to be fully vaccinated than children whose mothers had not completed primary education (WHO, 2001).

According to Gedlu and Tesemma , children of mothers in rural Ethiopia lack immunisation or are incompletely immunised because of lack of knowledge, unawareness of the need for second and third doses, measles protection and a belief that disease is better than immunisation. Other reasons were social problems and lack of time (Gedlu et al, 1997).

Elliot et al (2006) found that poor education is the most frequent reason given by parent's failure to vaccinate their children.

Bosu et al (1997) found that in the Central region, Ghana the major factors hindering attendance to EPI services were poor knowledge about immunisation, lack of suitable venues and furniture at outreach clinics, financial difficulties, long waiting times, transport difficulties, poorly motivated service providers and weak intersectional collaboration. It was observed that involving fathers especially those with high educational level improves the chances of completing vaccinations.

Mapatano studies revealed that 98% of mothers had positive attitudes towards immunisation. Coverage based on immunisation card, however, was as low as 37%, indicating a discrepancy between the high level of knowledge and positives attitudes, with the observed low immunisation coverage. The father's education and the mother's experience of an EPI-targeted disease in the family emerged as significant predictors of complete immunisation of the child. The father's involvement and the mother's ability to cite signs of severity of EPI disease were associated with the child's vaccination status in the high coverage health zone. The mother's vaccine related knowledge was a predictor of immunisation status only in the low-coverage zone (Mapatano et al, 2005).

Ramuson and Mark (1990) stated that communication activity in support of immunisation programs have helped mobilize populations and increase coverage. Communication offers practical strategies for reducing both services and consumer barriers to complete coverage and for sustaining appropriate immunisation in creating consumer demand for service.

A WHO cluster sampling in Alwar District, Rajasthan State, India, of 26 rural and 4 urban clusters showed that fully immunised children were more in urban areas, 82.1% as compared to rural areas, 45%. BCG and measles coverage was higher in urban areas, 89.3% and 85.7% that 69.61% and 52.2% in rural areas respectively. High dropout rate was found for DPT, 25.3% and OPV, 23.2% in rural areas as compared to urban, 7.7% each. Failure of immunisation in rural areas was mainly due to unawareness of need for immunisation, 35.4%, mother too busy is 16.8%, place and time not known is 9.7%, place of immunization too far is 8.8% and 7.1% each for unaware of need to return for subsequent doses, fear of side reactions and vaccinator absent(Gupta et al, 2006).

A coverage survey among children aged 12-23months in the urban slums of Lucknow district in India, indicate that the reasons for partial immunisation of the child, according to the respondents, was the unavailability of both parents, 17.2%. Another major reason for partial immunisation was that parents had gone either to a village or a native place during the scheduled date of vaccine or had been residing in the area for more than 6 months but had not yet acquired the necessary information regarding the details of vaccine administration, 14.7%. Sickness of elder sibling resulting from vaccination was 11.7% and lack of knowledge regarding the subsequent vaccination was 10.4%. 23.8% had lack of knowledge about the vaccination while 16.4% and 14.8% had lack of faith on it's effectiveness and were apprehensive due to the sickness of the elder sibling (Nath et al 2007).

CHAPTER THREE

3.0 METHODOLOGY

3.1 STUDY DESIGN AND METHODS

A coverage evaluation survey was undertaken from July to September 2008 among children aged 12 to 23 months in the communities of the Asutifi district using a modification to the WHO 30 cluster survey methodology. This is a two-stage sampling technique where 30 communities or clusters from the district were randomly selected in the first stage according to probability proportionate to size (PPS), which ascertains that, the probability of a particular sampling unit being selected in the sample is proportional to the population size of the sampling unit. In the second stage, the selection of the required number of children was done from each of the selected clusters. The first child in each cluster was selected randomly and the rest of them were selected from the contiguous household until the required number of children was attained.

The total number of children studied was 310 with 10 children in each cluster, {P=0.89 proportion of fully immunised children aged 12-23 months in Asutifi district according to the Annual District Report), confidence limit=95%, absolute precision(d)=5%, design effect=2}. To find 300 eligible children we surveyed about 840 households. In a house with twins, only one of them were selected randomly. Only those respondents who are residing in the area for the last six months or more are included in the study. The results thus obtained were within the 95% confidence interval.

A structured questionnaire which has been pre-tested was used to obtain the information from the study participants.

Qualitatively, data on knowledge, attitude and practices from mothers in the community and perceptions of health workers regarding immunisation was elicited using key informant interviews.

Key informant interviews involved the following people:

mothers from selected communities, technical field staffs each from the sub-district and the district disease control supervisor.

The interview with ten participating mothers between the ages 25 to 30 were held in 10 different locations on the immunization status of children as well as reasons for failure to send their children for vaccination. They were identified with the assistance of the In-charge at the health centres and CHPS compound. Each interview lasted between 30 to 60 minutes.

Seven health workers were interviewed from seven health facilities in the district on how the vaccination programme was organized and factors militating against efficient organization of EPI programmes. The mean duration for the interview was between 20 to 30 minutes.

For the supervisor at the district office, a duration of 1 hour was used for the interview on the supervisory function played by the supervisor and factors affecting smooth running of the programme.

3.2 DATA COLLECTION TECHNIQUES AND TOOL

The technique used for the determination of the vaccination status was the vaccination card and the recall method, written questionnaire and interview. A validated WHO sample research questionnaire on Expanded Program on Immunisation and an interview guide were used as tools for the study. Information collected was the immunisation status, reasons for partial immunisation, non-immunisation of children and on the various socio-demographic factors. The primary respondent was the mother of the child and in case of her absence, the father acted as the next respondent. In case of absence of both of them, an adult in the household who remained with the child for most of the time or had taken the child for immunisation on at least one occasion was interviewed. The child was considered as fully immunised if the child had received one dose each of BCG and measles and three doses each of Penta and Polio by the child's first birthday. Those who had missed any vaccine out of the six primary vaccines were described as partially immunised and those children who had not received any vaccine up to 12 months of age were defined as unimmunised. The overall dropout rate was the percentage point difference between the vaccines of the maximum and the minimum antigen received, expressed as a percentage of the maximum dose. Quantitatively, structured questionnaire was applied to gather information from the mothers. Information was collected about the immunisation status, reasons for partial immunisation and non-immunisation of the children and on the various socio-demographic factors that accounted` for partial immunisation. The method used for the determination of the vaccination status was the vaccination card and the recall method. The primary respondent was the mother of the child and in the case of her absence, the father acted as the next respondent. In the case of absence of both of them, an adult in the household who

remained with the child for most of the time or had taken the child for immunisation on at least one occasion was interviewed.

3.3 STUDY POPULATION

Study population was children between 12-23 months of age, mothers, health workers and supervisors.

3.4 STUDY VARIABLES

Table 1. These are qualitative independent variables

STUDY VARIABLE	OPERATIONAL DEFINITION	MEASUREMENT SCALE
Age	Age for vaccination	Continuous; in months
Sex	Male or female	Binary; male 1; female 2
Immunisation card	Present and vaccination given or absent but mother confirms vaccination given or none.	Nominal: by card; by history, none.
Source of immunisation	Place of immunisation	Nominal: hospital, outreach, health centre, private non-governmental organization
Immunisations tatus.	Recorded as fully, partially or not immunised	Ordinal: fully, partially and unimmunised.
Postponed	Vaccination for children	Binary: yes or no
Immunisation un awareness	Information given or not given by health worker.	Binary: given or not given
2nd and 3rd doses	subsequent vaccine follow up	Binary: received or not received
Lack of information	As reported by informant	Nominal;
Lack of motivation	As reported by informant	Nominal
Obstacles	As reported by informant	Nominal

3.5 SAMPLING TECHNIQUE AND SIZE

A cluster sampling technique was used which requires that samples be taken from only a sample of the subgroups. The immunisation status of children between the ages of 12 - 23

months is recorded according to the standard cluster sampling techniques recommended by the World Health Organization (WHO, 2005).

Sampling technique employed was the randomized cluster sampling. WHO cluster survey tool that validates sample size of 30 cluster and household of 8-10 eligible children under two years. A sample size of 300 children aged under -two from the target population was used for the study. The study population frame is the ratio of children under two to the total population of the district for the year 2007. The baseline data for the 2000 Population and Housing Census of the Ghana Statistical Service was used to define the number of households in each community of the District. The total sample of the study group was derived using the formula

$n=Z^2PQ*deff/ d^2$

P is the expected coverage between 85-90%, Z is the Z score which is a standard=1.96, d is the desired width of the confidence interval or the degree of precision i.e. Alpha error=0.05=5% and deff is the design effect=(1.5-2), Q=1-P

$N=\{1.96^2*0.89*0.11*2\}/0.05^2$

$=300.9$

Hence the sample size=300

The minimum number of children to be sampled was given by the formula

n_{min}=n/cluster size.

Nmin=300/30

Nmin =10 per cluster.

Selecting the households as sampling units and most importantly the first household was done using a random selection of direction as well as selection of random number between one and the total number of houses counted. The number selected was the first household to be visited.

3.6 DATA HANDLING AND ANALYSIS

Data on the immunisation status and reasons for failure was collected from mothers with children between 12-23 months using the card or by history. A pre-structured questionnaire was used in the interview with mothers. The qualitative data on the nominal scale of measurement was measured using frequency distribution and further summarized into ratio, proportion and rates. Statistical analysis was done by the software EPI Info version 3.4.3. A p-value of ≤0.05% was considered significant.

3.7 ETHICAL CONSIDERATION

A household survey raises a number of ethical questions. Such questions relate to the individual's privacy, the need for informed consent, and responsibilities that arise upon uncovering people`s health problems in a survey. Consent was sought from community heads, household heads and the caregivers who will participate in the study.

3.8 PRE-TESTING

The study components involve immunisation status; awareness of immunisation, service delivery, and reasons for failure of the EPI. An acceptable population and sample size was covered to yield useful results in terms of feasibility when minimum population size was around 100426 and the minimum number of households to be interviewed was 150 per

working week, hence between 600 to 700 for the period. The study pretested about 20 eligible target populations in the Acherensua community. The data collection tools employed were a survey questionnaire and key informant interview schedule as well as the validated immunisation card format.

3.9 CONFIDENTIALITY

All information provided to the interviewers was strictly confidential. Records was securely stored, which will not include any names that might be used to identify the families.

3.9.1 Informed consent

Mothers and other heads of families were informed about the contents of the interviews to enable them understand the procedures and give their verbal approval.

3.9.2 Feedback

Families were entitled to feedback since they have freely donated their time to the survey. Feedback was also given to the community.

3.9.3 Study assumptions and limitations

It was assumed that all participants answered their questionnaires truthfully and completely. It was believed that getting people to respond to the questionnaires was a major problem due to time constraints. Again, the occupational livelihood of mothers of children under -two who are mostly farmers was a challenge. Moreover, financial and logistics constraints affected the smooth implementation of the research work.

3.9.4 Strength

According to the WHO cluster survey methodology, which is the gold Standard for the coverage evaluation survey, the required sample size usually taken is 210; but the study took an absolute precision of 5% instead of 10% and a coverage of 89% as compared to 60% to achieve a sufficient large sample size of 300 to increase precision.

CHAPTER FOUR

4.0 RESULTS AND ANALYSIS

4.1 VACCINE IMMUNISATION COVERAGE AND IMMUNISATION STATUS

Three hundred eligible children between the ages of 12-23 months within the sample frame were interviewed. The children were from thirty communities in the Asutifi District. The mean duration of a child's eligibility was more than six months within a community. Of the clusters (communities) interviewed, 15 were of urban and are in the Kenyasi and Hwidiem sub-district whiles the other 15 clusters were of typical rural settlements spread in the Dadiesoaba, Gambia, Acherensua and Gyedu sub-districts.

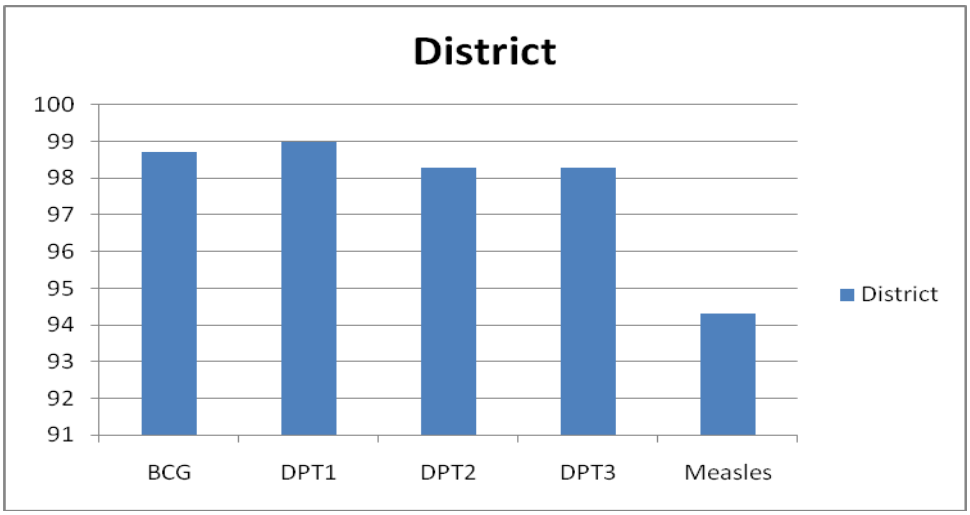
The national policy on percentage coverage of the EPI program is set at 90%. The District target was to immunise 100% of all children between the ages of 0-11 months against TB, 95% of infants with the pentavalent vaccine and to immunise 90% of eligible children with tetanus, measles and yellow fever.

The acceptable dropout rate nationally is the same as the WHO recommendation, and is less than 10%. The immunisation status was based on the recommended categories by the WHO: fully immunised, partially immunised and unimmunised.

4.1.1 Vaccine coverage

Out of the 300 children surveyed, 51.7% were males and 48.3% females. Immunisation card was available for 99% of children.

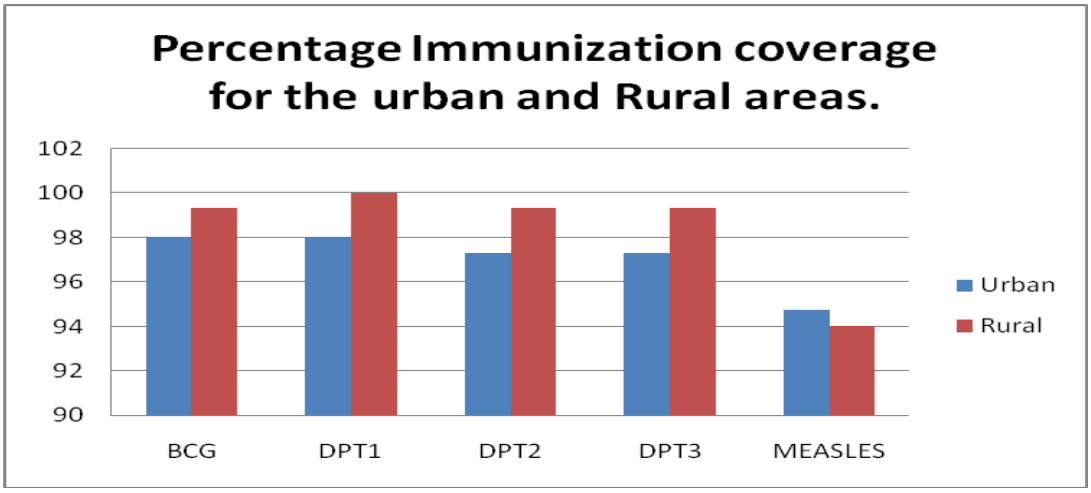
Figure 4.1: Percentage Immunisation Coverage in Asutifi District



Source: Field data, 2008

The coverage of individual vaccines in the district shows that BCG coverage in the district is 98.7%. DPT1, DPT 2 and DPT3 coverage were 99.0%, 98.3% and 98.3% respectively. The percentage coverage for measles was 94.3%.

Figure 4.2: Coverage for the Urban and Rural Settlements of the District



Source: Field data, 2008

Vaccine coverage for BCG and DPT1 in the urban area were above 98%, while that of DPT 2 and DPT 3 were 97.3% each. The measles immunisation coverage was 94.7% for the urban area. BCG coverage in the rural area was 99.4%. In the case of the first dose of DPT, 100% of children were immunised but the second and third doses were administered to about 99% of children in the rural area. Measles immunisation was 94% in rural area.

4.1.2 Immunisation Status

TABLE 4.3:Immunisation Status of Children

	(Frequency)	Percentage
1. Unimmunised	0	0.00%
2. Partially Immunised	15	5.00%
3. Fully immunised	285	95.00%
Total	**300**	**100.00%**

Source: Field data 2008

The frequencies and percentages of immunisation status of eligible child by different background characteristics showed that 94.3% of the entire children sampled in the district were fully immunised, while 5.4% of children were partially immunised.

Table 4.4: Children fully immunised by one year of age

	Frequency	Percentage
Yes	250	87.7
No	35	12.3
Total	**285**	**95**

Source: Field data, 2008

The number of children who were fully immunised before age one was 250 representing 87.7% with 12.3% who could not received the vaccines before age one.

4.1.2.1 Immunisation Status for Urban and Rural Area

The percentage of children (12-23) fully immunised was above 90% in all the two areas. None of the children in any of the settlements were unimmunised. However, the percentage of partially immunised children was higher in the rural (5.3%) than in the urban area (4.7%).

Table 4.5: Immunisation Status for Urban and Rural community

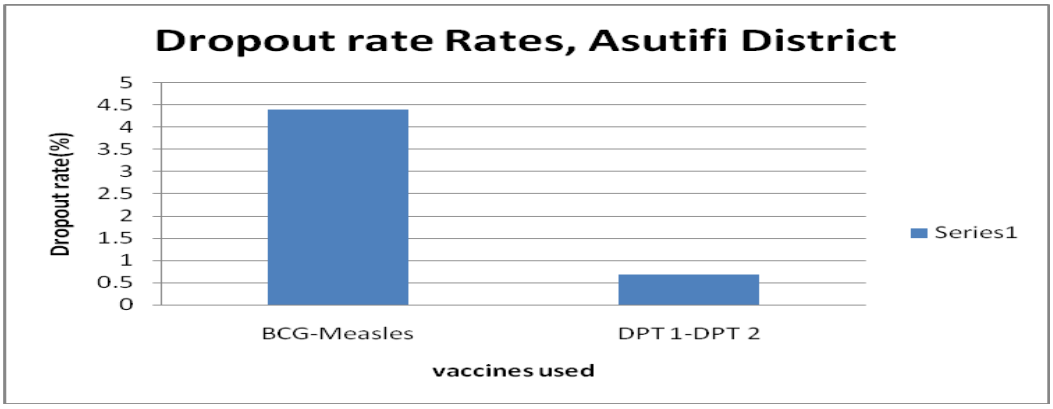
	Freq. & Percentages Urban	Freq. & Percentages Rural
Unimmunised	0 (0.0)	0 (0.0)
Partially Immunised	7 (4.7)	8 (5.3)
Fully Immunised	243 (95.3)	242 (94.7)

Source: Field data, 2008

4.2 DROPOUTS RATE AND REASONS FOR FAILURE TO VACCINATE CHILDREN

4.2.1 District Dropout rate

Figure 4.5: Dropout Rate Asutifi District.



Source: Field data, 2008

The dropout rate for DPT, BCG and measles in the district was used as an indicator to assess the efficiency of the EPI programme. DPT multiple dose dropout rate between DPT1 and DPT3 was 0.67%. The dropout rate therefore for the multiple dose is an acceptable percentage since it is lower than the recommended WHO value (10%).

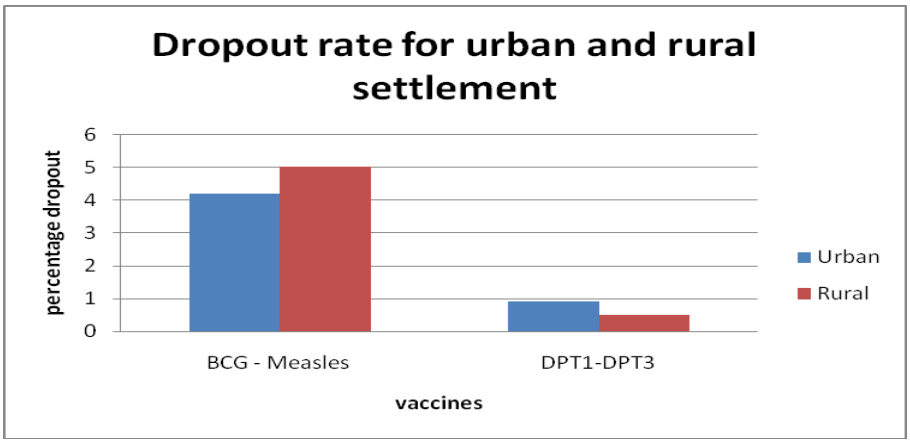
The dropout rate between BCG and measles is 4.4%. The percentage points dropout for BCG is therefore higher than that of the DPT multiple dose but again lower than the recommended WHO percentage and the District target. Generally, the district dropout rate is acceptable.

4.2.2 Rural and urban dropout rate

The dropout rate for both the urban and rural settlements were quite similar. The urban settlement in the district had a DPT multiple dose average dropout rate of 0.9%. The

dropout rate between BCG and measles was 4.2%. The rural settlement has a 0.5% DPT dropout rate and a 5% drop out rate between BCG and measles.

Figure. 4.6: Dropout Rate for the Urban and Rural Settlement.



Source: Field data, 2008

The DPT multiple dose dropout is higher in the urban than in the rural population indicating a better utilization in the rural area. Comparing the BCG-measles dropout rate for the two settlements, the rural is higher than the urban again indicating better utilization of vaccines in the urban area.

4.3 REASONS FOR FAILURE TO VACCINATE CHILDREN

Three variables have been shown to influence the failure of immunization: lack of information, lack of motivation and obstacle. The obstacle variable accounted for 62.5% of the reasons for immunisation failure followed by lack of information (31.25%) and lack of motivation (6.25%).

TABLE 4.7: Reasons for failure to vaccinate children

	Frequency	Percentage
Lack of information	5	31.25
Lack of Motivation	1	6.25
Obstacle	10	62.5
Total	**16**	**100**

Source: Field data, 2008

According to the respondents, 'obstacle' was the greatest barrier to vaccination.

Table 4.8: Reasons for Failure to Vaccinate Children.

	Frequency	Percentage
Lack of Information		
Unaware of need to return for 2nd or 3rd dose	1	6.25
Unaware of need for immunisation	3	18.7
Place and time of immunisation unknown	1	6.25
Subtotal	**5**	**31.2**
Lack of Motivation		
Postponed until another time	1	6.25
sub-total	1	6.25
Obstacle		
Place of immunisation too far	1	6.25
Mother too busy	9	56.3
Subtotal	10	62.55
Total	**16**	**100**

Source: Field data, 2008

The most common variable that influenced immunisation failure in the obstacle category was 'mothers too busy' (56.3%), followed by 'mothers unaware of need for immunisation' (18.7%) in the lack of information category.

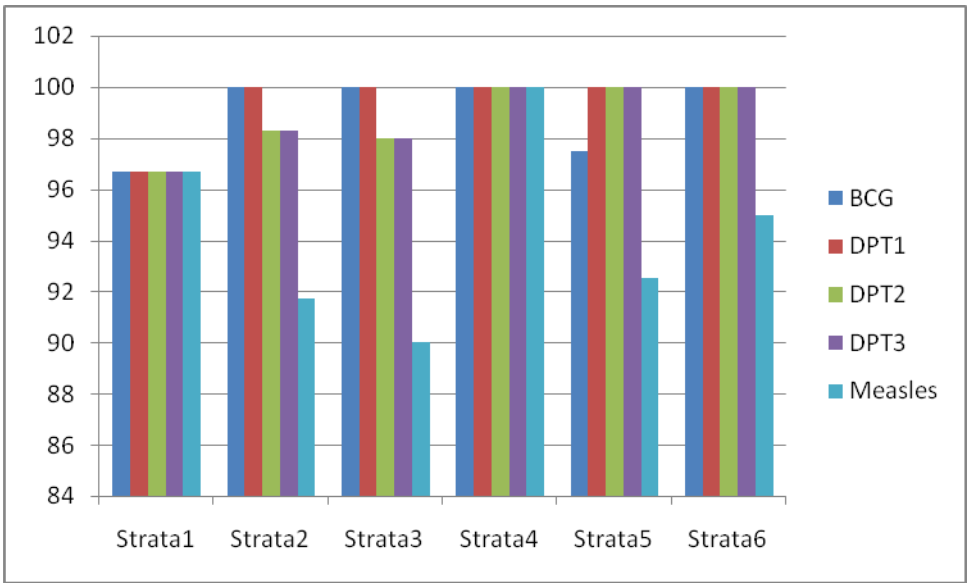
4.4 SUB-DISTRICTS VARIATION

Sub-districts variations, identifies the disparities that occur during vaccination services in the respective sub-districts as well as the effect of their socio- economic conditions on vaccination coverage and dropout of eligible children.

4.4.1 Sub-District Coverage

Inter sub-district variations shows coverage performance and draws attention to the specific sub-district where problems in service delivery exist. It will also bring to light the actual detailed performance during EPI programme and not only the cumulative coverage. The sub-districts includes strata 1(Kenyasi sub-district), strata 2 (Hwidiem sub-district), strata 3 (Gambia sub-district), strata 4 (Dadiesoaba-sub-district), strata 5 (Gyedu sub-district) and strata 6 (Acherensua sub-district). The inter sub-district variations of immunisation coverage shows non-uniform coverage of children receiving the vaccine in the sub-districts.

Figure 4.7: Inter sub-district vaccination coverage



Source: Field data, 2008

Coverage for all the vaccines for sub-district 1 indicated that all eligible children who started vaccination completed the programmme.

Sub-district 2 (strata 2) could not immunise all the children who started the vaccination programmme and dropped from100% with BCG to 91.2% for measles.

Sub-district 3 also shows a decrease in coverage from BCG to measles, 100% to 90% coverage. This sub-district performed satisfactorily in terms of service coverage.

Sub-district 4 came out the most efficient in terms of service delivery to achieve all eligible children who started vaccination finished it. Sub-district 5 has peculiar situation where the number of children vaccinated were lower than the target population, with a high rate of left out children. Percentage coverage for measles for sub-district 5 was 92.5%. Sub-district 6 had a good follow up in the cohort of eligible children but dropped for measles coverage to 95% for eligible children.

This emphasizes the existence of sub-district differentials in immunisation coverage. This service coverage gap, calls for a rethink of resource allocation and strengthening processes to improve immunisation coverage among the poorly performed sub-districts.

4.4.2 Frequency and percentage Immunisation Status of Children According to Size of Sub-district

Table 4.8: Frequency and percentage immunisation status of children according to size of sub-district.

	Not Immunised	Partially Immunised	Fully Immunised
Sub-district 1	0	(2) 2.2	(88) 97.8
Sub-district 2	0	(5) 8.3	(55) 91.7
Sub-district 3	0	(4) 8	(46) 92
Sub-district 4	0	(0) 0	(40) 100
Sub-district 5	0	(4) 7.5	(37) 92.5
Sub-district 6	0	(1) 5	(19) 95
Total	**0**	**(16) 5.3**	**(284) 94.7**

Source: Field data, 2008

The percentage of eligible children who were fully or partially immunised varied from one sub-district to another. Sub-district 1 shows that 97.8% of children were fully immunised while 2.2% were partially immunised. Lack of information on the need to return for subsequent doses affected utilization of the vaccines administered to children. Sub-district 2 had 91.7% of eligible children complete their vaccination schedule while 8.3% of the children could not complete the vaccination schedule.

Sub-district 3 also performed dismally. The number of children who did not complete the vaccination schedule stood at 8%. Sub-district 4 completely vaccinated all the eligible children. Sub-district 5 had 7.5% of children who did not complete their vaccination series and 5% of children could not complete their vaccination schedule in sub-district 6.

Service delivery and program organization varies from sub-district to another as shown by the records, however except some few sub-districts coverage and utilization were fairly good.

4.4.3. Dropout Rate of Immunisation in the Sub- District

Dropout rate shows the proportion of children that complete the immunisation schedule, hence the quality of utilization depends on the value of dropout rate. The utilization could be defined as good or poor where the dropout rate in the target age group is either less than 10%, or greater that 10%.

Table 4.10: Dropout rate of immunization in the sub-district.

	BCG – Measles	DPT1-DPT3
Sub-district 1	0	0
Sub-district 2	8.3	1.7
Sub-district 3	10	2
Sub-district 4	0	0
Sub-district 5	5.1	0
Sub-district 6	5	0

Source: Field data, 2008

The dropout rate for the multiple doses DPT was below 10%; indicating good utilization of the vaccine per strata(Sub-district). However, the dropout rate for BCG-measles for Strata 3

was equal to 10%, indicating that the quality of utilization of vaccine administration by eligible children was not the best. Key informant interviews with mothers and health workers revealed that poor staffing, accesibility to sites is a problem since staff may be late in arriving or may not arrive at all particularly at outreach centres. Health workers also complained they had difficulty getting to outreach centres as a result of frequent motor bike breakdown. The proportion of eligible children that completed the immunisation schedule per strata shows inter strata variations during service delivery and program organization.

4.4.4 Reasons for Failure to Vaccinate Children in the Strata (Sub- Districts)

Table 4.9: Reasons for failure to vaccinate children in the sub-district.

	Lack of information	Lack of motivation	Obstacle	Total
Sub-d 1	13.3%	0	0	13.3%
Sub-d 2	6.66%	6.66%	6.66%	20.00%
Sub-d 3	0	0	26.7%	26.7%
Sub-d 4	0	0	0	0
Sub-d 5	13.3%	0	13.3%	26.7%
Sub-d 6	6.66%	0	6.66%	13.3%

Source: Field data, 2008

Sub-district 1 had a problem with information flow from health workers to mothers or caregivers on the need for immunization as well as place and time of immunisation.

Sub-district 2 had all the three categories of the factors affecting vaccination. Sub-district 3 had a serious problem with mothers who were busy and could not attend vaccination as well as health workers inability to follow up defaulted mothers to vaccinate children. This variable constituted 27% among the other factors.

Sub-district 5 could not educate all their clients well (13.3%) and did not match up with progammes to enable busy mothers (13.3%) to settle and vaccinate their children.

4.5 QUALITATIVE ANALYSIS USING KEY INFORMANT INTERVIEW

During key informant interview various themes which are summarized emerged as reasons affecting adequate use of immunisation in the six subdistricts or problems associated with high dropouts and poor access in the communities under the category of service delivery and demand, staffing and supply.

4.5.1 Accessibility to vaccination services

TABLE 4.11: Accessibility of vaccination services.

Study- group	Type of answers
Key-informant---Mothers aged 25-30 years at the Kenyasi, Hwidiem, Dadiesoaba, Acherensua, Gambia and Gyedu sub-district	♠ Mothers are unaware of importance of immunisation ♠ Mothers do forget days to immunise children especially for multiple doses. ♠ Mothers are too busy to take off days to immunise child. ♠ Most mothers are lazy in sending their children for immunisation, ♠ Mothers spent pretty longer time at the centre.

Source: Field report, 2008

TABLE 4.12: Text box 1

"We believe children react to the antigen and make them sick, but if they are not vaccinated they do not get sick and that saves us from many problems (A 28 year old mother at Biaso community in the Gambia sub-district)".

"I think that Outreach centres should give us drugs like "Paracetamol" and other drugs freely because my child always gets fever when he received the vaccine and this should not be the poor mothers cost which again allows us to stay away (A 30 year old mother at Nkasiem community in the Hwidiem sub-district)".

Source: Field report 2008

4.5.2 Poor service provision and Staffing

Table 4.13: Poor service provision and staffing.

Study group	Type of answers
Key informants---Health workers at the sub-district health centres/ CHPS centres of Kenyasi, Hwidiem, Acherensua, Gyedu, Dadiesoaba and Gambia	• Health worker said workload was too much • Most outreach services were carried out in the morning between 8 a.m and 9 a.m or hence fixed time for immunisation. • Supervisors has been a bit relaxed, by monitoring once in three months • Averagely two staff attend to mothers at the outreach centre • Mothers walk from long distance to the immunisation centre. • Mothers work mostly on farms and migration is common to nearby towns.

Source: Field report, 2008

Table 4.14: Text box 2

"Depending on the distance and the available transport, one or two staff would have to visit outreach points to undertake immunization (A worker at a CHPS centre in the Hwiediem sub-district)".

"Sometimes our motor bikes breakdown or are not strong enough to journey long distances (a worker at a health center in the Dadiesoaba sub-district)".

Source: Field report 2008

4.5.3 Supervisory activities

Supervisory issues were raised as barriers to immunisation coverage.

Table 4.15: Supervisory activities

Study group	Type of answers
Key-informants- A Supervisor at the disease control unit of the Asutifi health district office.	♠ No supervisory schedule ♠ Supervisory and monitoring visits is poor ♠ Frequent breakdown of vehicles and motorbikes ♠ Inadequate funds for transport management ♠ Maximum of six (6) and minimum of four staff is needed to cover immunisation program but as low a staff does vaccination for outreach points. ♠ Multiple dose vaccine of BCG are just enough.

Source: Field report, 2008

Table 4.16: Text box 3

"Staff do not visit immunisation points on time (A disease control supervisor at the Asutifi district health office)". "Staff do not attend to their clients in the houses (A disease control supervisor at the Asutifi district health office)". "Practically the number of vials for BCG does not allow for timely vaccination as indicated by the policy for outreach services (A disease control supervisor at the Asutifi

district health office)".

" number of birth a day in the community is low and we cannot have all the twenty children at the same time hence eligible children are ask to come back latter (A disease control supervisor at the Asutifi district health office)".

Source: Field report, 2008

CHAPTER FIVE

5.0 DISCUSSION

5.1 IMMUNISATION COVERAGE

The proportion of children aged 12 to 23 months who were vaccinated before the age of 12 months declined for subsequent vaccines and was worst for measles vaccine; 98.7% of children aged 12-23 moths received a BCG vaccination but 94.3% were vaccinated against measles. Nonetheless, 87.7% of children in the district completed their vaccinations before the age of 12 months. This was a shortfall to the 90% goal for the district. Reasons for low coverage was due to; lack of information given to mothers on the part of health workers, the commitment to follow up mothers, poor accessibility to vaccination centres and low number of trained workforce

In Thailand, the rate of completion of immunisation by eligible children under- one increased from 65% to 89% for mothers who received regular information from village health communicators, there was no change in non-intervention (without village health commiunicators) areas. High immunisation coverage areas were highly correlated with high level of village health volunteers follow up and the education about the infectious diseases given to mothers. Both the frequency of contact between health workers and mother's knowledge of infectious diseases and immunisation were significantly correlated with immunisation status (Limtragool et al, 1989).

Our finding was similar to that in Thailand where information to mothers on the need for immunization of their children correlated with immunization coverage.

Our finding related to the low number of trained work force and poor coverage corroborates that of Gedlu and others who found that poor health infrastructure, low number of trained work force continue to affect the EPI programme in Ethiopia (Gedlu et al, 1997).

Unpredictably children in the rural areas were much more likely to have all the necessary vaccinations when compared with children in the urban areas except for measles. Outreach programmes were more reliable and better organized in the rural areas than in the urban area, except that follow up for subsequent doses was poor in the rural areas indicated by high percentage of children not receiving vaccine on time. Primary health care facilities were grossly inadequate with only one hospital and four health centre facilities to serve the entire district. Again staffing has not increased to march the growing population, low staff motivation owing to weak transport systems results in weak outreach.

In India the story is different, the coverage of children under-one in urban and urban poor areas were compared by Siddharth et al (2005), they showed that 60% of the children aged 12-23 months in urban India were fully immunised, coverage among urban poor children is a dismal 43%. The inter-state variations of immunisation coverage in urban areas reveal a service coverage gap, inadequate primary care facilities and low staffing (Siddharth et al, 2005).

Even though the District achieved an acceptable level of coverage, it is by itself not a sufficient indication of effectiveness of a health centre system, as deficiencies in other areas could be widespread. However, lack of progress in moving towards higher levels of

coverage is a strong indication of failure to provide essential services to protect the health of the most vulnerable (infants) in a population from the six killer diseases. Since immunisation coverage is a health output whose ultimate outcome is a reduction in disease incidence, head immunity is essential for effective health system in the district.

5.1.1 Immunisation status

The results showed that 15 (5%) of the 300 children assessed were partially immunised, 0 (0%) were not immunised and largely 285 (95%) were fully immunised. On the other hand, 265 (88.3%) of eligible children within one year were able to complete their vaccination.

The percentages of fully immunised children in the urban were 95.3% and that of the rural areas was 94.7%. There is therefore a slight variation in children who were partially immunised for the urban area (4.7%) and the rural area (5.3%).

This indicates that those children who received immunisations in the urban areas were more regular in completing the doses than the children who lived in the rural area. It again points to the fact that mother's knowledge as well as their children's full immunization coverage with individual vaccines was more in the urban areas than in the rural areas.

A study on the immunisation coverage relating to the six vaccine preventable diseases was carried out in Kerala State, India. The percentage of partially immunised children was 18.3% in urban, 21.4% in the semi urban and 21.8% in the rural areas which shows that partial immunization was less common in the urban area than the other areas. The leading

reason for failure to have a child immunised in all the three areas was child illness while fear of side effects was a big concern in the rural area (Prabakaran, 1993).

This study was similar to that found in Asutifi district where more children in the urban areas were fully covered compared to the rural areas.

5.2 DROPOUT RATE

Observation of the follow up of vaccination showed that 4.4% of the 296 children who started BCG vaccination dropped out as at the time of receiving measles vaccination. The dropout rate for the first dose DPT1 and the third dose DPT3 was 0.67%.

This finding is better than that found in Monkey Bay Head Zone, Malawi where drop-out rate from DTP1 to DTP3 vaccination by immunization card or history was 14.5%, and drop-out from DTP1 to Measles by card or history was 21%.This indicates that access to health services is adequate. However, the coverage of measles appears to be insufficient to prevent outbreaks, and must be improved (Thordarson et al, 2005)

The 35 children (11.7%) who could not complete vaccinations within one year, suggests a disturbing quality of services, which impacts negatively on the utilization of vaccines by children in the district.

The dropout rate for the multiple vaccines, DPT is a sign that immunisation services for these vaccines were reliable and was utilized by most eligible children, however the dropout rate for the BCG to measles vaccines was higher than the DPT1 and DPT3. This also

shows a service program lapse, because the task of the program is limited only to asking mothers to bring their child to the EPI centre and not following them up to the end so that the clients complete all the doses. This was affirmed by the fact that in the district 6.25% of mothers were unaware of need to return for 2nd or 3rd dose.

In the district, more infants (5%) received BCG immunisation than were vaccinated against measles. The urban and rural dropout rates were also acceptable for the indicators, DPT's, BCG and measles (0% and 5% respectively).

The finding is far better than that found in Lagos where 65.5% of 127 children who started BCG vaccination dropped out at the time of receiving measles vaccination (Bolagun et al, 2005).

The rural area had a higher BCG to measles dropout rate than the urban area because there was little follow-up of the parents due to the scattered nature of the communities which were predominantly occupied by migrating populations. Mothers were too busy with heavy workloads and poor accessibility of vaccination services accounted for this performance. This indicates that utilization is lower when vaccination centres are not easily accessible and when health workers are absent during immunisation sessions.

In general, most mothers of dropout children are aware about the necessity of completing the immunisation schedule but in most cases, they do forget days of immunisation. They are too busy to take off days to immunise their children and are also lazy in sending their children for immunisation as indicated by respondents during the key informant interview.

The dropout rate for the district shows that most mothers who have visited an outreach centre of health facility for an initial vaccination do not easily return for subsequent ones and this is due primarily to inefficiency of services programme and mother's socio-economic activities.

5.3 Reasons for failure to vaccinate children

Reasons advanced for failure to vaccinate or complete vaccination of the children included obstacles (62.5%), lack of information (31.25%) and lack of motivation. Examples of the three categories are: 'parents are often too busy' (56.3%) as an obstacle, 'unaware of need to return for further doses' (6.25%) as lack of information and 'postponed until another time' (6.25%) as lack of motivation. There is a clear need for strong communication and health education messages so that parents understand the importance of completing the vaccination schedule on time for each child.

In Lagos, Nigeria the reasons given for failure to immunize or complete immunization of the children included obstacles (47%), lack of information (40.7%) and lack of motivation (11.6%), (Bolagun et al, 2005).

Supervisors admitted inadequate supervision. They complained of inadequate logistics for supervisors such as transport. Although there is provision of reimbursement for transport cost, most supervisors found the procedure too cumbersome. They had never benefited from any such incentive, resulting in their reluctance to undertake supervisory visits.

Mothers were unaware of need for immunisation and this contributed to their failure to vaccinate the children. Health workers were either too busy or hurried and did not provide explanations. Furthermore, mothers missed the opportunities for health education due to their late arrival at the outreach posts. In-depth interviews of mothers revealed that mothers are unaware of the importance of full immunization.

5.4 INTER SUB-DISTRICT VARIATIONS IN COVERAGE

Sub-districts 1and 4 had good coverage because the number of eligible children who started the vaccination were able to complete the immunization program. This indicates that, those sub-districts practiced an efficient and effective service delivery programme.

Sub-district 2 had one of the worst coverage where most of the children (9%) who started the EPI programmme could not complete the vaccination. Sub-district 3 also performed disappointingly; one out of ten eligible children (10%) could not finish the vaccination program. Lapses in the service delivery and ineffectiveness of the health programme are present where severe staff shortage was known to occur especially in the rural health facilities. Weakness in supportive supervision and non-holding of EPI sessions are further elements responsible for low immunization coverage.

Accessibility also remains a problem where health facilities are more sparsely distributed. Certain areas which otherwise be easily accessible are not well served with roads making it difficult to reach the service delivery points. Outreach vaccination, which would be best to serve the mothers with eligible children had unfortunately been scaled down due to logistic difficulties.

Sub-district 5 vaccinated, 97% eligible children out of the target population for BCG vaccine. However, for DPT vaccines all children targeted for vaccination received the vaccines for the multiple dose. Evidently, few children were left- out during the start of vaccination. This indicates registration inconsistency. Sub-district 6 has an improved coverage where 95% of eligible children were vaccinated.

Gambia sub-district (sub-district 3) recorded the lowest coverage for measles with 90% of children aged 12 to 23 months. The programme management is not sufficiently strong in this sub-district to ensure that all children complete the recommended doses. A community in this sub-district could cover just 80% of eligible children. This means that almost one in every five children who gets the first immunization does not complete the recommended series suggesting a failure in the programme to communicate the importance on completing vaccine series.

The finding is similar to that in Monkey Bay head zone, Malawi where coverage by card or history was 97% for BCG, and 99%, 95% and 85% for DTP1, DTP2 and DTP3 respectively. Coverage for measles by card or history was 78%. This indicates that access to health services is adequate. However, the coverage of measles appears to be insufficient to prevent outbreaks, and must be improved (Thordarson et al, 2005).

5.4.1 Immunisation status by sub-district

The percentage of children between the ages 12-23 months who were fully immunised in the sub-districts is above 90%. Sub-districts 2, 3 and 5 have a relatively lower number of children who complete their vaccination. This points to the fact that those children who received immunization in these sub-districts were not regular in completing the doses because mothers' knowledge for need of full immunization was not adequate and mothers 'being too busy'.

Sub-district 3 had the highest number of eligible children who did not complete their vaccination programme, followed by sub-district 2 and 5. This denotes poor utilization of the vaccine by eligible children in the sub-districts. The inadequacy of adequate community mobilization has resulted in some outreach immunisation failing to get adequate children to vaccinate. This elicits a vicious positive feedback where the health managers feel the uptake was low yet the people were just not adequately informed.

The findings are similar to that found in the Central region of Ghana where major factors hindering attendance to EPI coverage were poor knowledge about immunization, long waiting times, poorly motivated service providers, weak inter-sectional collaboration and transport difficulties (Bosu et al, 1997).

5.4.2 Dropout rate in the sub-districts

The inter sub-district dropout rate for BCG and measles indicator, shows that sub-district 3 (Gambia) has a dropout rate of 10% followed by sub-district 2 (Hwiediem) with dropout rate (8.3%). All the other sub-districts had below 5% dropout rate.

The highest dropout was noted in the Gambia sub-districts (10%), with a community dropout rate of 20%. Almost one in every five children who get their first immunization do not complete the recommended series. This suggests a failure in the programme to communicate the importance of completing vaccine series. This again, indicates a quality service gap where vaccines are worst utilized due to lack of information (31.2%) and socio-economic factors such as mother being too busy (56.3%) in some sub-districts and communities.

This finding is similar to that in Dhaka district of Bangladesh, where children aged one had dropout rate for DPT1 to DPT3 and DPT1 to measles were 5% and 13% respectively. The findings revealed that access to child immunizations were good, but high dropout rate and invalid doses reduces these percentages of fully immunized child to 66% (Khan et al, 2005).

This could compromise the head immunity the sub-district and the district as a whole could achieve. In addition to ensuring provision of high quality routine services, areas with comparatively low coverage rates may require special catch up campaigns to ensure that outbreaks of diseases do not occur in these areas.

In general dropout rate for the vaccine indicators DPT, in sub-districts are below 2%. The multiple vaccines (DPTs), have a good utilization compared to the other follow up vaccines. The multi-dose vial (BCG) which must serve about twenty children on opening is one of the reasons for high dropout rate because most children could miss the opportunity of being vaccinated at the centre. Though the immunization policy states that the vaccine should be

administered to every eligible child who visits the centre, children are turned away for the reason of wastage of the vaccine if the number is not up to the usage.

5.4.3 Reasons for failure to vaccinate children in the sub-districts

Mothers being too busy and unaware of need for immunisation were the key reasons for failure to immunize children in the sub-districts.

In sub-district 1, 13.3% of mothers lacked information on full immunisation. This shows that information was not communicated to the clients in a way understandable in their local language and norms, likewise mother's unawareness of repeat visits to achieve complete immunization.

The study shows that in sub-district 2, lack of information (20%), lack of motivation and obstacle (6.66% each) were reasons why children were not vaccinated. Rescheduling of vaccination sessions due to absence of vaccinator, forced mothers to go the hospital as a compensatory site for missed sessions.

In sub-district 3, obstacles were responsible for 26.7% of the causes of failure to vaccinate children. Working mothers in the sub-district do not get the support required to attend to their child's health needs. During key informant interviews, it emerged that vaccinators do not think of the side effects of vaccine in children, A respondent said *"the child gets fever and the poor mother has to leave all that she has to do for the sake of the child, even Paracetamol is not given and we have to buy, I am busy and poor and will not send the child"*. One mother in this

district said "*most mothers are lazy in sending their children for vaccination and leave them with the old mothers or elder children to do that on their behalf, where they don't attend at all or leave when vaccinator delays in arriving.*"

Mothers being too busy to take off days to immunise a child (13.3%) and lack of information (13.3%) were cited as reasons for the low use of immunisation services in sub-district 5.

This finding is similar to that in Alwar district, Rajasthan state, (India) where failure of immunization in rural areas was mainly due to unawareness of need for immunisation (35%), mothers being too busy (16.8%), place and time not known (9.7%) and place of immunization too far (8.8%), (Gupta et al, 2006).

5.5 LIMITATIONS

We tried our best to minimize the recall bias by confirming the immunization status by enquiring about the various aspect of the vaccines, such as name, site and age of administration, but as it is with any other study, it could not be totally eliminated. I could also not study the inadequacies related to the health centre delivery aspect concerning vaccine logistic, the cold chain management and resource allocation, which have also been found to be responsible for low immunization coverage, due to the scarcity of resources.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 CONCLUSIONS

From the study results, it could be concluded that the coverage rate of children 12-23 months in the district is above 95%, however the percentage of children who fully complete vaccination by age 12 months was 88.3%. Children of the rural areas were more likely to have had high coverage for individual vaccines than in the urban areas.

Observation of the follow up of vaccination shows that 4.4% of the 296 children who started BCG vaccination dropped out as at the time of receiving measles vaccination. The dropout rate for DPT and DPT 3 was 0.67%. The sub-districts have comparatively higher dropout rates. Specifically, the Gambia and Hwiediem sub-districts recorded higher dropout rates. Children of the rural areas were more likely to have high dropout rate than in the urban areas.

When reasons for immunization failure were assessed, busy schedule of mothers significantly affected the coverage. Unavailability of enough health centres and staff greatly contributed to low coverage of eligible children which affected most hard to reach communities.

Finally, the effectiveness and efficiency of the EPI schedule managed by the district health management team was not the best, since the target coverage (100%) was not achieved

during the EPI programme. The programme was unable to hold on to the children who started the vaccination.

6.2 RECOMMENDATIONS

The research provides evidence for the health workers at the outreach post and health facilities to establish records of those who fail to appear for immunisation on schedule during visits to the communities to enable them follow-up and to remind either parents or caretakers of children immunisation status using reminder stickers.

The disease control division should have the need for strong communication and health education messages aimed at the high risk groups (busy mothers) in the communities so that parents understand the importance of completing the vaccination schedule on time for each child.

The District Health Management should enroll more community health volunteers and provide more CHPS compounds distributed equitably in the various sub-district to make immunization easily available and accessible for use by mothers to improve coverage and reduce dropout rates.

The District Health Management team should motivate workers by giving them extra duty allowance with the necessary inputs and logistics for them to meet the schedule for vaccination on time to avoid leaving and missing increasing number of eligible children.

The disease control unit must focus in areas with comparatively low coverage rates and also may require special "catch up" campaigns to ensure that outbreaks do not occur in these areas.

The disease control division should ensure effective supervision by insisting that birth registration system for the district be improved since many domicile deliveries are high so that age appropriateness of immunization can be used as a tool to improve performance.

Management should institute regular meetings of health staff from different health facilities to share experiences and techniques for improving vaccination coverage.

Regular outreach camps at a convenient location and day, by health staffs with support from local stakeholders are essential in endemically low coverage rural areas.

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APPENDIX

EVALUATION FORM, INFANT IMMUNISATION-EPI COVERAGE SURVEY

Variable	Response	Frequency (%)	Total

	s											
Strata 1		Cluster									Frequency	Percentage
		1	2	3	4	5	6	7	8	9		
Sex	Male	4 (40)	4 (40)	3 (30)	4 (40)	4 (40)	5 (50)	4 (40)	4 (40)	4 (40)	39	43.3
	Female	6 (60)	6 (60)	7 (70)	6 (60)	6 (60)	5 (50)	6 (60)	6 (60)	6 (60)	51	56.7
Immunisation Card	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	8 (80)		10 (100)	10 (100)	88	97.8
	No	-	-	-	-	-	2 (20)	-	-	-	2	2.2
BCG	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	7 (70)	10 (100)	10 (100)	10 (100)	87	96.7
	No	-	-	-	-	-	3 (30)	-	-	-	3	3.3
BCG Scar	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	9 (90)	10 (100)	10 (100)	10 (100)	88	97.8
	No	-	-				1 (10)	-	-	-	2	2.2
Source of BCG	Outreach	6 (60)	10 (100)	10 (100)	10 (100)	10 (100)	6 (60)	10 (100)	10 (100)	5 (50)	77	85.6
	Hospital	2 (20)	-	-	-	-	0 (0)	-	-	3 (30)	5	5.6
	Health centre	2 (20)	-	-	-	-	4 (40)	-	-	2 (20)	8	8.9
Variable	Responses	Frequency (%)									Total	

Strata 1		Cluster										
		1	2	3	4	5	6	7	8	9	Frequency	Percentage
DPT 1	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	7 (70)	10 (100)	10 (100)	10 (100)	87	96.7
	No	-	-	-	-	-	3 (30)	-	-	-	3	3.3
Source	Outreach	9 (90)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	4 (40)	83	92.2
	Hospital	1 (10)	-	-	-	-	-	-	-	2 (20)	3	3.3
	Health centre									4 (40)	4	4.4
DPT 2	Yes	7 (70)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	87	96.7
	No	3 (30)	-	-	-	-	-	-	-	-	3	3.3
Source	Outreach	7 (70)	10 (100)	10 (100)	10 (100)	10 (100)	10	10	10	4 (40)	81	90.0
	Hospital	3 (30)	-	-	-	-	(100)	(100)	(100)	2 (20)	5	5.6
	Health centre									4 (40)	4	4.4
DPT 3	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	7 (70)	10 (100)	10 (100)	10 (100)	87	96.7
	No						3 (30)				3	3.3
Source	Outreach	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	9 (90)	4 (40)	83	92.2
	Hospital	-	-	-	-	-	-	-	-	2 (20)	2	2.2
	Health centre	-							1 (10)	4 (40)	5	5.6
Variable	**Responses**	**Frequency (%)**									**Total**	

Strata 1		Cluster									Frequency	Percentage
		1	2	3	4	5	6	7	8	9		
Measles	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	7 (70)	10 (100)	10 (100)	10 (100)	87	96.7
	No	-	-	-	-	-	3 (30)	-	-	-	3	3.3
Source of Measles	Outreach	9 (90)	10 (100)	10 (100)	10 (100)	10 (100)	8 (80)	10 (100)	10	7 (70)	84	93.3
	Hospital	1 (10)									1	1.1
	Health centre									3 (30)	3	3.3
	No Response						2 (20)				2	2.2
Immunisation Status	Not	-	-	-	-	-	-					
	Partially	-	-	-	-	-	2 (20)	-	-	-	2	2.2
	Fully	10 (100)	10 (100)	10 (100)	10 (100)		8 (80	10 (100)	10 (100)	10 (100)	88	97.8

Source: Field data, 2008

EVALUATION FORM, REASONS FOR IMMUNISATION FAILURE

Variable	Responses	Frequency (%)									Total	
Strata 1		Cluster									Frequency	Percentage
		1	2	3	4	5	6	7	8	9		
Is Child fully immunised	Yes	10 (100)	10 (100)	10 (100)	9 (90)	10 (100)	7 (70)	10 (100)	10 (100)	10 (100)	86	95.6%
	No						2 (20)				2	2.2%
	No response				1 (10)		1 (10)				2	2.2%
Why was child not fully immunised												
Demand of service	Unaware of need for immunisation						1 (50)				1	50
	place and time of immunization unknown						1 (50)				1	50
Lack of motivation	Postponed until another time											
	No faith in Immunisation											

Source: Field data, 2008

EVALUATION FORM, INFANT IMMUNISATION-EPI COVERAGE SURVEY

Variable	Responses		Frequency (%)					Total	
Strata 2			Cluster					Frequency	Percentage
		10	11	12	13	14	15		
Sex	Male	4 (40)	7 (70)	8 (80)	6 (60	8 (80)	8 (80)	41	68.3
	Female	6 (60)	3 (30)	2 (20)	4 (40)	2 (20)	2 (20)	19	31.7
Immunisation Card	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	60	100.0
	No	-	-		-	-	-		
BCG	Yes	10 (100)	10 (100)		10 (100)	10 (100)	10 (100)	60	100.0
	No	-	-		-	-	-		
BCG Scar	Yes	8 (80)	8 (80)	10 (100)	4 (40)	8 (80)	1 (10)	49	81.7
	No	2 (20)	2 (20)		6 (60)	2 (20)	9 (90)	11	18.3
Source of BCG	Outreach	10 (100)	8 (80)	9 (90)	9 (90)	4 (40)	4 (40)	44	73.3
	Hospital		2 (20)		1 (10)	6 (60)	6 (60)	15	25.0
	Health centre		-	1 (10)	-	-	-	1	1.7

Variable	Responses	Frequency (%)						Total	
Strata 2		Cluster						Frequency	Percentage
		10	11	12	13	14	15		
DPT 1	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	60	100
	No	-	-	-	-	-	-		
Source	Outreach	10 (100)	8 (80)	9 (90)	9 (90)	4 (40)	4 (40)	50	83.3
	Hospital		2 (20)		1 (10)	6 (60)	6 (60)	10	16.7
	Health centre			1 (10)					
DPT 2	Yes	10 (100)	9 (90)	10 (100)	10 (100)	10 (100)	10 (100)	59	98.3
	No		1 (10)	-	-	-	-	1	1.7
Source	Outreach	10 (100)	8 (80)	10 (100)	10 (100)	6 (60)	6 (60)	50	83.3
	Hospital		2 (20)	-	-	4 (40)	4 (40)	10	16.7
	Health centre								
DPT 3	Yes	10 (100)	9 (90)	10 (100)	10 (100)	10 (100)	10 (100)	59	98.3
	No		1 (10)					1	1.7
Source	Outreach	10 (100)	9 (90)	8 (80)	10 (100)	6 (60)	6 (60)	49	81.7
	Hospital	-	-	2 (20)	-	4 (40)	4 (40)	10	16.7
	Health centre	-							
	No response		1 (10)					1	1.7

Variable	Responses	Frequency (%)						Total	
Strata 2		Cluster						Frequency	Percentage
		10	11	12	13	14	15		
Measles	Yes	9 (90)	8 (80)	10 (100)	9 (90)	10 (100)	9 (90)		
	No	1 (10)	2 (20)	-	1 (10)	-	1 (10)		
Source of Measles	Outreach	8 (80)	8 (80)	8 (80)	9 (90)	6 (60)	4 (40)	43	71.7
	Hospital			2 (20)		4 (40)	5 (50)	11	18.3
	Health centre	1 (10)						1	1.7
	No Response	1 (10)	2 (20)		1 (10)		1 (10)	5	8.3
Immunisation Status	Not	-	-	-	-	-	-		
	Partially	1 (10)	2 (20)	-	1 (10)	-	1 (10)	5	8.3
	Fully	9 (90	8 (80	10 (100)	9 (90)	10 (100)	9 (90)	55	91.7
Was Child fully immunised	Yes	9 (90)	8 (80	10 (100)	9 (90)	10 (100)	9 (90)	55	91.7%

Source: Field data, 2008

EVALUATION FORM, REASONS FOR IMMUNISATION FAILURE

Why was child not fully immunised									
Demand of service	Unaware of need for 2nd and 3rd dose		1 (20)					1	20.0
	Unaware of need for immunisation								
	place and time of immunisation unknown								
Lack of motivation	Postponed until another time						1 (20)	1	20
	No faith in								
	Immunisation								
	Rumours								
Obstacle									
	Time of immunisation inconvenient	1 (20)	1 (20)		1 (20)			3	60

Source: Field data, 2008

EVALUATION FORM, INFANT IMMUNISATION-EPI COVERAGE SURVEY

Strata 3			Cluster				Total	
		16	17	18	19	20	Frequency	Percentage
Sex	Male	6 (60)	6 (60)	4 (40)	7 (70)	6 (60)	29	58.0
	Female	4 (40)	4 (40)	6 (60)	3 (30)	4 (40)	21	42.0
ImmunisationCard	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	50	100
	No	-	-		-	-		
BCG	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	50	100
	No	-	-		-	-		
BCG Scar	Yes	9 (90)	8 (80)	8 (80)	8 (80)	9 (90)	42	84.0
	No	1 (10)	2 (20)	2 (20)	2 (20)	1 (10)	8	16.0
Source of BCG	Outreach		5 (50)	4 (40)	2 (20)	2 (20)	13	26.0
	Hospital	10 (100)	-	1 (10)	1 (10)	1 (10)	13	26.0
	Health centre		5 (50)	5 (50)	7 (70)	7 (70)	24	48.0

Variable	Responses	Frequency (%)					Total	
Strata 3		Cluster					Frequency	Percentage
		16	17	18	19	20		
DPT 1	Yes	10 (100)	10 (100)	10 (100)	10 (100)	10 (100)	**50**	100
	No	-	-	-	-	-		
Source	Outreach		7 (70)	8 (80)	5 (50)	8 (80)	28	56.0
	Hospital	9 (90)	-				9	18.0
	Health centre	1 (10)	3 (30)	2 (20)	5 (50)	2 (20)	13	26.0
DPT 2	Yes	9 (90)	10 (100)	10 (100)	10 (100)	10 (100)	49	98.0
	No	1 (10)	-	-	-	-	1	2.0
Source	Outreach	-	10 (100)	10 (100)	6 (60)	10 (100)	36	72.0
	Hospital	8 (80)		-	2 (20)		10	20.0
	Health centre	1 (10)			2 (20)		3	6.0
No response		1 (10)					1	2.0
DPT 3	Yes	9 (90)	10 (100)	10 (100)	10 (100)	10 (100)	49	98.0
	No	1 (10)					1	2.0
Source	Outreach		10 (100)	10 (100)	6 (60)	10 (100)	36	72.0
	Hospital	8 (80)	-	-	-		8	16.0%
	Health centre	1 (10)			4 (40)		8	16.0%
	No response	1 (10)					1	2.0

Variable	Responses	Frequency (%)					Total	
Strata 3		Cluster					Frequency	Percentage
		16	17	18	19	20		
Measles	Yes	9 (90)	9 (90)	10 (100)	9 (90)	8 (80)	45	90.0
	No	1 (10)	1 (10)	-	1 (10)	2 (20)	5	10.0
Source of Measles	Outreach		10 (100)	9 (90)	5 (50)	7 (70)	31	62.0
	Hospital	8 (80)	-	-	1 (10)	-	9	18.0
	Health centre	1 (10)		1 (10)	3 (30)	1 (10)	6	12.0
	No Response	1 (10)			1 (10)	2 (20)	4	8.0
Immunisation Status	Not		-	-	-	-		
	Partially	1 (10)		-	1 (10)	2 (20)	4	8.0
	Fully	9 (90	10 (100)	10 (100)	9 (90)	8 (80)	46	92.0

Source: Field data, 2008

EVALUATION FORM, REASONS FOR IMMUNISATION FAILURE

Was Child fully immunised	Yes	9 (90	10 (100)	10 (100)	9 (90	8 (80)	46	92.0
	No	1 (10)			1 (10)	2 (20)	4	8.0
Why was child not fully immunised	Demand of service							
	Lack of motivation							
	Obstacle							
Obstacle	Place of immunisationtoo far	1 (25)					1	25
No response					1 (25)	2 (50)	3	75

Source: Field data, 2008

EVALUATION FORM, INFANT IMMUNISATION-EPI COVERAGE SURVEY

Strata 4			Cluster			Total	
		21	22	23	24	Frequency	Percentage
Sex	Male	5 (50)	8 (80)	6 (60)	6 (60)	41	68.3
	Female	5 (50)	2 (20)	4 (40)	4 (40)	19	31.7
Immunisation Card	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No	-	-	-	-		
BCG	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No	-	-		-		
BCG Scar	Yes	10 (100)	10 (100)	9 (90)	9 (90)	38	95.0
	No	-	-	1 (10)	1 (10)	2	5.0
Source of BCG	Outreach	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	Hospital						
	Health centre						
		21	22	23	24		
DPT 1	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No	-	-	-	-		
Source	Outreach	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	Hospital						
	Health centre						
DPT 2	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No		-	-	-		
Source	Outreach	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	Hospital	-	-	-	-		
	Health centre						

DPT 3	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No						
Source	Outreach	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	Hospital		-	-			
	Health centre						
	No response						
		21	22	23	24		
Measles	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No						
Source of Measles	Outreach	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	Hospital		-				
	Health centre						
	No Response						
Immunisation Status	Not		-	-	-		
	Partially						
	Fully	10 (100)	10 (100)	10 (100)	10 (100)	40	100

Source: Field data, 2008

EVALUATION FORM, REASONS FOR IMMUNISATION FAILURE

Was Child fully immunised	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No						
Why was child not fully immunised	Demand of service						
	Lack of motivation						
	Obstacle						

Source: Field data, 2008

EVALUATION FORM, INFANT IMMUNISATION-EPI COVERAGE SURVEY

Strata 5			Cluster			Total	
		25	26	27	28	Frequency	Percentage
Sex	Male	3 (30)	5 (50)	6 (60)	2 (20)	16	40.0
	Female	7 (70)	5 (50)	4 (40)	8 (80)	24	60.0
ImmunisationCard	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No	-	-	-	-		
BCG	Yes	9 (90)	10 (100)	10 (100)	10 (100)	39	97.5
	No	1 (10)	-		-	1	12.5
BCG Scar	Yes	5 (50)	10 (100)	10 (100)	7 (70)	32	80.0
	No	5 (50)	-		3 (30)	8	20.0
Source of BCG	Outreach	1 (10)	10 (100)	9 (90)	2 (20)	22	55.0
	Hospital	2 (20)			1 (10)	3	15.0
	Health centre	6 (60)		1 (10)	7 (70)	14	35.0
		1 (10)				1	2.5
		25	26	27	28		
DPT 1	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No	-	-	-	-		
Source	Outreach	1 (10)	10 (100)	10 (100)		21	52.5
	Hospital	1 (10)			1 (10)	2	5.0
	Health centre	8 (80)			9 (90)	17	42.5

DPT 2	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No		-	-	-		
Source	Outreach	1 (10)	10 (100)	10 (100)		21	52.5
	Hospital	1 (10)	-	-	-	1	2.5
	Health centre	8 (80)			10 (100)	18	45.0
DPT 3	Yes	10 (100)	10 (100)	10 (100)	10 (100)	40	100
	No						
Source	Outreach	1 (10)	10 (100)	10 (100)		21	52.5
	Hospital	1 (10)	-	-	-	1	2.5
	Health centre	8 (80)			10 (100)	18	45.0
Measles	Yes	9 (90)	8 (80)	10 (100)	10 (100)	37	92.5
	No	1 (10)	2 (20)			3	7.5
Source of Measles	Outreach	1 (10)	8 (80)	10 (100)		19	47.5
	Hospital	1 (10)	-			1	2.5
	Health centre	7 (70)			10 (100)	17	42.5
	No Response	1 (10)	2 (20)			3	7.5
ImmunisationStatus	Not	-	-	-	-		
	Partially	2 (20)	2 (20)			4	10.0
	Fully	8 (80)	8 (80)	10 (100)	10 (100)	36	90.0

Source: Field data, 2008

EVALUATION FORMS, REASONS FOR IMMUNISATION FAILURE

Was Child fully immunised	Yes	8 (80)	8 (80	10 (100)	10 (100)	36	90
	No	2 (20)	2 (20)			4	10
Why was child not fully immunised	Demand of Service						
Demand of Service	Unaware of need for 2nd and 3rd dose						
	Unaware of need for immunisation		2 (50)			2	50
	place and time of immunization unknown						
Lack of motivation							
Obstacle	Mother too busy	2 (50)				2	50

Source: Field data, 2008

EVALUATION FORM, INFANT IMMUNISATION-EPI COVERAGE SURVEY

Strata 6	Responses	Cluster		Total	
		29	30	Frequency	Percentage
Sex	Male	5 (50)	2 (20)	7	35.0
	Female	5 (50)	8 (80)	13	65.0
ImmunisationCard	Yes	10 (100)	10 (100)	20	100.0
	No	-	-		
BCG	Yes	10 (100)	10 (100)	20	100.0
	No	-	-		
BCG Scar	Yes	9 (90)	6 (60)	15	75.0
	No	1 (10)	4 (40)	5	25.0
Source of BCG	Outreach	5 (50)	0	5	25.0
	Hospital		4	4	20.0
	Health centre	5 (50)	6	11	55.0
DPT 1	Yes	10 (100)	10 (100)	20	100
	No	-	-		
Source	Outreach	8 (80)		8	40.0
	Hospital		2 (20)	2	10.0
	Health centre	2 (20)	8 (80)	10	50.0
DPT 2	Yes	10 (100)	10 (100)	20	100
	No		-		
Source	Outreach	10 (100)		10	50.0
	Hospital		1	1	5.0

			(10)		
	Health centre		9 (90)	9	45.0
DPT 3	Yes	10 (100)	10 (100)	20	100
	No				
Source	Outreach	10 (100)		10	50.0
	Hospital		1 (10)	1	5.0
	Health centre		9 (90)	9	45.0
Measles	Yes	10 (100)	9 (80)	19	95.0
	No		1 (10)	1	5.0
Source of Measles	Outreach	10 (100)		10	50.0
	Hospital		1 (10)	1	5.0
	Health centre		8 (80)	8	40.0
	No Response		1 (10)	1	5.0
ImmunisationStatus	Not	-	-		
	Partially		1 (10)	1	5.0
	Fully	10 (100)	9 (90)	19	95.0

Source: Field data, 2008

EVALUATION FORM, REASONS FOR IMMUNISATION FAILURE

Was Child fully immunised	Yes	10 (100)	9 (90)	19	95.0
Was child not fully immunized	Demand of service				
	Lack of motivation				
	Obstacle				

Source: Field data, 2008

ASUTIFI DISTRICT - OPTIMUM ACCESSIBILITY MAP

EVALUATION FORM

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF HEALTH SCIENCE

SCHOOL OF MEDICAL SCIENCE

DEPARTMENT OF COMMUNITY HEALTH

4.1. INTRODUCTION

Dear Sir/madam

Good morning

I am Hanson Mensah Akutteh, a student from the Kwame Nkrumah University of Science and Technology Undertaking a Study on immunisation in this community. I would like you to assist me fill this questionnaire. The questionnaire designed, is to investigate the health and immunisation status of eligible children under two to the six vaccine preventable diseases. It also seeks to find out whether children have been protected against the disease by receiving all the vaccines and in the right dose and at the right time. The study will also find the dropout rate of multiple doses as well between vaccines to give opportunity to mother and service providers to identify children in need of immunisation as well as having the ability to assess recent clinic practices to determine if immunisation services have improved over time. The study will further find the reasons why eligible children sometimes do not receive all the vaccines and find ways to address the challenges.

You are kindly requested to provide frank answers to the items on the questionnaire. The information provided, was regarded as confidential and your identity as well as that of your community was well protected. Thank you.

Using the Validated standard WHO Expanded Program on Immunisation.

4.1.1 SECTION A

This section is looking at the immunisation status of eligible infants by card and History

4.1.0.1. INFANT IMMUNISATION CLUSTER FORM.

CLUSTER NUMBER	**Name of Child**												**Total**	
IMMUNISATION COVERAGE														
COMMUNITY:														
Range of birth dates. From----------Until----------														card
Cluster number	1	Area:			date:								card	,history
child number in cluster		1	2	3	4	5	6	7	8	9	10	11		
Date of birth														
Sex (M,F)														
Immunisation card	Yes/No													
	Date/ +/0													
	Scar: Yes/No/A													
BCG	Source													
	Date/ +/0													
DPT.1	Source													
	Date/ +/0													
DPT.2	Source													
	Date/ +/0													
DTP.3	Source													
	Date/ +/0													
OPV.1	Source													
	Date/ +/0													
OPV.2	Source													
	Date/ +/0													
OPV.3	Source													
	Date/ +/0													
Measles	Source													
	Not													
	partially													
Immunisation status	Fully													

fully immunised	Yes/No													
tally of household visited														
key: Date/+/0	Source													
date:copy date of Immunisation from card, if available	OUT: outreach													
: mother report Immunisation was given	HOS: Hospital													
0: Immunisation not given	HC: Health centre													
	PRIV: Private/ non governmental													

4.1.1 SECTION B

4.1.1.1 REASONS FOR IMMUNISATION FAILURE CLUSTER FORM

This Section seeks to find out the reasons, for immunisation failure among eligible children in the sub-district.

CLUSTER FORM										
IMMUNISATION COVERAGE										
COMMUNITY.1								Total		
Cluster number	1	Area:	date:	range of birthdates		FROM UNTIL		card	card, history	
NOTE: ASK ONLY ONE QUESTION: why was the child not fully immunised?" mark (X) the single most important reason according to your judgment										

Child number in cluster		1	2	3	4	5	6	7	8	9	10	
Sex (M or F)												
Immunisation status	Not immunised											
	partially immunised											
	fully immunised											
Lack of information	unaware of need to return for 2nd or 3rd dose.											
	unaware of need for immunisation											
	wrong ideas about contraindication.											
	fear of side reactions											

	place and time of immunisation unknown												
	Postponed until another time												
	No faith in immunisation												
Lack of motivation	rumours												
	place of immunisation too far												
	time of immunisation inconvenient												
	vaccinator absent												
	vaccine not available												
	mother too busy												
	family problems including illness of mother												
	child ill, not brought												
	child ill, brought but not giving immunisation												
	long waiting time												
Obstacle	did not know the date of the												

	campaign													
	not free at the time													
	religious reasons													
	lack of general information													
	forget the child's age													
	Tally of the household visited				Name of interviewer						Signature			

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SCHOOL OF MEDICAL SCIENCE

DEPARTMENT OF COMMUNITY HEALTH

4.2. QUESTIONNAIRE

4.2.1 Key informant interview schedule for mothers/ caregivers

Introduction:

Dear Sir/madam

Good morning

I am Hanson Mensah Akutteh, a student from the Kwame Nkrumah University of Science and Technology undertaking a Study on immunisation in this community. I would like you to assist me fill this questionnaire. The questionnaire designed, is to investigate the health and immunisation status of a child in the community. The study will give the opportunity to both mother and service providers to identify children in need of immunisation as well as having the ability to assess recent clinic practices to determine if immunisation services have improved over time. This study will find out the effect of attitude, knowledge and practices of mothers on immunisation programme.

You are kindly requested to provide frank answers to the items on the questionnaire. The information provided, was regarded as confidential and your identity as well as that of your community was well protected. Thank you.

NOTE:

INSTRUCTION: Tick (☑) the response that applies to you

OR

Provide your own response where no response has been provided.

Did you come to the immunisation session last month?

Yes [ ] No [ ]

Do you think, every mother knows when they should immunise their children?

Yes [ ] No [ ]

If No, what could be the reasons for not knowing the times for immunization?

_____

_____

How many immunisations does your child need?

_____

_____

Can it be true that mothers do not bring their children for immunisation because they are ignorant?

_____

_____

What happened the last time you brought your child for immunisation?

_____

_____

What happened when you arrive at the clinic with your child?

_____

_____

How did the child act after his last immunisation?

_____

_____

Why did you think some mothers do not immunize their children?

_____

_____

What did your husband say or do the last time you brought your child for immunisation?

_____

_____

Do you have to wait very long the last time you brought your child to the Out-reach centre for immunisation?

_____

_____

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QUESTIONNAIRE

4.2.2 Key informant interview schedule for health worker

Introduction:

Dear Sir/madam

Goodmorning

I am Hanson Mensah Akutteh, a student from the Kwame Nkrumah University Of Science and Technology Undertaking a Study on immunisation in this community. I would like you to assist me fill this questionnaire. The questionnaire designed, is to investigate the health and immunisation status of eligible children in the district. The study is designed to identify the attitude and practice of health workers during immunisation and to assess the quality of service delivery of immunization in the outreach centres.

You are kindly requested to provide frank answers to the items on the questionnaire. The information provided, was regarded as confidential and your identity as well as that of your community was well protected. Thank you.

NOTE:

INSTRUCTION: Tick (☑) the response that applies to you

OR

Provide your own response where no response has been provided

What time do you conduct the immunisation program during the day and why?

_____

_____

Do you often meet the children who are eligible for the program?

Yes [ ] No [ ]

What in your opinion could account for the absence or failure to meet them?

_____

_____

Is the community a typical farming community where mothers move to the fields to undertake farming activity ?

Yes [ ] No [ ]

How many staff attend immunisation schedule and why?

_____

_____

Do you think you are doing more than one persons job?

Yes [ ] No [ ]

Do you get tired during the program and postponed program?

Yes [ ] No [ ]

Are you motivated enough to cover areas/ communities due for immunisation and why?

_____

_____

Do you have enough logistics to complete immunisation.

Yes [ ] No [ ]

Do you receive feedback on coverage after immunisation from supervisors

Yes [ ] No [ ]

How many times do supervisors visit, you centre in a month?

_____

_____

What are your responses to mothers who visit outreach units for immunisation without immunisation card or any problem relating to immunisation?

_____

_____

Are mothers afraid to ask you questions about things you have told them which they do not understand?

Yes [ ] No [ ]

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QUESTIONNAIRE

4.2.3 Key informant interview schedule for supervisors

Introduction:

Dear Sir/madam

Good morning

I am Hanson Mensah Akutteh, a student from the Kwame Nkrumah University Of Science and Technology Undertaking a Study on immunisation in this community. I would like you to assist me fill this questionnaire. The questionnaire designed, is to investigate the health and immunisation status of eligible children in the district. The study is designed to identify the attitude and practice of health workers during immunisation and to assess the quality of service delivery of immunization in the outreach centres.

You are kindly requested to provide frank answers to the items on the questionnaire. The information provided, was regarded as confidential and your identity as well as that of your community was well protected. Thank you.

NOTE:

INSTRUCTION: Tick (☑) the response that applies to you

OR

Provide your own response where no response has been provided.

Do you supervise all the sub-districts with a plan schedule?

Yes [ ] No [ ]

Are you able to honor this scheduled program?

Yes [ ] No [ ]

Can you give reasons why you are unable to meet schedule if the above is No?

_____

_____

Do you always meet staff at post at you visit?

Yes [ ] No [ ]

Do you inform staff of your program for a visit?

Yes [ ] No [ ]

What in your opinion are the most challenging issues during your visits to the Sub-districts?

_____

_____

Do you have adequate logistic for supervisory activities?

Yes [ ] No [ ]

What could be the likely factors that militate against achieving your schedule?

_____

_____

Do health workers respond to feedback on time?

Yes [ ] No [ ]

Do you have adequate staff to cover the population target for the immunisation schedule.

Yes [ ] No [ ]

How many staff in your opinion is suitable for the program in a sub-district to achieve target and give reasons?

_____

_____

How are the logistics for immunisation of infants managed in the district?

_____

_____

_____

_____

_____

_____

_____

_____

Do you have enough resources to manage EPI program?

Yes [ ] No [ ]

If No could you give reasons why the problem exist

_____

_____

_____

_____