PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES IN GHANA

BY
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DECLARATION

I declare that this thesis is the result of my own research except where specific references have been made. I confirm the originality of this work as my own under the tutelage and supervision of my team of advisors and that this work has not been submitted in part or in whole to any institution for an award of a degree.

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DEDICATION

This Thesis is dedicated to and in honour of

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ABSTRACT

Background: The Okwawuman Mutual Health Insurance Scheme (OMHIS) had been operating since 2002. However, performance reviews have reported mainly on deficits/surpluses, coverage rates and effects on health services utilization.

Objective: The study seeks to assess the performance of the scheme with respect to the performance ratios and its impact on the utilization of differential components of health services and also on maternal care outcomes including caesarean section, vacuum extraction, stillbirth and maternal mortality.

Method: A cross-sectional and time series study design was used to collect both primary and secondary data through self administered questionnaires, structured interview guides and checklists. Secondary data were collected from the District Health Directorates and the District Hospitals spanning a period of eight years: Four years before and after the introduction of the OMHIS. The financial and membership records of the OMHIS were also studied. Primary data were gathered through a cross-sectional community survey, hospital exit interviews and key informant interviews. Logistic regression was employed for the test of associations.

Results: The overall combined ratio of the OMHIS for the period under review was <1.0 making it a viable scheme. Health services utilization was generally increased against a declining length of stay which was influenced by complications of caesarean section and vacuum extraction (p= 0.000) rather than mode of payment. Drug availability was 95.29% and the prescription of generic (rINN) or proprietary drugs was not influenced by insurance status (P_{rINN}= 0.777; $P_{Proprietary}$= 0.213). The mean annual caesarean section rate was high, 21-22% and that for vacuum extraction was low, 0.95-1.35%. There was a mean annual excess caesarean section of 151 cases. Caesarean section and vacuum extraction were not significantly affected by health insurance [$OR_{C/S}$= 0.337, 95% CI= 0.025-4.493 (Vs. Uninsured); $OR_{V/E}$= 2.970, 95% CI= 0.223-39.627 (Vs. Uninsured)]. Insurance impacted significantly on stillbirth (OR= 3.223, 95% CI= 1.527-6.800). Among the medical determinants of stillbirth, low birth weight (<2.5kg) had the strongest impact (OR= 89.979, 95% CI= 12.002-674.564). Stillbirth was more affected by per capita ANC attendance than supervised delivery. Insurance did not impact significantly on maternal mortality [OR= 1.587, 95% CI= 0.325-7.761 (Vs. Insured)] but rather medical determinants; with complications of labour having the strongest impact (OR= 30.320, 95% CI= 9.748-94.309). Supervised delivery played a more pivotal role in influencing maternal mortality than per capita ANC attendance.

Conclusion: The Okwawuman Mutual Health Insurance Scheme was viable with government subvention. The scheme caused an increased utilization of the health services but did not influence length of stay in hospital and prescription pattern. The scheme also significantly impacted on stillbirth but was not significantly associated with maternal mortality, caesarean section and vacuum extraction.

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ACRONYMS

ANC	Antenatal Care
CHS	College of Health Sciences
DANIDA	Danish International Development Agency
DHMT	District Health Management Team
DHS	Demographic and Health Survey
GDP	Gross Domestic Product
HFH	Holy Family Hospital
KGH	Kwahu Government Hospital
MHO	Mutual Health Organization
MOH	Ministry of Health
NHIA	National Health Insurance Authority
NHIL	National Health Insurance Levy
NHIS	National Health Insurance Scheme
PNC	Postnatal Care
PPS	Prepayment Scheme
SPH	School of Public Health
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
VAT	Value Added Tax
WHO	World Health Organization
WIFA	Women in Fertility Age (15 – 49yrs)

CHAPTER ONE

INTRODUCTION

The "user – fee" system was officially introduced into the country in 1985 (MOH, 2002). The introduction of this policy resulted in the first observed decline in the utilization of health services in the country. This decline was general and so the utilization of maternal care services was also affected. It was estimated that, nationwide, outpatient utilization dropped by more than half after the 1985 fee increase (Waddington and Enyimayew, 1990). In urban areas, utilization recovered after several months, but it took some years for attendances in rural areas to reach their previous levels (Bennett et al, 1994). In Kenya, a 38 per cent decline in MOH hospital outpatient and health centre attendances followed the introduction of fees in December, 1989. However, it was observed that, the more recent and better planned and managed fee increase did not have such a negative effect (Bennett et al, 1994). The story was not different for Rwanda which re-introduced a similar policy in 1996 to generate supplemental revenue. The result was a drop in utilization of basic health care from 0.3 annual consultations per capita in 1997 to a national average of 0.25 in 1999 (Pia Schneider and Dmytraczenko, 2003). Several other countries including Burkina Faso, Gambia, Lesotho, Mozambique, Swaziland, Zambia and Zimbabwe which also applied this policy similarly observed decreased utilization of health services (Bennett et al, 1994).

In contrast to the observed trend in the aforementioned countries, many francophone countries including, Benin, Burundi, Cameroon, Guinea, Mauritania, Senegal, and Togo observed increased utilization (Bennett et al, 1994). This was as a result of the reinvestment of the revenue generated into the institutions with the subsequent improvement in the quality of service. The Table 1.1.1 below summarizes the effect on utilization of health services across some African countries after the introduction of "user – fees". In fact, the "user – fee" policy did not go down well with many. Some described it as "a tool for moderating demand than a source of revenue" (Creese, 1997).

TABLE 1.1.1:EFFECT ON UTILIZATION AFTER INTRODUCTION OF "USER – FEES"

	Increase in Utilization	Decrease in Utilization
Francophone	Benin, Burundi, Cameroon, Guinea, Mauritania, Togo, Senegal	Burkina Faso
Anglophone	Sierra Leone	Gambia, Ghana, Kenya, Lesotho, Mozambique, Swaziland, Zambia, Zimbabwe

Source: Bennett and Ngalande-Banda (1994)

> *"A contemporary commentator said of Vietnam: Access to health care increasingly depends on income, and another said of China: Access to health care is largely based on the patient's ability to pay and many cannot afford care" (Creese, 1997).*

Following the calls for a more humane system of health financing, health insurance schemes of various types sprang up in several countries across sub-Saharan Africa.

Kutzin defined health insurance as a means of financial protection against the risk of unexpected and expensive illness. He also described it as a form of savings set aside to cover relatively predictable contingencies (annual medical check-ups, for example) facing individuals or households (Kutzin, 1995). In another development, Pia Schneider and Dmytraczenko (2003) described health insurance as a mechanism that protects the insured against the risk of the financial consequences of an uncertain illness or accident. The insured individual is protected because, individual risk of illness or accident is pooled with the risk of other insurance scheme members thus minimizing individual risk since all members will not fall sick at the same time or within a short period of time.

There are many different types of health insurance schemes but the following are basic to the sub-region (Bennett et al, 1994).

1) **SOCIAL HEALTH INSURANCE**: This is sometimes called "*national health insurance"* and is generally compulsory and organized by the government. The premiums are paid by both the employer and employee. It often principally applies to those in formal employment. Two types of schemes can be distinguished:

a) The Primary Benefit Model: Where health care benefits are financed by a specific health insurance contribution.
b) The Secondary Benefit Model: Where health care benefits are financed from general social security contributions which also cover other types of benefits.

2) EMPLOYER BASED SCHEMES: This is a form of group insurance established around employers. Sometimes the insurance agency is a non-profit employee cooperative.

3) COMMUNITY BASED HEALTH INSURANCE: This is a type of Mutual Health Organization and is organized locally by the community. This type of scheme has a very strong social solidarity function. They are more often found in the rural areas. The premiums are paid by households, and it covers both the formal and informal sectors.

4) PRIVATE HEALTH INSURANCE: This is a voluntary type of scheme unlike the social health insurance. It generally covers the wealthiest part of the population. Individuals may choose to take out private insurance or it may be a perquisite associated with employment.

In Ghana presently, the community based health insurance or mutual health organizations form the basis of the national health insurance scheme. These are being amalgamated into the National Health Insurance Scheme (NHIS) which readily captures formal sector workers with monthly deductions made at source for their premium and contribution towards the National Health Insurance Levy (NHIL). Value Added Tax (VAT) accredited businesses also pay 2.5 per cent levy towards the NHIL which may serves as a re-insurance pool. Atim in 1998 described a Mutual Health Organisation (MHO) as:

> "A voluntary, non-profit insurance scheme, formed on the basis of an ethic of mutual aid, solidarity and the collective pooling of health risk, in which the members participate effectively in its management and functioning".

He elaborated that, Mutual Health Organizations are community and employment-based groupings particularly engaged in new and innovative approaches to the difficult issues of health care financing and access (Atim, 1998). The following Table (1.1.2) demonstrates the typology of mutual health organizations.

TABLE 1.1.2:MHO TYPOLOGY MATRIX

TYPE OF MHO	SOCIO-PROFESSIONAL BASE OR CRITERIA OF MEMBERSHIP	SIZE OR SCALE (Membership): (Small =<100; Medium = 100s; Large = 1000s and above)	RATIO OF ADMINISTRATIVE COST OF INCOME
(i) Traditional (clan or ethnic-based social network) type.	Usually based around members of an ethnic group or clan, not inclusive	Usually small to medium	Usually very high
(ii) Inclusive mutual health social movement or association type	Can be community, professional, enterprise or social movement (e.g. trade union) based	Small to large	Usually high
(iii) Co-managed (provider + community) mutual health scheme	As above for model 2; but community concerned manages first level (health centre) facility	Large	High
(iv) Community financing (or provider-managed) insurance scheme	Usually around a community (catchment area of a district hospital or health centre)	Medium to large	Very low or nil
(v) Medical Aid Societies	Can be community, professional, enterprise or social movement (e.g. trade union) based or a combination of all these	Large to very large	Usually low but union based ones may have reasonable level of participation.

Source: Atim (1998:58)

In a survey carried out by Aikins (2003) on DANIDA supported health schemes in Ghana, 37 schemes were discovered in 34 districts and their distribution is as shown in Table 1.1.3 below (Tables A1.5 and A1.6 in Appendix 1 provides details of the directory of health schemes in Ghana). This survey also revealed that, 41 per cent of the schemes were community based / mutual health organizations (Figure 1.1.1) and 37 per cent were operational (Figure 1.1.2) by the close of 2002.

TABLE 1.1.3:DISTRIBUTION OF THE TYPES OF HIS/MHOS

Region	Types of HIS/MHOs					
	Community based	Religion based	Community & Institutional based	District based	Institutional based	Total HIS/MHOs
Ashanti	0	0	1	2	0	3
Brong Ahafo	3	0	0	4	0	7
Central	0	0	0	1	1	2
Eastern	1	2	0	2	1	6
Gt. Accra	0	0	0	1	0	1
Northern	7	0	0	2	0	9
Upper East	0	0	0	1	0	1
Upper West	3	0	0	3	0	6
Volta	0	0	0	1	0	1
Western	1	0	0	0	0	1
Total	**15**	**2**	**1**	**17**	**2**	**37**

Source: Aikins (2003)

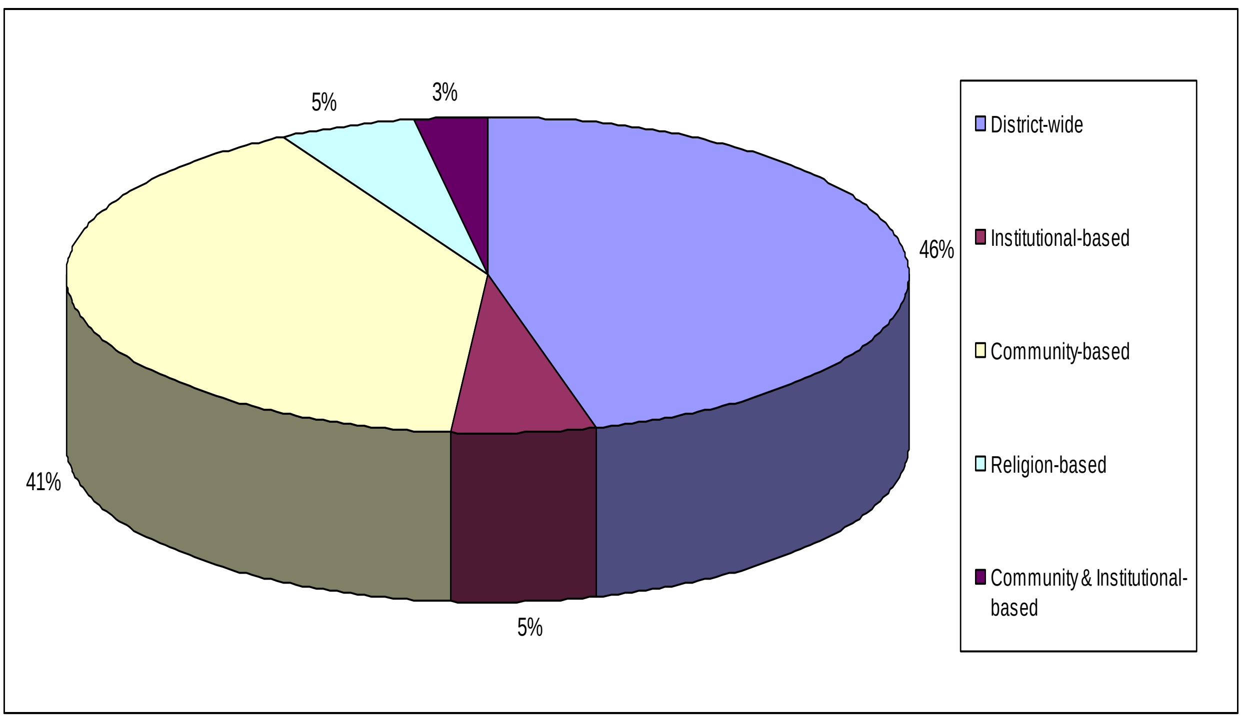


FIGURE 1.1.1: TYPES OF HIS/MHOS IN GHANA
Source: Aikins (2003)

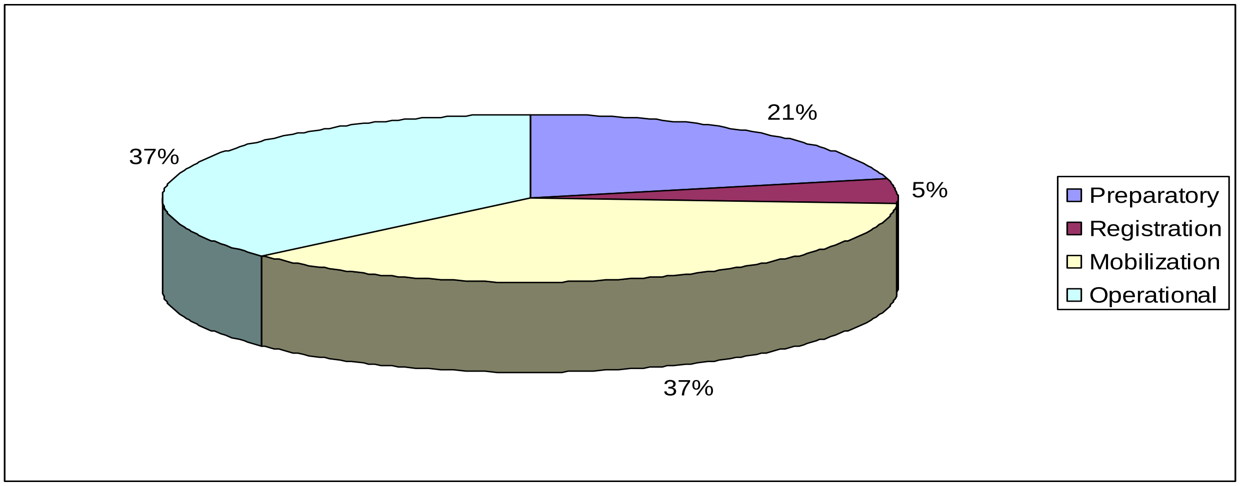


FIGURE 1.1.2: STATUS OF SCHEMES; 2002
Source: Aikins (2003)

More recently and with the introduction of the National Health Insurance Scheme, many of these schemes have coalesced into district wide Mutual Health Schemes forming the basis of the National Scheme. Nearly all districts in the country presently have district wide schemes and their distribution is shown in Table 1.1.4 below (NHIA, 2007).

There was a phenomenal increase in growth (74.43%) in national enrolment between 2005 and 2006 and less marked (46.96%) in 2007 (NHIA, 2007). The national coverage within the three years of operation is estimated at 52.07% (Table 1.1.5).

TABLE 1.1.4: REGIONAL DISTRIBUTION OF HEALTH SCHEMES IN GHANA

Region	**Total Number of Schemes**	**Total Enrolment**
Ashanti	24	2,370,021
Brong Ahafo	19	1,771,221
Central	13	916,983
Eastern	17	1,394,500
Greater Accra	10	1,066,544
Northern	16	1,197,081
Upper East	8	465,107
Upper West	8	296,464
Volta	15	830,422
Western	15	971,325

Source: NHIA, 2007

In fact, the community based health insurance schemes have been operative in the country for over a decade now. However, their translation into effects on the health indices has not been extensively researched in Ghana. Basically, only consequences on utilization have been reported. Maternal mortality is one of several health indices that give a fair view of the performance of a nation's health sector. This index is relatively high in Africa and its' reduction is among the region's Millennium Development Goals (MDG). This and several other health indices including stillbirth, caesarean section and assisted vaginal delivery (see Table 1.7.2) will better describe the performance of the health scheme than utilization alone.

TABLE 1.1.5: ANNUAL ENROLMENT AND GROWTH OF ALL HEALTH SCHEMES IN GHANA

Year	*No. of Schemes*	*Enrolment*	*% Growth*
2005	127	4,400,279	-
2006	138	7,675,568	74.43%
2007	145	11,279,678	46.96%
National Population: 21,664,000			
Percentage Coverage: 52.07%			

Source: NHIA, 2007

Biller et al (1998) defined maternal mortality as the death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration of the pregnancy, from any cause related or aggravated by the pregnancy but not from accidental and incidental causes.

Of all the statistics monitored by the WHO, maternal mortality has the most discrepancy between developed and under developed countries. There are issues of under reporting and misclassification (Biller et al, 1998). WHO and UNICEF, in conjunction with Johns Hopkins University reviewed the 1990 figure of 509,000 deaths world wide to 585,000 maternal deaths. One woman in fifty dies as a result of pregnancy related complications. Ninety nine per cent of maternal deaths occur in developing countries, particularly in Africa (Biller et al, 1998; Grieco, 2005).

Biller et al (ibid) further described the 585,000 maternal deaths each year as only the tip of the iceberg but that for every maternal death, 16 women suffer from illness during pregnancy, childbirth, or post-partum. Three hundred million women, representing more than 25 per cent of all adult women living in the developing world, suffer from long-term illnesses and injuries related to pregnancy and child birth (Biller et al, 1998). This is supported by Grieco (2005) who added that women in sub-Saharan Africa continue to face a 1 in 13 chance of dying from pregnancy and child birth, when the risk for women in the industrialized world is only 1 in 4,085.

Maternal mortality ratio in Africa remains the highest in the world with the average actually increasing from 870 per 100,000 live births in 1990 to 1,000 per 100,000 live births in 2001 (Grieco, 2005). It is estimated that, there will be 2.5 million maternal deaths, 2.5 million child deaths and 49 million maternal disabilities in the African region over the next decade if nothing is seriously done to halt the trend. The distribution of maternal mortality by country in sub-Saharan Africa is shown in Tables A2.4a and A2.4b in Appendix 2.

Presently, maternal mortality rates have reached record low levels in the developed countries though as recent as 1935, the maternal mortality rate in the United States was nearly 600 per 100,000; comparable to those seen in developing countries today (Biller et al, 1998).

In Ghana, out of 100,000 live births, 214 women die of complications of pregnancy and child birth (Collison et al, 2003). Map A1.1 in Appendix 1 shows the distribution of maternal mortality rate by region in Ghana for 2004 (Ghana Info. 2.0) and Figure A1.1 in Appendix 1 also shows maternal mortality rate by region for 2003/2004 (GHA_Ghana_MOH, 2004). In both years, 2003 and 2004, the Eastern Region had the highest rate of maternal deaths; 262.6 and 267 per 100,000 live births respectively. The Volta Region followed closely. However in 2007, the Western Region came first with the highest rate of 341.9 per 100,000 live births (Table 2.4.3 in Chapter 2).

However, the African story is different in Zegoua; a small Malian town with 22,000 inhabitants. Zegoua is nearly 500 kilometers south of the capital, Bamako. Since January 2002, there had been no recorded case of neonatal or maternal mortality in Zegoua and nearby surrounding villages (Grieco, 2005).

The lesson from Zegoua is that, the women from this town and surrounding communities organized themselves into cooperatives and the proceeds from the crops were used to fund the health care needs of members as follows:

1) Consultations to check on the health of babies and new mothers
2) Family planning services
3) Vaccinations
4) Drugs for treating malaria

This is similar to the “Awo pa health scheme” in Larteh in the Eastern Region of Ghana (Aikins, 2003).

In Africa, only 42 per cent of births are attended by skilled personnel and this may be one reason why maternal mortality is so high (Pia Schneider and Dmytraczenko, 2003; Grieco, 2005). Furthermore; the percentage of GDP (Gross Domestic Product) devoted to health in sub-Saharan Africa remains between one per cent and 3.7 per cent compared to the large percentage spent on arms thus further compromising the already precarious health care situation on the sub-continent (Grieco, 2005). The challenge is how health insurance can change this rather gloomy picture around for the better.

Perinatal mortality is another important indicator of obstetric care, health status and socio-economic development (Weiner et al, 2003; Kusiako et al, 2000; Van Geertruyden JP. et al, 2004). Kusiako et al (2000) and Weiner et al (2003) have defined perinatal mortality as the death of a fetus after 28 weeks’ gestation or of a neonate during the first seven days of life.

In 1995, WHO estimated the number of perinatal deaths worldwide to be greater than 7.6 million, with 98 per cent of these deaths occurring in developing countries. Africa alone recorded 75 per 1000 births, a modest decline from the rate of 81 per 1000 births in 1983. This is however still substantially higher than in more developed countries, where the estimated rate was 11 per 1000 births. The estimate for Asia lies in the range of 36-74 per 1000 births (Weiner et al, 2003; Kusiako et al, 2000).

Perinatal mortality has been largely attributed to complications of childbirth (Weiner et al, 2003; Kusiako et al, 2000) and Table A1.1 in Appendix 1 provides some details. The influence of health insurance on this index has not been well established in Ghana and for that matter has been selected as one of the focus of this research. However, in present times, the use of perinatal death is no longer informative and because of difficulties in measurement and aetiologic differences between the two components of perinatal death-stillbirth and early neonatal death, its value has become limited. The aetiologic determinants of stillbirth and early neonatal death have diverged sharply, with many fewer neonatal deaths caused by asphyxia and relatively many more caused by congenital anomalies (Kramer et al, 2002). For the purposes of this research therefore, stillbirth is used as the indicator of maternal care outcome in place of perinatal mortality. Stillbirth is an indicator of access to and quality of antenatal and delivery care and also a development indicator [development status (developed vs. less/least developed): OR= 0.43; 95% CI= 0.33-0.55; p< 0.001] (Say et al, 2006).

The definition of stillbirth is dynamic, evolving over time. The World Health Organisation (WHO) in 1950 provided the core definition of "fetal death" upon which the evolving definition of stillbirth is built. The World Health Organisation defined fetal death as:

> "death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy and which is not an induced termination of pregnancy. The death is indicated by the fact that after such expulsion or extraction, the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps (WHO, 1950)".

The difference in the various definitions of stillbirth is based on the maturity and/or weight of the fetus and several definitions have stated gestational ages ranging from 19 to 28 completed weeks and fetal weight ranging from 350 to 500g. Prior to the amendment of the law in respect of the definition of stillbirth in 1992, the United Kingdom had considered the definition of stillbirth as any child delivered after the 28th week of pregnancy that does not afterwards breathe or show any sign of life (Lewis and Chamberlain, 1991). Presently, "the law in England and Wales (Section 41 of the Births and Deaths Registration Act 1953 as amended by the Stillbirth Definition Act 1992), Scotland (Section 56(1) of the Registration of Births, Deaths and Marriages (Scotland) Act 1965 as amended by the stillbirth Definition Act 1992) and Northern Ireland (Births and Deaths Registration Order 1976 as amended by the Stillbirth Definition Northern Ireland Order 1992), requires that any "child" expelled or issued forth from its mother after the 24th week of pregnancy that did not breathe or show any other signs of life be registered as a stillbirth (RCOG, 2005)". However Sweden continues to restrict registration of stillbirths to those fetuses that were expelled at, and after 28 weeks of gestation (Kramer et al, 2002). The Ghana Health Services vital statistics record also still maintains 28 weeks and after for the definition of stillbirth.

In the United States, federal guidelines recommend reporting fetal deaths whose birth weight is over 350g or those over 19 weeks gestation (CDC, 1997). In Australia, any stillborn fetus weighing more than 400g, or more than 20 weeks in gestation, must have its birth registered (Lahra et al, 2007). Similarly, Silver et al (2007) and Turkington (2008) put the dividing line between abortion and stillbirth at 20 weeks gestation. Turkington (ibid) also referred to stillbirth as intra-uterine fetal death (IUFD) and further described it as unintentional end of a pregnancy. Kramer et al (2002) put the dividing line at 20 and 22 weeks of gestation and/or fetal weight greater than 500g. For this research however, the 28th week of pregnancy is used as the cut off in the definition of still birth which definition is given by Lucas and Gilles (1990) below.

$$\text{Still Birth Rate} = \frac{\text{Annual number of fetal deaths after 28 weeks gestation}}{\text{Total number of births in a year}}$$

The 28th week was used as the cut-off point in this research because the investigation employed secondary data that was captured using 28 weeks and above for the definition of stillbirth.

Stillbirth is a relatively common, but often random, occurrence. The mean stillbirth rate in the United States is approximately 1 in 115 births giving a yearly average of 26,000 stillbirths, thus an estimated 1 stillbirth every 20 minutes. In Australia, England, Wales and Northern Ireland, the rate is about 1 in every 200 births, and in Scotland, 1 in 167 births (GROS, 2008; CDC, 1997; Lahra et al, 2007; RCOG, 2005). The stillbirth rates in developing countries are much higher than for the developed countries.

The causes of a large percentage of human stillbirths remain unknown and are sometimes described as the “sudden antenatal death syndrome (SADS)”. In instances where the causes are known, the following have been documented: bacterial infection, birth defects, chromosomal aberrations, growth retardation, intrahepatic cholestasis of pregnancy, maternal diabetes mellitus or high blood pressure, postdate pregnancy, placenta abruption, physical trauma, radiation poisoning, rhesus disease, umbilical cord accidents, maternal consumption of nicotine, alcohol, recreational drugs (excluding cannabis), and/or pharmaceutical drugs contraindicated in pregnancy (Collins J.H, 2002; ollins et al, 2008).

In another development, health insurance has been observed to influence the mode of delivery and thus, assisted vaginal delivery and caesarean sections are an important indicator for assessing the impact of health insurance.

Cai et al (1998) found that, caesarean section rate was on the increase in China; the highest proportion associated with government insurance. They found that, the high rate of caesarean sections were surprisingly given the lack of the factors that usually lead to caesarean sections. This was an early indication that, emerging forms of health insurance will lead to an excessive emphasis on costly, high-technology medical care in China. This finding is corroborated by Fisher et al (1995) and Murray (2000) who discovered that, privately insured women were significantly more likely to experience assisted vaginal and caesarean deliveries than those receiving care in the public hospital system.

In Ghana community based health insurance schemes have been operating in parts of the country for over a decade and the time is just but ripe to assess the impact on some health indices as have been mentioned above so as to apply the results generated in advising the national health insurance authority which is in its early stages and the health delivery services as well as the health training institutions.

1.2 PROBLEM STATEMENT

The United Nations agreed on eight Millennium Development Goals to be attained by 2015 and among these goals is the reduction of maternal mortality ratio by 75 per cent. Maternal mortality ratios have rather been on the high side in the developing countries and worse in Africa with ratios well above 200 per 100,000 live births (Grieco, 2005; Akosa, 2005).

In recent times, health organizations and programmes around the globe have dedicated appreciable resources to improve women's and children's health including their access to effective care. In spite of all these efforts, maternal mortality ratios are still high suggesting that, maternal health care is not effectively reaching the targeted population.

The Table 1.2.1 below demonstrates some factors considered to influence maternal mortality in two developing countries – Bolivia in South America and Rwanda in Central Africa. The example of Bolivia and Rwanda showed that, use of modern contraceptive services, antenatal care, and professional assistance during delivery were low and thus contributed to the high maternal and infant mortality rates (Pia Schneider and Dmytraczenko, 2003).

TABLE 1.2.1: MATERNAL HEALTH INDICATORS IN RWANDA AND BOLIVIA

INDICATOR	**RWANDA DHS 2000**	**BOLIVIA DHS 1998**
Contraceptive prevalence rate, modern methods, all women	2.7%	16.5%
Percentage of women with at least 1 antenatal care visit	92%	69%
Percentage of women with assisted delivery by a health professional	31%	56.7%
Percentage of women with assisted delivery by a physician	8%	52.9%
Maternal mortality ratio, per 100,000 live births	1,071	1,379
Infant mortality rate, per 1,000 live births	107	67.3

Source: Pia Schneider et al (2003)

The low utilization of modern methods of medical care has been blamed on financial barrier (Pia Schneider and Dmytraczenko, 2003). Thus, the institution and implementation of a well designed, managed, and appropriate health financing system is likely to improve the health indices which is what is exemplified in Bolivia and Rwanda and a rather creative one by the people of Zegoua in Mali (Pia Schneider and Dmytraczenko, 2003; Grieco, 2005).

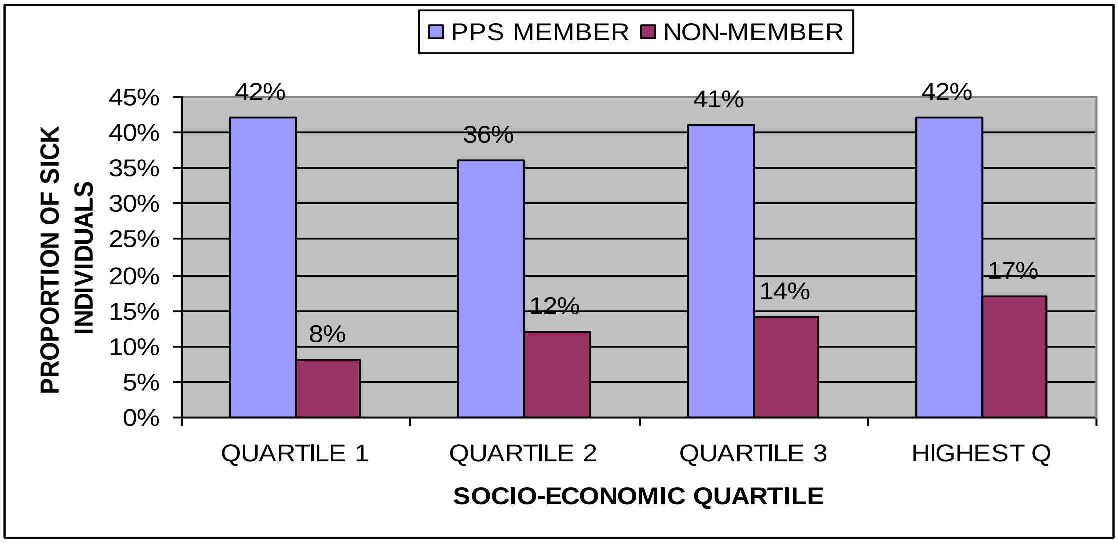
In 1996, Bolivia introduced the National Insurance for Mothers and Children as part of a broader health reform strategy. The insurance package included: antenatal care; pre-eclampsia; eclampsia; vaginal delivery with neonatal care; caesarean section with neonatal care; postpartum sepsis; postpartum haemorrhage; neonatal asphyxia; pneumonia, and sepsis; acute respiratory illness; and diarrhoea for children under age five years (Pia Schneider and Dmytraczenko, 2003).

Following the introduction of the insurance scheme for mothers and children, the utilization of formal maternal and child health services covered by the programme increased. Demographic and health survey findings showed improvement in utilization rates of key maternal health services. The percentage of women with assisted delivery by a physician increased from 42.3 in 1994 to 55.9 in 1998 while the percentage of births receiving antenatal care from a doctor or nurse increased from 52.5 in 1994 to 69.0 in 1998. Associated with this was also improvement in quality of care and the availability of drug supply (Pia Schneider and Dmytraczenko, ibid).

In Rwanda, the Ministry of Health decided to address low service utilization by introducing prepayment schemes (PPS) for basic health care to assure utilization of health interventions by the poor. The scheme was piloted between 1998 and 2000 (Pia Schneider et al, ibid). The package included: deliveries; essential drugs; curative and preventive care services; ambulance transfer to the district hospital; and caesarean section.

The scheme membership in the trial areas was 88,303 at the end of the first year, 2000 and by November, 2002, it increased to 150,000 members constituting 15 per cent of the targeted population – a rather low coverage. Poverty was cited as the main cause of the low coverage.

Following the introduction of the scheme in Rwanda, utilization of medical services by the insured increased by approximately four times that of the uninsured individuals. The following Figure 1.2.1 reveals how insurance scheme membership had led to equal access across all socio-economic groups. Among the uninsured, the poorest reported the lowest utilization rates.

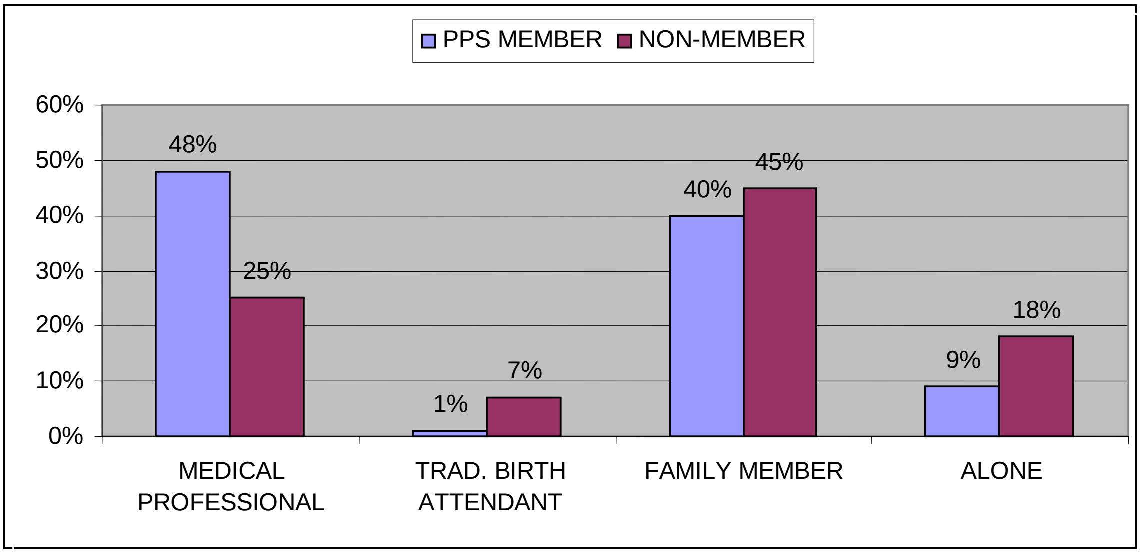


Key: PPS: Prepayment Scheme
Source: Pia Schneider et al (2003)

FIGURE 1.2.1: PROPORTION OF SICK INDIVIDUALS WHO REPORTED AT LEAST ONE VISIT TO A PROFESSIONAL PROVIDER, BY INSURANCE STATUS AND SOCIO-ECONOMIC QUARTILE

Insured women were also almost twice as likely to deliver with professional assistance compared to the uninsured as shown in Figure 1.2.2 below. The uninsured were also 7 times more likely to deliver with the traditional birth attendant and twice as likely to deliver alone when compared to the insured (Figure 1.2.2 below). In this way, insurance has the potential of being an effective tool to guarantee access to safe motherhood.

The Rwanda experience also demonstrated an improved quality of care and an increase in caesarean section rate for insured clients (Pia Schneider and Dmytraczenko, 2003). Murray (2000) also associated higher rates of caesarean section with private health insurance in Chile.



Key: PPS: Prepayment Scheme
Source: Pia Schneider et al (2003)
FIGURE 1.2.2: DELIVERY ASSISTANCE BY INSURANCE STATUS

In all the instances cited, utilization of orthodox health services increased as a consequence of breaking the financial barrier through health insurance. This resulted in the reduction of maternal mortality ratio and infant mortality rate. The health scheme afforded the clients quality health care which otherwise may have been denied them but also reflected in high caesarean section rates in Chile and Rwanda. Drug availability was ensured in the examples cited above and the credit was given to the well organized insurance scheme.

The situation in Ghana is different. Between 1999 and 2002, the number of community based health insurance schemes rose from 3 to 17. The annual enrolment also rose from 44,030 to 93,986 (Table 1.2.2 and Figures A1.2 and A1.3 in Appendix 1).

TABLE 1.2.2: TREND OF ANNUAL ENROLMENT/GROWTH OF HEALTH SCHEMES

YEAR	NO. OF SCHEMES	ANNUAL ENROLMENT	PERCENTAGE CHANGE
1999	3	44,030	-
2000	3	50,808	15.4
2001	6	59,476	17.1
2002	17	93,986	36.7

Source: Aikins (2003)

And more recently, with the introduction of the national health insurance scheme in 2005, the number of schemes has risen to 145 and enrolment has catapulted to 11,279,678 (Table 1.1.5).

The rate of growth of the schemes was rather steeper than the rate of enrolment and thus a much less desired coverage which is much similar to the prepayment schemes in Rwanda (Pia Schneider and Dmytraczenko, 2003). The financial performance of the schemes has been impressive with a consistent surplus of total mobilized funds over annual expenditure through the years (Aikins, 2003).

The rather impressive picture painted of the health schemes in Ghana as shown above has not yielded the much desired results in improving the health indices including maternal care indices. Indeed, there have been widespread increases in the utilization of orthodox health services following the introduction of the health schemes. In the Dangme West District of the Greater Accra Region, Agyepong et al (2006) observed an increase in the visits per capita from 0.3 and 0.4 during the pre-insurance period (before 2000) to 0.9 visits/capita for the insured in the first year of the scheme and to 1.35 visits/capita in the second year of the scheme.

This has however not translated into improving the health care indices including maternal care indices and the picture is worrying. Maternal mortality rates still remain high and even increasing (Table 2.4.2) with rates above 200 maternal deaths per 100,000 live births[†]. High perinatal mortality rates and stillbirths are unfortunately a baneful common place in our health institutions (Table A1.2 in Appendix 1)[†]. The study thus aims at evaluating the performance of the Okwawuman Mutual Health Insurance Scheme and assessing its impact on the utilisation and outcome of maternal health care indices including assisted vaginal deliveries (vacuum extraction), caesarean section, maternal mortality ratio and still birth rates which hitherto have not been well researched into in the country aside the evaluation of mostly routine data on utilization. It is expected that this will help structure a problem solving health system in the country rather than routine medical care.

† The mortality rates and stillbirth rates stated here are institutional rates.

1.3 RESEARCH QUESTIONS

1) What is the performance of the Okwawuman Mutual Health Insurance Scheme in the district?
2) How has the health scheme influenced the utilization of maternal care services?
3) What factors influence caesarean section and assisted vaginal delivery in the districts covered by the insurance scheme?
4) What factors, medical and non-medical including health insurance influence still births in the districts covered by the insurance scheme?
5) What factors, medical and non-medical including health insurance influence maternal mortality in the districts covered by the insurance scheme?

1.4 OBJECTIVES

1.4.1 PRINCIPAL OBJECTIVE

To assess the performance of the Okwawuman Mutual Health Insurance Scheme and determine its impact on the utilization and outcome of maternal care services.

1.4.2 SPECIFIC OBJECTIVES

1) Assess the performance of the Okwawuman Mutual Health Insurance Scheme.

2) Determine how the health scheme has influenced the trend of utilization of maternal care services.

3) Determine the trends of assisted vaginal delivery, caesarean section, stillbirth and maternal mortality in the health institutions serving the insured clients.

4) Determine the medical and non-medical factors including health insurance that influence caesarean section and assisted vaginal delivery in the districts covered by the insurance scheme.

5) Determine the medical and non-medical factors including health insurance that influence stillbirths in the districts covered by the insurance scheme.

6) Determine the medical and non-medical factors including health insurance that influence maternal mortality in the districts covered by the insurance scheme.

1.5: HYPOTHESES

1) H_A: The Okwawuman Mutual Health Insurance Scheme was viable (combined ratio < 1.0) over the study period.

H_O: The Okwawuman Mutual Health Insurance Scheme was not viable (combined ratio > 1.0) over the study period.

2) H_A: The length of stay in hospital was influenced by the mode of payment

H_O: The length of stay in hospital was not influenced by the mode of payment

3) H_A: The choice of caesarean section / vacuum extraction as a preferred method of delivery was influenced by health insurance.

H_O: The choice of caesarean section / vacuum extraction as a preferred method of delivery was not influenced by health insurance.

4) H_A: The occurrence of stillbirth was due to the lack of health insurance.

H_O: The occurrence of stillbirth was not due to the lack of health insurance.

5) H_A: Maternal death was a consequence of the lack of health insurance.

H_O: Maternal death was not a consequence of the lack of health insurance.

1.6: CONCEPTUAL FRAMEWORK

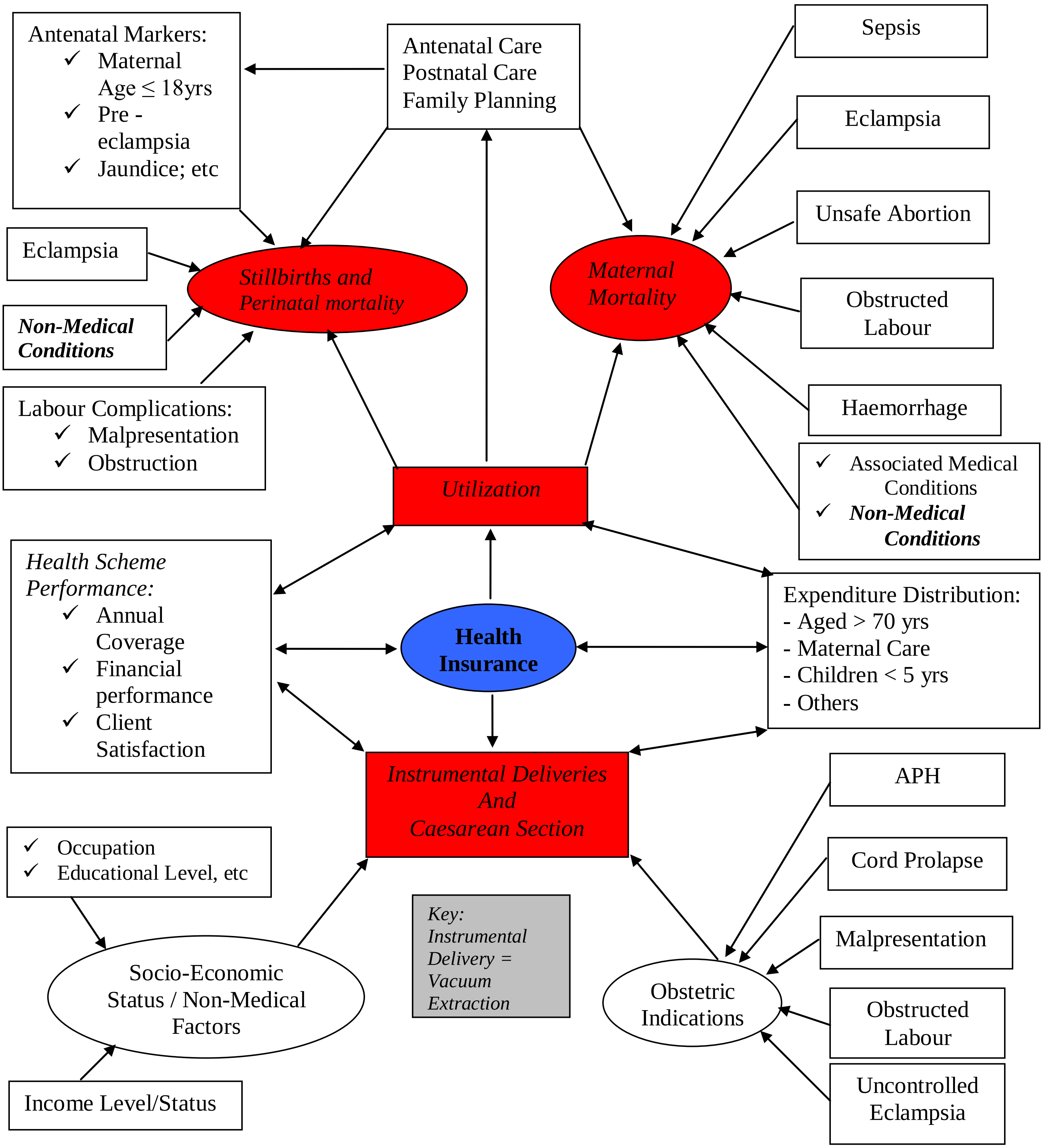


FIGURE 1.6.1: CONCEPTUAL FRAMEWORK

The Mutual Health Organization otherwise called the community health insurance scheme is represented in the conceptual framework as health insurance. In this particular instance, the health scheme under review is the Okwawuman Mutual Health Insurance Scheme and this would be assessed for performance and impact on the selected health indices – stillbirth / perinatal mortality rate, maternal mortality ratio, utilization of maternal care services, assisted vaginal delivery (vacuum extraction) and caesarean section.

It is expected that, a well functioning health scheme with a good or an increasing coverage and a high level of client satisfaction will translate into increased utilization of the contracted health institutions (Agyepong et al; 2006). The increased utilization is expected to be skewed towards the poor.

However, regardless of the skewness and assuming the contracted health facilities are well equipped with both human and material resources so that they are up and doing; it will be expected that, the health indices will improve – increase in utilization, decrease in maternal mortality, stillbirths, and perinatal mortality. There may be a change in the rate of assisted vaginal deliveries and caesarean section.

Increased utilization of antenatal care facilities will improve the identification of maternal risk factors deemed unsafe for mother and baby thus enabling early medical intervention to forestall any eventuality. This certainly should improve maternal care indices – maternal mortality, stillbirths and perinatal mortality.

These maternal care indices are not only influenced by financial barrier but other obstetric and medical factors which directly impinge on the technical competence of the medical staff and the material resources available. Optimum improvement of these indices will thus be best obtained when the financial barrier is broken through insurance and materials are made available in the health institutions as well as equipping medical staff with the requisite competencies to handle medical and obstetric emergencies. The ability to carry out emergency procedures like removal of retained placenta, vacuum extraction and caesarean section is key if maternal mortalities would necessarily have to be reduced. WHO, UNFPA and UNICEF estimate that, the minimum acceptable rate of caesarean section in developing countries must reach 5 per cent to guarantee safety for both the new-born and the mother (Robitail, 2004).

Increased utilization of postnatal care services will improve the contraceptive prevalence rate thus reducing fertility and subsequently impacting positively on the maternal care indices.

Analysis of spending of the insurance scheme will throw light on the pattern and impact of expenditure. This will inform policy makers to apportion resources appropriately targeting vulnerable areas to improve the health indices.

Studies by Cai et al (1998), Fisher et al (1995), and Murray (2000) have indicated an increase in the use of assisted vaginal delivery and caesarean section with the introduction of health insurance. Cai et al (1998) in their study challenged the indications for the procedures against the background of documented obstetric indications whiles Murray (2000) attributed the increase in assisted vaginal deliveries and caesarean sections partly to higher socio-economic status as pertaining with the private health insurance schemes. The conceptual framework features the interplay of these factors – obstetric indications (medical indications) and socio-economic/non-medical indications. The influence of these factors would be statistically tested to assess their strength of association.

The network of factors in this conceptual framework provides sensitive indicators to assess the impact of the mutual health insurance scheme. The variables shown in this framework are further explained in the methodology (see Table 1.7.2).

1.7: RESEARCH DESIGN AND METHODOLOGY

1.7.1: OVERVIEW

The study aims at evaluating the performance of the Okwawuman Mutual Health Insurance Scheme and its impact on selected health indices including utilization of health services, maternal mortality ratio, stillbirth rate, caesarean section and assisted vaginal delivery in the Kwahu South and West Districts of the country This area was referred to as Kwahu South District before being split into two districts in 2005.

The Okwawuman Mutual Health Insurance Scheme was chosen “purposively”. This was principally due to limited funds to cover all the operational mutual health insurance schemes so as to be able to generalize findings for the country at large. Other factors determining the choice of the Okwawuman Health Scheme include the following:

(i) It has been operational for more than three years which is the acceptable minimum duration of operation to be eligible for this research.

(ii) It has a benefit package that included elements which contributed to the improvement of maternal health care (See Table A1.3 in Appendix 1).

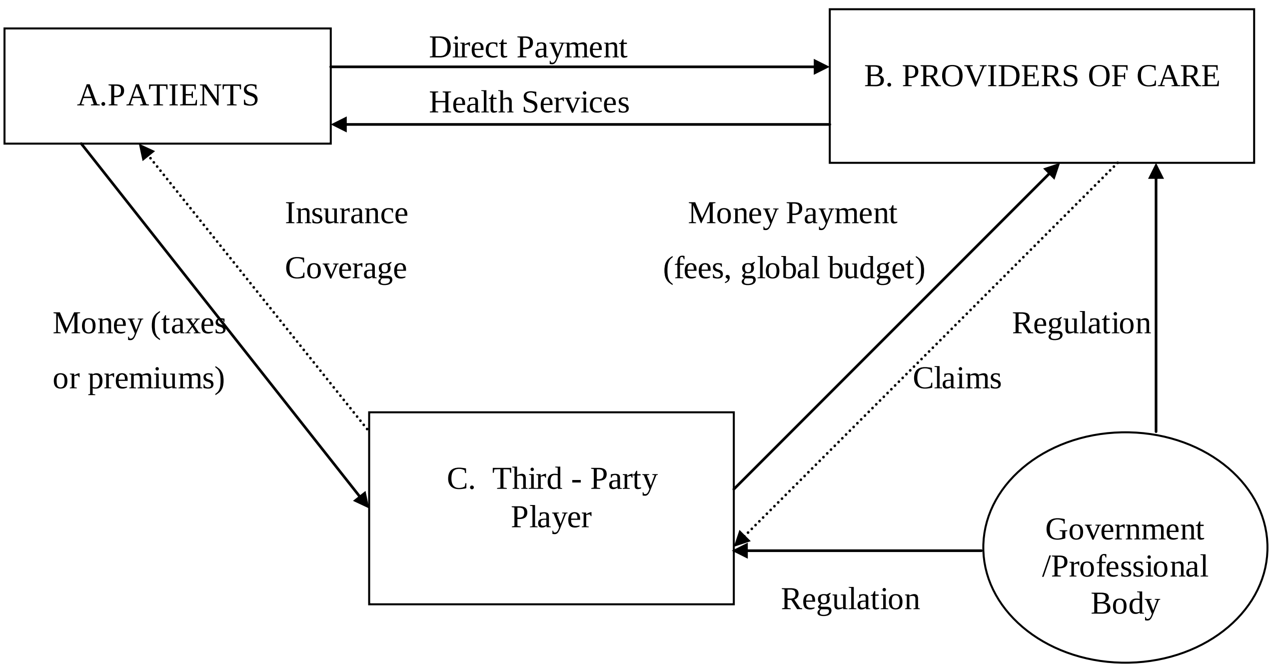
(iii) It is operational in a district with two active and functional district hospitals that were able to take care of obstetric emergencies.

(iv) It is operational in a district with a rich network of health institutions including mission, public and private health care institutions.

(v) It operates in a region that had the highest maternal mortality ratios in the country for 2003 and 2004 concurrently – 262.6 and 267 per 100,000 live births respectively (See Figure A1.1 in Appendix 1).

1.7.2: STUDY TYPE AND DESIGN

The research was designed along the lines of a "before and after" study similar to that conducted in Bolivia and Rwanda by Pia Schneider and Dmytraczenko, (2003). Data on the selected health indices were collected over a period spanning eight years; four years prior to the operationalization of the health scheme and four years after. Both secondary and primary data were collected and they comprised both quantitative and qualitative data. The study was conducted in three parts – at the levels of the client (patient), the provider (health institutions) and the insurer (Okwawuman Mutual Health Insurance Scheme) and thus followed the course of the Vogel's model of insurance (Figure 1.7.1). This made it possible to assess the scheme at each level of operation.



Source: Shaw and Ainsworth (1996: 147)

FIGURE 1.7.1: VOGEL'S MODEL

RESEARCH DESIGN

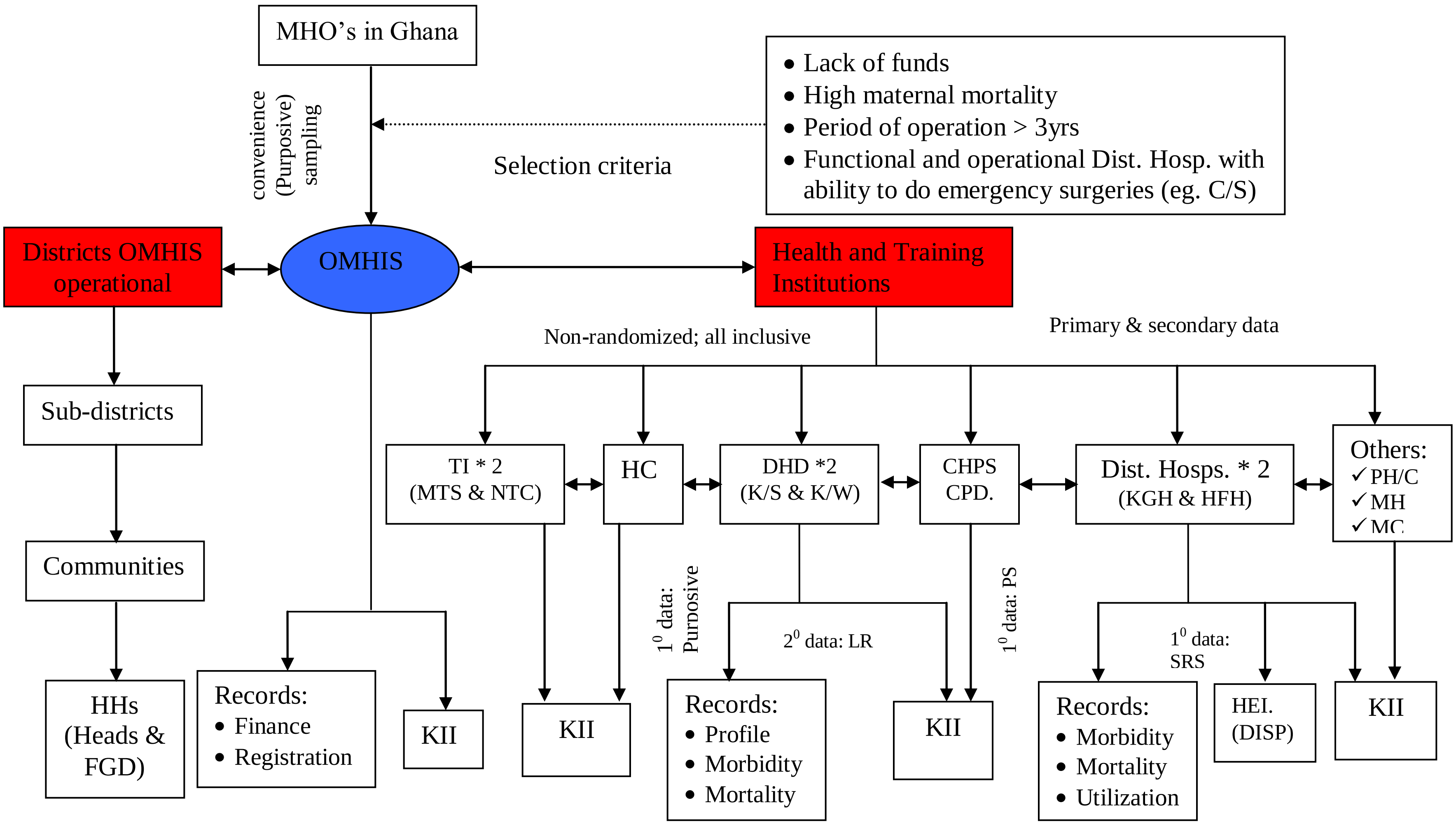


FIGURE 1.7.2: RESEARCH DESIGN

Key:

MHO's:	Mutual Health Organizations
OMHIS:	Okwawuman Mutual Health Insurance Scheme
Dist. Hosp:	District Hospital
C/S:	Caesarean Section
2^0 data: LR:	Secondary data: Longitudinal Retrospective
1^0 data: PS:	Primary data: Purposive Sampling
TI (MTS & NTC):	Training Institutions (Midwifery Training School & Nursing Training College)
HHs:	Households
FGD:	Focus Group Discussion
HC:	Health Centres
DHD (K/S & KW):	District Health Directorate (Kwahu South & Kwahu West)
KII:	Key Informant Interview
HEI (DISP):	Hospital Exit Interview (Dispensary)
CHPS CPD:	Community Health Planning and Services (CHPS) compound (CPD)
KGH:	Kwahu Government Hospital
HFH:	Holy Family Hospital
PH/C:	Private Hospitals/Clinics
MH:	Maternity Homes
MC:	Mission Clinics
1^0 data: SRS:	Primary data: Simple Random Sampling

A community survey was conducted in the form of a descriptive cross-sectional study in the communities served by the Okwawuman Mutual Health Insurance Scheme (Figure 1.7.2). Household heads were interviewed on issues relating to the health scheme, exemption policy and how these had impacted on their lives by improving financial access to health care and thereby influencing the selected health indices or otherwise. There was then a focus group discussion (adult men and women numbering not more than nine) per household on the impact of insurance on maternal deaths or stillbirths if any had occurred in the family in the last ten years; otherwise this section was skipped. If there were any maternal deaths or stillbirths in the last ten years, these deaths were further characterized to ascertain the cause of death and any factors contributing to the event.

The investigation of health institutions required both primary and secondary sources of data (Figure 1.7.2). In each case data collection took two forms. Primary data collection was through exit interview and key informant interview. The exit interview took the form of a cross sectional study and involved clients (patients) leaving the dispensary. The key informants were purposively selected from all the health institutions in the district; including the two District Hospitals, the two District Health Directorates, all Health Centres, all CHPS Compounds, Mission Clinics and Maternity Homes, Private Clinics, Hospitals and Maternity Homes and the Training Institutions (Midwifery Training School and the Nursing Training College). A non-randomised, cross sectional design was used in the selection of the key informants because only members of management and core members of the District Health Management Team (DHMT) were eligible for recruitment. This section solicited the personal opinion of these key informants on the performance of the health scheme, the impact on the selected health indices and how any shortfalls could be addressed.

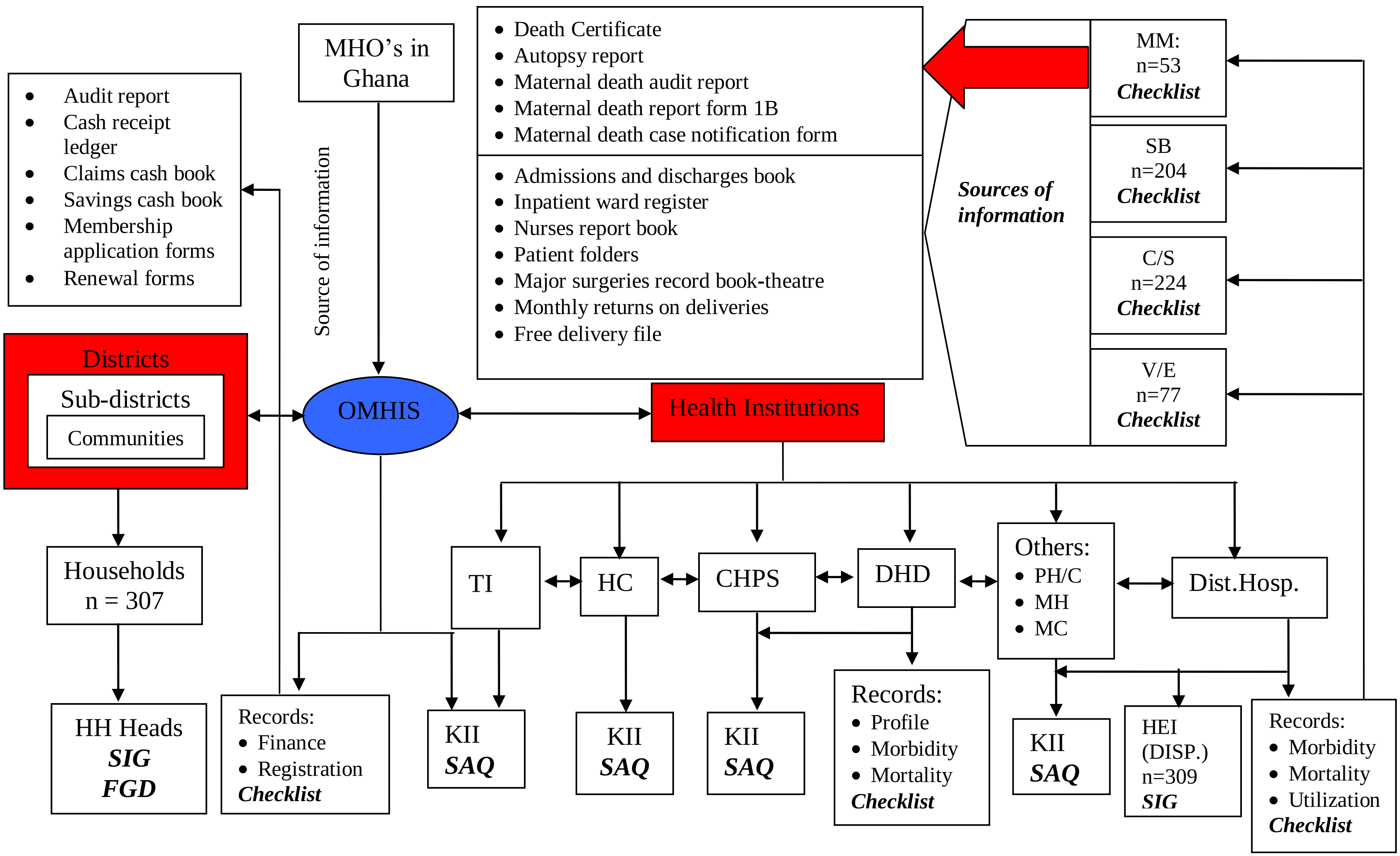
Secondary data for the health institutions were collected mainly from the two district hospitals (Holy Family Hospital and Kwahu Government Hospital) and the Kwahu South District Health Directorate (Figure 1.7.2). Information on morbidity, mortality and utilization of health services was gathered from the two district hospitals. In addition, the profile of the study area was taken from the Kwahu South District Health

Directorate which was used to guide the community work. Summary health data was also taken from the district health directorate to validate information gathered from the district hospitals. This part of the study took a "before and after" design and was chronologically retrospective and longitudinal.

The Okwawuman Mutual Health Insurance Scheme (OMHIS) was the last to be evaluated and both primary and secondary data were collected (Figure 1.7.2). The primary data was collected through key informant interviews and the design was cross-sectional with purposive sampling. The secondary data was collected from the record books of the financial transactions and records of registration. This also took the form of a "before and after" study design. Chronologically, this was retrospective and longitudinal.

1.7.3: DATA COLLECTION TOOLS (STUDY INSTRUMENTS)

The study instruments mainly used were compilation/checklists and structured interview guides. The checklists were used to collect secondary data while the structured interview guides were used in collecting primary data (Figures 1.7.2 and 1.7.3). Both instruments employed restricted questions but the structured interview guide in addition had open ended questions (See Appendix 6). In all, nine different sets of instruments were used and both quantitative and qualitative data were collected.



FIGIURE 1.7.3: RESEARCH INSTRUMENTS: APPLICATION AND SOURCES OF INFORMATION

TABLE 1.7.1: SOURCES OF INFORMATION AT INSURANCE SECRETARIAT

SOURCE	INFORMATION
Cash receipt ledger	Government subvention for the payment of medical claims
	Income from donors
	Administrative support from government for the day to day running of the scheme and salaries
Claims cash book	Payment of OPD and In-patient bills
	Income from the government for the payment of bills
	Premium transferred for the payment of bills
Savings cash book	Premium collected
	Registration collected
Computer: Membership application forms and Renewal forms	Membership of the scheme

KEY TO FIGURE 1.7.3:

C/S	Caesarean Section
CHPS	Community Health Planning and Services
DHD	District Health Directorate
Dist.Hosp.	District Hospitals
FGD	Focus Group Discussion
HC	Health Centres
HEI	Hospital Exit Interview
KII	Key Informant Interview
MC	Mission Clinic
MH	Maternity Home
MHO	Mutual Health Organisation
MM	Maternal Mortality
OMHIS	Okwawuman Mutual Health Insurance Scheme
PH/C	Private Hospitals / Clinics
SAQ	Self Administered Questionnaire
SB	Still Birth
SIG	Structured Interview Guide
TI	Training Institutions
V/E	Vacuum Extraction

1.7.4: RESEARCH VARIABLES AND INDICATORS

The variables and their indicators measured are shown in Table 1.7.2 below.

TABLE 1.7.2: VARIABLES AND INDICATORS

<table>
<tr><th colspan="2">VARIABLES</th><th>INDICATOR/S</th></tr>
<tr><td colspan="2" rowspan="10">Performance of Health Insurance</td><td>1) Insurance Coverage:
1.1 In the Community
1.2 At the Hospital
1.3 At the Insurance Secretariat
• WIFA (15-49yrs)</td></tr>
<tr><td>2) Community Perception on Performance</td></tr>
<tr><td>3) Health Workers Perception on Performance</td></tr>
<tr><td>4) Finance (Income):
4.1 Annual Income from Registration
4.2 Annual Income from Premium
4.3 Total Income (Registration + Premium)
4.4 Annual Income from Investments
4.5 Annual Income from Donors
4.6 Gross Annual Income</td></tr>
<tr><td>5) Finance (Expenditure):
5.1 Total Annual Medical Claims
5.2 Administrative cost (overhead)
5.3 Annual Gross (Total) Expenditure</td></tr>
<tr><td>6) Financial Ratios:
6.1 Percentage of Administrative cost to Total Expenditure
6.2 Claims Ratio
6.3 Expense Ratio
6.4 Combined Ratio</td></tr>
<tr><td>7) Annual Surplus / Deficit</td></tr>
<tr><td>8) Drug Availability</td></tr>
<tr><td>9) Average Length of Hospitalization</td></tr>
<tr><td>10) Health Seeking Behaviour</td></tr>
<tr><td rowspan="4">Impact</td><td>Utilisation of Maternal Care Services</td><td>11) ANC Attendance
12) Ultrasonography
13) Number of Supervised Deliveries
14) Other Associated Services
14.1 OPD Attendance
14.2 Admissions (Maternity Ward Particularly)
14.3 X-Rays</td></tr>
<tr><td rowspan="3">Outcome of Maternal Care Services [Factors (medical/non-medical including health insurance) affecting the listed indicators].</td><td>15) Number of Caesarean Sections and Assisted Vaginal Deliveries
16) Percentage of Assisted Vaginal Deliveries and C / S
17) Rate of Assisted Vaginal Deliveries and C / S</td></tr>
<tr><td>18) Number of Maternal Deaths
19) Maternal Mortality Rates / Ratios</td></tr>
<tr><td>20) Number of Stillbirths
21) Stillbirth Rates / Ratios</td></tr>
</table>

The key ratios are defined as follows:

$$\text{Maternal Mortality Ratio} = \frac{\text{Annual No. of Maternal Deaths due to Pregnancy, Child Births and Puerperal Conditions}}{\text{Total No. of Live Births in same Year}} * 100{,}000$$

$$\text{Maternal Mortality Rate} = \frac{\text{Annual Number of Maternal Deaths due to Pregnancy, Child Birth and Puerperal Conditions}}{\text{Total number of Women in Reproductive Age during the same Year}} * 100{,}000$$

$$\text{Still Birth Rate} = \frac{\text{Annual No. of Fetal Deaths after 28 Weeks Gestation}}{\text{Total No. of Births in the Year}} * 1{,}000/100{,}000$$

$$\text{Percentage of Instrumental Deliveries} = \frac{\text{Number of Instrumental Deliveries in Year}}{\text{Total Number of Deliveries in same Year}} *100$$

The maternal mortality ratio expresses the risk of deaths among women once they are pregnant. It is a ratio because the denominator (live births) is not part of the numerator. This is the most used maternal death index and is sometimes erroneously referred to as a rate. The ratio is employed in this study.

The maternal mortality rate indicates the impact of maternal deaths on the population of women in reproductive age (15-49). The maternal mortality ratio and the fertility rate influence this figure (Biller et al, 1998).

1.7.5 SAMPLING

The research went through multi-staged sampling. The Okwawuman Mutual Health Insurance Scheme was selected through purposive sampling in view of the reasons provided in the selection criteria (Figure 1.7.2). Subsequently, all the districts in which the scheme operated provided the sample population and so were all the health institutions that provided care and the health training institutions that were affected by the schemes operation (Figures 1.7.2 and 1.7.3).

At the secretariat of the Okwawuman Mutual Health Insurance Scheme, all the records of registration and financial transactions including bank statements and audit reports were scrutinized to complete the checklist (2002 to 2005). The sources of information are detailed in Figure 1.7.3 and Table 1.7.1. Key informants at the secretariat including the scheme manager, claims officer and accountant were interviewed using a structured interview guide. They were also given self administered questionnaires for completion.

FIGURE 1.7.4: OKWAWUMAN MUTUAL HEALTH INSURANCE SECRETARIAT (PRESENTLY MOVED TO A NEW OFFICE)

Primary data were also obtained from the communities through a descriptive cross-sectional survey. Twenty-five communities were chosen randomly from a total of two hundred communities using a table of random numbers. These communities were already coded for the purposes of the health insurance. Sixteen communities were taken from the bigger Kwahu South District and nine from the Kwahu West District (quota sampling).

In the communities, household heads or competent substitutes (knowledgeable, willing adult members of a household, culturally permitted to divulge information) were interviewed to complete the structured interview guide. The houses which had also been already coded and numbered for the purposes of the health insurance were selected through systematic sampling. The first house was chosen by simple random sampling by tallying the last two digits of the house numbers with the last two digits of a chosen currency note. Subsequent houses were selected through systematic sampling by visiting the n^{th} house after the first. The n^{th} house/term is computed as shown below using a pre-determined quota for the number of houses to be visited in any particular community.

$$n^{th} \text{ house / term (Sampling Interval)} = \frac{\text{Total number of houses in the community}}{\text{Pre-determined number of Houses to be visited}}$$

One household head was interviewed in any house visited. The selection was based on availability and willingness to partake in the exercise after the research team had introduced themselves and the purpose of the visit.

Both health training institutions in the two districts (Midwifery Training School, Atibie, Kwahu South and Nursing Training College, Nkawkaw, Kwahu West), as well as all health providing institutions constituted the study population (Figures 1.7.2 and 1.7.3). The tutors and principals of both training institutions, medical assistants, senior nurses, and midwives of health centres, CHPS compounds, mission clinics and hospitals as well as management members, all prescribers, all ward “in-charges” and senior staff of the two district hospitals comprised the sampling frame and were purposively sampled as key informants. These were interviewed and as well given questionnaires to complete.

There was also a hospital exit interview; recruiting participants at the exit point of the hospital – the dispensary. This was cross-sectional by design and participants were recruited using both simple random sampling and systematic sampling. The first participant was selected by simple random sampling by tallying the last two digits of the card/folder number with the last two digits of the serial number of a currency note. The first card or folder to have the last two digits being the same as that of the last two digits of the chosen currency note became the first client. Subsequent participants were selected through systematic sampling by selecting the n^{th} term/card (sampling interval) from the first. The n^{th} term was calculated as shown below using a pre-determined number of participants to be interviewed in a day and the average daily hospital attendance.

$$\begin{array}{c} n^{th}\text{ term} \\ \text{(sampling interval)} \end{array} = \frac{\text{Daily average hospital attendance}}{\begin{array}{c}\text{Pre-determined number of clients to} \\ \text{be interviewed in a day}\end{array}}$$

For Holy Family Hospital which was much more active and saw many more patients than the Kwahu Government Hospital, one hundred and sixty participants were recruited and one hundred and forty-nine were recruited in the Kwahu Government Hospital (quota sampling).

Secondary data was also taken from the two district health directorates spanning 1998 to 2005. These included morbidity and mortality records and profile of the two districts. For the newly created Kwahu West district, only the district profile was assessed. In fact the data collected from the district health directorates was to validate records from the two district hospitals.

The utilization, morbidity and mortality records of the two district hospitals were also investigated spanning 1998 to 2005 (Figure 1.7.3). A registry (sample frame) of all maternal deaths, stillbirths, caesarean sections and vacuum extractions (1998 to 2005) was made using a compilation list (Appendix 4). From this sample frame, the folders of the client or study units were traced to the archives and record departments (Figures 1.7.5 and 1.7.6).

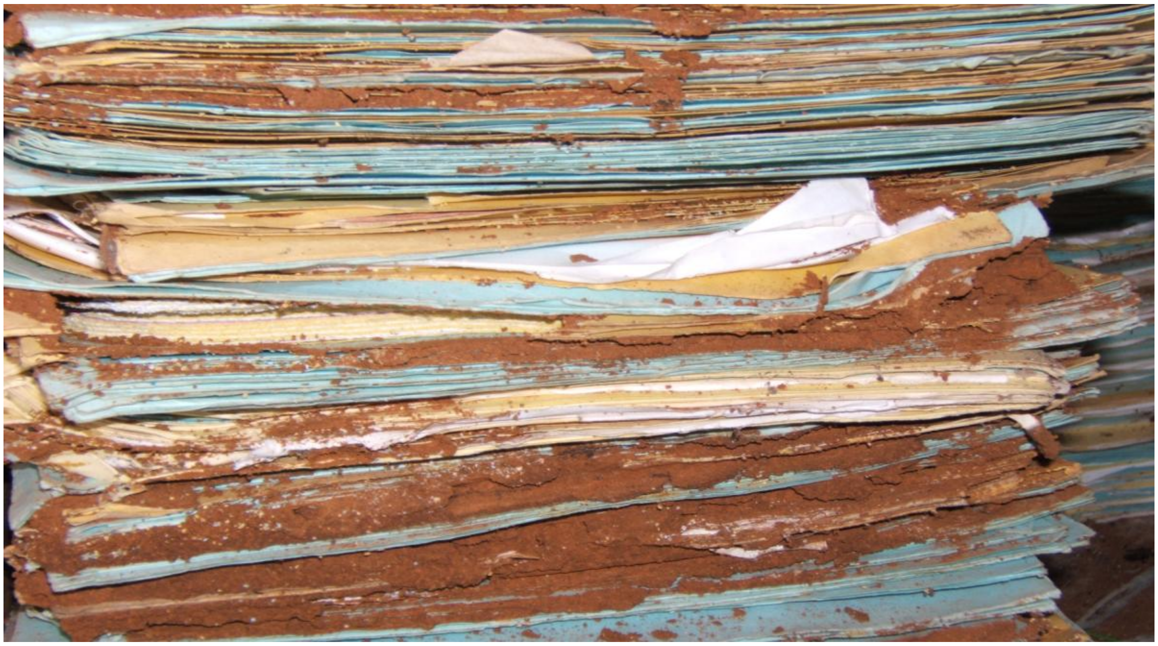


FIGURE 1.7.5: ARCHIVE OF KWAHU GOVERNMENT HOSPITAL WITH TERMITES EATING AWAY FOLDERS

FIGURE 1.7.6: ARCHIVE OF THE HOLY FAMILY HOSPITAL

The maternal deaths and vacuum extractions were not many and so all retrieved folders were used. However, for the caesarean section and still births, folders were selected using a combination of simple random sampling and systematic sampling as previously described. Check list for the mentioned morbidity and mortality indicators were filled using the selected folders and supported by other sources of information detailed in Figure 1.7.3.

1.7.6 SAMPLE SIZE

This was computed using the formulae:

(i) $$n = \frac{z^2pq}{d^2}$$

Where:

n = the desired sample size (when the population is > 10,000)

z = the standard normal deviate (set at 1.96 corresponding to the 95% confidence level)

p = the proportion in the target population estimated to have a particular characteristic (if there is no reasonable estimate; then 50% is used – 0.05)

q = 1.0 – p

d = degree of accuracy desired (set at 0.05)

The above equation holds when the study population is greater than 10,000 (Araoye, 2004) and this was the situation for the community survey and the hospital exit interview (Table 1.7.3). In circumstances when the study population is < 10,000 as in the cases of caesarean section, vacuum extraction, still birth and maternal mortality (Table 1.7.3), an additional formula was used to estimate the final sample size based on the study population (Araoye, 2004) as follows:

(ii) $$n_f = \frac{n}{1 + (n/N)}$$

Where:

n_f = the desired sample size when the population is < 10,000

n = the desired sample size when the population is > 10,000

N = the estimate of the population size (study population)

Table 1.7.3 below summarizes the events culminating in the computation of the sample sizes. The p and q values were arrived at following a pilot study of the various study categories. During the pilot study, the study instruments were also pre-tested.

TABLE 1.7.3:SAMPLE SIZES

Category	Study Population	Pilot Study		Computed Sample Size	Actual Sample Size Used	Comments
		p	q (1.0 - p)			
Caesarean Section	4,528	0.20	0.80	233	224	9 less than the computed sample size
Vacuum Extraction	267	0.05	0.95	57	77	20 more than the computed sample size. All available records were used.
Stillbirths	1,206	0.05	0.95	69	204	135 more than the computed sample size
Maternal Mortality	171	0.06	0.94	58	53	5 less than the computed sample size. All available mortality records were used. Percentage Recovery of Maternal Mortality Records, 30.99%.
Community Survey	268,570	0.40	0.60	369	307	62 less than the computed sample size
Hospital Exit Interview	109,440	0.60	0.40	369	309	60 less than the computed sample size
Sub-Total	384,182			1,155	**1,174**	19 in excess of computed sample size
Health Workers Survey (KII)					73	Percentage Return = 76.84%
Utilization of Health Facilities					8	Checklist used to collect summarized data over 8 years
Grand Total					**1,255**	

The sample sizes in Table 1.7.3 above were arrived at as follows;

Assuming a standard normal deviate (z) of 1.96 and a confidence level of 95% with a 0.05 degree of accuracy, the sample sizes were computed as follows:

(i) Community Survey:

$$n = \frac{(1.96)^2 (0.40)(0.60)}{(0.05)^2} = (1536.64)(0.40)(0.60) = 368.79$$

(ii) Hospital Exit Interview

$n = (1536.64)(0.60)(0.40) = 368.79$

(iii) Caesarean Section:

$n = (1536.64)(0.20)(0.80) = 245.86$

However, the study population was < 10,000

$$n_f = \frac{245.86}{1 + (245.86/4{,}528)} = 233.20$$

(iv) Vacuum Extraction:

$n = (1536.64)(0.05)(0.95) = 72.99$

For N < 10,000

$$n_f = \frac{72.99}{1 + (72.99/267)} = 57.32$$

(v) Stillbirth

$n = (1536.64)(0.05)(0.95) = 72.99$

For N < 10,000

$$n_f = \frac{72.99}{1 + (72.99/1{,}206)} = 68.83$$

(vi) Maternal Mortality:

$n = (1536.64)(0.06)(0.94) = 86.67$

For N < 10,000

$$n_f = \frac{86.67}{1 + (86.67/171)} = 57.52$$

1.7.7: ASSUMPTIONS

(i) COMMUNITY AND HOSPITAL (EXIT INTERVIEW) SURVEY

It is assumed that;

1) Interviewers were not by any means particularly attracted to certain households / families but adhered to the randomization as much as possible
2) Interviews and questionnaire administration were generally similar in all cases and under all circumstances
3) Respondents provided correct and unambiguous answers to the questions posed
4) Interviewers recorded just as was told them by respondents or interviewees
5) The drugs as captured in the structured interview guide were as recorded in the patient's folder

(iii) HEALTH WORKERS SELF ADMINISTERED QUESTIONNAIRE

It is assumed that;

1) The information as provided by the respondents was the truth and represented the personal opinion of the respondents
2) The respondents were not in any way influenced by any persons or circumstances.

(iv) HEALTH INSTITUTIONS SECONDARY RECORDS

It is assumed that;

1) All the information catalogued in the records (hospital folders, admission and discharge books, nurse's record book, nurse's notes, death certificates, etc) were a true reflection of what transpired.

1.7.8: LIMITATIONS

The study had the following limitations:

1) The morbidity and mortality data used were institutional and may not reflect the perfect situation in the community;

2) A mixed methodology design was applied in sampling and not entirely randomized. Thus the findings can not be generalized as reflecting the general situation in Ghana;

3) Records of morbidity and mortality were poorly stored and information recorded was scanty and inadequate necessitating the use of many and different sources of information to cross-validate the information collected. This not withstanding, the completeness of some records were a challenge;

4) Poor record keeping restricted the maternal mortality survey to a sample size less than the computed; and

5) The three years duration of operation of the health scheme though meets the minimum requirement for a trend analysis yet is not optimum for the said analysis. This is what necessitated the multiple indicators.

1.8: PROFILE OF STUDY AREA

1.8.1: COUNTRY PROFILE

Ghana is located in the West – African Sub – Region and a few degrees north of the equator. It is bordered on the north by Burkina Faso; the south by the Atlantic Ocean; the east by Togo; and the west by Cote d'Ivoire. It has a total area of 238,540km^2 (including water bodies), and a land area of 230,020km^2, just slightly smaller than Oregon in the United States of America.

MAP 1: LOCATION OF GHANA IN AFRICA

Half of the country lies less than 152 meters (500ft.) above sea level, the highest point being 883 meters (2,900ft.). The 537 kilometer coastline is mostly a low, sandy shore backed by planes and scrub and intersected by several rivers and streams, most of which are navigable only by canoe. A tropical rain forest belt, broken by heavily forested hills and many streams and rivers, extends northwards from the shore, near the Cote d'Ivoire frontier. The southern belt is gradually being encroached upon by the advancing savanna. North of this belt, the country varies from 91 to 396 meters (300 – 1,300ft.) above sea level and is covered by low bush, park-like savanna, and grassy plains.

The climate is typically tropical. The eastern coastal belt is warm and relatively dry; the southern corner, hot and humid; and the north, hot and dry. There are seemingly two distinct rainy seasons in the south: May to June (major season) and August to September (minor season). In the north, the rainy seasons tend to merge. A dry northeasterly wind, the harmattan, blows in January and February. March is rather excessively hot and dry and is the period for the outbreak of meningitis. This weather pattern appears to be changing.

The Volta Lake, which is a man-made lake, extends from the Akosombo dam in southeastern Ghana to Yapei, 520 kilometers to the north. The lake is the main source of hydroelectric power and provides inland transportation as well. It is also a valuable resource for irrigation and fishing. The hydroelectric power generation from the Akosombo dam was severely constrained from the last quarter of 2006 to September of 2007 due to the poor rainfall the previous year and a consequence of the changing weather pattern. The socio-economic implications cannot be over emphasized.

MAP 2: MAP OF GHANA SHOWING REGIONAL CAPITALS AND NEIGHBOURING COUNTRIES

1.8.2: THE KWAHU SOUTH DISTRICTS

Until the middle of 2004, the Kwahu West district was an integral part of the Kwahu South district. The Kwahu South district then was the second largest district in the Eastern Region with a land area of 1,876 sq. km. representing about 10 per cent of the total land area in the region. The district had an estimated population of 229,922 in 2004 with a growth rate of 3.1%. It was bounded on the north by the Sekyere East district; the west by the Asante Akyem North and Asante Akyem South districts in the Ashanti Region; the east by the Afram Plains and the south by the Birim North, East Akyem and Fanteakwa districts. The male to female ratio was estimated to be 1 : 0.98. The population distribution is as shown in Table 1.8.1 below (And also in Table A1.4 in Appendix 1).

TABLE 1.8.1:POPULATION DISTRIBUTION IN THE KWAHU SOUTH DISTRICTS

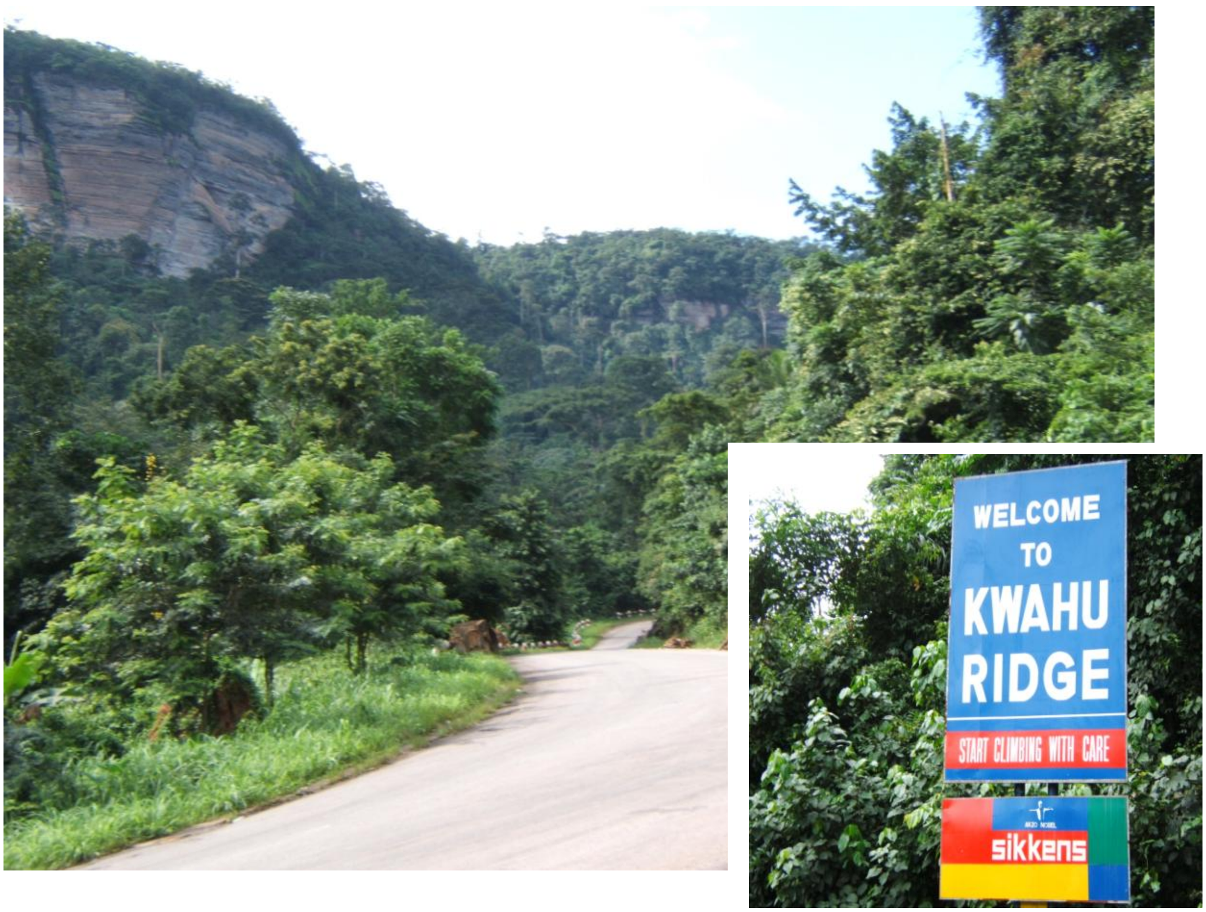
	2004 (Kwahu South District before Separation)		**2005** [Kwahu South District (New) after Separation]		**2005** (Kwahu West District)
Target Population	% of Total Pop.	Number	% of Total Pop.	Number	
Children 0 – 11 months	4	9,197	4	6,737	**Values not available**
Children 12 – 23 months	4	9,197	4	6,737	
Children 24 – 59 months	12	27,591	12	20,209	
Children 5 – 14 years	28	64,378	28	47,155	
Women 15 – 49 years	21	48,284	21	35,367	
Men 15 – 49 years			21	35,367	
Men and Women 50 – 60 years	8	18,394	8	13,473	
Men and Women 60 years and above	2	4,597	2	3,368	
Total Population	100	229,922	100	168,413	100,157

Source: Provisional Census 2000

The district was also divided into eight operational sub-districts each having complements of health institutions and educational facilities detailed in subsequent sections. The sub-districts were namely; Nkawkaw East, Nkawkaw West, Pepease, Kwahu Praso, Abetifi/Nkwatia, Mpraeso, Nkyenenkyene, and Kwahu Tafo.

1.8.3: THE (NEW) KWAHU SOUTH DISTRICT

Presently, the Kwahu South district has lost most of the low lying areas to the Kwahu West district and now maintains a land area of just over 1,000 sq. km. representing about 7 per cent of the total land area in the Eastern Region.



MAP 3: THE KWAHU SOUTH DISTRICT

The district shares boundaries with Fanteakwa district to the north; Asante Akyem North district to the south; Kwahu West district to the west, and the Afram Plains to the

East (GHS_DHD, 2004, 2005, 2006). The population distribution is as shown in Table 1.8.1 above.

Topographically, the district is divided into two distinct parts; the original or traditional settlements located on the ridge or scarp, rising to heights of 640 meters above sea level (Map 4) and the low lying settlements most of which now forms part of the newly created Kwahu West district.

MAP 4: THE KWAHU RIDGE

The district experiences a double maximal rainfall pattern in consonance with the pattern observed in most parts of the southern sector of Ghana. Annual rainfall figures fall between 1,670mm and 1,799mm. The major season spans April to July whilst the minor season covers, September to October. The intensity of the rain decreases towards the Afram Plains. The mean monthly temperature settles around 32°C with average relative humidity between 75 – 80%.

The district lies within the semi-deciduous belt with most of its original vegetation replaced with secondary forest. Odum, Wawa, and Sapele are a few of the economic species of trees left. The district has seven forest reserves occupying a total land area of 34,840 hectares.

The district is the home of the Kwahu's and they constitute the majority (66 per cent) of the inhabitants. Other tribes notably the Ewes form 15 per cent of the heterogenous population and the Asantes make up about 17 per cent.

The district is predominantly Christian (89.5%) with the Presbytarian making a strong impact. It is not surprising that, one of the campuses of the Presbytarian University College is located in Abetife in the Kwahu South District. The traditionalist make up 3.6 per cent of the religions with the remaining distributed among other religions notably Islam.

The main occupation in the district is farming constituting 50.4% of the work force. The main cash crops cultivated are cocoa and kola nuts. Communities close to the Volta Lake or its tributaries are engaged in fishing. The service sector employs 42.2 per cent of the work force whilst industry absorbs 7.4 per cent.

The district is endowed with some mineral deposit including; gold, diamond, bauxite, manganese, aluminium, granite stone and clay.

The district has reasonably adequate network of roads with most of the communities connected. However, most of these roads are not tarred and are particularly rocky with noticeably steep gradients so that traversing them becomes quite difficult needing rather good vehicles or motor bikes. For the purpose of this research, nearly all the communities visited were done on motor bikes (Figure 1.8.1).

FIGURE 1.8.1: RESEARCH ASSISTANTS OFF TO THE FIELD ON A MOTOR BIKE

The Kwahu South district is divided into six operational sub-districts including: Mpraeso, Abetifi / Nkwatia, Kwahu Tafo, Kwahu Praso, Pepease and Nkyenekyene. The district has the following complements of health facilities delivering health care and also a midwifery training school (Table 1.8.2).

TABLE 1.8.2: HEALTH INSTITUTIONS IN THE KWAHU SOUTH DISTRICT

Name	**Location**	**Bed Complement**	**Staff Strength**
Administration			
DHA	Atibie	-	21
Hospital			
KGH	Atibie	175	270
Health centres and RCH Centres			
Obo Health Centre	Obo	10	12
Bepong Clinic	Bepong	5	8
Atibie RCH	Atibie	-	4
Nkyenenkyene H/C	Nkyenenkyene	2	9
Nkwatia H/C	Nkwatia	5	8
Abetifi H/C	Abetifi	10	8
Pepease H/C	Pepease	6	12
Kwahu Praso RCH	Kwahu Praso	10	3
Kwahu Tafo RCH	Kwahu Tafo	-	3
St.Joseph's Clinic/RCH	Kwahu Tafo	20	26
Asakraka RCH	Asakraka	5	4
Ankoma RCH	Ankoma	2	4
Aduamoa RCH	Aduamoa	2	3
CHPS Compounds			
Onyemso	Onyemso	2	1
Hweehwee	Hweehwee	2	2
Atuobikrom	Atuobikrom	2	3
Aweregya	Aweregya	5	1

Source: GHS_DHD_KS (Profile, 2006)

Key:
DHA: District Health Administration
H/C: Health Centre
KGH: Kwahu Government Hospital
RCH: Reproductive and Child Health
CHPS: Community Health Planning and Services

1.8.4: THE KWAHU WEST DISTRICT

The Kwahu West district is one of the seventeen districts in the Eastern Region and it was carved out of the Kwahu South district around the middle of 2004. Its district capital is Nkawkaw.

The district is bordered on the north by the Asante Akim South district, the east by the Kwahu South district, south by the Atiwa district and the west by the Birim North district. The district has a total land area of 414 sq. km.

The projected population for 2005 using the 2000 population census with a growth rate of 2.5 per cent is estimated at 100,157. The district has a population density of 242 per square kilometer.

The Kwahu West district has one urban and three area councils. These are the Nkawkaw urban council; Awenade/Aprandan, Fodoa, Kwahu Nsaba/Asuboni area councils. The Nkawkaw urban council is the largest community with a population size of 53,668 representing 53 per cent of the total district population. Ten communities have populations between 1,000 and 5,000; forty have less than 200 and the rest range between 200 and 1,000.

The main inhabitants in the district are the Kwahu’s constituting 66 per cent of the total district population. The Asantes constitutes 20 per cent whiles the remaining are Ewes and other ethnic groups. The Kwahu West district is also largely Christian - 89.5 per cent. The main economic activities in the district are farming, trading and pottery. Agriculture absorbs 54 per cent of the total work force of the district.

The health activities in the district are rather concentrated in the district capital which can boast of four hospitals and a nursing training college. Holy Family Hospital is a Catholic Mission hospital (a CHAG institution) and is the main referral point in the district with a bed compliment of two hundred and eleven (211). Six other reproductive and child health centres (RCH) are located at Jejeti, Aprandi, Asuboni, Nkawkaw East, Danteng and Nkawkaw West. There are also sixty eight trained traditional birth attendants. The Table 1.8.3 below summarises the health delivery institutions in the district (GHS_DHD_KW, 2005 and HFH_NK, 2004, 2005).

TABLE 1.8.3:HEALTH INSTITUTIONS IN THE KWAHU WEST DISTRICT

Facility	Government	Private	Total
Hospital	1	3	4
Health Centre	0	-	0
RCH Centres	6	-	6
CHPS Compound	0	-	0
Clinic	1 (STI)	2	3
Maternity Home	-	3	3
Total	8	8	16

Source: GHS_DHD_KW (Profile, 2005)

1.9: ETHICAL CONSIDERATION

Ethical Clearance

No serious ethical issues were envisaged and none arose during the study. However, ethical clearance was sought from the ethical committee of the Ghana Health Service. Permission was also sought from the Eastern Regional Director of Health Services, the District Director of Health Services (Kwahu South and West Districts) and the District Chief Executives for the Kwahu South and West Districts. The chiefs, elders, and other traditional authorities; assemblymen and opinion leaders in the communities were also visited and their approval to conduct the research in their respective communities was obtained.

Privacy and Confidentiality

The privacy of the respondents was respected and their opinions were kept confidential. The identities of the respondents were also not disclosed in the write-up. All records of the responses were coded as shown below and there was no link between the respondents and the codes.

Identification Code

All completed survey instruments were stored in a locker in the School of Public Health, University of Ghana and this will be destroyed after the completion of the programme of study.

Informed Consent

Both oral and written informed consent was obtained from the participating individuals and institutions. The purpose of the research was explained to them and all queries answered. The consenting individuals and institutions were made to understand that the research was for academic purpose and the results were to be restricted to that and also for improving health delivery in the participating institutions. Only consenting individuals and institutions were allowed to proceed from here by signing the consent form.

Procedures:

The survey was in different parts and involved the completion of a Structured Interview Guide, a Checklist, a Self Administered Questionnaire or a Key Informant Interview.

Risks, Discomforts and Benefits:

There were no foreseeable physical risks to participating in the study. Participants had the option of not answering a question or stop the survey at any point. By agreeing to participate in the study meant permission to keep the responses to the survey questions for the duration of the study.

Participants may not directly benefit from participating in the study; however, their participation provided a better understanding of their viewpoint on health issues in the District and this may eventually improve the health of the community.

Incentives for participants

No incentives were provided.

Sponsor:

The whole research was funded by the principal investigator.

Who to contact:

In the event of any queries or questions about the survey, participants were to contact the address below:

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CHAPTER TWO

2.0: LITERATURE REVIEW

2.1: PERFORMANCE OF THE HEALTH SCHEME

2.1.1: OVERVIEW

The performance of the health scheme was evaluated in a two-stage manner: The health financing elements and the final goals of the health system are illustrated in Figure 2.1.1. Evaluating the health financing elements may involve assessing financial resources, resource allocation and specified benefit package. This is the aspect often done in the assessment of most health schemes. The evaluation of the final goals of a health system may involve the assessment of the equality in health, equality in responsiveness, and fairness in financing (Carrin and James, 2004).

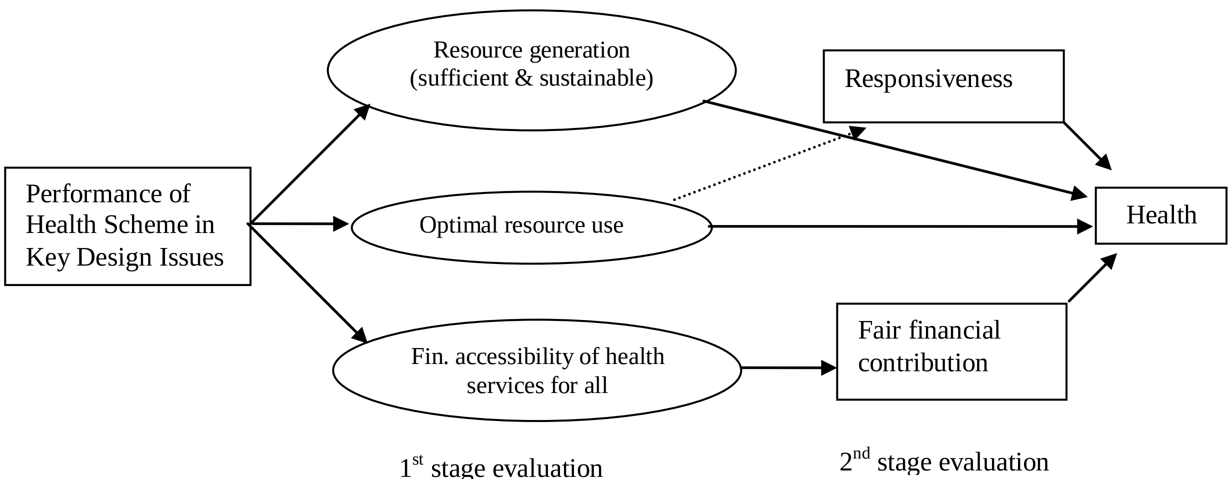


FIGURE 2.1.1 STAGES AT EVALUATION
Source: Carrin and James, 2004

Thus in assessing a health scheme by the former (health financing elements) the performance can be measured through the following health financing targets:

1) Resource generation (sufficient and sustainable)
2) Optimal resource use
3) Financial accessibility of health services for all.

The performance in relation to these targets is assessed against the three broad functions of health financing: (i) revenue collection, (ii) risk pooling, and (iii) purchasing. These broad functions of health financing have been further fractionated into sub-functions with measurable indicators as shown in Figure 2.1.2 and Table 2.1.1.

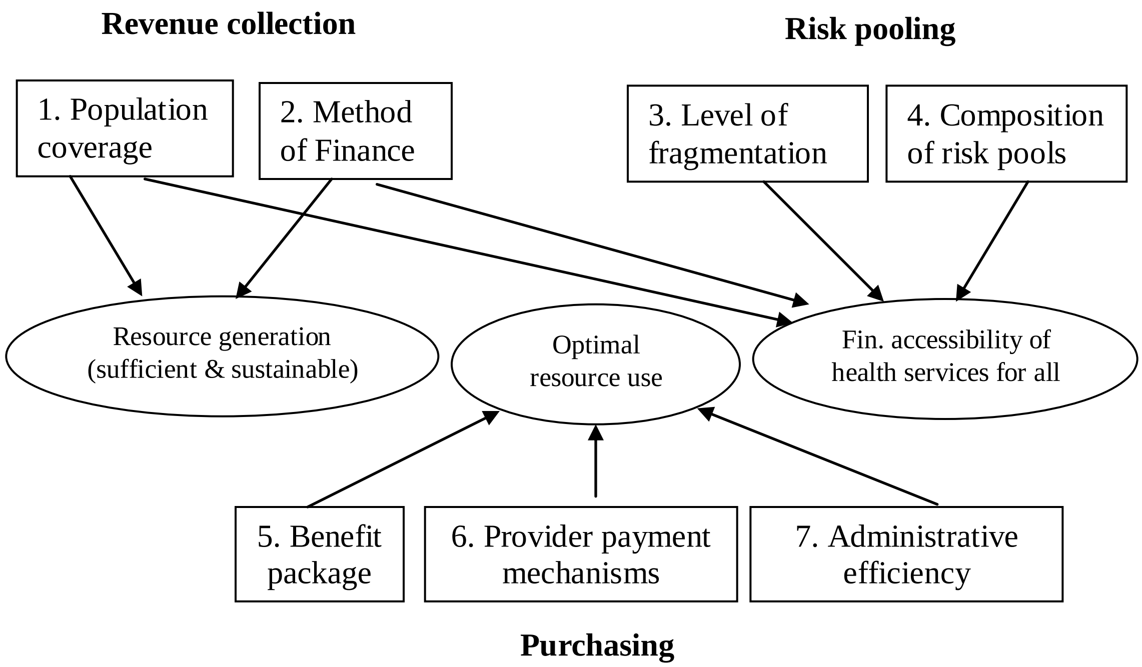


FIGURE 2.1.2: KEY DESIGN ISSUES IN THE HEALTH FINANCING SUB-FUNCTION

Source: Carrin and James, 2004

The population coverage of a scheme and the method of finance serve as indicators for the revenue sub-function. The level of fragmentation and the composition of risk pools measure the sub-function of risk pooling whiles the benefit package, provider payment mechanisms and administrative efficiency determine the sub-function of purchasing (Table 2.1.1).

The overall percentage of population covered determines the membership base and hence how much revenue the health scheme is able to mobilize. The bigger the coverage, the larger the revenue base all other factors assumed favourable. This not withstanding; when the population is sparsely distributed and heterogenous in terms of sociodemographic factors, revenue mobilization becomes expensive thus driving administrative cost high. Population coverage by sociodemographic and socioeconomic strata is also very important in view of equity issues. Certainly, the elderly, disabled and paupers may be unable to afford even the minimum premium and such need to be budgeted for since they are prone to catastrophic events and worst hit by measures of co-payment instituted to curtail moral hazard (Carrin et al, 2004; Carrin et al, 2005).

TABLE 2.1.1: OVERVIEW OF PERFORMANCE IN THE HEALTH FINANCING FUNCTIONS: SEVEN KEY DESIGN ISSUES

Key Issues	**Performance Indicator**	
Revenue Collection		
1. Population Coverage ✓ Overall / macroeconomic level ✓ By specific population group	✓ Percentage of population covered by insurance ✓ Coverage by socioeconomic group	What scope for direct government subsidies?
2. Method of Finance a) Extent of Prepayment ✓ Overall ✓ By specific population group b) Protection against catastrophic expenditure ✓ Overall ✓ By specific population group	✓ Ratio of prepaid contributions to total health care costs ✓ Prepayment ratio by socioeconomic group ✓ Percentage of households with catastrophic spending ✓ Catastrophic spending by socioeconomic group	Different sources of funds: • Payroll taxes versus mix of revenue sources • Are contributions flat-rated or income-rated
Risk Pooling		
3. Level of Fragmentation	Multiple risk pools? If yes, are there risk equalization measures in place?	Single versus multiple funds: ✓ Single funds: level of decentralization ✓ Multiple funds: member characteristics of different funds, with varying contributions and benefits? Competition amongst funds?
4. Composition of Risk Pool/s	Is membership compulsory?	What is the unit of subscription?
Purchasing		
5. Benefit Package	Are monitoring mechanisms - patient appeals mechanism, information on claimant rights, peer review committee and claims review – in place?	Nature of contract between provider and insurance scheme. How to reflect efficiency and equity criteria within the benefit package?
6. Provider Payment Mechanisms	See details in table 2.	Do provider incentives encourage cost containment and provision of good quality care?
7. Administrative Efficiency	Percentage of Expenditure on Administrative Costs	Budget caps; exclusion of low-cost interventions from benefit package.

Source: Carrin et al, 2005; Carrin et al, 2004

A high prepaid contribution to total health care cost is a favourable factor. However, complete (100 per cent) maximization of the prepayment ratio is not necessarily the best policy since it promotes moral hazard. A level of co-payment is favoured and levels of up to 30 per cent are quite common in European Social Health Insurance systems and even higher co-payments are noted for certain categories of pharmaceuticals (Carrin and James, 2004). In Vietnam, voluntary scheme members and active contributors (employed persons) out of compulsory schemes are required to pay 20 per cent co-payment based on schedule of hospital fees. However, the policy of co-payment in Vietnam did not meet the desired purpose of its institution and was thus targeted for removal in the new health insurance decree (Nguyen et al, 2003).

The average of prepayment ratios of some 27 countries estimated at 72.3 per cent; with 17 of the countries having ratios > 70 per cent is a useful guide. In terms of financial protection against health care cost, this average is taken as being a reasonable benchmark for developing countries. The socioeconomic stratification of this ratio can not be over emphasized. The Table (2.1.2) below illustrates the prepayment ratio of some selected countries.

TABLE 2.1.2: PREPAYMENT RATIOS IN SELECTED SHI SYSTEMS, 2000

Prepayment Ratio (%)	**Country**		
40-49.9	Chile (42.6%)	Republic of Korea (44.1%)	Monaco (48.1%)
50-59.9	Yugoslavia (51%)	Greece (55.5%)	Switzerland (55.6%)
60-69.9	Costa Rica (68.4%)	Romania (63.8%) Austria (69.7%)	Netherlands (67.5%) Poland (69.7%)
70-79.9	Belgium (71.2%) Hungary (75.7%) Estonia (76.7%) Slovenia (78.9%)	Lithuania (72.4%) Israel (75.9%) Japan (76.7%)	Germany (75.1%) France (76%) Bulgaria (77.6%)
80-89.9	The F.Y of Macedonia (84.5%) San Marino (85.7%)	Croatia (84.6%) Slovakia (89.6%)	
90+	Czech Republic (91.4%)	Luxembourg (91.9%)	

Source: Carrin and James, 2004

Catastrophic spending is yet another compelling indicator and has been defined as being 40 per cent or more of a household's effective income, net of subsistence (food) expenditure. This is a useful indicator since 100 per cent health insurance coverage is an unnatural event and many who may fall victim to catastrophic spending are the vulnerable – elderly, paupers, and the disabled. The socioeconomic stratification of this indicator may help resolve equity issues (Carrin and James, 2005).

The degree of fragmentation determines the level of risk pooling. Lower levels of fragmentation are associated with greater accessibility of health services. A health scheme can comprise multiple risk pools / multiple funds or a single risk pool / single fund. In a single risk pool, all financial operations flow through it. However in a multiple pool system, each risk pool has its own financial fund. Thus single risk pools are more likely to benefit from lower administrative cost and enjoy the benefit of "economies of scale".

In circumstances when multiple risk pools exist, policy makers can achieve the objective of one benefit package by "risk equalization" through a "solidarity fund'. Vietnams health insurance system had been going through phases of evolution. Their system had a fragmentation of the risk pool but achieved risk equalization through cross-subsidisation (Nguyen et al, 2003).

Traditionally, two forms of risk equalization have been used: (i) Risk adjusters (ii) Ex post risk sharing. Risk adjusters are characteristics used to estimate likely health expenditures and they include: age, sex, disability, income, employment status, region (epidemiological profile and whether it is predominantly rural or urban), prior year expenditures and prior utilization (Carrin and James, 2005). Risk pools with a disproportionately high number of high risk individuals may receive subsidies through the solidarity fund in an effort to foster equity through cross-subsidisation. The ex post risk sharing involves retrospective reimbursement by the solidarity fund and can be designed to cover exceptionally high cost. This form of risk equalization is more effective than the method of risk adjusters (Carrin and James, ibid).

The composition of the risk pool is key to the sustainability of the scheme. If enrolment into the scheme is voluntary and based on ability-to-pay rather than individual risk, then "adverse selection"; where high risk cases are systematically enrolled occurs and these predominate the scheme's membership. This can be checked by introducing a form of compulsory membership (Carrin and James, ibid).

The comprehensiveness of the benefit package cannot be ruled out in assessing the performance of the health scheme. An over-inclusive benefit package will drive the premium quite high and many will not be able to afford with a subsequent low prepayment ratio. This will make the scheme less attractive and skew the membership to only the rich. This may only be economically sound in an uncompetitive and inelastic health insurance market. However, it raises moral and ethical issues. In situations with incomprehensive benefit packages, essential services are left out and members still have to make out-of-pocket payment at health facilities and the poor cannot afford this. Thus the basic essence of the health scheme is defeated.

To ensure the appropriateness of the benefit package, monitoring mechanisms – patient appeals mechanism, full information on claimant rights, peer review committee, and claims review, need to be in place. This is even more important because of asymmetry of information when the health care provider has to make decisions on behalf of the patient in what is known as the "agency relationship". Thus the presence of these monitoring mechanisms are indicative of a well implemented benefit package and thus of good performance (Carrin and James, 2004).

There are many types of provider payment mechanisms as shown in Table 2.1.3. Each has its strengths and weaknesses. Basic to health schemes operating in Ghana are fee-for-service, capitation payment and more recently case payment.

The fee-for-service payment mechanism is the most common mode of payment used by many schemes in Ghana. Here, providers are paid for each service or act provided to a patient. Its perceived strength is in the provision of quality service which stands to question. However, this mode of payment is fraught with overproduction of health services due to supplier-induced demand. It is also criticized for the tendency to reduce time spent on an activity, delegation to less qualified personnel so as to maximize income as well as high administration cost due to billing, reimbursement fees and monitoring / adjustable fee schedules.

The negative consequences of the fee-for-service payment mechanism can be counteracted by combining fee-for-service with budgets, and/or by adjusting fees after a specified quantity of services is exceeded. Co-payments for patients can also act as counterweight to provider demand inducement. Competition among providers can also moderate the negative quality issues. Monitoring as in the form of peer reviews can also limit inappropriate delegation and insufficient time spent per activity.

TABLE 2.1.3: PROVIDER PAYMENT METHODS AND EXPECTED LEVEL OF PRODUCTION

Payment Method	**Overproduction or Underproduction?**	**Main design remedy (alongside monitoring activities)**
Fee-for-service	Overproduction	Combine with budgets Adjust fees when specified level exceeded
Daily payment	Overproduction	Reduce daily payment as length of stay increases
Case payment (DRGs)	Overproduction	Ensure diagnostic groups are clearly defined
Capitation	Underproduction	Integrated referral systems
Budgets	Underproduction	Strict budgets that are *not* based on historical allocations Integrated referral systems
Salaries	Underproduction	Ensure salaries are performance-related

Source: Carrin and James, 2004, 2005

Similar to fee-for-service, Daily payment and Case payment (DRGs: Diagnosis-related groups) provider payment mechanisms are associated with overproduction of health services whereas, Capitation, Budgets, and Salaries are associated with underproduction of health services (Carrin and James, 2004, 2005).

In an assessment of "potentially large population schemes" in Africa for "financial risk protection" (FRP) performance, Arhin-Tenkorang (2001) used indicators like: Affordability, percentage of target population enrolled, appropriateness of payment schedules, completeness of package and level of access (Table A2.2 in Appendix 2). Arhin-Tenkorangs' addition corroborates many issues in the discussions above and adds an African dimension. Scheme design was emphasized in this new development as key to efficient performance. Design options included utility function, operational level, range of providers, and range of benefits as shown in Table 2.1.4 (Arhin-Tenkorang, 2001).

TABLE 2.1.4:SCHEME DESIGN OPTIONS

Dimension	Choices	Strengths	Weaknesses
Utility Functions	Access maximization	Encourages affordable premiums and hence high participation.	
	Revenue maximization	Encourages community-rated premiums and enhances cross-subsidization between scheme members	
	Cost recovery		Discourages affordable premiums (i.e. based on WTP)
Operational Level	Single-facility based (i.e. a hospital scheme)		Discourages participation by distant populations & limits range of benefits
	Provider-network based (i.e. scheme consisting of participating clinics and referral hospital(s))	Encourages wider geographic spread of participants and greater range of benefits, and permits effective referral system	
Range of Providers	Restricted to public and not-for-profit private	Absence of profit motivation and use of existing structures may lower premiums	
	Includes or limited to for-profit private		Profit margins may lead to high premiums
Range of Benefits	Full basic package (i.e. outpatient plus inpatient)		Encourages high enrollment, prompt attendance to health problems
	Partial packages		Discourages early treatment until illness is severe and/or complications arise that are covered by scheme leading to high costs.

Source: Arhin-Tenkorang, 2001

2.1.2: COVERAGE

The population coverage of a health insurance scheme is a useful indicator of performance but is limited by the sociodemographic stratification of the population. The casual workers, self employed (workers in the informal sector), heterogenous and sparsely distributed populations are hard to reach with concomitant high administrative cost. Unstratified population coverage rates must thus be used with circumspection.

The U.S. Census Bureau released a report in 2004 on income, poverty, and health insurance coverage in the United States. The report revealed that, between 2002 and 2003, real median household income remained unchanged at $43,318, official poverty rate rose from 12.1 to 12.5 per cent, the number of people with health insurance increased by 1 million and the number without health insurance went up by 1.4 million. The report concluded, the percentage of the nation's population without health insurance coverage grew from 15.2 to 15.6 per cent (US Census Bureau, 2004).

In other developments, the national health interview surveys of 2003, 2004, and 2005 found a relatively stable non-insurance coverage rate of 17 per cent among persons aged under 65 years. The reasons attributed to the lack of health insurance were cost followed by change in employment (Adams et al, 2006; Adams et al, 2007; Schiller et al, 2005).

In California, six and one-half million Californians were uninsured for all or some part of 2005. The number of uninsured represented one in five children and non-elderly adults. This situation may not make significant improvement in the face of instability of employment-based insurance coverage in the light of rising cost (Yoon et al, 2006).

Indeed the declining health insurance coverage rates in the United States attributable to rising cost and loss of employment as suggested by the aforementioned authors has also been corroborated by Hadley (2006) and Gould (2008). Gould observed that, the number of Americans without health insurance rose from 38.4 million in 2000 to 47.0 million in 2006, primarily due to the precipitous decline in employer- provided health coverage for workers and their families. Nearly 3.9 million fewer Americans under 65 had employer-provided coverage in 2006 than in 2000. The downward trend in the rate of employer-provided insurance continued for the sixth year running, falling from

68.3 to 62.9 per cent. Jobholders experienced a significant decline in health insurance coverage, from 74.8 per cent in 2000 to 70.8 per cent in 2006 (Gould, 2008).

The declining coverage of health insurance due to increasing premium can not be overemphasized as Chernew et al (2005) also added their voice to this assertion in a survey conducted in the United States. They found that, more than half of the decline in coverage rates experienced over the 1990's was attributable to the increase in health insurance premiums – 2.0 percentage points of the 3.1 percentage point decline (Chernew et al, 2005).

Health insurance coverage rates varied among the different sociodemographic groups. Analysis of the Commonwealth Fund Bienniel Health Insurance Survey (2005) found that, uninsured rates for Hispanics and African American adults were one and a half to three times greater than the rate for white adults. The analysis further revealed that, nearly two-thirds (62%) of working age Hispanics and one-third (33%) of African Americans were insured at some point during 2005, compared to 20 per cent of working-age whites (Doty and Holmgren, 2006). Freeman et al (2006) and DeVoe et al (2008) researching on a similar issue but at different locations in the United States corroborated the trend described by Doty and Holmgren. DeVoe et al in Oregon revealed that, nearly 11 per cent of children presumed eligible for public insurance were uninsured. The non-insurance among the children was associated with being Hispanic, having an employed parent, and higher household earnings (133-185% of the federal poverty level). They also found that, children with uninsured parents were more likely to be uninsured, compared with those with insured parents (adjusted OR 14.21; 95% CI: 9.23-20.34). Rather surprising, there was a higher rate of uninsured children among privately insured parents compared with parents covered by public insurance (adjusted OR 4.39; 95% CI: 2.00-9.66).

In one other dimension, studies have shown that uninsurance rates are higher in rural than urban dwellers (Ziller et al, 2006, 2008). Ziller et al (2008) found that, one out of three rural families had at least one uninsured member, a rate higher than for urban families. In another development, Ziller et al (2006) observed that, 6 per cent of privately insured urban residents were underinsured, a rate that increased to 10 per cent for rural adjacent and 12 per cent for rural non-adjacent.

In an unrelated development, Zun and Downey (2006) discovered that, patients attending the Emergency Department of a United States Hospital had 78.2 per cent insurance coverage.

The increase in coverage is not necessarily a simple linear increase. To this end, it took Austria 40 years (from 1890 to 1930) to move from 7% to 60%, but another 35-37 years (from 1930 to 1965-1967) were needed to extend insurance to farmers and civil servants, reaching 96% coverage. Similarly, it took Germany 47 years (from 1883 to 1930) to increase coverage from 10% to 50% and another 58 years to extend coverage to 88%, drawing in among others, the self-employed workers to the Social Health Insurance (SHI). In Costa Rica, it took 20 years to reach a population coverage level of 17% (in 1961) and a remarkably shorter period of only 5 years to double the coverage to 34% in 1966. The latter increase was an immediate consequence of the law of 1961 introducing the principle of universality. Following this, it took more than 10 years to again double the population coverage; and by 1978, the population coverage amounted to 74%. Subsequently, a population coverage level of 83.4% was obtained in 1991: Thus 13 years were required to add a further 10% coverage to the population. In the case of Costa Rica, special efforts were needed to extend coverage to the self-employed and the low-income population, demanding ever longer time periods to systematically enroll these population groups (Carrin and James, 2004).

In the European Union, the existence of near universal coverage by the statutory health care system reduces consumers' need for additional coverage through Voluntary Health Insurance (VHI) in many member states unlike the United States, Australia, and Switzerland. In 1997 universal rights to health care could be found in Denmark, Finland, Greece, Ireland, Italy, Luxembourg, Portugal, Sweden and the United Kingdom, and near universal rights (99% coverage or higher) in Austria, Belgium, Germany, France and Spain. Statutory health coverage was lowest in the Netherlands (74.6%).

Participation in the statutory health care system is mandatory in the European Union as it is financed through taxation or contributions from employers and employees.

However, certain situations have called for the augmentation of the statutory health care system with the VHI which takes three forms: (i) Substitutive (ii) Supplementary (iii) Complementary (Carrin and James, 2004).

Substitutive VHI is limited to specific population groups in a handful of member countries and is purchased by those who are excluded from participating in some or all aspects of the statutory health insurance scheme (SHI) or exempt from contributing to the statutory health insurance scheme because they are allowed to opt out. In fact, it substitutes for cover that would otherwise be available from the state (SHI).

Complementary VHI covers those services that are excluded or not fully covered by the SHI (including cover for co-payment imposed by the statutory health care system). It is available in every member state and to the whole population.

Supplementary VHI is quite similar to complementary VHI and the distinction between them is not always clear so that overlaps sometimes occur between them in some member EU states. It provides supplementary cover for faster access and increased consumer choice. Traditionally, it guarantees superior accommodation and amenities in hospitals (a single room with en suite bathroom, for example) rather than improved clinical quality of care and, crucially, faster access to treatment, particularly in areas of health care with long waiting times, such as surgery (Mossialos and Thomson, 2004). The percentage coverage rates of VHI in some member states of the EU are shown in Tables 2.1.5 and A2.1 in Appendix 2.

Health insurance schemes in Africa are not well established and only a few countries like Zimbabwe (prior to the present economic crisis) and South Africa have relatively well developed health schemes. The large majority of countries have predominantly health schemes tailored to rural dwellers and the informal sector and these take any of the following forms: (i) provider insurance model (ii) mutual-provider partnership model (iii) mutual benefit society model. These schemes have structural and organizational weaknesses that make them unable to function efficiently and because of their small sizes, are unable to benefit from economies of scale. A few selected “potentially large population” schemes have been detailed in Table A2.2 in Appendix 2.

These health schemes showed population coverage rates from 5.0 per cent to 66 per cent. The Carte d' Assurance Malaidie (CAM) programme in Burundi recorded a coverage rate of 54% in 1 province studied in 1992. The Community Health Fund (CHF) in Tanzania recorded a modest low coverage of 5.3% in 2 districts studied in 1999.

TABLE 2.1.5: LEVELS OF VHI COVERAGE AS A PERCENTAGE OF THE TOTAL POPULATION

Country	Substitutive	Complementary/Supplementary
Austria (1999)	0.2%	18.8% (complementary) 12.9% (supplementary; hospital expenses)
Belgium (2000)	7.1%	30-50% (complementary)
Denmark (1999)	None	28% (mainly complementary; some supplementary)
Finland (1996)	None	Children aged < 7: 34.8% (supplementary) Children aged 7–17: 25.7% (supplementary) Adults: 6.7% (supplementary)
France (2000)	Marginal (frontier workers)	85% (1998) (complementary) 94% (2000 estimate) (complementary)
Germany (1999)	9%	9%
Greece (2000)	None	10% (supplementary)
Ireland (2000)	None	45%
Italy (1999)	None	15.6%
Luxembourg (2000)	None	70% (mainly complementary)
Netherlands (1999)	24.7% (+ 4.2% WTZ)	>60% (complementary) Marginal (supplementary)
Portugal (1998)	None	12% (mainly supplementary)
Spain (1999)	0.6%	11.4%
Sweden (1999)	None	1.0-1.5% (mainly supplementary)
United kingdom (2000)	None	11.5% (mainly supplementary)

Source: Mossialos and Thomson, 2004

The Dangwe West Health Insurance Scheme (Dangme Hewami Nami Kpee) in Ghana registered the lowest (among the selected schemes) coverage rate of 5% of households in 2000. The Nkoranza Community Financing Health Insurance Scheme also in Ghana and the Bwamanda Hospital Insurance Scheme in the Democratic Republic of Congo are similar – both structured according to the provider insurance model. The Nkoranza scheme, started in 1992 had a coverage rate of 27% whiles the Bwamanda scheme averaged a coverage rate between 41% and 66% between 1987 and 1995.

Studies of the Nkoranza scheme have shown that enrollment decreased with distance from the hospital. Low enrollment has also been blamed on inappropriateness of payment schedules and inadequate cash as was the situation in the following schemes: CAM, Burundi; Bwamanda scheme, Democratic Republic of Congo; Dangme West Health scheme, Ghana and the Nkoranza scheme, Ghana. In Tanzania, provider health facilities for the community health fund (CHF) reported 75% of patients attending the facilities were enrollees of the scheme (Arhin-Tenkorang, 2001).

2.1.3: PERFORMANCE RATIOS

The administrative cost or expense ratio is yet another key indicator used in the assessment of the performance of health insurance schemes. This cost reflects a component of health care funding consumed on non-health improving activities. The administrative cost arise from planning, management, regulation and collection of funds and handling of claims of the delivery system. Public administration costs borne by health care providers (eg. Patient records and hospital management) are not included in the administrative cost (Saltman et al, 2004). Over allocation of this cost would limit the funds available for health care. There is also the need to keep funds in reserve to meet unexpected cost as well as fluctuations in expenditure (Carrin and James, 2005).

Studies of matured Social Health Insurance (SHI) systems have generated the mean share of administrative costs in health spending as 4.2%. This ranged from 2% in Japan to 6.6% in Switzerland. In the Republic of Korea, administrative costs in health spending were 11.9% in 1990 and by 1999 had fallen to 6.4%. These systems demonstrated a downward trend with decreasing average cost in the processing of claims. Technological advances were also an important factor for this trend. Based on analysis of 20 Organisation for Economic Cooperation and Development (OECD) countries, the administrative cost was seen to reduce at a rate of 0.1% per annum. The studies thus recommended a maximum level of 6-7% administrative cost in the later stages of social health insurance (SHI) development which cost should fall by an average minimum of 0.1% per annum as the SHI is extended (Carrin and James, 2004 and 2005).

Saltman et al (2004) in a study of social health insurance in Western Europe observed administrative cost as measured by the OECD countries (2003) was higher in SHI countries than in countries with a tax-based system as demonstrated in Table 2.1.6. In the tax-funded system, Portugal recorded the lowest of 0.1% and the United Kingdom 3.3%. The SHI system had France recording the lowest of 1.8% and Luxembourg recording the highest of 6.7%. The choice of "sickness fund" explained the difference in administrative cost in the two systems. In a further analysis, Saltman et al (2004) established a correlation between the number of sickness funds per capita and administrative cost thus providing prima facie evidence for the interpretation of the observed trend in Table 2.1.6.

TABLE 2.1.6:TOTAL EXPENDITURE ON HEALTH ADMINISTRATION AND INSURANCE AS A PERCENTAGE OF TOTAL HEALTH EXPENDITURE (%THE), 1990, 1995, 2000.

Country	*Dominating System*	*Administrative Costs* 1990	*(%THE)* 1995	*2000*
Luxembourg	SHI	-	-	6.7
Germany	SHI	6.3	5.3	5.4
Switzerland	SHI	6.1	5.0	5.1
Netherlands	SHI	4.9	4.5	4.4
Austria	SHI	-	3.7	3.7
UK	Tax-funded	-	-	3.3[†]
Spain	Tax-funded	-	2.7	2.3
Finland	Tax-funded	2.0	2.3	2.1
France	SHI	1.6	1.7	1.8
Denmark	Tax-funded	0.8	0.9	0.9
Italy	Tax-funded	0.3	0.3	0.3
Portugal	Tax-funded	-	0.1	0.1

[†] 1999 data. Countries are ordered by 2000 costs. Ordering is only to facilitate easy interpretation of data. It does not reflect overall national rankings.

Source: Saltman et al, 2004.

Switzerland, the Netherlands and Spain showed decreasing administrative cost over the period 1990 to 2000 whiles France demonstrated the opposite over the same period (Saltman et al, 2004).

Administrative cost for voluntary health insurers in member states of the European Union ranged from about 10% in Germany, Luxembourg (mutual associations), the Netherlands and France (mutual associations) to as much as about 25% in Austria, Belgium, Italy and Portugal. In contrast, the administrative cost of statutory health care systems were substantially lower: Between 3% and 5% in most member states and even lower in others such as Denmark and Italy (Table A2.3 in Appendix 2).

Financial analysts hold different opinions on the justification for administrative cost. In the United States, some analyst claim that voluntary health insurers compete by devising ways to control moral hazard more effectively, including structured co-payments, utilization review, case management, selective contracting with preferred providers and provider-targeted financial incentives such as capitation and other risk-sharing forms of prospective reimbursement. In contrast, insurers in the European Union were more likely to compete on the basis of risk selection than through competitive purchasing and attempt to contain cost by generally operating on the demand rather than the supply side (Mossialos and Thomson, 2004).

In Ghana, an analysis of seventeen Mutual Health Insurance Schemes (MHIS) revealed an average administrative cost of 29.03% of the total expenditure (Aikins, 2003). The yearly averages were estimated as follows: 17.4% (1999), 37.8% (2000), 35.2% (2001), and 25.7% (2002).

TABLE 2.1.7:ADMINISTRATIVE COST IN SEVENTEEN MHIS IN GHANA

Year	***Administrative Cost (%)***	***% Change from Previous Year***	***% Change (1999 - 2002)***
1999	17.4		
2000	37.8	117.24	
2001	35.2	-6.88	
2002	25.7	-26.99	**47.70**
Mean	29.03	**27.79**	

Source: Adapted from Aikins (2003)

Between 1999 and 2000, the administrative cost increased by 117.24%. Subsequently, it declined by 6.88% and 26.99% respectively as shown in Table 2.1.7. The yearly average increamental rate was 27.79%. However, between 1999 and 2002, the administrative cost had increased by 47.70% (Gross Incremental Rate).

There was substantial variation in the claims ratio (claims expenditure as a proportion of premium income) among different member states of the European Union and between individual and group VHI policy holders.

In Germany, the claims ratio decreased significantly from 80.0% in 1995 to 65.8% in 1999, but this decline was caused by increases in the legal requirements for old age reserves, rather than a fall in claims expenditure (Mossialos and Thomson, 2004). Overall, the claims ratio appears to be highest in Denmark (91.7% in 1998) and greater than 80% in the Netherlands and Spain. However, most claim ratios were in the range of 72-76% (Table 2.1.8). The average for 1995 was estimated as 79.98% and for 1998 it was 79.37%.

The variation between claims ratios for commercial individuals and group policy holders was much more marked, reflecting the fact that many insurers offered lower rates for group policy. Commercial insurers in Belgium had a claims ratio of as low as 60.2% for individual policies in 1999 and 88.8% for group policies in the same year. In France, commercial individual policies had a ratio of 68.7% in 1998 whereas counterparts in the group policies had 84.5% claims ratio in the same year. Claims ratios were also much higher for group policies in Portugal and the United Kingdom (Mossialos and Thomson, 2004).

TABLE 2.1.8:CLAIMS RATIO† OF VOLUNTARY HEALTH INSURERS IN THE EUROPEAN UNION

Country	*1995*	*1998*	*Various years (national reports)*
Austria	74.1%	75.8%	74.4% in 2000
Belgium	75.2%	74.1%	Commercial individual: 60.2% (1999) Commercial group: 88.8% (1999)
Denmark	90.9%	91.7%	N/A
Finland	-	69.4%	Commercial (includes accident + health) 75.2% (1998) 75.8% (1999) 72.5% (2000)
France	77.5%	78.7%	Commercial individual: 66.5-70% (1999) 71.9% (1989) to 68.7% (1998) Commercial group: 100% (1993) 82% (1996) 85.4% (1997) 84.5% (1998)
Germany	80.0%	70.4%	65.8% (1999)
Greece	-	-	76.6% (1999)
Ireland	-	-	Vhi Healthcare: 86% (2001)
Italy	74.1%	78.1%	75.2% (1999)
Luxembourg	-	-	Mutuals had a deficit of LUF 20 million in 2000, in 1998 they had a much larger deficit, but membership fees have since increased.
Netherlands	87.7%	89.35%	81.3% (2000)
Portugal	76.3%	78.15%	83-87% (1996-1999) lower for individual policies
Spain	82.0%	84.05%	83%
United Kingdom	82.0%	83.35%	Overall: 79% (2000) Individual: 73% (2000) Employer-paid: 85% (2000)
Average	79.98%	79.37%	

† Claims Ratio = Benefits Paid ÷ Premium Income

Source: Mossialos and Thomson, 2004

2.1.4: HEALTH SERVICES UTILIZATION

The utilization of health services became an issue following the introduction of the user fee policy. The policy affected the utilization of health services in different ways. Proponents of its abolition argued that, it decreased utilization (Ahlamaa-Tuompo et al, 1998; Matee et al, 2000; Nabyonga et al, 2005) and increased the inequality gap between the rich and the poor (Bonu et al, 2003; Burstrom et al, 2002; Diop et al, 1995) so that the poor did not have access to health care.

However, other studies observed increases in utilization as a result of the policy (Akashi et al, 2004; Audibert et al, 2000; Barber et al, 2004; Dipankar et al, 2007). This was largely as a result of improvement in the quality of services resulting from the retention of the money recovered through the user fees.

In other instances, the utilization showed a mixed picture of both a decline and an increase (Asbu et al, 1999; Benjamin et al, 2001; Blas et al, 2001). Asbu et al (1999) and Blas et al (2001) observed a shift in utilization from referral hospitals to smaller units at the health centres and primary care levels which explains the mixed picture in the utilization pattern. However, Benjamin et al (2001) observed an initial fall then a rise later.

The user fee policy was therefore not so much of an “evil” policy as it had been portrayed by some commentators (Creese, 1997). It’s impact on utilization largely depended on its management but certainly there were some unintended and unpleasant consequences.

This not withstanding, it set the stage for the start of health insurance which better addresses inequality issues depending on the design. If direct payments like co-payment is introduced to control moral hazard and this additional charge is significantly high, then the issue of inequality is again brought to the fore. In this regard, De Allegri et al (2006) in a population-based study in rural Burkina Faso explained that, the decision to enroll in a community health insurance scheme was shaped by a combination of factors viz, household head, household, and community factors which should be factored into the design. De Allegri et al (2006) found an association between enrolment and ethnicity, higher education, higher socioeconomic status, a negative perception of the adequacy of traditional care, higher proportion of children living within the household, greater distance from the health facility, and a lower level of socioeconomic inequality within the community but no association with household health status, or previous household health service utilization.

Many studies have associated a good performing health insurance with increased health service utilization (Fuda and Immekus, 2006; Hunt et al, 2006; Jeffrey and Newacheck, 2006). Jeffrey and Newacheck (ibid) demonstrated the positive and substantial impact of insurance on access and utilization and provided clear evidence that insurance protects families against the financial burden of catastrophic health expenditures. Hunt et al (2006) also found that most frequent users of the Emergency Department had health insurance (84%) and a usual source of care (81%).

In a related development Geitona et al (2007) observed that, the utilization of health services in Greece was mostly determined by health status rather than other socioeconomic factors.

2.1.5: LENGTH OF STAY IN HOSPITAL

The length of stay (LOS) in a health facility is influenced by many factors including: Discharge destination (Brasel et al, 2007), type of case/diagnoses (Sakamoto et al, 2006; Schneider et al, 2007), procedure (Choi et al, 2007; Dillavou et al, 2006; Druzin and El-Sayed, 2006; Higashida et al, 2007; Perleth, 2007), insurance type and status (Brameld et al, 2006; Diercks et al, 2007; Lopez et al, 2006; Robergeau et al, 2006; Schneier et al, 2006; Sepehri et al, 2006; Shen and Washington, 2007), socioeconomic status (Ellison and Bauchner, 2007), ethnicity (Hlaing, 2007, Kokoska et al, 2007), complications (Kugelmass et al, 2006; Reynolds et al, 2006; London et al, 2006), type of provider (Lin et al, 2006) and sociocultural factors (Toyabe et al, 2006). These factors by themselves interact with each other in various associations which ultimately end up in affecting cost and this is what the insurers try to regulate. Often the cost factor operates through the length of stay (LOS). Chen et al (2007) observed that, the increased hospital expenditures in Taiwan's National Health Insurance programme was strongly impacted by LOS, increasing cost by about 4.8% per day.

Brasel et al (2007) tried to find an association between non-clinical factors and LOS. Their investigations revealed that, discharge destination had the greatest effect on LOS. Length of stay was longer for patients discharged to a nursing home (14.2 days) or rehabilitation facility (11.5 days) compared with those discharged to any other facility (9.6 days). The mean LOS for patients with Medicaid (11.3 days) was significantly longer than for patients with commercial insurance and uninsured patients (each 9.3 days) and patients with medicare (8.8 days). Overall mean LOS came to 9.6 days. In a related development, Toyabe et al (2006) associated prolonged LOS with socio-cultural factors like non-working mothers and smaller number of siblings. These had stronger influence on LOS in Japan than did medical factors like disease course, coexisting illness, complications and treatment response.

Length of stay is one indicator of utilization that can not be applied across board in comparisons. It affords comparisons among cohorts. Situations in orthopaedics (Sakamoto et al, 2006) may certainly be different from oncology (Schneider et al, 2007). Analysis of data (on femoral neck and trochanteric fractures) from 158 core orthopaedic hospitals in Japan revealed mean duration from fracture to admission as 3.1 days, mean duration from admission to surgery 11.2 days and from surgery to discharge 49.8 days (Sakamoto et al, ibid). In the state of lower Saxony in Germany, analysis of data on lung, colon, breast and prostate cancers revealed number of inpatient hospital stays as 2.7 cases and 29 days per patient (Schneider et al, ibid).

The type of procedure a patient undergoes also dictates the length of stay (LOS) in hospital. In the light of the above, Druzin and El-Sayed (2006) were concerned about rising caesarean section rates as it was associated with longer LOS and higher occupancy rate. In a related development, Dillavou et al (2006) and Perleth (2007) observed that, minimally invasive surgery was associated with shorter hospital stay.

In other developments, Robergeau et al (2006) established a correlation between LOS and insurance status and this was corroborated by Shen and Washington (2007) who additionally established an association of longer LOS and poorer health outcomes with the uninsured. In Vietnam, Sepehri et al (2006) investigated the effects of Vietnam’s health insurance schemes on inpatient care using the national health survey data. Their findings revealed varying effects on hospital admission and LOS across the various schemes. The compulsory insurance scheme and the insurance scheme for the poor increased the expected LOS by factors of 1.18 and 1.39, respectively, while the voluntary insurance scheme had minimal effect on the expected LOS. Insurance also increased the likelihood of hospital admission far more for compulsory members than for members of the other two insurance schemes. The positive influence of the insurance on hospital admission and the LOS also varies across income quintiles, regions and types of health facilities. While the compulsory and voluntary schemes increased the likelihood of hospital admission more for the lower and middle income individuals, the influence of the compulsory scheme on the expected LOS was more pronounced for patients in the middle income category. The influence of insurance was also found to be stronger for patients admitted to provincial hospitals rather than district hospitals (Sepehri et al, 2006).

Kokoska et al (2007) observed racial disparity in the management of paediatric appendicitis. Their study revealed that, African-American with appendicitis had lower overall hospitalization rates, higher rates of perforation, a greater delay to surgical management and lower laparoscopic rates. In contrast, Hispanic children more frequently had appendicitis and complex disease. In fact, the treatment of African-American and Hispanic children overall was associated with longer hospital stay and higher charges. This was corroborated by Hlaing (2007) who found that, the adjusted length of stay was 3.2 (Blacks), 3.1 (Hispanics) and 2.9 (Whites) days ($P < 0.01$).

In yet another development, Reynolds et al (2006) revealed an association between LOS and complications. In medicare patients undergoing cardioverter-defibrillator implantation, early complications were associated with significant increases in LOS and cost. Any complication increased adjusted LOS by 3.4 days and cost $7,251 more.

The influence of the human factor can not be separated from LOS in a health facility. In the management of acute myocardial infarction in Taiwan, it was observed by Lin et al (2006) that, the LOS among patients attended to by cardiologist was 28.0% shorter than those seen by physicians specialized in surgery, family medicine, or emergency medicine. It was also revealed that, compared with district hospitals, the LOS was significantly longer in both medical centres and regional hospitals (both $P < 0.001$).

2.1.6: DRUG AVAILABILITY AND PRESCRIPTION PATTERN

Prior to the introduction of "cost sharing" through "user-fees", the availability of drugs in many public health facilities in Africa left much to be desired. "Stock-outs" were so frequent, and became common phrase. Patients and relatives had to go out with prescriptions to buy both drug and non-drug consumables for the treatment of their ailments. The quality of these drugs could not be guaranteed and patients were left at the mercy of profiteering drug merchants. The introduction of the user fees was aimed in part at recovering some cost at the facility level and to have this fund to replenish drug and non-drug consumables for the smooth and uninterrupted running of the facilities. Key to monitoring the performance of the user fee system was the availability of drugs. To this end, many public health institutions introduced the "revolving drug accounts" operated independently of the "internally generated fund" (IGF) and the "donor pool fund" (DPF) accounts and also protected from vying. This was to ensure availability of funds at any time to purchase drugs so as to avoid or limit stock-outs.

After the introduction of the user fee policy, prescription patterns began to change. Holloway et al (2002) assessed the influence of user fees and patient demand on prescribers in rural Nepal and concluded that patient demand was not affected by the different kinds of user fee and did not directly influence prescribing behaviour. In an earlier study also by Holloway et al (2001), 20-52% of total drug costs were attributed to inappropriate drug prescription.

In spite of the introduction of user charges in public health facilities, the availability of prescribed medications still remained poor in some institutions. In Tanzania, drugs were reported to be always available by only 27.3% of public health facility users compared to 80% of private health facility users (Hussein and Mujinja, 1997).

In view of the above and also the decline in the utilization of public health facilities (Bailey et al, 1994; Hogberg and Larsson, 1999) and the increasing inequality gap between the rich and poor (Dao et al, 2008; Ensor and San, 1996), the user fee policy started giving way to health insurance.

In the Boboye district of Niger, revenues from co-payments alone covered about 34% of the cost of medicines or about 20% of costs of drugs and administration. Here again, taxes plus the additional co-payments covered 120-180% of the cost of medicines, or 75-105% of the cost of medicines plus administration of cost recovery (Wouters, 1995).

In fact, drug dispensing and prescription patterns were not immune from the effect of insurance. Kartal et al (2007) in Turkey, whiles studying the "prescription pattern of general practitioners for Osteoarthritis in primary care settings" observed that the preference of drugs was affected by health insurance types and the gender of patients in favour of expensive new drugs.

An analysis of the Medical Expenditures Panel Survey of a nationally representative sample of civilian non-institutionalized population of the United States showed that, generic drugs constituted 40.6% of the prescriptions analysed (Chen and Wu, 2008). Uninsured patients were more likely than privately insured patients to have a generic drug dispensed than brand-name drugs (OR: 1.42; 95% CI: 1.10-1.84). Asian children were also more likely than White children to receive generic drugs (OR: 1.66; 95% CI: 1.07-2.57) and so were girls more likely than boys to receive generic drugs over brand-name drugs (OR: 1.36; 95% CI: 1.08-1.73). Chen and Wu (2008) thus exposed the ethnic group and gender type predisposed to generic prescription.

Federman et al (2006) corroborated the above trend; observing that, persons with low income or no prescription coverage were more likely to use generic drugs than their more affluent and insured counterparts. The cost escalation associated with prescription drugs is a matter of concern to insurers. Doran et al (2005) observed the rapid increase in pharmaceutical related expenditure in Australia. This was a consequence of the universal pharmaceutical subsidies – pharmaceutical benefits scheme that operated in the country and many people took advantage of this and were using more medicines than were necessary –a clear case of "moral hazard". In a later development, Federman et al (2007) noted that, promoting generic prescribing among specialists and generalists may increase opportunities for patients and third-party payers to reduce spending on prescription drugs.

Several strategies were developed to curtail the cost escalation. In one such strategy, Gouya et al (2008) advocated financial incentives for insurants by partial reimbursement of prescription charges. This was effective for increasing the proportion of generic substitutes and for controlling drug costs. In other developments, "priorauthorisation (before paying or before prescription)" and "stepped-therapy approach" were implemented to curtail cost escalation (Fischer et al, 2007 & 2004).

In yet another related development, Hu et al (2001) in China explained that, the drug list and capping policies in Shanghai had been able to contain the escalation of drug expenditure and improved rational drug use without compromising equity. Co-payments were also measures used to control drug expenditures and promote rational prescribing (Martikainen et al, 2007). Gemmill et al (2008) summarized the direct and indirect forms of prescription drug charges and their incentives in Table 2.1.9 below.

TABLE 2.1.9:DIRECT AND INDIRECT FORMS OF PRESCRIPTION DRUG CHARGES AND THEIR INCENTIVES

Form	***Definition***	***Patient Incentives***
Direct		
Co-payment	The user pays a fixed fee (flat rate) per item or service.	The patient may decrease the volume of drugs consumed or may decrease the number of prescriptions filled while increasing the size of each prescription. The patient has no incentive to consume cheaper drugs unless co-payments are lower for these drugs.
Co-insurance	The user pays a fixed proportion of the total cost, with the insurer paying the remaining proportion.	The patient may decrease the volume of drugs consumed and may only request a larger pack size if this produces savings. The patient has an incentive to consume cheaper therapeutic medications.
Deductible	The user bears a fixed quantity of the costs, with any excess borne by the insurer; deductibles can apply to specific cases or to a period of time.	When patients are not close to the deductible level, they may decrease the volume of drugs consumed and/or switch to cheaper therapeutic alternatives. As they near the deductible limit, they have an incentive to consume more drugs and more expensive drugs to push themselves over the deductible.
Indirect		
Reference pricing (RP)	A reference price refers to the maximum price for a group of equal or similar drugs that the insurer will reimburse the user. If the user chooses a drug that costs more than the reference price, he or she must pay the difference.	The patient is likely to decrease his or her consumption of drugs that are priced above the reference price and switch to alternative drugs priced at or below the reference price.
Differential charges		
Multi-tier formularies	Typically, these contain two or three tiers. The first tier consists of generic drugs, which have the lowest co-payment. The second and third tiers generally comprise brand-name drugs, which can be split into preferred and non-preferred drugs (where nonpreferred drugs are the most expensive in the tier). Multi-tier formularies are most commonly used in the United States.	The patient has an incentive to switch from brand-name medications to generic medications and from non-preferred medications to preferred medications.

Source: Gemmill et al, 2008

2.2: CAESAREAN SECTION AND ASSISTED VAGINAL DELIVERY (VACUUM EXTRACTION)

Caesarean section rates have been increasing dramatically in the past decades around the world (Mossialos et al, 2005; Barros et al, 1986; McCallum, 2005; Murray, 2000; Murray and Elston, 2005; Renwick, 1991; Waniez et al, 2006 and Xirasagar et al, 2006). In the United States, 1 of 20 babies was delivered by caesarean section during the 1970's with this rate reaching 1 in 4 (25%) during the 1990's. In France, an increase in caesarean sections from 10.7% in 1981 to 15.3% in 1995 was observed and in Brazil (Table 2.2), the rate of caesarean sections increased from 15.6% in 1970 to 31.0% in 1980 and from 31.6% in 1986 to 36.4% in 1996 (Ribeiro, 2007). In the Korle Bu Teaching Hospital in Accra-Ghana, 2500 caesarean sections were performed out of 11,027 deliveries giving a caesarean section rate of 22.7% (Nkyekyer, 2003). The rates in most countries range between 15 and 25%. The trend is similar in OECD[1] countries and increasing so in less developed countries (e.g. Brazil, Mexico, Thailand, and some Indian states). Mossialos et al (2005) stated that based on studies of medical indications, the acceptable caesarean section level should vary from 7 to 14%. They also quoted WHO as indicating that, "there was no justification for any region to have a rate higher than 10% to 15%", signifying a serious cause for concern in the majority of countries. This was supported by Murray (2000) who also quoted the maximum acceptable caesarean section rate as 15%. In another development, WHO, UNFPA and UNICEF estimated that, the minimum acceptable rate of caesarean section in developing countries must reach 5 per cent to guarantee safety for both the new-born and the mother (Robitail, 2004). The high rates of caesarean section and vacuum extraction and the reasons for carrying them out vary widely including medical and non-medical reasons with private health insurance auspiciously implicated in many cases.

1: OECD (30): Organisation for Economic Co-operation and Development – e.g. Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Iceland, etc.

Zahniser et al (1992) in the United States of America observed a 48 per cent increase in the rate of caesarean section from 1980 through 1987. During the same period, the rate of forceps procedure declined by 43 per cent. Some researchers have hypothesized that the increase in caesarean sections is a result of the decrease in the use of forceps. They found that, the risk of caesarean section was significantly increased for older women but did not vary with age for vacuum extraction and forceps deliveries. In a similar study conducted in the Lazio region of Italy, Bertollini et al (1992) observed that, forceps delivery and vacuum extraction constituted 2.8% of total deliveries but without significant time trends. Zahniser et al (ibid) again observed that women with private health insurance were significantly more likely to receive a caesarean section (rate ratio [RR] = 1.2), forceps procedure (RR = 1.7), and vacuum extraction procedure (RR = 1.8) than were women without private health insurance. This observation is corroborated by Stanfford (1990) in California, Yi-Wen and The-Wei Hu (2002) in Taiwan, Ribeiro et al (2007) in Brazil, and Bertollini (1992) in Italy.

In one other development, Zahniser et al (ibid) observed that, the mean length of hospital stay for all deliveries decreased from 3.8 days in 1980 to 3.1 days in 1987 (test for linear trend, p=0.0001). During the same period, the mean length of hospital stay for caesarean section deliveries declined from 6.5 to 4.8 days (test for linear trend, p=0.0001); for forceps deliveries, it decreased from 3.5 to 2.8 days (test for linear trend, p=0.0001); and for vacuum extraction, it declined from 3.2 to 2.7 days (test for linear trend, p=0.002). Further to this, de Jong et al (2004) observed that the type of insurance did not affect the length of stay. They argued that hospitals had their general policy concerning length of stay, independent of the type of insurance of the patient.

In Brazil, caesarean section rate rose from 15 per cent of all births in 1970 to over 30 per cent in 1980 (Barros et al, 1986). In this study, it was observed that the doctor's decision was largely influenced by the financial reward so that they concentrated their efforts on the low risk and high income mothers, with 50 per cent of private patients having an operative delivery compared to 13 per cent of uninsured mothers. In Salvador da Bahia also in Brazil, caesarean section rate was found to be excessive and the standard form of delivery in private hospitals, though vaginal delivery still predominates in the public sector (McCallum, 2005). McCallum argues that, no particular social group is the principal cause of the excessive use of caesarean section to deliver babies but rather a host of factors converge in sustaining this practice. In fact, Waniez et al (2006) have described Brazil as the "world champion of caesareans" with rates into 40 per cent of all deliveries, that is, three times the maximum recommended by WHO.

Mossialos et al (2005) in Greece purposed to assess the impact of non-medical factors such as private health insurance, potential for making informal payments, physician convenience and socio-economic status on the rate of caesarean deliveries. They observed that the caesarean rate in public hospitals was 41.6 per cent (52.5 per cent for Greeks and 26 per cent for immigrants), while the rate in private hospitals was 53 per cent (65.2 per cent for women with private insurance and 23.9 per cent for women who paid directly). Mossialos and his colleagues also found out that, in the public hospitals Greek ethnic background, delivery between 8 a.m. and 4 p.m., between 4 p.m. and midnight, and on Monday, Wednesday and Friday increased the likelihood of caesarean delivery. In the private hospital however, having private health insurance was the strongest predictor for caesarean delivery. This was followed by delivery between 8 a.m. and 4 p.m., between 4 p.m. and midnight, delivery on a Saturday and being a housewife. The conclusion was that, physicians are motivated to perform caesarean section for financial and convenience incentives. Rock (1988) took a different dimension to the increased caesarean section rate in New York and Illinois blaming the high rate on malpractice liability.

In Chile, private health insurance cover requires the primary maternity care provider to be an obstetrician. Murray (2000) in a postnatal survey observed that, women with private obstetricians showed consistently higher rates of caesarean section (range: 57 – 83 per cent) than those cared for by midwives or doctors on duty in public or university hospitals (range: 27 – 28 per cent.). Again the rate of elective caesarean section was 30 – 68 per cent in women with private obstetricians and 12 – 14 per cent in women not attended by private obstetrician (Table 2.2.1).

TABLE 2.2.1: TYPE OF DELIVERY, BY INSTITUTION AND PROVIDER OF CARE. VALUES ARE NUMBERS OF DELIVERIES (PERCENTAGE OF TOTAL).

Mode of Delivery	Public Hospital		University Hospital		Private Clinic
	Women attended by midwife or doctor on duty (n=147)	Women attended by private obstetrician (n=47)	Women attended by midwife or doctor on duty (n=106)	Women attended by a private obstetrician (n=63)	Women attended by private obstetrician (n=177)
Caesarean section	41 (28)	39 (83)	29 (27)	36 (57)	123 (69)
Unassisted vaginal delivery	104 (71)	7 (15)	62 (58)	25 (40)	45 (25)
Forceps delivery	2 (1)	1 (2)	15 (14)	2 (3)	9 (5)

Source: Murray (2000)

In Australia, generally, caesarean section rates were highest in the state capital cities and for insured women (Renwick, 1991). This is similar to what Ribeiro et al (2007) found in Brazil.

Rumler – Detzel (2006) blamed "personal request" for the high caesarean delivery. In this instance, the physician has the burden of proof that the patient has been provided with the necessary information on the possible outcomes and risks of the surgical procedure.

Xirasagar et al (2006) gave yet another slant to the factors related to high caesarean section in Taiwan. The study revealed that "solo practices" had 7 per cent excess caesarean cases relative to large group practices. In the analysis of their results and after controlling for patient's age, physician demographics, the clinic's geographic location and size of delivery service, and clinic-level random effect, solo practice physicians were 5.38 times as likely as 4+ physician practices to provide caesarean delivery (CI = 4.18; approximately 6.93), 2-physician practices were 3.87 times (CI =

2.99; approximately 5.01), and 3-physician practices 2.72 times (CI = 2.06; approximately 3.59) as likely as 4+ physician practices to provide caesarean delivery. They concluded that, "solo physicians" were the most likely to provide caesarean delivery, and caesarean section likelihood decreases with increasing number of physicians in the practice. Thus group practice support may reduce the caesarean section likelihood when it is not clinically indicated.

In yet another twist, Robitail et al (2004) observed low caesarean section rates in Madagascar with a national average of 0.6 per cent in 1997. This low rate was blamed on the high cost of the procedure estimated at 36 euros when the average income bothered around 25 euros per month per inhabitant. The cover rate of caesarean section in the area of Toamasina increased from 0.58 per cent in 1999 to 0.67 per cent in 2000 and to 0.71 per cent in 2001 but still short of the 5 per cent minimum set by WHO, UNFPA and UNICEF to guarantee safety for the new-born and the mother (Robitail et al, 2004).

A wide range of medical and non-medical determinants for caesarean section and vacuum extraction have been put forward by different authors. A good number of the non-medical factors including private health insurance have already been discussed above.

Lei et al (2003) in a study of 20,891 pregnant women registered with the Qingyuan perinatal surveillance system, found that 7.5 per cent were delivered by elective caesarean section and 18.4 per cent by non-elective (emergency) caesarean section. The most common indications for elective caesarean delivery were:

2) Socio – cultural
3) Fear of pain
4) Wish to give birth on a date or at a time believed to be particularly auspicious
5) Belief that delivery by caesarean section would protect the baby's brain.

Factors strongly related to elective caesarean delivery included:

1) Insurance status
2) Maternal age

3) Plurality

4) Pre-eclampsia and eclampsia

5) Gestational age

6) Birth weight

The most common indication for non-elective (emergency) caesarean delivery was Cephalopelvic disproportion.

Factors strongly related to non-elective caesarean delivery included:

1) Maternal age

2) Preeclampsia and eclampsia

3) Placenta praevia

4) Gestational age

5) Birth weight

Lei et al (2003) concluded that, non-medical causes, including a woman's insurance status and her personal and social demands, accounted for a large proportion of elective caesarean deliveries. Mossialos et al (2005), Bertollini (1992), Ribeiro et al (2007), Yi-Wen and Teh-wei Hu (2002) all corroborated the findings of Lei and his colleagues. Bertollini and his colleagues detailed that, caesarean section rate increased with maternal age: Rates ranged from 16.4% among women younger than 20 years to 43.8% among those older than 39, an OR of 3.97 (95% CI = 3.54, 4.45). They stated further that, the rate was 18.2% among women 20 through 24, 21.7% among women 25 through 29, 26.4% among women 30 through 34 and 33.9% among women 35 through 39. They also realized that, the caesarean section rate significantly decreased with parity (23.9% for parity 0 and 22.4% for parity greater than 0). It was observed that, the rate of caesarean delivery was highest among women who delivered low-birth-weight (LBW) infants (34.3%), decreased with increasing birth weight (22.5%) and slightly increased for large babies (23.6%). Bertollini et al (1992) associated caesarean delivery with complications of pregnancy – breech presentation (3.3%). They also indicated that caesarean section rates were consistently lower on Sundays in all types of hospital (overall CS rate 15.7%).

Ribeiro et al (2007) and Mossialos et al (2005) summarized the medical indicators for caesarean delivery as: Fetal distress, cephalopelvic disproportion, breech presentation, previous caesarean section, and other obstetric complications. They associated the high caesarean rates to: Private care, delivery at given time of day, prenatal care and delivery performed by the same physician, social class, maternal age, maternal request, antenatal attendance, primiparity, higher educational level and high income.

The high rates of caesarean section and the attendant magnified economic cost and health-related risks associated with the procedure have necessitated the institution of some checks to curtail this new epidemic (Belizan, 1999). In the United Kingdom, caesarean deliveries significantly increased health care cost to twice as much as spontaneous vaginal delivery. Likewise, in Mexico, the large proportion of caesarean deliveries has created a serious burden on public health care spending. The impact of this on the health insurance schemes cannot be over emphasized. In the early 1990's, the USA, Netherlands, and the UK reported maternal mortality rates 2 to 4 times higher and incidence of morbidity was 5 to 10 times greater for caesarean deliveries as compared to vaginal deliveries (Mossialos et al, 2005). Mandatory second opinion has been used to reduce rates of unnecessary caesarean sections (Table 2.2.2) in Latin America (Fernando Althabe et al, 2004). In this instance, all physicians deciding a non-emergency caesarean section had to follow the policy of mandatory second opinion. In applying this policy, 22 intrapartum caesarean sections could be prevented per 1000 deliveries, without affecting maternal or perinatal morbidity, and without affecting the mothers' satisfaction with the care process. In Chile, unnecessary caesarean section (Table 2.2.2) was checked by not making additional payment for caesarean deliveries than for vaginal deliveries (Murray, 2000). These checks have been corroborated by Zahniser et al (1992) in the United States. They pointed out that, a comprehensive system of peer review, discussion of all caesarean sections at staff conferences, the use of standardized protocols and second opinions have been effective in reducing the caesarean section rate.

TABLE 2.2.2: ESTIMATED ANNUAL NUMBER OF CAESAREAN SECTIONS AND ANNUAL NUMBER OF CAESAREAN SECTIONS ABOVE 15% UPPER LIMIT FOR LATIN AMERICAN COUNTRIES.

Countries	Rate of caesarean section (%)	Annual number of caesarean sections*	Annual number above 15% maximum
Colombia	16.8	146,664	15,714
Panama	18.2	11,284	1,984
Ecuador	18.5	57,165	10,815
Costa Rica	20.8	18,096	5,046
Venezuela	21.0	120,120	34,320
Uruguay	21.9	11,826	3,726
Cuba	23.0	33,350	11,600
Mexico	24.1	561,120	212,752
Argentina	25.4	181,356	74,256
Dominican Republic	25.9	51,023	21,473
Brazil	27.1	869,910	388,410
Chile	40.0	116,800	73,000
Total		2,178,714	853,096

* Based on annual mean number of births 1995 – 2000

Source: Belizan et al (1999)

2.3: STILLBIRTH

The various definitions of stillbirth used by different institutions and countries pose a problem of comparison and there is need for standardization. Indeed the survival of fetuses below 28 weeks of gestation in least developed and developing countries is certainly small when compared to the developed world but that not withstanding, an agreeable gestational age and/or weight can be arrived at that will form the basis of epidemiological comparisons.

2.3.1: EPIDEMIOLOGY

The prevalence of stillbirth at the community level is typically less than 1% in more developed parts of the world and could exceed 3% in less developed regions (Say et al, 2006). Stillbirth affects nearly 1 in 200 pregnancies. In approximately 85% of cases, death of the fetus occurs prior to labour – antepartum stillbirth (Smith et al, 2004).

Goldenberg et al (2007) on evaluating data from 51 countries found that, developed countries had lower total stillbirth rates (6.0 versus 21.3/1,000 births; p= 0.0002) as well as a lower fraction of stillbirths that were intrapartum (0.16 versus 0.31; p= 0.0019). The antepartum stillbirth rates in developed countries were 5.2/1,000 as against 14.0/1,000 in developing countries (p= 0.0002). Goldenberg et al (ibid) found that the highest antepartum stillbirth rates, all in southern Africa and Asia, ranged from 25 to 35/1,000 births. The intrapartum stillbirth rates averaged 0.9/1,000 births for developed countries compared to 7.3/1,000 in developing countries (p= 0.0024), but ranged as high as 20-25/1,000 births for some countries in southern Africa and Asia (Goldenberg et al, 2007).

In Peru, Gonzales et al (2008) demonstrated that, stillbirth rates were higher at high altitudes, >3,000m (OR= 4.82; CI= 3.05-7.72) compared to low altitudes. Cherry et al (2008) in Bangladesh estimated a stillbirth rate of 3.4% and in Karachi, Pakistan, Korejo et al (2007) similarly estimated a rate of 73.4/1,000 total births at 28 completed weeks of gestation. In yet another study on stillbirths in an Urban community in Pakistan, Jehan et al (2007) found the stillbirth rate to be 33.6/1,000 births, despite the fact that 96% of the women received prenatal care, 83% were attended to by skilled providers in the hospital, and another 20% underwent caesarean delivery. Fifty one per cent of the stillbirths occurred ≥ 37 weeks of gestation and 19% occurred from 34-36 weeks of gestation. Only 4% of the births had congenital anomalies. Vaginal bleeding, pre-eclampsia and haemoglobin < 8g/dl were associated with increased risk of stillbirth (Jehan et al, 2007).

In a study conducted in Verona University Obstetric Department in Italy, Zanconato et al (2007) found the incidence rate of stillbirth to be 9.8 stillbirths per year with a corresponding prevalence rate of 5.4 cases per 1,000 births.

In 2004, the United States reported 25,655 fetal deaths of 20 weeks gestation or more corresponding to 6.20 fetal deaths per 1,000 live births and fetal deaths. This was not significantly different from the 2003 rate of 6.23 per 1,000 births. The fetal mortality rate for non-Hispanic black women (11.25) was 2.3 times the rate for non-Hispanic white women (4.98), whereas the rate for Hispanic women (5.43) was 9 per cent higher than the rate for non-Hispanic white women. In Missouri, USA, Aliyu et al (2008) determined a rate of 4.0/1,000 births. In a similar development, Getahun et al (2007) also in Missouri found that, among African American, risk of antepartum and intrapartum stillbirths were 5.6 and 1.1 per 1,000 singleton births respectively and the risk among whites were 3.4 and 0.5 per 1,000 births.

In an effort to study stillbirths in developing countries including five resource-poor countries (Democratic Republic of Congo, Guatemala, India, Zambia, and Pakistan) and one mid-level country (Argentina), McClure et al (2007) defined stillbirth as births >1,000g with no signs of life. The stillbirth rates ranged from 34 per 1,000 in Pakistan to 9 per 1,000 births in Argentina. Maceration was present in 17.2% of the stillbirths. Increased stillbirth rates were associated significantly with lower skilled providers, out-of-hospital births and low caesarean section rates. The stillbirth rates among births of ≥1,000g in these developing countries were substantially higher than reported stillbirth rates in developed countries (3-5/1,000 births). Because most developed countries define stillbirths as ≥ 20 weeks of gestation or ≥500g and because almost one-half of all stillbirths are <1,000g, the developing/developed country difference is actually larger than apparent. Maceration was uncommon, which indicates that most of the deaths probably occurred intra-partum. The low rates of physician attendance, hospital delivery, and caesarean section deliveries suggest that stillbirth rates could be reduced by access to higher quality institutional deliveries (McClure et al, 2007).

In Zimbabwe, the annual rate of stillbirth was estimated as 61 per 1,000 births (Feresu et al, 2004). The estimated annual number of stillbirths in sub-Saharan Africa is 890,000 with a stillbirth rate of 32 per 1,000 births. In Ghana, the annual number of stillbirths stands at 16,300 with a corresponding stillbirth rate of 24 per 1,000 deliveries/births (WHO, 2006). The distribution of the prevalence rates of stillbirths in Africa is detailed in Table A2.4a and Table A2.4b in Appendix 2.

2.3.2: DETERMINANTS OF STILLBIRTH

Many determinants have been found to be associated with stillbirth and these include: antenatal care (ANC), preterm delivery, low birth weight, pregnancy induced hypertension (PIH), eclampsia, ante-partum haemorrhage (APH), mechanical causes, congenital fetal malformations, medical conditions of the mother (including jaundice, diabetes mellitus, anaemia), maternal age, intrauterine growth retardation, parity, gravidity, smoking, marital status, infection (including maternal syphilis, chorioamnionitis), socioeconomic disadvantage (including maternal education, rural dwelling), and maternal nutrition among others (Feresu et al, 2004; Korejo et al, 2007; Smeeton et al, 2004; Zanconato et al, 2007; Brimacombe et al, 2007; Cripe et al, 2007; Di Mario et al, 2007).

Korejo et al (2007) in a study in Karachi, Pakistan found that the leading cause of stillbirth was hypertensive disease of the mother, 180 (24%). This included pregnancy induced hypertension, 106 (14%) and eclampsia, 74 (10%). Following these were mechanical causes which accounted for 161 stillbirths (21.4%), ante-partum haemorrhage, 151 (20%), low birth weight, 108 (14.4%), congenital fetal malformations 47 (6.2%), and maternal medical conditions 24 (3.2%).

Smeeton et al (2004) in the United Kingdom asserted that, birth weight and length of gestation were the most influential factors on unfavourable fetal outcome and that conception at an older age had a serious impact on stillbirth rates. This assertion was corroborated by Feresu et al (2004) in Zimbabwe who also observed that preterm births and low birth weight were more likely to be stillborn (RR= 7.26, 95% CI= 6.28-8.39; RR= 6.85, 95% CI= 5.94-7.91). Feresu et al (ibid) also found that, not attending antenatal care (prenatal care) was associated with increased risk of stillbirths (RR= 2.54, 95% CI= 2.21-2.92), preterm delivery (RR= 2.43, 95% CI= 2.26-2.61), and low birth weight (RR= 2.16, 95% CI= 2.02-2.31).

In a related development on the determinants, maternal age, prenatal care, body mass index (BMI) and preterm delivery; Getahun et al (2007) added a racial slant. In their findings, maternal age ≥35 years, lack of prenatal care, pre-pregnancy body mass index (BMI) ≥ 30 kg/m^2, and prior preterm or small-for-gestational age birth were significantly associated with increased risk for ante-partum stillbirth among whites, but not African Americans. BMI ≤ 18.5 kg/m^2 was found to be associated with ante-partum and intra-partum stillbirths among African Americans but not the whites.

Bahtiyar et al (2008), Huang et al (2008) and Katz et al (2008) also corroborated the finding that, older maternal age was associated with unfavourable fetal outcome (Getahun et al, 2007; Smeeton et al, 2004). Bahtiyar et al (2008) in a study of stillbirths at term in women of advanced maternal age in the United States discovered that, compared with women 25 to 29 years of age, the risk of intra-uterine fetal death (IUFD) increased with advancing age as follows: 30 to 34 years (OR= 1.24, 95% CI= 1.13-1.36), 35-39 years (OR= 1.45, 95% CI= 1.21-1.74) and 40-44 years (OR= 3.04, 95% CI= 1.58-5.86). They further found that, the risk of intra-uterine fetal death for women 40-44 years of age at 39 weeks gestation was comparable with that at 42 weeks in women aged 25 to 29 years. Thus Bahtiyar et al (ibid) concluded that, advanced maternal age was an independent predictor of intra-uterine fetal death. Katz et al (2008) in rural southern Nepal, evaluated the effect of maternal age on the outcome of pregnancy in another dimension. They discovered that, young maternal age increased the risk of miscarriages but not stillbirths for nulliparous and that miscarriage and stillbirths did not differ by maternal age for primiparous women.

In Kenya, Brown et al (2008) did a study on antenatal care and perinatal outcomes and their findings were similar to those of Di Mario et al (2007) and Feresu et al (2004). Brown et al (2008) found that, women attending ANC at least twice were more likely to have live birth (vs. stillbirth) and women attending for two ANC visits (but not more than two) were more likely to have healthy weight babies (OR= 4.39, 95% CI= 1.36-14.15). They also discovered that, women with secondary education or above (aOR= 1.83, 95%

CI= 1.06-3.15) were more likely to attend ANC, whiles those living further than 5 km from a dispensary were less likely to attend (OR= 0.29, 95% CI= 0.22-0.39). Paradoxically, however, the number of ANC visits increased with distance from the dispensary (OR= 1.46, 95% CI= 1.33-1.60).

A study by Da Vanzo et al (2007) in Bangladesh revealed that, women whose pregnancies were between 15 and 75 months after a preceding pregnancy outcome (regardless of its type-live birth or non-live birth) had lower likelihood of fetal loss than those with shorter or longer inter-pregnancy intervals.

In one other development, Chu et al (2007) and Hacini et al (2008) evaluated the consequence of maternal weight (leanness, overweight, and obesity) on the outcome of pregnancy. Chu et al (2007) observed that, maternal obesity was associated with an increased risk of stillbirth. The unadjusted odds ratios of stillbirth were 1.47 (95% CI= 1.08-1.94) and 2.07 (95% CI= 1.59-2.74) among overweight and obese pregnant women respectively, when compared with normal weight pregnant women. Corroborating the findings of Chu et al (2007), Hacini et al (2008) also found that, leanness (BMI< 18.5kg/m^2) was a risk factor for very preterm live birth (aOR= 1.73, 95% CI= 1.12-2.68) and over weight (BMI $\geq$ 25kg/m^2) was a risk factor for stillbirth (aOR= 1.71, 95% CI= 1.03-2.84). They found that, among mothers with live born babies, leanness was a risk factor for spontaneous preterm birth (aOR= 2.12, 95% CI= 1.20-3.74) whereas over weight was a risk factor for very preterm birth on medical decision due to gestational hypertension (aOR= 2.85, 95% CI= 1.80-4.52). In a related development, Dixit and Girling (2008) stated that, maternal risk resulting from obesity included, gestational diabetes, hypertension and pre-eclampsia, increased incidence of operative delivery, post partum haemorrhage (PPH), anaesthetic risks as well as infective and thrombo-embolic complications whiles fetal risks included, miscarriage, neural-tube defects, macrosomia and stillbirth.

Blackwell et al (2008) in a study of duration of labour induction in nulliparous women at term found no association with prolonged induction to delivery intervals and adverse maternal /neonatal outcomes.

In another development, Gray et al (2007) found out that, pregnancies in women following a pregnancy delivered by caesarean section were at increased risk of stillbirth.

In yet another development, Chan et al (2008) and Lurie et al (2008) in different studies associated umbilical cord injury with poor fetal outcome. Chan et al (2008) linked umbilical cord ulceration with obstruction of the duodeno-jejunal junction by a peritoneal band and said this was associated with high perinatal mortality and morbidity. It presents as sudden foetal deterioration due to foetal haemorrhage. Lurie et al (2008) also associated umbilical cord strangulation due to amniotic band (amniotic band syndrome) with stillbirth even in full-term otherwise healthy fetuses.

Di Renzo et al (2007) in one development asserted that the male sex was an independent risk factor for adverse pregnancy outcome. Evidence suggested that females had an advantage over males, with a better outcome in the perinatal period, particularly after preterm birth.

Hilder et al (2007) studied the influence of parity on fetal mortality in prolonged pregnancy. They found that, before 41 weeks, the stillbirth risk rose gradually but did not differ by parity and by 41 weeks there was a substantial increase in the stillbirth risk in nulliparous women but not in parous women. The pattern of rise was such that the stillbirth risk was 2.9 times higher (95% CI= 1.06-8.19) in nulliparous women at >42 weeks gestation. Conversely, Brimacombe et al (2007) in New Jersey observed higher stillbirth rates with greater parity and gravidity.

An association between diabetes mellitus and stillbirth was established by Cundy et al (2007) and Lapolla et al (2008). Higher rates of stillbirths were observed in women with type 2 diabetes (vs. type 1 diabetes), which suggested that other features such as obesity, contributed significantly to pregnancy loss (Cundy et al, 2007). In a multicentre Italian study on pregnancy outcome in women with diabetes, Lapolla et al (2008) found that, pregnancy in diabetic women were associated with high rates of stillbirths (1.26%), neonatal mortality (0.63%), and congenital malformations (4.9%) when compared with normal Italian pregnancies (stillbirths,0.30%; neonatal mortality, 0.32%; and congenital malformations, 0.86%).

In some other development, Lagerberg et al (2008) stated the effects of malaria on pregnancy as follows: spontaneous abortion, preterm delivery, low birth weight, congenital infection, maternal death, and stillbirth. Mann et al (2007) also found that, women who were neither married nor cohabiting were far more likely to experience pregnancy loss.

The consequence of alcohol consumption during pregnancy among singletons was evaluated by Aliyu et al (2008). They found that, mothers who consumed alcohol while pregnant were 40% more likely to experience stillbirth as compared with non-drinking mothers (adjusted hazards ratio= 1.4, 95% CI= 1.2-1.7).

The effect of smoking on pregnancy outcome has been investigated among others by, Aliyu et al (2008), Wisborg et al (2001), Hogberg and Cnattingius (2007). Hogberg and Cnattingius (ibid) found that, maternal smoking during pregnancy was causally associated with stillbirth risk. In their analysis for evidence, they established that, women who smoked during the first pregnancy but not during the second did not have an increased risk of stillbirth (OR= 1.02, 95% CI= 0.79-1.30) while corresponding risk among women who smoked during both pregnancies was 1.35 (95% CI= 1.15-1.58). Wisborg et al (2001) also detected that exposure to tobacco smoke in-utero was associated with an increased risk of stillbirth (OR= 2.0, 95% CI= 1.4-2.9).

Wisborg et al (2001) summed up that, approximately 25% of all stillbirths and 20% of all infant deaths in a population with 30% pregnant smokers could be avoided if all pregnant smokers stopped smoking by the sixteenth week of gestation. Goldenberg et al (2007) established that, the relationship between intra-partum stillbirth and the various measures of obstetric care were generally stronger than those for ante-partum stillbirth and thus over the entire range of values, for each 1% increase in the percentage of women with at least 4 antenatal visits, the intra-partum stillbirth rate decreased by 0.16 per 1,000 births ($p < 0.0001$). As caesarean section rates increased from 0 to 8%, for each 1% increase, there was a decrease of 1.61 intra-partum stillbirths per 1,000 births (in developing countries). In the concluding write-up of Goldenberg et al (2007), they documented that, the intra-partum stillbirth rate was more closely related to the various measures of obstetric care than ante-partum stillbirth rate and increment in caesarean section rates up to 8% were associated with significant improvement in intra-partum stillbirth rates.

2.4: MATERNAL MORTALITY

Maternal mortality is one indicator that provides vital information on the quality of health delivery in an institution and nation. It is one of the United Nations' Millennium Development Goals which is targeted to reduce by 75% by 2015.

Approximately 529,000 women die from pregnancy related causes annually and about 99% of these deaths occur in developing nations (Nour, 2008). It is measured either as a ratio or rate. The ratio is more often used and is the number of maternal deaths per 100,000 live births. It expresses the risk of death among women once pregnant. The rate is the number of maternal deaths per 100,000 women ages, 15-49. This expresses the impact of maternal deaths on the population of women in their reproductive age (Biller et al, 1998).

2.4.1: EPIDEMIOLOGY

The maternal mortality ratio varies widely across institutions, countries and regional zones and continents. The gap in this ratio between the industrialized world (13) and developing countries (440) is very wide and it appears suicidal for a woman to get pregnant in a least developed country which is estimated to have a ratio of 890 and a 1 in 17 chance of dying when pregnant.

The world average maternal mortality ratio is estimated at 400 per 100,000 live births. The average ratio (2000) estimated for sub-Saharan Africa stands at 940 with Eastern and Southern Africa contributing 980 whiles West and Central Africa contributed 900 maternal deaths per 100,000 live births. The South Asia region followed sub-Saharan Africa with 560 maternal deaths per 100,000 live births then in decreasing order, Middle East and North Africa (220), Latin America and Carribean (190), and East Asia and the Pacific (110). The regional distribution of the maternal mortality ratios is shown in Table 2.4.1 below and the composition of the regional groups is shown in Tables A2.5a and Table A2.5b in Appendix 2.

Sub-Saharan Africa now plagued with armed conflicts, natural disasters, famine and poverty has unprecedented high ratios of maternal mortality. Ghana has a ratio of 540 per 100,000 live births. Her Eastern and Western neighbours, Togo (570) and Cote d'Ivoire (690) respectively have slightly higher ratios and her northern neighbour, Burkina Faso is reported to have a high of 1,000 maternal deaths per 100,000 live births.

TABLE 2.4.1:WORLD DISTRIBUTION OF ANTENATAL CARE COVERAGE, SKILLED ATTENDANT AT DELIVERY AND MATERNAL MORTALITY RATIO

Regions	Antenatal Care Coverage (%) 1997-2005	Skilled Attendant at Delivery (%) 1997-2005	Maternal Mortality Ratio, 2000 (per 100,000 live births)	
			Adjusted	*Lifetime Risk of Maternal Death. 1 in:*
Sub-Saharan Africa	68	43	940	16
Eastern and Southern Africa	71	39	980	15
West and Central Africa	66	45	900	16
Middle East and North Africa	70	76	220	100
South Asia	53	37	560	43
East Asia and Pacific	88	87	110	360
Latin America and Caribbean	93	87	190	160
CEE/CIS	87	93	64	770
Industrialised Countries	-	99	13	4,000
Developing Countries	71	60	440	61
Least Developed Countries	59	35	890	17
World	71	63	400	74

Source: UNICEF, 2006

Key:

CIS: Commonwealth of Independent States

The composition of various regional groups is shown in Tables A2.5a and A2.5b in Appendix 2.

Famine stricken Ethiopia has 850 and the most populous country in Africa and eighth in the world, Nigeria is reported to have 800 maternal deaths per 100,000 live births. The icon of the continent, South Africa has a low of 230 maternal deaths per 100,000 live births. The detail of the distribution of maternal mortality ratios in sub-Saharan Africa is shown in Tables A2.4a and A2.4b in Appendix 2.

In 2007, Ghana recorded an institutional maternal mortality of 995 deaths, an increase of 4.0% over the 2006 record of 957. The institutional maternal mortality ratio increased from 187 maternal deaths per 100,000 live births in 2006 to 229.9/100,000 live

TABLE 2.4.2: TEN YEAR ANNUAL TREND OF MATERNAL MORTALITY (INSTITUTIONAL) IN GHANA

Year	Maternal Mortality
1997	637
1998	777
1999	813
2000	851
2001	954
2002	837
2003	854
2004	824
2005	912
2006	957
2007	995

Source: Ghana Health Service, 2007

births in 2007 (GHS, 2007). The annual trend of maternal mortality from 1997 to 2007 and the regional distribution of the ratios are shown in Tables 2.4.2 and 2.4.3 respectively.

TABLE 2.4.3:REGIONAL DISTRIBUTION OF MATERNAL MORTALITY RATIOS IN GHANA

	Maternal Mortality Ratio per 100,000 Live Births		
Region	2003	2004	2007
Western	209.5	155.4	341.9
Central	159.3	134.5	266
Greater Accra	187.7	183	202
Volta	256.2	261.9	200
Eastern	262.6	267	265
Ashanti	196.1	176.4	246
Brong Ahafo	196.2	229.6	222
Northern	254.8	172	207
Upper East	203.5	170.9	141
Upper West	99.1	107.7	161

Sources: Ghana Info 2.0 and GHS, 2007

A study conducted by Okusanya et al (2007) in Irrua Specialist Teaching Hospital in Nigeria between January 1999 and December 2003 found the institutional maternal mortality ratio to be 1,747 per 100,000 live births. Delay was associated with 77.8% of all maternal deaths. Type I delay was the major culprit contributing 57.1%. The identified risk factors for the delay were: unbooked status, low socioeconomic status, and marital status. The delay in seeking medical assistance in Irrua, Nigeria cannot be divulged from financial barrier for which health insurance plays a critical role. In corroborating the findings of Okusanya et al (2007), Hounton et al (2008) observed a seasonality in the institutional maternal mortality rate in Burkina Faso and linked it to financial and geographical barriers to health as major underlying factors.

In another development, Ozumba et al (2008) conducted a study in the Obstetric Unit of the University of Nigeria Teaching Hospital (UNTH), Enugu between January 2003 and December 2005 and computed the institutional maternal mortality ratio of 2,397.3 maternal deaths per 100,000 live births, far in excess of the national rate of 800/100,000 live births (Table A2.4b in Appendix 2). The average maternal age in this study was 29.8 years. Ozumba et al (2008) characterized all deliveries as follows: nulliparous, 21.3%; para 1-2, 31.9%; para 3-4, 36.2%; and para ≥5, 10.6%. In addition, they characterized the deliveries based on first point of call as follows: Private medical clinic (44.7%), general/mission hospital (12.8%), maternity/health centres (10.6%), traditional birth attendants (2.1%), and UNTH, Enugu (29.8%). Ozumba et al (ibid) also observed that, 39.8% of the mothers died within 24 hours on admission, 25.5% between 24 and 48 hours, 14.9% between 48 hours and 96 hours and 29.8% after 96 hours. Two women (4.3%) delivered at home, eight (17.0%) in private medical clinics, 23 (48.9%) in the UNTH, Enugu and 14 (29.8%) died undelivered.

Ozumba et al (ibid) further observed that, the major avoidable factors were substandard care (27.7%), delay in seeking care (19.1%), financial constraints (8.4%), delay in recognizing a problem (6.4%), lack of blood (4.3%), lack of drugs (2.1%) and industrial strike action by health workers (2.1%). In fact, in 29.8% of the women, there were no major avoidable factors contributing to their death.

In yet another development, Barnett et al (2008) estimated the maternal mortality ratio in indigenous populations of Jharkhand and Orissa in India as 722 per 100,000 live births (CI: 591-882). Women aged between 15-49 years constituted 29% of all maternal deaths and haemorrhage (25%) was the commonest cause of all maternal deaths but causation varied between the ante-partum, intra-partum and post-partum periods.

In Cambodia, Chandy et al (2008) reported 450 maternal deaths per 100,000 live births. In South Africa, Garenne et al (2008) reported the maternal mortality ratio as 542 per 100,000 live births. This level is said to be much higher than previous estimates and the reasons alluded for this trend is the excessive levels of HIV/AIDS and other external causes of death. The influence of HIV/AIDS on maternal mortality ratio is corroborated by Menendez et al (2008) in an autopsy study of maternal deaths in Mozambique. Menendez et al (ibid) found that, 52.8% of the maternal deaths who had autopsy performed on them were HIV-positive. Obstetric complications accounted for only 38.2% of the deaths and haemorrhage was the most frequent (16.6%).

Christian et al (2008) in rural Nepal added a new slant to the discussion on maternal mortality ratio. In their assertion, limiting the roll call to 42 days post-partum cuts out some maternal deaths very much caused by the complications of pregnancy. To this end they introduced up to 42 days post-partum as early period and between 43 and 364 days post-partum as late period. Christian et al (ibid) found that, early and late pregnancy related mortality rates were 469 (95% CI= 385-553) and 254 (95% CI= 192-316) respectively. Maternal age ≥35 years was associated with a 3 to 4 fold increase in mortality, whereas parity conferred increasing protection. The assertion by Christian et al (2008) on late post-partum maternal deaths was corroborated by Cliffe et al (2008) in a study in New South Wales, Australia. By the extended definition, Cliffe et al (ibid) identified 76 additional deaths which causes of death were mostly indirect including: Suicide (n= 23), cardiac disorders (n=16) and accident/violence (n= 16).

2.4.2: DETERMINANTS OF MATERNAL MORTALITY

There are many determinants of maternal mortality including medical, socioeconomic and socio-demographic factors. Jacob et al (1994) in Utah identified 62 maternal deaths dating from January 1, 1982 through December 31, 1994. In their findings, the risk of maternal death increased with maternal age and parity. The classic triad of haemorrhage (n=8), infection (n=5), and pre-eclampsia/eclampsia (n=3) remained the most important contributors (25.8%). Trauma (n=10), pulmonary embolism (n=10) and maternal cardiac disease (n=9) accounted for 46.8% of the maternal deaths. Jacob et al (ibid) observed that, a greater number of direct obstetric causes of maternal deaths (n=20) were preventable than the indirect obstetric causes (n=1) or non-obstetric causes (n=4).

In their classification of maternal mortality as per Biller et al (1998), Jacob et al (1994) gave the aetiology of the various classifications as follows:

a) Direct Maternal Deaths (n=35): pulmonary embolism (n=10), haemorrhage (n=8), retained products of conception (n=1), ruptured ectopic pregnancy (n=5), uterine rupture (n=1), placenta praevia (n=1), infection (n=5) (group B streptococcus sepsis, 2; puerperal endometritis, 3), amniotic fluid embolism (n=4), anaesthetic complications (n=3), intravascular injection (n=2), failed intubation (n=1), pre-eclampsia/eclampsia, 3 (intracranial haemorrhage, 2; HELLP syndrome, 1), adult respiratory distress syndrome (n=1), and acute fatty metamorphosis of pregnancy (n=1).

b) Indirect Maternal Deaths (n=14): cardiac causes (n=11) (congenital, 4; myocardial infarction, 2; arrhythmia, 3; cardiomyopathy, 2) and cerebro-vascular accident (n=3).

c) Non-Obstetric Maternal Deaths (n=13): Trauma, 10 (motor vehicle accident, 8; homicide, 2), malignancy (n=1), infection (n=2), pneumonia (n=1) and urosepsis (n=1).

Beathe Andersgaard et al (2008) in Norway found the direct maternal mortality ratio to be 5.5/100,000 live births with the complications of hypertensive disease of pregnancy and thromboembolism as the main causes as asserted by Jacob et al (1994) in Utah. These findings were corroborated by Clark et al (2008) who also found the leading causes of death to be complications of pre-eclampsia, pulmonary thromboembolism, amniotic fluid embolism, obstetric haemorrhage, and cardiac disease. Only one of the deaths seen was from placenta accreta which could as well present as obstetric haemorrhage. They asserted that, 27 per cent of the deaths were preventable (17 by the actions of health care personnel and 10 by the actions of non-health care personnel). Additionally, they causally related the rate of maternal death with mode of delivery and found, 0.2 per 100,000 for vaginal delivery and 2.2 per 100,000 for caesarean section, suggesting that the number of annual deaths resulting causally from caesarean delivery in the United States was about 20.

Evjen-Olsen et al (2008) in rural northern Tanzania established a relationship between some selected socio-demographic factors and maternal death. In their study they observed that, there was an increased risk of maternal deaths; for women aged 35-49 years when compared with the 15-24 years group (OR= 4.0; 95% CI= 1.5-10.6), women from ethnic groups other than the indigenous groups (OR=13.6; 95% CI= 2.5-75.0), when women adhered to traditional beliefs (OR= 2.1; 95% CI= 1.0-4.5), when husbands adhered to traditional beliefs (OR= 2.6; 95% CI= 1.2-5.7) and when husbands had no formal education (OR= 2.2; 95% CI= 1.0-5.0).

In yet another development, Rosenstein et al (2008) in Argentina corroborated earlier findings of haemorrhage being the leading cause of maternal deaths but additionally observed that, at least one form of delay in accessing care was culprit. They found that, delays in seeking assistance was the most common cause followed by delays in accessing and receiving quality care. This indeed hinges on financial barrier to health and the role due the health insurance in breaking this barrier.

The magnitude of the role of post-partum haemorrhage in the causation of maternal death cannot be over emphasized. Geller et al (2008) in rural India associated the use of misoprostol with post-partum haemorrhage. They also found that, having fewer than 4 prenatal visits and lack of iron supplementation increased the risk for post-partum haemorrhage ($p < 0.001$ and $p = 0.037$ respectively).

Wandabwa et al (2008) in Mulago hospital in Kampala, Uganda, identified some risk factors for severe post-partum haemorrhage. In their assertion, they stated that the predictors for post-partum haemorrhage were: Co-existing hypertension (OR= 9.3; 95% CI= 1.7-51.7), chronic anaemia (OR= 17.3; 95% CI= 9.5-31.7), low socioeconomic background (OR= 5.3; 95% CI= 3.0-9.2), past history of post-partum haemorrhage (OR= 3.6; 95% CI= 1.1-11.8), previous delivery by caesarean section (OR= 7.5; 95% CI= 3.5-14.3), long birth interval of more than sixty months (OR= 5.2; 95% CI= 2.1-13.0), prolonged third stage of labour (OR= 49.1; 95% CI= 8.8-342.8) and non-use of oxytocics (OR= 4.3; 95% CI= 1.2-15.3).

In recent times, hypertensive disease of pregnancy including, pregnancy induced hypertension (PIH), pre-eclampsia, and eclampsia are taking centre stage in the direct causation of maternal deaths (Moodley, 2008). The changes in lifestyle and eating habits cannot be ruled out. It affects about 3% of women, but the underlying pathogenetic mechanisms still remain unclear (Mutze et al, 2008). A study conducted by Miguil and Chekairi (2008) found an incidence rate of 0.91% and a maternal death rate of 6.7% among pregnant women. It was more prevalent in nulliparous women (62.5%). Additionally, their findings suggested some poor prognostic factors including: Diastolic blood pressure ≥115mmHg, Glasgow coma score ≤ 8, thrombocytopenia, liver cytolysis, acute renal failure, cerebral oedema and haemorrhage, and pulmonary oedema. It is sometimes complicated by maternal hepatic rupture which is a very rare condition in pregnancy and the HELLP syndrome which is the acronym for haemolysis (H), elevated liver enzymes (EL), and low platelet count (LP) (Sutton et al, 2008).

Amniotic fluid embolism is also one of the direct obstetric causes of maternal death. Abenhaim et al (2008) in a population-based study of 3 million births in the United States reported an incidence rate of 7.7 per 100,000 births (95% CI= 6.7-8.7) with a case fatality rate of 21.6% (95% CI= 15.5-27.6%). Amniotic fluid embolism was found to be associated with, maternal age > 35 years (OR= 2.2; 95% CI= 1.5-2.1), placenta praevia (OR= 30.4; 95% CI= 15.4-60.1) and caesarean delivery (OR= 5.7; 95% CI= 3.7-8.7).

Although Abenhaim et al (ibid) did not find a significant relationship between amniotic fluid embolism and induction of labour (OR= 1.5; 95% CI= 0.9-2.3), it was associated with pre-eclampsia, abruptio placenta and the use of delivery forceps.

Ruptured ectopic gestation is yet another cause of direct maternal death. In Makurdi in north central Nigeria, Swende and Jogo (2008) found the incidence of ruptured tubal pregnancy as 0.87% of total births (1 in 114 deliveries) and accounted for 94.6% of all ectopic pregnancies. They discovered a rising trend in the incidence of ruptured tubal pregnancy from 0.65% in 2004 to 1.09% in 2006. Swende and Jogo (ibid) identified the risk factors to include, previous pelvic infection and induced abortions. Meanwhile, Majlessi et al (2008) in Isfahan, Iran documented that a high proportion of maternal deaths were caused by abortion, especially induced abortion and in their study, unwanted pregnancy was one of the most important risk factors for induced abortion (OR= 8.84; 95% CI= 4.36-17.92).

Ruptured uterus, one of the direct obstetric causes of maternal mortality has a high mortality rate. In Mulago hospital in Kampala, Uganda, Wandabwa et al (2008) identified the following to be risk factors for ruptured uterus: low socioeconomic status (OR= 2.5; 95% CI= 1.2-7.1), residing > 10km from Mulago hospital (OR= 6.7; 95% CI= 2.1-21.2), previous delivery by caesarean section (OR= 22.3; 95% CI= 9.2-54.2), delivery of babies weighing > 3,500g (OR= 2.4; 95% CI= 1.2-7.2) and testing HIV-positive (OR= 3.2; 95% CI= 1.5-7.2).

Lately, regional anaesthesia is gaining grounds as the preferred choice of anaesthesia. However in circumstances where regional anaesthesia is not suitable, general anaesthesia is relied upon. Occasionally, management of the airway presents difficulties (Goldszmidt, 2008; Vasdev et al, 2008; Cooper and McClure, 2008). Cooper and McClure (2008) cited obesity as a risk factor in difficult airway management.

In one other development, Chames and Pearlman (2008) documented that, trauma affected up to 6%-7% of all pregnancies and accounted for up to 46% of maternal deaths. They mentioned the adverse consequences to include preterm labour and delivery, abruptio, fetomaternal haemorrhage and fetal demise with even apparently minor degrees of injury. Sanchez et al (2008) corroborated the above findings by linking intimate partner violence (IPV) with pre-eclampsia. They found that, women who reported exposure to intimate partner violence had a 2.4 fold increase in risk of pre-eclampsia when compared to those without exposure (OR= 2.4; 95% CI= 1.7-3.3). They also found that, emotional abuse in the absence of physical violence was associated with a 3.2 fold (95% CI= 2.1-4.9) increased risk of pre-eclampsia. Emotional and physical abuse during pregnancy was associated with a 1.9 fold increased risk of pre-eclampsia (95% CI= 1.1-3.5).

In fact, maternal deaths may never be eradicated like smallpox but controlled and hence the need for continuing efforts to contain it. In one move to keep it under check, Druzin et al (2008) provided evidence to suggest that, treatment of severe hypertension, seizure prophylaxis with magnesium sulphate had the tendency of reducing maternal mortality. Ecra et al (2008) also demonstrated that, haemorrhage during the third stage of labour could be reduced by "systematic controlled placenta birth". In another development, Low et al (2008) found that, there was statistical significant ($p< 0.001$) correlation between oxytocin administration and lower estimated blood loss ($r= -0.232$) indicating that there was less blood loss when oxytocin was administered. Mercier and Van de Velde (2008) noting haemorrhage as the leading cause of direct maternal deaths and morbidity worldwide summarized its management in this narrative following:

> "Major obstetric hemorrhage is associated with a high rate of substandard care. A well-defined and multidisciplinary approach that aims to act quickly and avoid omissions or conflicting strategies is key. The most common etiologies of hemorrhage are abruptio placenta, placenta previa/accreta, uterine rupture in the antepartum period and retained placenta, uterine atony, and genital-tract trauma in the postpartum period. Basic treatment of postpartum hemorrhage relies on manual removal of the placenta or manual exploration of the uterus plus bladder emptying and oxytocin administration. If this does not arrest bleeding, or if there is any suspicion of genital-tract trauma, examination of the vagina and cervix with appropriate valves and analgesia/anesthesia must follow quickly. Postpartum uterine atony resistant to oxytocin must be treated with prostaglandin within 15 to 30 minutes; uterine balloon tamponade can be also useful at this stage. Aggressive transfusion therapy and resuscitation are mandatory in major obstetric hemorrhage. Specific invasive treatment must be

considered within no more than 30 to 60 minutes, if previous measures have failed -- and even earlier in some particular etiologies. The two main options are radiologic embolization and surgical artery ligations. Recombinant factor VIIa may also be considered, but should not delay the performance of a life-saving procedure such as embolization or surgery. Hysterectomy must be implemented when all other interventions have failed."

CHAPTER THREE

3.0: FINDINGS / RESULTS OF ANALYSIS

3.1: OVERVIEW

This chapter is discussed under the following sub-headings:

a) Community Characteristics

b) Performance of the Scheme

   i) Coverage

   ii) Performance Ratios

   iii) Utilization of Health Facilities

   iv) Length of Stay in Hospital

   v) Drug Availability and Prescription Pattern

c) Trend and Determinants of Caesarean Section and Assisted Vaginal Deliveries

d) Trend and Determinants of Stillbirth

e) Trend and Determinants of Maternal Mortality

3.2: COMMUNITY CHARACTERISTICS

This section describes selected sociodemographic and socioeconomic characteristics of the community.

TABLE 3.2.1:SUMMARY STATISTICS OF ANNUAL INCOME OF HOUSEHOLDS IN THE COMMUNITY (n=307)

Statistics	Community (Undifferentiated) Amount in GH¢	Insured Amount in GH¢	Uninsured Amount in GH¢
Mean	569.94	602.51	558.98
Median	318.00	300.00	360.00
Mode	240.00	240.00	120.00
Std. Dev.	669.26	676.21	679.27
Minimum	2.00	20.00	2.00
Maximum	4,500.00	3,000.00	4,500.00

Most households in the general community (undifferentiated) earned GH¢240.00 per annum. However, most uninsured members of the community earned half as much with an annual estimated income of GH¢120.00. Their insured counterparts earn twice as much (Table 3.2.1). The median annual income of the insured in the community was also estimated as GH¢300.00 with an annual mean income of GH¢602.51 which was greater than the estimated mean incomes for the general population (GH¢569.94) and the uninsured (558.98) as demonstrated in Table 3.2.1. It stands to reason that, persons with higher incomes were more likely to join the scheme than those less financially endowed. The gap between the rich and the poor was also outstanding with minimum incomes estimated at GH¢2.00 and GH¢20.00 and maximum incomes also estimated at GH¢4,500.00 and GH¢3,000.00 respectively for the general population/uninsured and the insured respectively. This is also reflected in the wide standard deviations observed for all three groups in the community. This thus brings to the fore the need to develop equity tools and measures to enhance uptake for the poor and underprivileged in the community.

The estimated annual spending on selected areas including; education, health, funeral, house keeping and utilities have been demonstrated in Table 3.2.2 below. The mean annual income spent on house keeping amounted to GH¢847.51. It constituted the highest area of spending followed by education (GH¢164.50), funeral (GH¢73.45), health (GH¢63.50), and lastly utilities (GH¢38.48). Spending on house keeping was 13.35 times that of health and 11.54 times that of funerals. Spending on funerals was 1.16 times that of health. The above shows increased spending on the dead (funeral) than on the living (health). Though the area least spent on was that of utilities, it registered the highest minimum spending of all five selected areas with health registering the least. The place of health in the spending pattern of members of the community is thus precarious. There is need for intensive and massive education to turn the situation around to a more pro-health sensitive community. The graphical representation of Table 3.2.2 is shown in Figure A3.1 in Appendix 3.

TABLE 3.2.2:ESTIMATED ANNUAL SPENDING ON SELECTED AREAS – SUMMARY STATISTICS

Parameter	Education	Health	Funeral	House Keeping	Utilities
	Amount in GH¢	Amount in GH¢	Amount in GH¢	Amount in GH¢	Amount in GH¢
Mean	**164.50**	**63.50**	**73.45**	**847.51**	**38.48**
Median	49.00	20.00	26.00	720.00	31.00
Mode	20.00	20.00	20.00	720.00	9.60
Std. Deviation	353.72	123.42	250.24	616.51	40.81
Minimum	1.00	0.30	1.20	1.80	9.60
Maximum	3,500.00	1,200.00	3,600.00	4,320.00	195.00
N_1	**208**	**247**	**256**	**303**	**26**
N_2	99	60	51	4	281
Total Responses	307	307	307	307	307

Key:

Education: School fees of dependents
Health: Direct payment and Insurance
House Keeping: Food, Clothing, etc
Utilities: Electricity, Water, Telephone, etc
Funeral: Contributions / Donations & Funeral Attires
N_1: Number who spent money in selected area
N_2: Number who did not spend significantly in selected area.

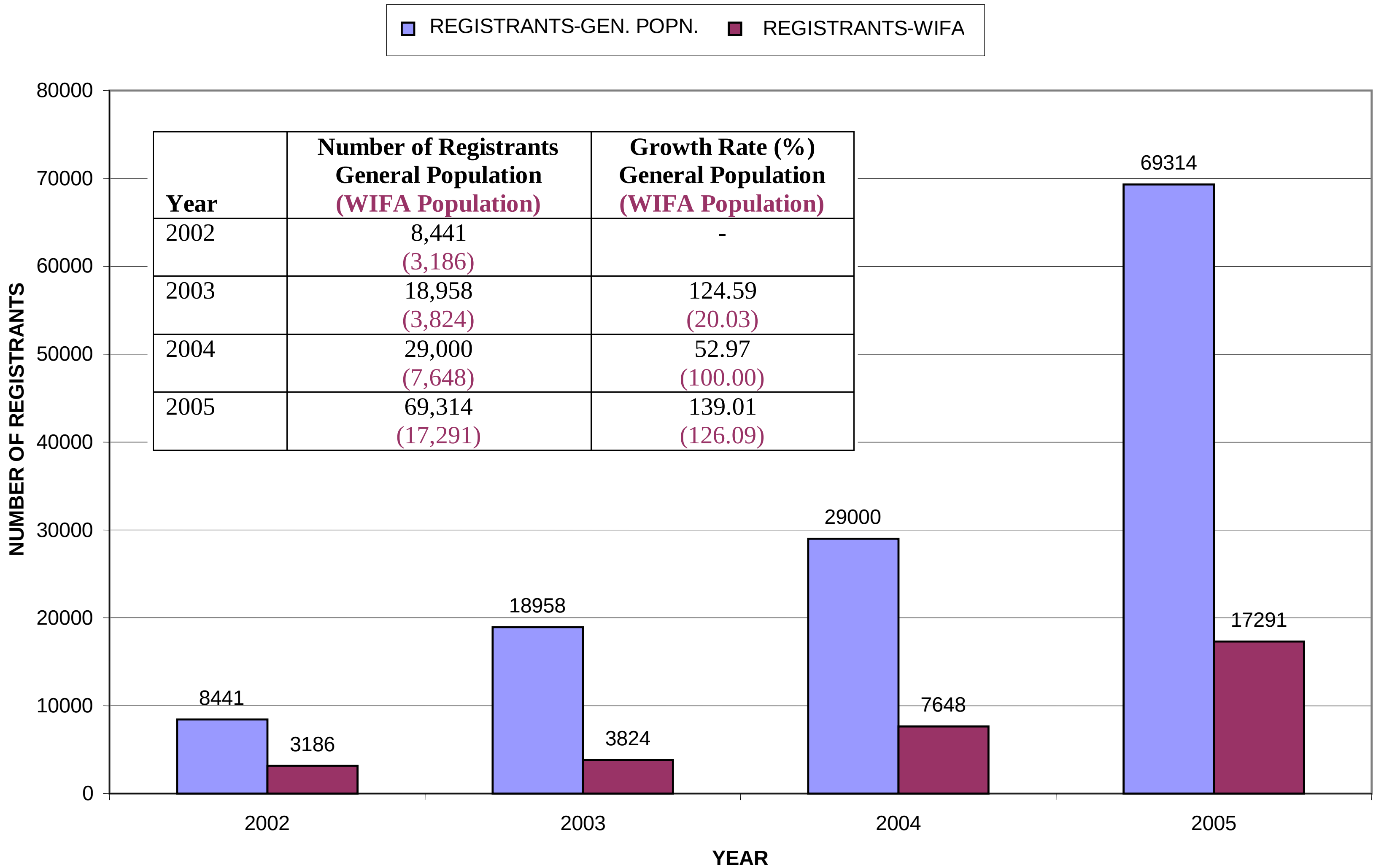
3.3: PERFORMANCE OF THE SCHEME

3.3.1: COVERAGE

This section describes the insurance coverage rate in all the three wings or stakeholders in the insurance market viz; the provider, the insurer, and the insured. It also provides the community's perception on the performance of the scheme and ascribes reasons for the observed pattern.

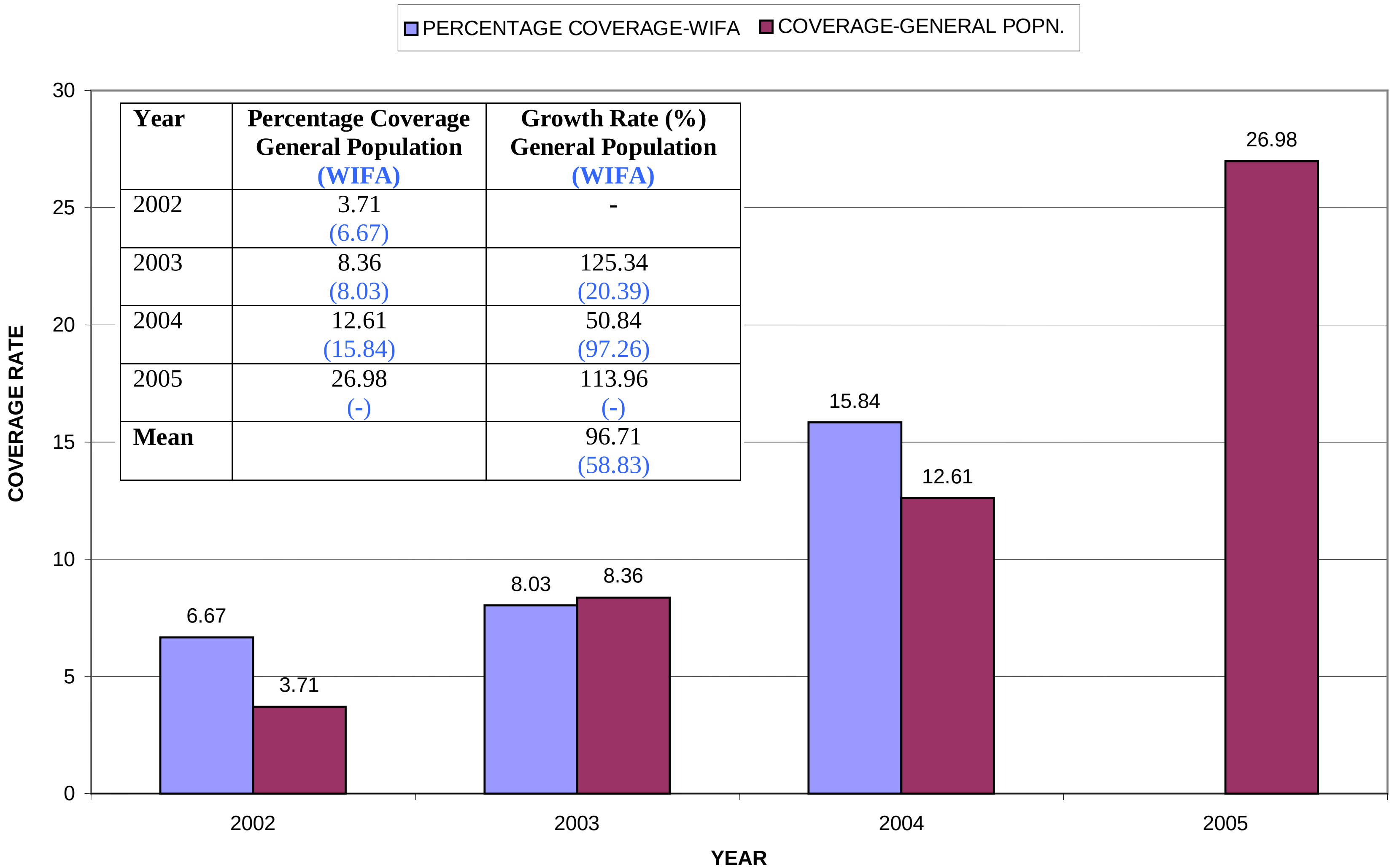
From 2002 to 2005, the number of registrants for both the general and the WIFA populations had been on the increase as shown in Figure 3.3.1 below. The rate of growth for the general population was on the average 105.52 per cent. There was a dip in the rate of increament between 2003 and 2004 but this picked up again in 2005 with a rate of 139.01 per cent well above the 124.59 per cent recorded between 2002 and 2003. This could be attributed to the start of the national health insurance scheme. However the WIFA population showed a consistent increament throughout with an average growth rate of 82.04 per cent. The growth rate saw its maximum (126.09%) between 2004 and 2005 and again this can be attributed to the commencement of the national health insurance scheme.

In Figure 3.3.2 below, both the general and WIFA populations showed a consistent rise in coverage rates. The general population showed an average rate of increase of 96.71 per cent whiles the WIFA population increased at an average rate of 58.83 per cent. Though there was a positive growth rate for the general population; the initial rate of 125.34 per cent between 2002 and 2003 declined to 50.84 per cent by 2004. This however recovered to a rate of 113.96 per cent by 2005. This last ascent may also be as a result of the implementation of the national health insurance scheme in 2004. Unlike the dip observed in the general population in 2004, there was no such occurrence in the WIFA population during the same year. There was however no record of data for the WIFA population in 2005 and as such the rate could not be estimated for the said year.



Year	Number of Registrants General Population (WIFA Population)	Growth Rate (%) General Population (WIFA Population)
2002	8,441 (3,186)	-
2003	18,958 (3,824)	124.59 (20.03)
2004	29,000 (7,648)	52.97 (100.00)
2005	69,314 (17,291)	139.01 (126.09)

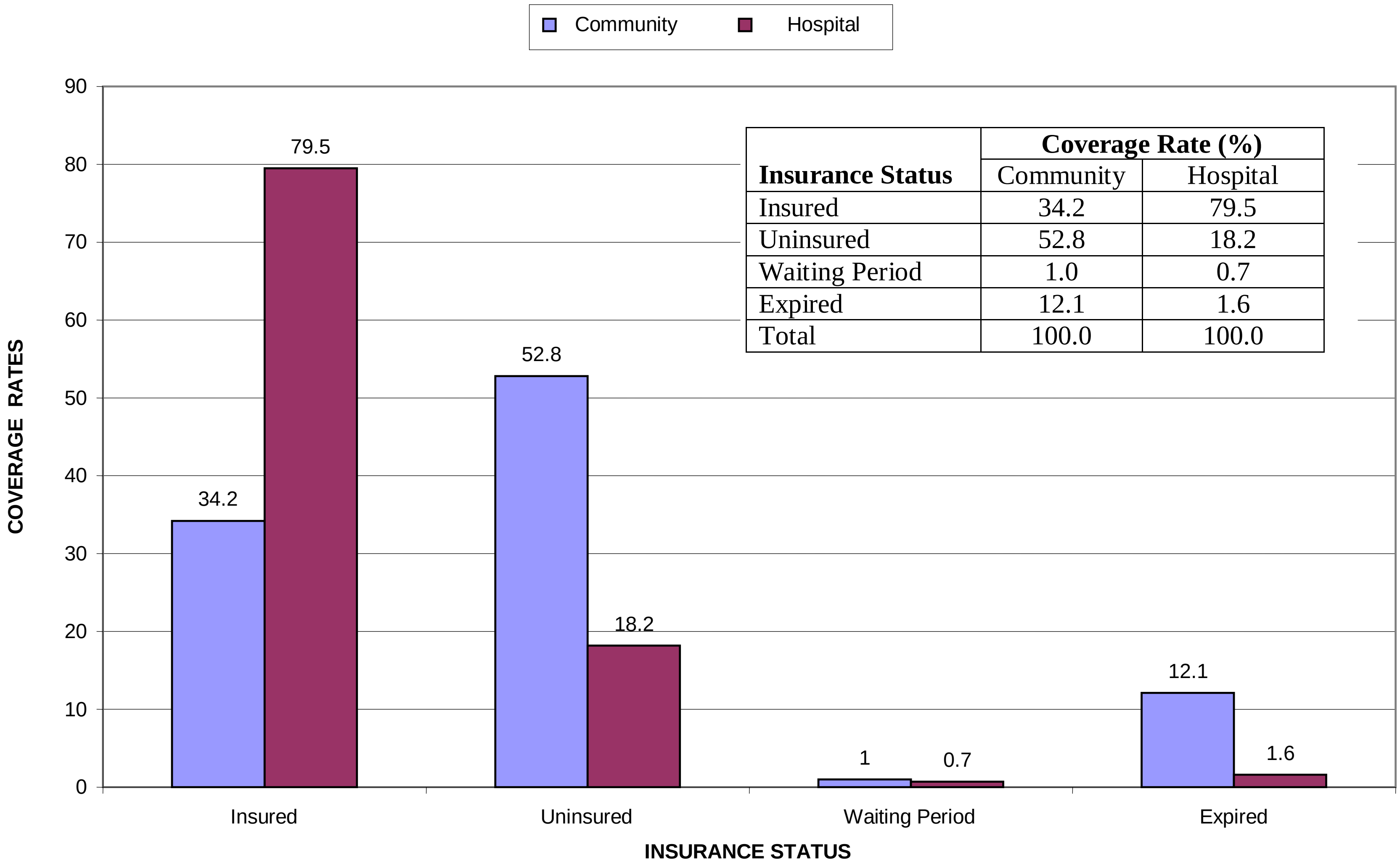
FIGURE 3.3.1: TREND OF REGISTRATION-GENERAL AND WIFA POPULATION



Year	Percentage Coverage General Population (WIFA)	Growth Rate (%) General Population (WIFA)
2002	3.71 (6.67)	-
2003	8.36 (8.03)	125.34 (20.39)
2004	12.61 (15.84)	50.84 (97.26)
2005	26.98 (-)	113.96 (-)
Mean		96.71 (58.83)

FIGURE 3.3.2: PERCENTAGE COVERAGE OF WIFA AND GENERAL POPULATION (INSURANCE SECRETARIAT)

NB: No records available for WIFA. 2005



Insurance Status	Coverage Rate (%)	
	Community	Hospital
Insured	34.2	79.5
Uninsured	52.8	18.2
Waiting Period	1.0	0.7
Expired	12.1	1.6
Total	100.0	100.0

FIGURE 3.3.3: INSURANCE STATUS AND COVERAGE RATES

Figure 3.3.3 above shows the insurance coverage rates in the community and the health institutions (Holy Family and Kwahu Government Hospitals) in a combined Table and Figure. The uninsured constituted nearly 53% in the community survey as against 18% in the two hospitals. Grossly, the uninsured (uninsured and expired insurance) in the community came up to 64.9% and 19.8% in the hospital. Most clients visiting the hospitals were insured (≈80%). In the community, only 34% were insured with 12% having their insurance expired as against 1.6% expiry rate in the hospitals. It can therefore be inferred from here that, many more insured clients visited the hospital than the uninsured clients suggesting a situation of moral hazard and possible abuse.

TABLE 3.3.1:PERFORMANCE RATING OF THE MUTUAL HEALTH INSURANCE SCHEME – COMMUNITY PERCEPTION

Performance Rating	Frequency	Percentage
Very Good	116	37.8
Good	127	41.4
Satisfactory	12	3.9
Poor	30	9.8
Don’t Know	18	5.9
No Response	4	1.3
Total	307	100.0

To a large extent, many household heads thought the mutual health insurance scheme was doing well. In all 79% had this optimistic perception; 37.8% saying the scheme was “very good” and 41.4% said the schemes performance was “good” (Table 3.3.1). Nearly 4% suggested the schemes performance was satisfactory.

Many reasons were adduced for this performance rating as shown in Table A3.1 in Appendix 3. The majority of nearly 29% rated the scheme based on the fact that people were benefiting from the scheme whiles just over 18% did so on account of not paying medical bills at the accredited health institutions when they reported sick. A few respondents said otherwise and these may have rated the scheme poorly. Nearly 5% of the respondents were of the view that, uninsured clients were given priority attention at the health institutions and another 1.2% thought not all the prescribed drugs were supplied the insured clients as against the uninsured. This clearly is a case of non-communication and lack of information in view of the fact that not all the drugs are on the insurance drug list. Another small group of just 0.6% thought that cheap drugs were being given to the insured clients. The issue of unofficial charges or under-the-table fees surfaces in the group (5.5%) that complains of still paying medical bills in spite of being insured. This is prominent for elective surgical cases and a few of such clients had lodged complaints at the insurance secretariat. Many more reasons are detailed in Table A3.1 in Appendix 3.

TABLE 3.3.2:FIVE YEAR TREND OF INSURANCE STATUS IN THE COMMUNITY

Year	Number of Insured Clients	Percentage (of number interviewed - 307)	Rate of Change (from previous year)
2002	0	0	-
2003	10	3.3	∞
2004	67	21.8	560.6
2005	134	43.6	100.0
2006	140	45.6	4.6

The community survey revealed that, of the 307 households interviewed, not one of them had even a single member insured in 2002 (Table 3.3.2). The scheme picked up in 2003 with 10 registered members constituting 3.3% of the population interviewed. The number of registrants increased dramatically in 2004 and 2005 with incremental rates of change (from previous year) at 560.6 and 100.0 respectively. This gradually scaled down to 4.6 in 2006 by which time the national health insurance scheme had come into effect and there was a pseudo-plateau since the saturation level had not yet been reached and coverage rate was only 34.2%. The pattern of the above trend is explained in Table 3.3.3 below.

TABLE 3.3.3:REASONS FOR OBSERVED TREND IN SCHEME MEMBERSHIP

REASONS	FREQUENCY / COUNT	PERCENTAGE OF RESPONSES
Reasons for Registering in Subsequent years		
For future emergencies	18	9.3
Reduction in family size has made it easier for me to register	11	5.7
Able to save money	4	2.1
It is my responsibility to register my family	4	2.1
It has reduced my financial burden	3	1.6
Government directive and so no other way than to register	3	1.6
It is good	3	1.6
Help us to access health facility	2	1.0
Was prompted to register	1	0.5
The chief forced us to register	1	0.5
Now understand how the health insurance scheme works – “pros and cons”	1	0.5
Reasons for Not Registering in Subsequent years		
There was no money	75	38.9
Not around during the time of registration	25	13.0
Had never benefited from the scheme	17	8.8
Not interested in the health scheme	9	4.6
Increase in family size and thus no enough money to register family members	6	3.1
Delayance at the time of registration (a lot of bottlenecks in the registration process)	3	1.6
Bad attitude towards NHIS client at the health institutions	2	1.0
My husband is very difficult and will not register the family	2	1.0
Insurance staff are not caring enough	1	0.5
Insurance staff are not trust worthy	1	0.5
I’m too old	1	0.5
Total responses	**193**	**100.0**

One hundred and forty two households representing nearly 74 per cent of the community failed to register in subsequent years citing several reasons for this occurrence (Table 3.3.3). Seventy five responded there was no money at the time of registration constituting 38.9% and twenty five said they were not around during the registration period and this represented 13.0% of responses. Another seventeen said they had never benefited from the scheme for the previous years that they had registered and thus saw no reason to register again. This group represented 8.8% of all responses. For the households that registered, eighteen said they did so for future emergencies or future and unforeseen catastrophic events and this represented 9.3% of the total responses. The modal class was those who said there was no money and this raises the issue of “willingness to join the scheme but inability to pay and as such the need to design mechanisms to take care of the poor as in cross subsidization whiles addressing equity issues.

Earlier, 13.0 per cent had indicated they were not around during the registration period. This brings to light the timing of registration. Consideration should be given to opening registration throughout the year vis-à-vis restricted to a certain portion of the year. There may be the need in subsequent researches to evaluate the cost-effectiveness of such a move so as to maximize membership.

3.3.2: PERFORMANCE RATIOS

This sub-section describes the expense ratio, claims ratio and the combined ratio. The expense ratio (administrative cost : premium income) provides information on how much of the premium income is used to finance administration (overheads) and the claims ratio (medical claims : premium income) represents the amount of premium income used to pay medical claims. The combined ratio is the sum of the expense ratio and the claims ratio.

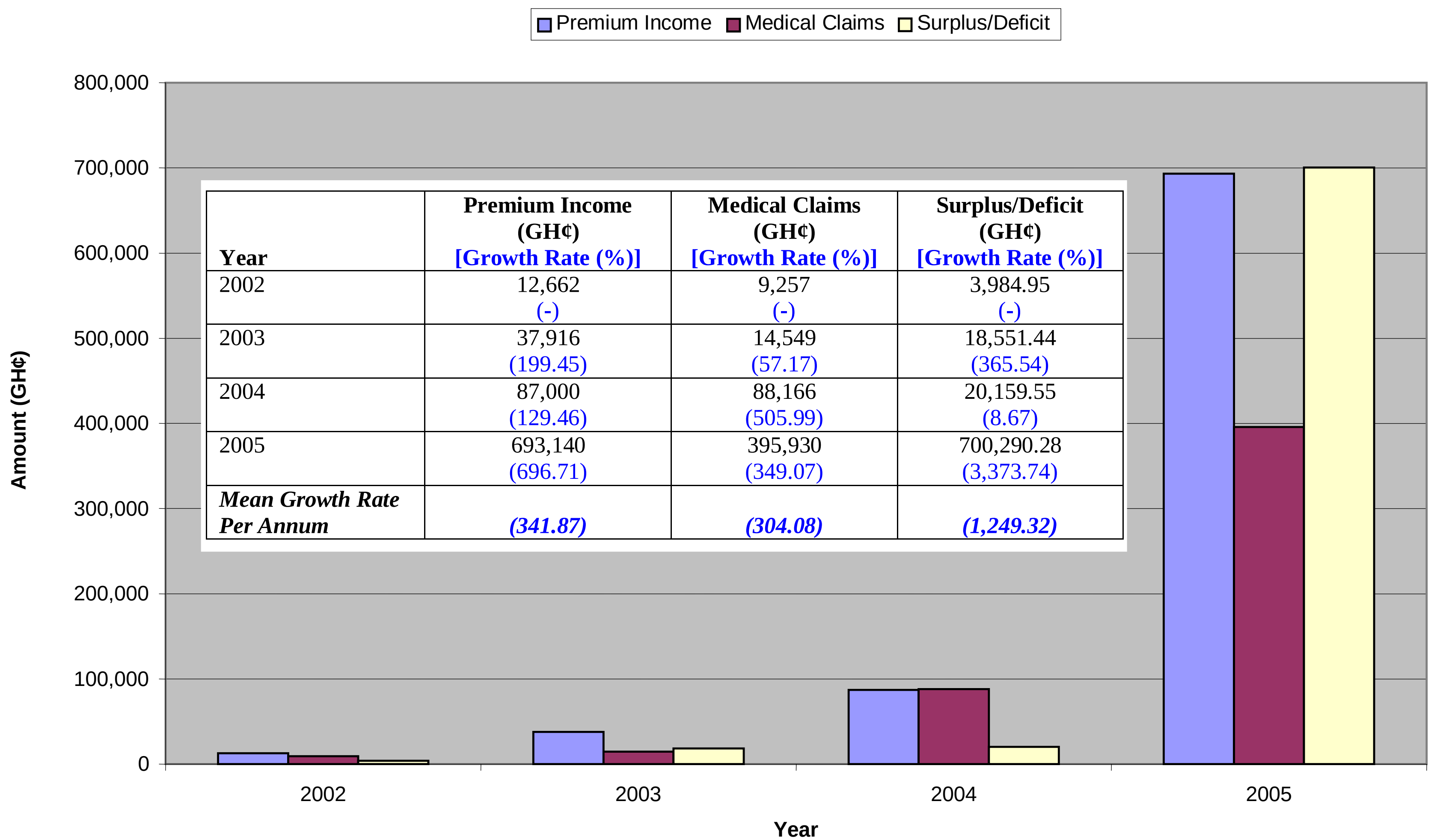
Table 3.3.4 demonstrates the income and expenditure pattern of the Okwawuman Mutual Health Insurance Scheme from 2002 to 2005. Over the period, there was a consistent surplus and this had been increasing from GH¢3,984.95 in 2002 to GH¢700,290.28 in 2005. Both income and expenditure had also been on the ascent. Income from donors saw a decline in 2005 and there was also no income from government subvention in 2002 and 2004. Other sources of income – investment in treasury bills dipped in 2004 but recovered in 2005. The overall picture looked favourable but the viability is better assessed in Figure 3.3.4 and Table 3.3.5 below.

Figure 3.3.4 demonstrates the trend of premium income and medical claims pattern of the Okwawuman Mutual Health Insurance Scheme form 2002 to 2005. The income from premium had been on the ascendancy during the stated period. The annual average rate of increase was estimated at 341.87%. The rise between 2004 and 2005 was rather phenomenal with a rate of 696.71%. The annual average growth rate of expenditure form medical claims came to 304.08%. Unlike the phenomenal ascent for premium income between 2004 and 2005, that due to medical claims was more gentle (349.07%). However, instead of a decline in growth rate in 2004 as observed for premium income (129.46%), there was a remarkable rise (505.99%) in the medical claims which may have precipitated the deficit in 2004. Subsequently, in 2005, the growth rate for medical claims declined to 349.07%.

TABLE 3.3.4:INCOME AND EXPENDITURE PATTERN FOR OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME (2002 - 2005)

Year	Income (GH¢)						Expenditure (GH¢)			Surplus / Deficit (GH¢)
	Registration	Premium	Donors	Government Subvention	Others	Total	Medical Claims	Adm. Cost	Total	
2002	4,221	12,662	45	0	1,607.03	18,534.03	9,257	5,291.99	14,549.08	3,984.95
2003	18,958	37,916	8,678	10,000	7,684.83	83,236.91	14,549	15,426.50	64,685.47	18,551.44
2004	29,000	87,000	15,008	0	7,486.25	138,494.25	88,166	30,168.34	118,334.70	20,159.55
2005	138,628	693,140	8,596	332,392	8,225.22	1,180,980.72	395,930	84,760.69	480,690.44	700,290.28

NB: Income (Others): Income from Investments (eg. Treasury Bills)



Year	Premium Income (GH¢) [Growth Rate (%)]	Medical Claims (GH¢) [Growth Rate (%)]	Surplus/Deficit (GH¢) [Growth Rate (%)]
2002	12,662 (-)	9,257 (-)	3,984.95 (-)
2003	37,916 (199.45)	14,549 (57.17)	18,551.44 (365.54)
2004	87,000 (129.46)	88,166 (505.99)	20,159.55 (8.67)
2005	693,140 (696.71)	395,930 (349.07)	700,290.28 (3,373.74)
Mean Growth Rate Per Annum	***(341.87)***	***(304.08)***	***(1,249.32)***

FIGURE 3.3.4: TREND OF PREMIUM INCOME AND MEDICAL CLAIMS PATTERN OF THE OMHIS (2002-2005)

The trend for surplus funds was similar to that for premium income. The average growth rate per annum was 1,249.32%. The rise had been gentle until 2005 when there was a phenomenal ascent (3,373.74%). This remarkable growth rate followed the decline (8.67%) of the previous year, 2004; the worst performing year in the analysis (Figure 3.3.4). This may explain the deficit observed for 2004 and demonstrated in the combined ratio of > 1.00 in Table 3.3.5 below. The phenomenal ascent observed between 2004 and 2005 may be partly due to the start of the implementation of the national health insurance scheme in 2004 with a sudden surge in the number of registered members.

TABLE 3.3.5: SELECTED PERFORMANCE RATIOS FOR THE PERIOD 2002-2005

Year	**Percentage of Administrative Cost to Total Expenditure**	**Expense Ratio (Growth Rate %)**	**Claims Ratio (Growth Rate %)**	**Combined Ratio**
2002	36.37	0.42 (-)	0.73 (-)	1.15
2003	23.85	0.41 (-2.38)	0.38 (-47.95)	0.79
2004	25.49	0.35 (-14.63)	1.01 (165.79)	1.36
2005	17.63	0.12 (-65.71)	0.57 (-43.56)	0.69

The performance ratios are stated in Table 3.3.5 above. The percentage of administrative cost to total expenditure decreased from 2002 to 2005 except for 2004 where it was slightly higher (25.49%) than that observed for the previous year, 2003 (23.85%). Thus over a quarter of the income was expended on administration (in 2002 and 2004) leaving less than three-quarters for medical claims and a buffer for any eventful or sudden occurrence. The expense ratio is the ratio of administrative cost to premium income only. The expense ratio decreased over the years from 2002 to 2005. The most remarkable decline (over 4 folds – 4.5* from the previous year, 2004) was observed in 2005 (-65.71%) by which time the government had taken over the payment of salaries of the scheme's staff. The claims ratio (ratio of medical claims to premium income) which expresses the amount spent on medical claims showed a pyramidal shape in trend. There was an initial fall in 2003 then a sharp rise in 2004 and another decline in 2005. The sharp rise in 2004 was not commensurate with the fall in expense ratio and this may be attributable to moral hazard and abuse which the scheme presumably tried to check as portrayed in the high administrative cost but failed. The scheme demonstrated a surplus over the years (Table 3.3.4) but failed to break even in 2002 and 2004 by having a combined ratio >1.0 in the two years. There was a deficit in these two years. To have survived meant having to buffer from surpluses from previous years and from strategic investments. The scheme did well in 2003 and 2005 with combined ratios being <1.0 for these two years.

3.3.3: HEALTH SERVICES UTILISATION

The trend of the per capita Ante-Natal-Clinic (ANC) attendance in the Kwahu South and West Districts is demonstrated in Figure 3.3.5 and Table 3.3.6 below. There was a general trend of increase in the per capita ANC attendance in both district hospitals and also the average. The mean per capita attendance during the pre-insurance period was lower (2.11) than that observed during the post-insurance period (3.44). In a similar manner, the rate of growth (% change) in the per capita ANC attendance was lower during the pre-insurance period (3.89%) when compared to the post-insurance period (7.07%).

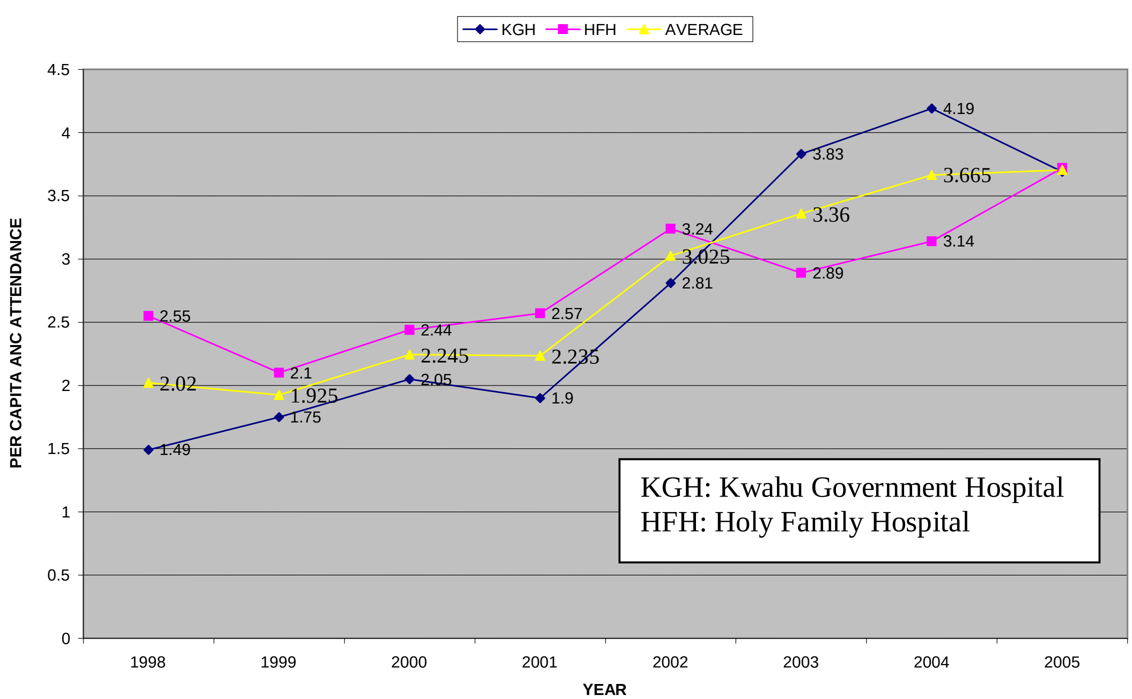


FIGURE 3.3.5: PER CAPITA ANC ATTENDANCE (KGH AND HFH)

The mean percentage change in the per capita ANC attendance in both district hospitals had always been greater in the Kwahu Government Hospital (KGH) than the Holy Family Hospital (HFH) during both the pre-insurance and post-insurance periods. The implications are that, the utilization of the KGH was far below saturation point as against the HFH during the pre-insurance period possibly due to a larger financial barrier in the former (KGH). As a consequence of breaking this barrier through the health insurance, the uptake increased in KGH remarkably but less marked in HFH because they were already close to saturation point and thus could not take much more. Further evidence is revealed when in 2004 the per capita ANC attendance in the KGH dropped after a consistent increase; by which time they had also closed in to their saturation level. The positive impact of health insurance cannot be denied in this situation.

TABLE 3.3.6: TREND IN PER CAPITA ANC ATTENDANCE: PRE-/POST-INSURANCE PERIODS

PRE-INSURANCE				**POST-INSURANCE**			
Year	KGH (% Change)	HFH (% Change)	Average (% Change)	Year	KGH (% Change)	HFH (% Change)	Average (% Change)
1998	1.49 (-)	2.55 (-)	2.02 (-)	2002	2.81 (-)	3.24 (-)	3.03 (-)
1999	1.75 (17.45)	2.10 (-17.65)	1.93 (-4.46)	2003	3.83 (36.30)	2.89 (-10.80)	3.36 (10.89)
2000	2.05 (17.14)	2.44 (16.19)	2.25 (16.58)	2004	4.19 (9.40)	3.14 (8.65)	3.67 (9.23)
2001	1.90 (-7.32)	2.57 (5.33)	2.24 (-0.44)	2005	3.69 (-11.93)	3.72 (18.47)	3.71 (1.09)
Mean	1.80 (9.09)	2.42 (1.29)	**2.11 (3.89)**	**Mean**	3.63 (11.26)	3.25 (5.44)	**3.44 (7.07)**

The trend of supervised deliveries is shown in Figure 3.3.6 and Table 3.3.7 below. The number of supervised deliveries (1,356) between 1998 and 2001 (pre-insurance period) was less than that observed (1,427) between 2002 and 2005 (the post-insurance period).The general trend had been an ascent for both the pre-insurance (KGH: 14.20%; HFH: 0.95%; AV.:4.04%) and post-insurance (KGH: 20.30%; HFH: 3.53%; AV.: 9.26%) periods. However, the ascent was greater (2 fold) during the post-insurance period resonating the impact of the health insurance scheme. The mean percentage changes were greater for the KGH (14.20%, 20.30%) than was observed for HFH (0.95%, 3.53%).

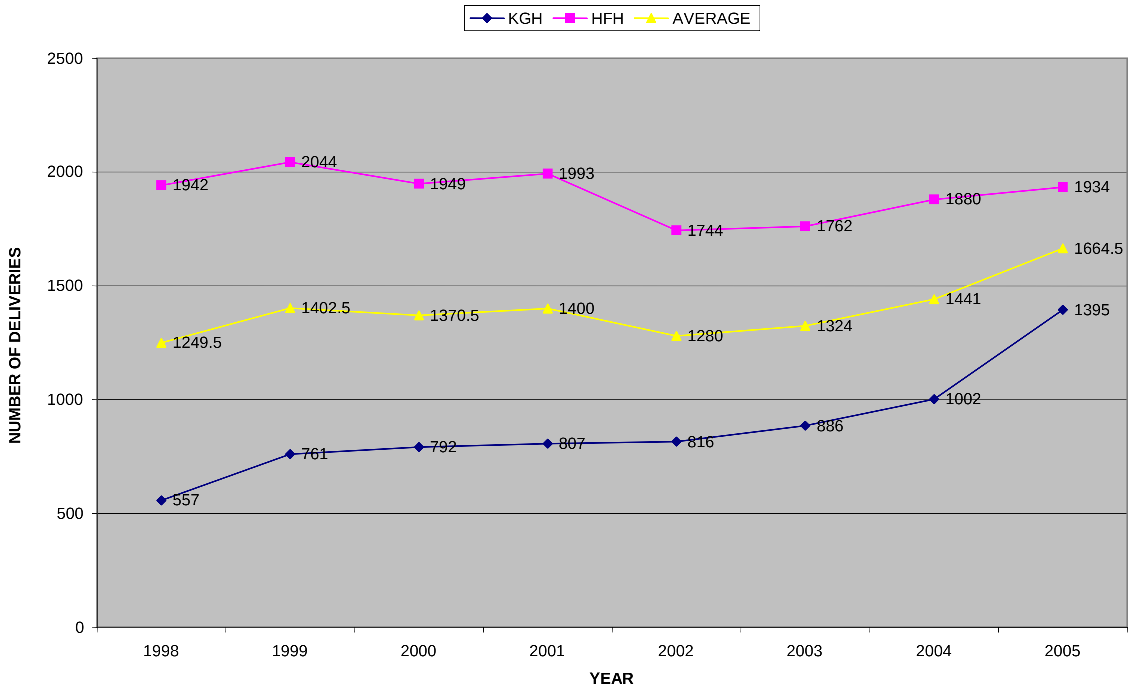


FIGURE 3.3.6: TREND OF SUPERVISED DEDLIVERIES (KGH AND HFH)

TABLE 3.3.7:TREND OF SUPERVISED DELIVERIES

PRE-INSURANCE				**POST-INSURANCE**			
Year	KGH (% Change)	HFH (% Change)	Average (% Change)	Year	KGH (% Change)	HFH (% Change)	Average (% Change)
1998	557 (-)	1942 (-)	1249.50 (-)	2002	816 (-)	1744 (-)	1280 (-)
1999	761 (36.63)	2044 (5.25)	1402.50 (12.25)	2003	886 (8.58)	1762 (1.03)	1324 (3.44)
2000	792 (4.07)	1949 (-4.65)	1370.50 (-2.28)	2004	1002 (13.09)	1880 (6.70)	1441 (8.84)
2001	807 (1.89)	1993 (2.26)	1400 (2.15)	2005	1395 (39.22)	1934 (2.87)	1664.50 (15.51)
Mean	729.25 (14.20)	1982 (0.95)	**1355.63 (4.04)**	**Mean**	1024.75 (20.30)	1830 (3.53)	**1427.38 (9.26)**

The trend of utilization of ultrasound services is demonstrated in Figure 3.3.7 and Table 3.3.8 below. The utilization had increased remarkably from a mean value of 819.13 to 1,364.63 after the introduction of the health scheme. The mean rate of increase was rather higher (69.36%) during the pre-insurance period compared to 2.16% after the introduction of the health scheme.

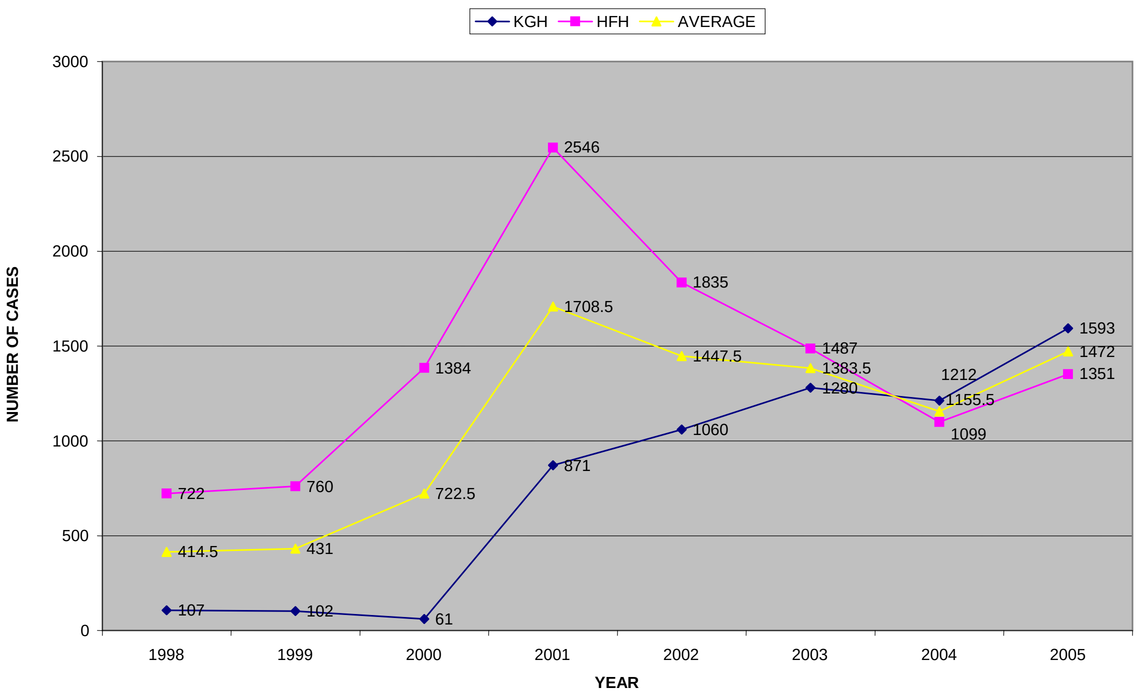


FIGURE 3.3.7: TREND OF UTILISATION OF ULTRASOUND (KGH AND HFH)

TABLE 3.3.8:TREND OF THE UTILISATION OF ULTRASOUND

PRE-INSURANCE				**POST-INSURANCE**			
Year	KGH (% Change)	HFH (% Change)	Average (% Change)	Year	KGH (% Change)	HFH (% Change)	Average (% Change)
1998	107 (-)	722 (-)	414.50 (-)	2002	1060 (-)	1835 (-)	1447.50 (-)
1999	102 (-4.67)	760 (5.26)	431 (3.98)	2003	1280 (20.76)	1487 (-18.97)	1383.50 (-4.42)
2000	61 (-40.20)	1384 (82.11)	722.50 (67.63)	2004	1212 (-5.31)	1099 (-26.09)	1155.50 (-16.48)
2001	871 (1327.87)	2546 (83.96)	1708.50 (136.47)	2005	1593 (31.44)	1351 (22.93)	1472 (27.39)
Mean	285.25 (427.67)	1353 (57.11)	**819.13 (69.36)**	Mean	1286.25 (15.63)	1443 (-7.38)	**1364.63 (2.16)**

The decline in the mean percentage change during the post-insurance period is largely due to the drop in utilization in HFH after 2001 and this drop was marked. However, the high percentage change (69.36%) observed during the pre-insurance period was mainly due to the phenomenal rise in utilization in KGH in 2001 (1,327.87%).

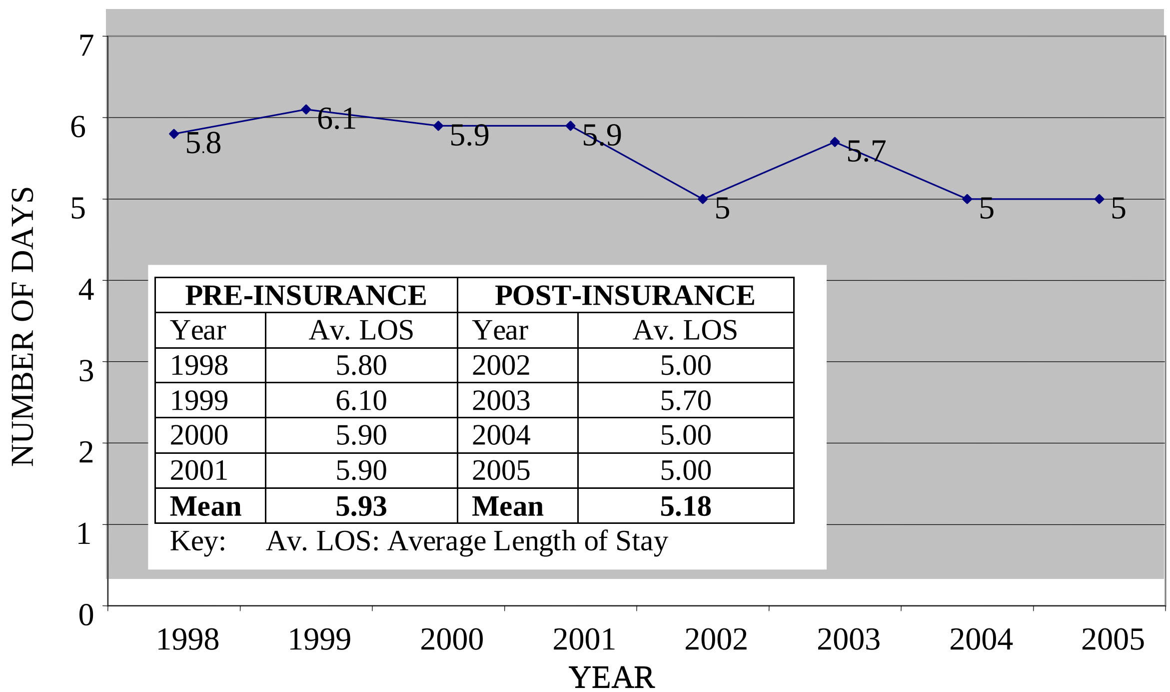
The trend in the utilization of the Out Patient Department (OPD) facilities is shown in Table A3.2 in Appendix 3. It shows an overall reduction in OPD attendance after the introduction of the health insurance. This trend follows an incredible decrease in attendance at the HFH (which was the main service provider for insured clients) as against a less remarkable increase in attendance at the KGH. This pattern is a consequence of the benefit package where the scheme takes care of only OPD bills in excess of ¢200,000.00 (GH¢20.00). Thus insured clients wait till their illnesses are worse before reporting sick to the health facility in order to be admitted and have their bills catered for by the insurance scheme.

The trend of admissions is also demonstrated in Table A3.3 (for HFH) and Table A3.4 (for KGH) both in Appendix 3. Unlike the trend observed for the utilization of OPD facilities, the total admission went up from 50,255 to 52,146 and so did admissions into the maternity wards (from 18,252 to 19,598) after the introduction of the health scheme. In both situations, the slight reduction in attendance in HFH was outstripped by the phenomenal increases observed in the KGH. These observations are a result of the benefit package of the scheme taking care of the admission bills of all insured clients unlike the selective payments for OPD clients (only bills in excess of ¢200,000.00 i.e. GH¢20.00).

The trend of utilization of X-ray facilities is demonstrated in Figure A3.2 in Appendix 3. The general picture was an increase which was more prominent in the KGH.

3.3.4: LENGTH OF STAY (LOS) IN HEALTH FACILITY

The average LOS in HFH is shown in Figure 3.3.8 below. Data was incomplete for KGH and hence could not be computed. The general trend of the average LOS was a gradual decline over the study period. The mean Av. LOS during the pre-insurance period was 5.93 days. This however declined to 5.18 days after the introduction of the health insurance scheme against expectation.



PRE-INSURANCE		POST-INSURANCE	
Year	Av. LOS	Year	Av. LOS
1998	5.80	2002	5.00
1999	6.10	2003	5.70
2000	5.90	2004	5.00
2001	5.90	2005	5.00
Mean	**5.93**	**Mean**	**5.18**

Key: Av. LOS: Average Length of Stay

FIGURE 3.3.8: AVERAGE LENGHT OF HOSPITALIZATION-HFH

TABLE 3.3.9: TEST OF SIGNIFICANCE BETWEEN LENGTH OF STAY AND COMPLICATION

		Complication		Total
		Yes	No	
< 5 days	Count	26	59	85
	% LOS	30.6%	69.4%	100.0%
	% Comp.	46.4%	24.2%	28.3%
5 – 10 days	Count	15	157	172
	% LOS	8.7%	91.3%	100.0%
	% Comp	26.8%	64.3%	57.3%
> 10 days	Count	15	28	43
	% LOS	34.9%	65.1%	100.0%
	% Comp	26.8%	11.5%	14.3%
Total	Count	56	244	300
	% LOS	18.7%	81.3%	100.0%
	% Comp	100.0%	100.0%	100.0%

Pearson Chi-Square = 26.612 df = 2 p (2-sided) = 0.000 (< **0.025**)

Key: LOS: Length of Stay Comp: Complication

The test of significance between LOS and complications developed following a Caesarean Section or Vacuum Extraction is demonstrated in Table 3.3.9 above. The test established that, the LOS increased with complications and the trend was significant ($p < 0.025$).

TABLE 3.3.10: TEST OF SIGNIFICANCE BETWEEN LENGTH OF STAY AND MODE OF PAYMENT

Length of Stay < 5 days 5 – 10 days > 10 days	Mode of Payment	Pearson Chi-Square	df	p (2-sided)
	Out-of-Pocket	6.059	2	0.048
	Exemption	2.507	2	0.286
	Insurance	6.326	2	0.042
	Others	1.540	2	0.463

Key:

df: degree of freedom
p: level of significance

Patients visiting the two District Hospitals (KGH and HFH) paid their medical bills from “Out-of-Pocket”, through “Exemption”, by “Health Insurance”, or through other Means – Employers. The mode of payment by patients who underwent caesarean section or vacuum extraction is characterized in Table A3.5 in Appendix 3. The large majority of the patients paid “Out-of-Pocket” for the study period. The test of significance between LOS and mode of payment is also shown in Table 3.3.10 above. Not one of the four payment modes was significantly associated with LOS.

To buttress the above observations, a cross-correlation between LOS and mode of payment was done and the results are demonstrated in Table A3.6 in Appendix 3. There was a negative correlation between LOS and Out-of-Pocket payment ($r= -0.143$; $p= 0.013$) and Exemption ($r= -0.001$; $p= 0.985$). The Out-of-Pocket payment mode showed a weak but significant correlation. There was a positive but weak and insignificant correlation between LOS and Insurance ($r= 0.014$, $p= 0.806$), and LOS and Other (Employer) payment mode ($r= 0.064$; $p= 0.270$). Thus patients who paid Out-of-Pocket were less likely to stay long on the ward compared to those who were paid for by the insurance scheme and their employers.

3.3.5: DRUG AVAILABILITY AND PRESCRIPTION PATTERN

This sub-section characterizes prescriptions given out to patients in a cross-sectional exit interview of 309 patients.

The prescription pattern of prescribers and drug availability is shown in Table 3.3.11 below. The mean number (categories) of drugs prescribed was 3.64 (± 1.29) with a median of 4. Most patients went home with 3 categories of drugs. The maximum number of drugs prescribed was 7 (categories/types) with no patient going home without a drug. The drug availability was 95.29%.

TABLE 3.3.11: PRESCRIPTION PATTERN OF PRESCRIBERS AND DRUG AVAILABILITY (n=309)

Stats.	Number of Drugs Prescribed	Number of Drugs obtained from the Hospital Pharmacy	Number of Drugs Unavailable
Mean	3.64	3.47	0.18
Median	4.00	3.00	0.00
Mode	3	3	0
Std. Dev.	1.29	1.26	0.53
Minimum	0	0	0
Maximum	7	7	4
Sum	**1126**	1073	55
Drug Availability = 95.29%			

TABLE 3.3.12: CHARACTERISTICS OF UNAVAILABLE DRUGS (n=309; Denominator=55)

Stats.	NHIS Drug List	Non-NHIS Drug List	EDL	Non-EDL	Drugs not in either NHIS Drug List or EDL
Mean	22	22	0.07	0.11	0.11
Median	0.08	0.10	0.00	0.00	0.00
Mode	0.00	0.00	0	0	0
Std. Dev.	0	0	0.27	0.36	0.36
Minimum	0	0	0	0	0
Maximum	2	3	2	3	3
Sum	**22 (40.00%)**	**30 (54.55%)**	**21 (38.18%)**	**31 (56.36%)**	**31 (56.36%)**

Key:
NHIS: National Health Insurance Scheme EDL: Essential Drug List

TABLE 3.3.13: CHARACTERISTICS OF AVAILABLE DRUGS (n=309; Denominator=**1073**)

Stats.	**NHIS Drug List**	**Non-NHIS Drug List**	**EDL**	**Non-EDL**	**Drugs not in either NHIS Drug List or EDL**
Mean	3.01	0.44	3.01	0.44	0.46
Median	3.00	0.00	3.00	0.00	0.00
Mode	3	0	3	0	0
Std. Dev.	1.32	0.61	1.32	0.61	0.63
Minimum	0	0	0	0	0
Maximum	7	3	7	3	3
Sum	**926 (86.30%)**	**135 (12.58%)**	**926 (86.30%)**	**135 (12.58%)**	**140 (13.05%)**

Tables 3.3.12 and 3.3.13 above, characterise the unavailable and available drugs respectively. Of the unavailable drugs, 40% were on the NHIS drug list and 54.55% were not on the list. Similarly, 38.18% of the unavailable drugs were on the Essential Drug List (EDL) and another 56.36% were not on the EDL. Just over fifty six per cent (56.36%) were neither on the NHIS drug list or the EDL.

The available drugs had 86.30% on the NHIS drug list and 12.58% were not on the list. The same picture was repeated for the EDL category (EDL: 86.30%; Non-EDL: 12.58%). Another 13.05% were neither on the NHIS drug list or the EDL.

The characteristics of the available drugs showed a lot of homogeneity and much similarity between the NHIS-drug list and the EDL. The characteristics of the unavailable drugs were much less homogeneous but did not differ in similarity between the NHIS-drug list and the EDL. This category of drugs (unavailable drugs) revealed a much wider range of drugs in the NHIS-drug list than the EDL.

The characteristics of the prescribed drugs are shown in Table 3.3.14 below. There were no prescriptions containing specialist drugs (Level SD), however all other categories were represented including; Level A 12.70%, Level B1 20.60%, Level B2 11.10%, Level C 13.23%, Level D 5.60% and Level PD 19.89%. Generic drugs (rINN) were the most prescribed (72.47%).

TABLE 3.3.14: CHARACTERISTICS OF PRESCRIBED DRUGS (n=309; Denominator=**1126**)

Stats.	**Level A**	**Level B1**	**Level B2**	**Level C**	**Level D**	**Level SD**	**Level PD**	**rINN**	**Proprietary Names**
Mean	0.46	0.75	0.40	0.48	0.20	0.00	0.72	2.65	0.87
Median	0.00	1.00	0.00	0.00	0.00	0.00	0.00	3.00	1.00
Mode	0	0	0	0	0	0	0	3	1
Std. Dev.	0.51	0.79	0.66	0.78	0.45	0.00	0.90	1.24	0.82
Minimum	0	0	0	0	0	0	0	0	0
Maximum	2	4	3	4	2	0	3	7	4
Sum	**143 (12.70%)**	**232 (20.60%)**	**125 (11.10%)**	**149 (13.23%)**	**63 (5.60%)**	**0 (0.00%)**	**224 (19.89%)**	**816 (72.47%)**	**266 (23.62%)**

Key:

Levels of Care:

Level A: Community
Level B1: Health Centre without Doctor
Level B2: Health Centre with Doctor
Level C: District Hospital
Level D: Regional/Teaching Hospital
Level SD: Specialist Drugs
Level PD: Programme Drugs
rINN: Recommended International Non-Proprietory Name (Generic Names)
Proprietory Name ≈ Trade Name ≈ Brand Name

The correlation between the mode of payment and the type of drug prescribed is demonstrated in Table A3.7 in Appendix 3. There was a negative correlation between Out-of-Pocket payment and the prescription of rINN (generics) drug type but this correlation was weak and insignificant (r= -0.029; p= 0.616). The prescription of the generics (rINN) however showed positive but weak and insignificant correlation with; Exemption (r= 0.012; p= 0.834), Insurance (r=0.032; p= 0.578), and "Paid-For" (Insured + Insured-in-waiting + Exemption + Others-Employer Payment) (r= 0.014; p= 0.807). The prescription of proprietary drugs similarly showed positive but weak and insignificant correlation with Out-of-Pocket payment (r= 0.091; p= 0.111), Exemption (r= 0.043; p= 0.449); Insurance (r= 0.040; p= 0.480), and "Paid-For" (r= 0.066; p= 0.247). The cross-correlation between the modes of payment is also demonstrated in Table A3.7 in Appendix 3 and is largely characterized by negative correlations.

TABLE 3.3.15: TEST OF SIGNIFICANCE BETWEEN INSURANCE STATUS AND TYPE OF DRUG (rINN, Proprietary)

Type of drug	X^2	*df*	*p (2-sided)*
rINN	0.080	1	0.777
Proprietary	1.554	1	0.213

Key:

rINN: Recommended International Non-Proprietary Name (Generic Names)
X^2: Pearson Chi-Square
df: degree of freedom
p: Level of Significance (2-tailed)

The test of significance between insurance status and type of drug prescribed is showed in Table 3.3.15 above. The test of significance revealed that, the type of drug prescribed was inconsequential to the insurance status [p (rINN)= 0.777; p (Proprietary drugs)= 0.213].

3.4: CAESAREAN SECTION AND ASSISTED VAGINAL DELIVERIES (VACUUM EXTRACTION)

This sub-section describes how the implementation of health insurance affected the trend of caesarean section and assisted vaginal delivery-vacuum extraction. The other form of assisted vaginal delivery (i.e. forceps delivery) was not conducted in the two district hospitals and hence was not reported on. Other factors that influenced caesarean section and vacuum extraction were also investigated to provide a holistic picture of the socioeconomic, sociodemographic and medical indicators of caesarean section and vacuum extraction.

3.4.1: TREND ANALYSIS

The trend and rates of caesarean section before and after the introduction of the health scheme is shown in Table 3.4.1 below. During the study period, 2,075 caesarean sections were performed during the pre-insurance period and 2,453 in the post-insurance period. The average number of caesarean sections per annum was estimated as 259.38, pre-insurance and 306.63, post-insurance; a marginal increase of 18.22%. The mean caesarean section rate per annum came to 21.25%, pre-insurance and rose to 22.44%, post-insurance; also a marginal increase of 5.59%. The introduction of the health scheme thus did not produce a paradigm shift towards operative deliveries in view of the marginal increases in the number and rates of caesarean section, prior to and after the introduction of the health scheme.

The trends observed in Table 3.4.1 are graphically presented in Figures A3.3 and A3.4 in Appendix 3. The rates of caesarean section had consistently been higher in Kwahu Government Hospital (KGH) than in Holy Family Hospital (HFH). In 1998, the rate of caesarean section in HFH was 13.9% below the 15% optimum rate recommended by the World Health Organisation (WHO) and in 2005, it came close to the 15% benchmark at 15.77% (Figure A3.3). Otherwise, all the rates were above 15%. The mean rate for HFH, pre-insurance was 16.61% and 25.90% for KGH. Post-insurance, HFH registered a mean rate of 19.47% and KGH recorded 25.41% (Table 3.4.1). Kwahu Government Hospital had never registered a rate below 23% as opposed to HFH. The implications for these high rates of caesarean section are far reaching and needs attention.

TABLE 3.4.1:TREND AND RATES OF CAESAREAN SECTION: A COMPARISON BETWEEN PRE-INSURANCE AND POST-INSURANCE

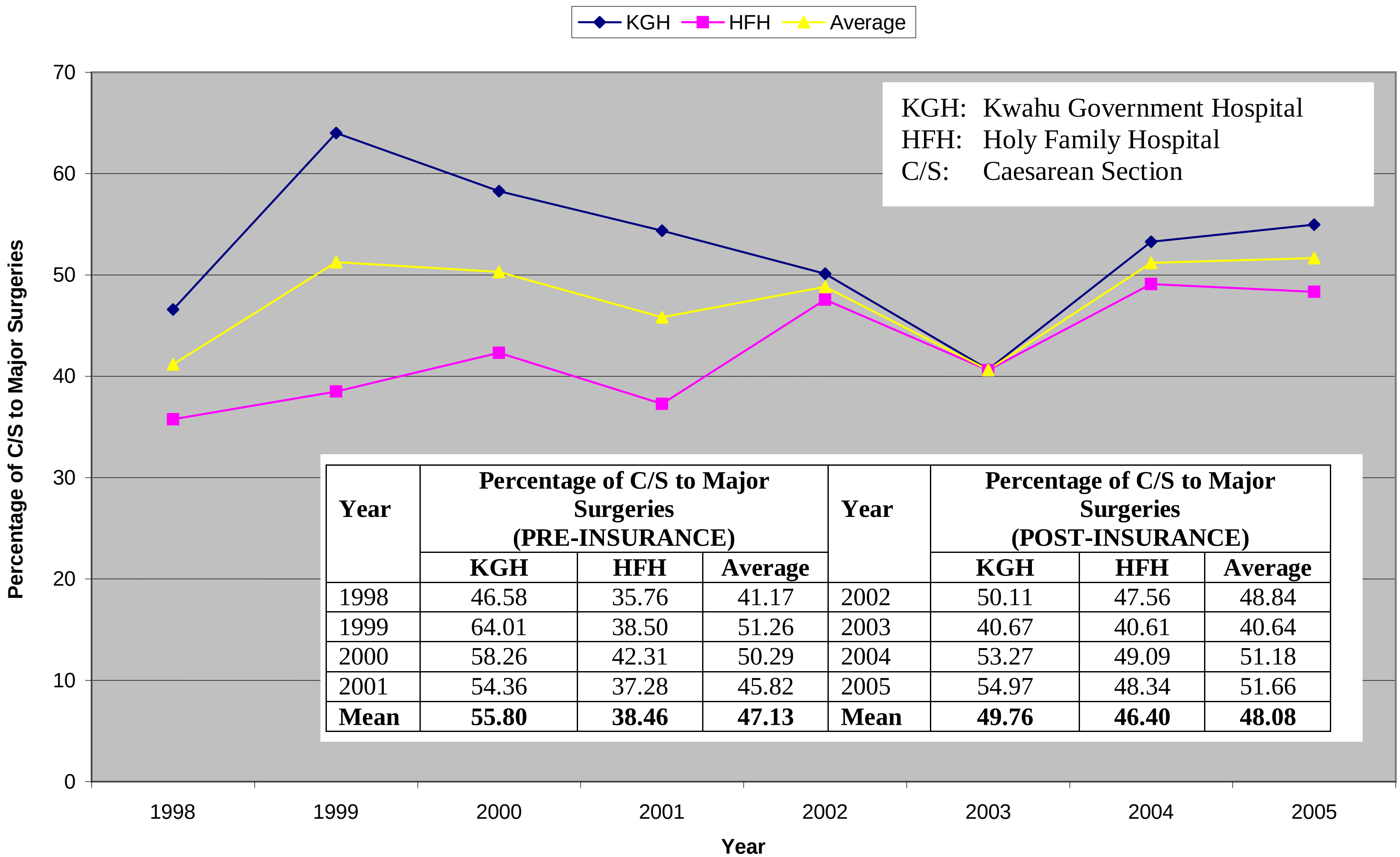
PRE-INSURANCE							POST-INSURANCE						
	KGH		HFH		Average			KGH		HFH		Average	
Year	No.	Rate	No.	Rate	No.	Rate	**Year**	No.	Rate	No.	Rate	No.	Rate
1998	136	24.42	270	13.9	203	19.16	**2002**	219	26.84	380	21.79	299.5	24.32
1999	233	30.62	353	17.27	293	23.95	**2003**	207	23.36	331	18.79	269	21.08
2000	201	25.38	352	18.06	276.5	21.72	**2004**	285	28.44	405	21.54	345	24.99
2001	187	23.17	343	17.21	265	20.19	**2005**	321	23.01	305	15.77	313	19.39
Total	757		1318		1037.5		**Total**	1032		1421		1226.5	
Mean	189.25	25.90	329.50	16.61	259.38	21.25	**Mean**	258	25.41	355.25	19.47	306.63	22.44
Percentage Change in Total No. of C/S (Post-Insurance)							18.22%						
Percentage Change in the Mean Rate of C/S (Post-Insurance)							5.59%						

Key:

KGH: Kwahu Government Hospital HFH: Holy Family Hospital C/S: Caesarean Section
No.: Annual Number of Caesarean Sections
Rate: Caesarean Section Rate per Annum

In Figure A3.4, the number of caesarean sections is revealed to be higher for HFH than for KGH throughout the study period except for 2005. This is in contradiction to the observations made for the rates of caesarean section. This inverse relationship is manifested because, HFH performed several folds more deliveries than KGH and hence had a far bigger denominator, thus the low rates of caesarean section. The chances are that, a pregnant woman has a 1: 3.9 chance of undergoing a caesarean section in the KGH as against a 1: 5.6 in HFH.

The percentage of caesarean section to all major surgeries is demonstrated in Figure 3.4.1 below. Generally the trend had been on the decline from 1999 to 2003 and then began a gentle ascent. The mean was 47.13% pre-insurance and 48.08% post-insurance; a very marginal rise. The rates have consistently been higher for KGH. The effect of the health scheme on this index is far from significant. However, this index needs to be monitored because of its high rate with concomitant cost implications for the health scheme. Further more, it is one index that can be abused and yet can so easily be controlled.



Year	**Percentage of C/S to Major Surgeries (PRE-INSURANCE)**			**Year**	**Percentage of C/S to Major Surgeries (POST-INSURANCE)**		
	KGH	**HFH**	**Average**		**KGH**	**HFH**	**Average**
1998	46.58	35.76	41.17	2002	50.11	47.56	48.84
1999	64.01	38.50	51.26	2003	40.67	40.61	40.64
2000	58.26	42.31	50.29	2004	53.27	49.09	51.18
2001	54.36	37.28	45.82	2005	54.97	48.34	51.66
Mean	**55.80**	**38.46**	**47.13**	**Mean**	**49.76**	**46.40**	**48.08**

FIGURE 3.4.1: TREND OF C/S TO MAJOR SURGERIES

TABLE 3.4.2:TREND AND RATES OF VACUUM EXTRACTION: A COMPARISON BETWEEN PRE-INSURANCE AND POST-INSURANCE

PRE-INSURANCE							POST-INSURANCE						
	KGH		HFH		Average			KGH		HFH		Average	
Year	No.	Rate	No.	Rate	No.	Rate	**Year**	No.	Rate	No.	Rate	No.	Rate
1998	2	0.36	29	1.49	15.50	0.93	2002	5	0.61	15	0.86	10	0.74
1999	12	1.58	31	1.52	21.50	1.55	2003	7	0.79	18	1.02	12.5	0.91
2000	15	1.89	36	1.85	25.50	1.87	2004	15	1.50	6	0.32	10.5	0.91
2001	8	0.99	23	1.15	15.50	1.07	2005	7	0.50	38	1.97	22.5	1.24
Total	**37**		**119**		**78**		**Total**	**34**		**77**		**55.5**	
Mean	**9.25**	**1.21**	**29.75**	**1.50**	**19.50**	**1.35**	**Mean**	**8.50**	**0.85**	**19.25**	**1.04**	**13.88**	**0.95**

Key:

KGH: Kwahu Government Hospital HFH: Holy Family Hospital V/E: Vacuum Extraction
No.: Annual Number of Vacuum Extractions
Rate: Vacuum Extraction Rate per Annum

The trend and rate of vacuum extraction prior to and after the introduction of the health insurance scheme is demonstrated in Table 3.4.2 above. Cumulatively, from 1998 to 2001 prior to the establishment of the health scheme, 156 vacuum extractions were performed in both district hospitals – KGH and HFH. The cumulative four years into the health insurance period (post-insurance) came down to 111 vacuum extractions; a drop of 28.85%. The mean vacuum extraction rate similarly declined from 1.35% to 0.95%; a drop of 29.63%. The low rates of vacuum extraction demonstrated that it was not a preferred mode of delivery regardless of the insurance status. The rates were consistently higher in HFH than KGH.

The findings in Table 3.4.2 are captured diagrammatically in Figures A3.5 and A3.6 in Appendix 3. The gentle decline in the rate and number of vacuum extraction from 2000 to 2004 was interrupted by a sharp rise between 2004 and 2005 (533.33%) in HFH. This may be attributed to the start of the national health insurance scheme which saw a phenomenal increase in uptake and coverage in 2004. It could also be attributed to the acquisition of training skills in the performance of the procedure. Over all, the health insurance scheme did not definitively cause a rise in the vacuum extraction rate.

The estimated annual number of caesarean section above 15% of supervised delivery upper limit suggested by WHO is demonstrated in Table 3.4.3. Over the study period (1998 to 2005), this came to 473 in Holy Family Hospital (HFH) with an annual mean of 68 unnecessary caesarean sections. In Kwahu Government Hospital (KGH), the unnecessary caesarean section was greater (738) with an annual mean of 92. Thus the Kwahu South and West districts represented by the two district hospitals (KGH and HFH) cumulatively experienced 1,211 unnecessary caesarean sections over the study period with an annual mean of 151. The implications for morbidity, mortality, disability and the cost implications can not be over emphasized.

TABLE 3.4.3: ESTIMATED ANNUAL NUMBER OF CAESAREAN SECTIONS AND ANNUAL NUMBER OF CAESAREAN SECTIONS ABOVE 15% (OF SUPERVISED DELIVERY) UPPER LIMIT SUGGESTED BY WHO

Year	**HOLY FAMILY HOSPITAL**				**KWAHU GOVERNMENT HOSPITAL**				District Total of Unnecessary Caesarean section
	Annual No. of Supervised Delivery	Annual No. of Caesarean Section	Rate of Caesarean Section (%)	Annual No. Above 15% Maximum (Unnecessary caesarean Section)	Annual No. of Supervised Delivery	Annual No. of Caesarean Section	Rate of Caesarean Section (%)	Annual No. Above 15% Maximum (Unnecessary caesarean Section)	
1998	1942	270	13.9		557	136	24.42	53	53
1999	2044	353	17.27	46	761	233	30.62	119	165
2000	1949	352	18.06	60	792	201	25.38	82	142
2001	1993	343	17.21	44	807	187	23.17	66	110
2002	1744	380	21.79	118	816	219	26.84	97	215
2003	1762	331	18.79	67	886	207	23.36	74	141
2004	1880	405	21.54	123	1002	285	28.44	135	258
2005	1934	305	15.77	15	1395	321	23.01	112	127
Total	15248	2739		473	7016	1789		738	1211
Mean	1906	342		68	877	224		92	**151**

3.4.2: IMPACT ANALYSES

The type of procedure performed is shown in Table 3.4.4 below. Elective or planned caesarean section constituted 9.4% of operative deliveries whiles emergence caesarean section formed 90.6%. Subsidiary procedures which were secondary to the main procedure performed were adhesiolysis (0.4%), bilateral tubal ligation (21%), bilateral tubal ligation and ophorectomy (0.4%), myomectomy (0.9%), secondary suturing (0.4%) and total abdominal hysterectomy (0.9%). These constituted 24.1% of all caesarean section cases.

TABLE 3.4.4:TYPE OF PROCEDURE PERFORMED

CAESAREAN SECTION (n = 224)			***VACUUM EXTRACTION (n = 77)***		
VARIABLE	***No.***	***%***	***VARIABLE***	***No.***	***%***
Main Procedure					
Elective CS	21	9.4			
Emergency CS	203	90.6			
Subsidiary Procedure					
Adhesiolysis	1	0.4	Episiotomy	27	35.1
BTL	47	21.0	Nil	50	64.9
BTL + Ophorectomy	1	0.4			
Myomectomy	2	0.9			
Secondary Suturing	1	0.4			
TAH	2	0.9			
Nil	170	75.9			

Key:
CS: Caesarean Section No.: Number %: Percentage
BTL: Bilateral Tubal Legation TAH: Total Abdominal Hysterectomy

The management of labour is demonstrated in Table 3.4.5 below. The use of the partograph in monitoring labour was 26.8% for caesarean section and 31.2% for vacuum extraction. The use of this instrument was disappointingly lower in Holy Family Hospital (HFH) than in Kwahu Government Hospital (KGH). The augmentation of labour with oxytocics was 12.0% for caesarean section and 37.7% for vacuum extraction.

TABLE 3.4.5:MANAGEMENT OF LABOUR

Indicator	CAESAREAN SECTION		VACUUM EXTRACTION	
	Number	Percentage	Number	Percentage
Use of Partograph				
Yes	60	26.8	24	31.2
No	164	73.2	53	68.8
Augmentation during Labour				
Yes	26	12.0	29	37.7
No	190	88.0	48	62.3

The indications for caesarean section and vacuum extraction are shown in Table A3 8 in Appendix 3. Most prominent among the indications for caesarean section are; fetal distress (54), cephalopelvic disproportion (45), antepartum haemorrhage (38), previous caesarean section (27), prolong labour (19), eclampsia (11), malpresentation (8), delayed second stage of labour (7), cervical dystocia (7), macrosomia (7), retained twin (7), breech presentation (7), and twelve others with decreasing occurrences as illustrated in Table A3.8 in Appendix 3.

Prolonged second stage of labour (61) was the most frequent indication for vacuum extraction. Fetal distress (9), poor uterine contraction (2), eclampsia (1), pregnancy induced hypertension (1), and retained twin (1) followed in decreasing order. Some indications for vacuum extraction were screened out as inappropriate indications for the procedure and are illustrated in the text box in Table A3.8 in Appendix 3.

The test of association between selected indicators for caesarean section is demonstrated in Table 3.4.6 below. The odds of association was significant for delayed second stage of labour (OR: 0.011; 95% CI: 0.002 – 0.054) and cervical dystocia (OR: 0.049; 95%CI: 0.017 – 0.144) but was found to be insignificant for previous caesarean section (OR: 0.570; 95% CI: 0.162 – 2.006), fetal distress (OR: 1.051; 95% CI: 0.365 –

3.025), antepartum haemorrhage (OR: 4.024; 95% CI: 0.498 – 32.514), and cephalopelvic disproportion (OR: 5.230; 95% CI: 0.652 – 41.946).

TABLE 3.4.6: TEST OF ASSOCIATION BETWEEN SELECTED INDICATORS AND CAESAREAN SECTION

	CAESAREAN SECTION			
		95% CI		
INDICATIONS	O/R	Lower	Upper	Sig. (p)
Delayed 2nd Stage of Labour	0.011	0.002	0.054	0.000
Cervical Dystocia	0.049	0.017	0.144	0.000
Previous Caesarean Section	0.570	0.162	2.006	0.381
Fetal Distress	1.051	0.365	3.025	0.927
Antepartum Haemorrhage	4.024	0.498	32.514	0.192
Cephalopelvic Disproportion	5.230	0.652	41.946	0.119
Others	1.000	Referent	Referent	Referent

Key:

Others: Bad Obstetric History, Failed Vacuum Extraction, Pelvic Deformity, Eminent Uterine Rupture, Prolong Labour, Malpresentation, Eclampsia, Failed Induction, and Cord Prolapse.

In consolidating the indications for caesarean section and vacuum extraction in the Kwahu Government Hospital and the Holy Family Hospital, selected determinants were further evaluated. The summary statistics of these selected determinants is demonstrated in Table 3.4.7 below.

The mean age of patients undergoing caesarean section was 27.53 (± 7.04) years with a minimum of 14 and maximum of 46 years. These clients had antenatal visits ranging from 0 to 12 visits and a mean of 4 (± 3) visits. Parity was from 0 to 12 as well with a mean of 2 (±2) births. The birth weight of the babies ranged from 1.0Kg to 5.4Kg with a mean of 3.10 (±0.73) Kg. The head circumference of the babies ranged form 29cm to 42cm with a mean of 34.52 (±1.95) cm.

TABLE 3.4.7: SUMMARY STATISTICS OF SELECTED DETERMINANTS OF CAESAREAN SECTION (C/S) AND VACUUM EXTRACTION (V/E)

Stats.	**Caesarean Section (n = 224)**							**Vacuum Extraction (n = 77)**						
	Mat. Age (Years)*	ANC Visits*	Parity*	B.Wt. (Kg)*	Head Cirm. (Cm)*	LOS (Days)	Hb. (g/dl)	Mat. Age (Years)*	ANC Visits*	Parity*	B.Wt. (Kg)*	Head Cirm. (Cm)*	LOS (Days)	Hb. (g/dl)
Mode	30	3	0	2.90	34	8.00	10.20	30	4[a]	0	2.8[b]	34	1[c]	8.4[d]
Median	27.00	3.50	1.00	3.10	34.00	8.00	9.70	27.00	5.00	1.00	3.20	34.00	2.00	10.45
Mean	27.53	4.15	1.93	3.10	34.52	8.34	9.46	26.66	5.16	1.78	3.26	34.40	2.60	10.22
S.D.	7.04	2.75	2.20	0.73	1.95	3.83	2.31	6.47	3.04	2.15	0.51	1.14	2.03	2.09
Min.	14	0	0	1.0	29	0.42	3.9	15	1	0	2.2	32	1	4.8
Max.	46	12	12	5.4	42	35.00	17.2	42	12	9	4.4	36	14	15.3

Key:

Mat. Age: Maternal Age
ANC Visits: Antenatal Care Visits
B. Wt: Birth Weight
Head Cirm: Head Circumference
LOS: Length of Stay
Hb: Haemoglobin
S.D: Standard Deviation
Min: Minimum
Max: Maximum

C/S: Caesarean Section
V/E: Vacuum Extraction
a, b, c, d: Multimodal; smallest value shown
*: Selected determinants

The length of stay (LOS) in the hospital also ranged from 0.42 days to 35 days with a mean of 8.34 (± 3.83) days. The degree of anaemia was measured using the haemoglobin level and ranged from 3.9g/dl to 17.2g/dl with a mean of 9.46g/dl (± 2.31g/dl).

The same determinants were measured for vacuum extraction and noticeable differences were observed in the maximum values for parity (9 births as against 12 for C/S), birth weight (4.4Kg as against 5.4Kg for C/S), and head circumference (36cm for V/E as against 42cm in C/S). The mean LOS for vacuum extraction was shorter (2.60 ± 2.03 days versus 8.34 ± 3.83 days for C/S) and the maximum LOS was much shorter (14 days) as against 35 days in caesarean section.

In Table 3.4.8, the odds of association between maternal age, antenatal visit and parity for caesarean section and vacuum extraction is demonstrated. None of the selected determinants showed significant association with caesarean section and vacuum extraction. Maternal age of ≥35 years had an OR of 1.9 (95% CI: 0.28 – 12.91) indicating a 1.9 times more likelihood of a caesarean section than a patient with maternal age 20-34 years. However, this was not statistically significant. The odds of association between antenatal visits <4 (OR=0.29, 95% CI=0.06-1.38) and >4 (OR=0.29, 95% CI=0.08-1.09) with caesarean section was not significant either though both revealed a 29% less likelihood of a caesarean section than a patient with 4 antenatal visits, the WHO recommended number of visits for uncomplicated cases. For vacuum extraction, antenatal visits <4 (OR=3.40, 95% CI=0.72-16.02) and >4 (OR=3.40, 95% CI=0.92-12.60) did not provide any significant association with the procedure as well and were 3.4 times more likely to undergo vacuum extraction than patients with 4 antenatal visits.

The odds of association between source of patient, insurance status and body weight with caesarean section and vacuum extraction is shown in Table 3.4.9 below. Here again, no significant association is demonstrated. The referred cases were 0.48 times (95% CI=0.15-1.58) less likely to have caesarean section than the non-referred cases and were twice (95% CI=0.63-6.82) more likely to have vacuum extraction than the non-referred cases. The analysis also revealed that, the insured were 0.34 times (95% CI=0.03-4.49) likely to undergo caesarean section than the uninsured but were almost three times (95% CI=0.22-39.63) more likely to have vacuum extraction than the uninsured (Table 3.4.9).

TABLE 3.4.8: ODDS RATIOS AND 95% CONFIDENCE INTERVALS BY SELECTED DETERMINANTS (MATERNAL AGE, ANV AND PARITY) OF CAESAREAN SECTION AND VACUUM EXTRACTION

Determinants	**Caesarean Section (n = 224)**				**Vacuum Extraction (n = 77)**			
			95.0% CI				95.0% CI	
	%	O/R	Lower	upper	%	O/R	Lower	Upper
Mat. Age (yr)								
< 20	13.0	0.932	0.204	4.252	18.2	1.073	0.235	4.897
20-34	66.8	1.000	Referent	Referent	66.3	1.000	Referent	Referent
≥ 35	20.2	1.901	0.280	12.913	15.6	0.526	0.077	3.573
ANV (Visits)								
< 4	50.0	0.294	0.062	1.383	31.6	3.403	0.723	16.017
= 4	13.2	1.000	Referent	Referent	15.8	1.000	Referent	Referent
> 4 (4+)	36.8	0.294	0.079	1.089	52.63	3.402	0.918	12.602
Parity (Births)								
0	33.2	0.850	0.198	3.642	42.9	1.177	0.275	5.042
1	22.0	1.310	0.222	7.728	15.6	0.763	0.129	4.503
2-4	33.6	1.000	Referent	Referent	31.2	1.000	Referent	Referent
≥ 5 (5+)	11.2	0.658	0.083	5.202	10.4	1.519	0.192	11.997

Key:

O/R: Odds Ratio CI: Confidence Interval

Mat. Age: Maternal Age ANV: Antenatal Visits

TABLE 3.4.9: ODDS RATIOS AND 95% CONFIDENCE INTERVALS BY SELECTED DETERMINANTS (SOURCE OF PATIENT, INSURANCE STATUS AND BIRTH WEIGHT) FOR CAESAREAN SECTION AND VACUUM EXTRACTION

Determinants	**Caesarean Section (n = 224)**				**Vacuum Extraction (n = 77)**			
			95.0% CI				95.0% CI	
	%	O/R	Lower	Upper	%	O/R	Lower	Upper
SOP								
Non-Referred	69.2	1.000	Referent	Referent	66.2	1.000	Referent	Referent
Referred	30.8	0.481	0.147	1.579	33.8	2.078	0.633	6.815
Ins. Status								
Insured	14.3	0.337	0.025	4.493	5.2	2.970	0.223	39.627
Uninsured	85.7	1.000	Referent	Referent	94.8	1.000	Referent	Referent
B. Wt. (Kg)								
< 2.5	15.5	3.506	0.498	24.668	5.3	0.285	0.041	2.007
2.5-3.8	75.7	1.000	Referent	Referent	84.2	1.000	Referent	Referent
> 3.9	8.8	0.299	0.047	1.911	10.5	3.341	0.523	21.336

Key:

SOP: Source of Patient
O/R: Odds Ratio
Ins. Status: Insurance Status
CI: Confidence Interval
B. Wt: Birth Weight

The source of patients (referrals) is demonstrated in Table 3.4.10 below. The sources were similar for both caesarean section and vacuum extraction and differed only in the proportion of cases. For caesarean section, most of the cases came from public clinics/hospitals (55.2%) followed by maternity homes (32.8%) and then traditional birth attendants (9.0%). The dominant source of referral for vacuum extraction was the same as for caesarean section – public clinics/hospitals (66.7%) but differed for the second, traditional birth attendants (20.8%) and third, maternity homes (8.3%).

TABLE 3.4.10: SOURCES OF PATIENT

Variable	**Caesarean Section (n = 224)**		**Vacuum Extraction (n = 77)**	
	Number	Percentage	Number	Percentage
Referrals (from):				
TBA	6	9.0	5	20.8
Maternity Home	22	32.8	2	8.3
Public Clinic/Hospital	37	55.2	16	66.7
Private Clinic/Hospital	1	1.5	1	4.2
Home Case	1	1.5	0	0

The complications arising from caesarean section and vacuum extraction are demonstrated in Table A3.9 in Appendix 3. Fourteen per cent of patients who under went caesarean section developed complications and 31.2% developed complications after vacuum extraction. Among the complications developed after a caesarean section; wound sepsis (11) was the most common followed by post partum haemorrhage (7), bladder injury (4), intra-operative haemorrhage (4), disseminated intravascular coagulation (2), and uterine rupture (2), among others. For vacuum extraction, perineal tear (12) and post partum haemorrhage (12) were the most common followed by multiple vaginal tears (2), and vesico-vaginal fistula (1) among other complications detailed in Table A3.9 in Appendix 3.

3.5: STILLBIRTH

This sub-section describes how the implementation of health insurance affected the trend of stillbirth in the Kwahu South and West districts of Ghana. Other factors that influenced stillbirth were also investigated to provide a holistic picture of the socioeconomic, sociodemographic and medical indicators of stillbirth. Representative samples were taken from Kwahu Government Hospital representing the Kwahu South district and the Holy Family Hospital representing the Kwahu West district.

3.5.1: TREND ANALYSIS

The trend and rate of stillbirth before and after the introduction of the health scheme is illustrated in Table 3.5.1 below. The four years pre-insurance period produced an average district total of 318 stillbirths with an annual mean of 79.5 stillbirths. This declined by 10.38% to an average district total of 285 stillbirths with an annual mean of 71.24 during the first four years post-insurance (Table 3.5.1). Similarly, the district mean stillbirth rate per annum decreased from 58.15 stillbirths per 1000 births in the last four years of the pre-insurance period to 49.33 stillbirths per 1000 births in the first four years post-insurance - a decline of 15.17%.

The observed trend may not have been attributable to the health insurance only since there was already a gradual decline in the number and rate of stillbirths even before the introduction of the health insurance as demonstrated in Figures A3.7 and A3.8 in Appendix 3. Both Figures; A3.7 (Trend of Stillbirths-KGH and HFH), and A3.8 (Trend of Stillbirth Rates-KGH and HFH) demonstrated an initial rise (Av. 19.53%) in stillbirth rate between 1998 and 1999 and then started a gradual decline at an average rate of 4.61%, though undulating with an isolated ascent (7.94%) in 2003. The decline in 2005 was phenomenal (-28.13%) and this coincided with the introduction of the national health insurance scheme which saw a remarkable rise in registration and uptake into the health scheme.

TABLE 3.5.1: TREND AND RATES OF STILLBIRTH: A COMPARISON BETWEEN PRE-INSURANCE AND POST-INSURANCE PERIODS

PRE-INSURANCE							**POST-INSURANCE**						
	KGH		**HFH**		**Average**			**KGH**		**HFH**		**Average**	
Year	No.	Rate	No.	Rate	No.	Rate	**Year**	No.	Rate	No.	Rate	No.	Rate
1998	32	55.94	119	59.95	75.5	57.95	**2002**	43	51.87	93	50.63	68	51.25
1999	61	78.21	125	60.33	93	69.27	**2003**	46	51.22	108	59.41	77	55.32
2000	46	56.93	102	50.35	74	53.64	**2004**	57	57.34	93	48.26	75	52.80
2001	41	50.43	110	53.04	75.5	51.74	**2005**	50	35.09	80	40.80	65	37.95
Total	180		456		**318**		**Total**	196		374		**285**	
Mean	45	60.38	114	55.92	79.5	**58.15**	**Mean**	49	48.88	93.5	49.78	71.25	**49.33**
Percentage Change in Average number of Stillbirth							-10.38%						
Percentage change in Stillbirth Rate							-15.17%						

KGH: Kwahu Government Hospital HFH: Holy Family Hospital No.: Number

TABLE 3.5.2: TREND OF SUPERVISED DELIVERY, PER CAPITA ANC ATTENDANCE AND STILLBIRTH RATE

Year	Health Institutions						District Average		
	KGH			HFH					
	Supervised Delivery	Per Capita ANC Att.	Stillbirth Rate	Supervised Delivery	Per Capita ANC Att.	Stillbirth Rate	Supervised Delivery	Per Capita ANC Att.	Stillbirth Rate
1998	557	1.49	55.94	1942	2.55	59.95	1249.50	2.02	57.95
1999	761	1.75	78.21	2044	2.10	60.33	1402.50	1.93	69.27
2000	792	2.05	56.93	1949	2.44	50.35	1370.50	2.25	53.64
2001	807	1.90	50.43	1993	2.57	53.04	1400	2.24	51.74
2002	816	2.81	51.87	1744	3.24	50.63	1280	3.03	51.25
2003	886	3.83	51.22	1762	2.89	59.41	1324	3.36	55.32
2004	1002	4.19	57.34	1880	3.14	48.26	1441	3.67	52.80
2005	1395	3.69	35.09	1934	3.72	40.8	1664.50	3.71	37.95

ANC Att.: Ante-Natal Clinic Attendance

The trend of supervised delivery, per capita ANC attendance and stillbirth rate is demonstrated in Table 3.5.2 and Figure A3.9 in Appendix 3. The trend of stillbirth reflected very much development in the trend of per capita ANC attendance much more than supervised delivery. The initial rise of stillbirth between 1998 and 1999 was accompanied by a decline in per capita ANC attendance as against a rise in supervised delivery. Subsequently, the declines observed in the stillbirth rate tallied with the rise in per capita ANC attendance through the study period (Figure A3.9). In one instance, 2001 when the per capita ANC attendance dropped, this was compensated for by a rise in supervised delivery thus keeping stillbirth on the decline. Therefore, it follows by logic that, the control of stillbirth is much more reliant on per capita ANC attendance than on supervised delivery.

3.5.2: IMPACT ANALYSES

The diagnoses and factors associated with stillbirth are shown in Table A3.10 in Appendix 3. Pregnancy induced hypertension (PIH) topped the causes of stillbirth in the Kwahu Government and Holy Family Hospitals with a count of 29. This was followed by ante-partum haemorrhage (26), premature rupture of membranes (18), cord prolapse (15), malpresentation (14), malaria (10), and retained twin (10) among several other causes. Striking but negligible is breech delivery with transaction of the cord (1) which can be likened to the epitome of an obstetric disaster.

In Table A3.11 in Appendix 3, the mode of delivery, associated medical conditions and fetal abnormalities have been demonstrated. Spontaneous vaginal delivery constituted 77.9% of all births resulting in stillbirths whiles caesarean section came next with 15.7%. Laparotomy (2.9%), vacuum extraction (1.0%) and breech delivery (0.5%) followed in decreasing order. Associated medical conditions contributed to 3.9% of stillbirths and within this group, sickle cell anaemia took prominent stage constituting 50% of the diagnosed medical conditions. Ten per cent of the stillbirths had abnormalities. Hydrocephalus was the most common abnormality representing 57.14% of all abnormalities.

The characterization of referral status, use of partograph and fetal heart is shown in Table A3.12 in Appendix 3. Just over 38% of deliveries resulting in stillbirths were referred cases. Health centre referrals constituted 54.1% of all referred cases followed by maternity home (25.7%), traditional birth attendants (10.8%), and home referrals (9.5%). The use of partograph for monitoring labour was disappointing and 89.2% of all labour cases that resulted in stillbirths were not monitored with this instrument. The non-use of partographs was more prominent in Holy Family Hospital than the Kwahu Government Hospital. Fetal heart beat was present in 25.4% of cases (patients) presenting at the two district hospitals (KGH and HFH) and these were preventable deaths. Their demise hinges on purely obstetric care and not financial access i.e. insurance.

The summary statistics of selected quantitative determinants of stillbirths is demonstrated in Table 3.5.3 below. The mean age of mothers who experience stillbirth was estimated as 28.45 (±7.10) years. The minimum maternal age was 16 years and the maximum 48 years. The mean number of ANC visits was 4 (±2) with a minimum of 1 visit and a maximum of 14 visits. ANC attendance was 83.2%. The mean number of ANC visits coincided with the WHO recommended of 4 visits for a normal pregnancy. The mean gravidity was approximately 4 ($\pm \approx 3$) with a minimum of 1 and a maximum of 11. Parity ranged from 0 to 9 with a mean of 2 (±2). The number of abortions ranged from 0 to 4. Fetal heart beat was present in 25.4% of the mothers visiting the two district hospitals. The fetal heart rate ranged from 118 bpm to 152 bpm with a mean of 136 (±8) bpm. The birth weight of the still born babies ranged from 0.7Kg to 5.6Kg. The mean birth weight was 2.719 (±0.906) kg. The haemoglobin level ranged from 4.3 g/dl to 15.1g/dl with a mean of 10.043 (±2.556) g/dl just 1 unit less the WHO recommended of 11.0g/dl. The total duration of labour ranged from 2.77 hours to 30.25 hours with a mean of 11.32 (±7.0) hours.

The duration of the various stages of labour is shown in Table 3.5.4 below. The mean duration for the first stage was 10.66 (±6.81) hours with a minimum duration of 2.60 hours and a maximum of 29.92 hours. The normal reference range was exceeded by 30.90% of patients. The duration of the second stage of labour ranged from 4 minutes to 180 minutes with a median of 15.0 minutes. Seven patients (12.70%) exceeded 1 hour in second stage.

TABLE 3.5.3:SUMMARY STATISTICS OF SELECTED QUANTITATIVE DETERMINANTS OF STILLBIRTHS (n=204)

Stats	Mat. Age (Years)	ANC Visits (83.2% Attendance)	Gravidity	Parity	Abortions / Miscarriages	FHR [bpm] (Present in 25.4%)	B. Wt. (kg)	Hb. (g/dl)	Total Duration of Labour (hr/min)
Mode	30	3	1	0	0	136	3.0	12.1	2.77[a]
Median	28.00	3.00	3.00	2.00	0.00	136.00	2.800	10.600	9.9967
Mean	28.45	4.00	3.59	2.37	0.22	135.79	2.719	10.043	11.3233
SD	7.10	2.306	2.451	2.396	0.657	7.846	0.9055	2.5564	6.99736
Min.	16	1	1	0	0	118	0.7	4.3	2.77
Max.	48	14	11	9	4	152	5.6	15.1	30.25

Key:

Stats: Statistics
Mat. Age: Maternal Age
ANC: Antenatal Clinic
FHR: Fetal Heart Rate
bpm: beats per minute
B. Wt.: Birth Weight
Hb.: Haemoglobin
a: multimodal. Smallest value chosen

TABLE 3.5.4:DURATION OF THE STAGES OF LABOUR

Stats	**Stages of Labour**			
	First (Hours)	**Second (Minutes)**	**Third (Minutes)**	**Total (Hours/Minutes)**
Mode	11.00	10.00	5.00	2.77 [a]
Median	9.00	15.00	5.00	10.00
Mean	10.66	31.55	8.91	11.32
Std. Dev.	6.81	38.96	7.51	7.00
Min.	2.60	4	1	2.77
Max.	29.92	180	45	30.25
> 12 hrs (First Stage) Normally 7-11hrs in primigravida	***n=17 (30.90%)***			
> 1hr (Second Stage)		***n=7 (12.70%)***		
> 20 mins (Third Stage) [Normally 10-20 mins]			n=3 (5.70%)	
> 12 hrs (Total Duration) Normally: 8-12 hrs in primiparae and 4-8 hrs in multiparae				***n=20 (36.40%)***

a: multimodal; smallest value chosen

The third stage of labour ranged from 1 minute to 45 minutes with a mean of 8.91 (±7.51) minutes. Normally this stage of labour is expected to last for 10 – 20 minutes. However, 5.70% of the patients exceeded the 20 minute upper limit. The total duration of labour also normally last for 8 – 12 hours in primiparae and 4 – 8 hours in multiparae. However, the total duration of labour of 36.40% of the patients exceeded 12 hours. These prolonged stages of labour are indicative of poor monitoring and a recipe for producing stillbirths.

The test of association between insurance status, maternal age, ANC visit, gravidity, and birth weight with stillbirth is demonstrated in Table 3.5.5 below. Only insurance status and birth weight showed significant association with stillbirth. The uninsured were 3.2 times (OR=3.223; 95% CI= 1.527-6.800) more likely to have stillbirths than the insured and low birth weight (<2.5kg) babies were about 90 times (OR= 89.979; 95% CI= 12.002-674.564) more likely to be still born than babies with birth weight ≥ 2.5kg. Surprisingly, ANC visit which showed a corresponding and matching trend with stillbirth rate in the trend analysis in Figure A3.9 failed to produce any significant association (ANC < 4 visits: OR= 0.739; 95% CI= 0.415-1.319).

In Table 3.5.6, the test of association between parity, number of abortions, presentation of fetus, and nature of membranes with stillbirth is demonstrated. None of the selected determinants were significantly associated with stillbirth. Breech presentation which is occasionally fraught with delivery difficulties produced an odds ratio of 0.891 (95% CI= 0.460-1.705). Other forms of fetal malpresentations (Table A3.10) with considerable obstetric problems at delivery likewise produced an insignificant association (OR= 1.739; 95% CI= 0.926-3.263).

The test of association between fetal abnormality, haemoglobin level, referral status, and diagnoses with stillbirth is shown in Table 3.5.7. Referred cases (p= 0.020), pregnancy induced hypertension (p= 0.000), and cord prolapse (p= 0.008) showed significant association with stillbirth. Referred cases were 76% (OR= 1.761; 95% CI= 1.093-2.835) more likely to have stillbirths than non-referrals. Patients with PIH were 6.54 times (OR= 6.541; 95% CI= 2.566-16.674) more likely to have stillbirths than the referent group.

TABLE 3.5.5:TEST OF ASSOCIATION BETWEEN INSURANCE STATUS, MATERNAL AGE, ANC VISITS, GRAVIDITY, BIRTH WEIGHT AND STILLBIRTH

Determinants	**Still Births (n=204)**				
			95% CI		
	Percentage	**OR**	**Lower**	**Upper**	**p**
Insurance Status					
Insured	6.4	1.000	Referent	Referent	Referent
Uninsured	**93.6**	**3.223**	**1.527**	**6.800**	**0.002**
Maternal Age (years)					
<20	10.30	0.813	0.395	1.672	0.573
20-29	44.40	1.000	Referent	Referent	Referent
30-39	37.90	1.213	0.664	2.217	0.530
40+	7.40	1.090	0.364	3.267	0.878
ANC Visits					
<4	51.80	0.739	0.415	1.319	0.306
≥4 (4+)	48.20	1.000	Referent	Referent	Referent
Gravidity					
1	27.00	0.665	0.203	2.181	0.500
2-4	40.60	1.000	Referent	Referent	Referent
≥5 (5+)	32.40	1.398	0.644	3.038	0.397
Birth Weight					
<2.5	**32.50**	**89.979**	**12.002**	**674.564**	**0.000**
≥2.5	67.20	1.000	Referent	Referent	Referent

Key: ANC: Ante-Natal Clinic OR: Odds Ratio CI: Confidence Interval p: Level of Significance

TABLE 3.5.6:TEST OF ASSOCIATION BETWEEN PARITY, NUMBER OF ABORTIONS, PRESENTATION OF FETUS, AND NATURE OF MEMBRANES WITH STILLBIRTH

Determinants	**Still Births (n=204)**				
			95% CI		
	Percentage	**OR**	**Lower**	**Upper**	**p**
Parity					
0	32.80	1.428	0.434	4.702	0.558
1	13.80	0.894	0.446	1.791	0.751
2-4	32.80	1.000	Referent	Referent	Referent
≥5 (5+)	20.60	2.337	0.972	5.620	0.058
Number of Abortions					
0	86.10	1.000	Referent	Referent	Referent
≥1 (1+)	13.90	0.883	0.400	1.953	0.759
Presentation of Fetus					
Cephalic	70.33	1.000	Referent	Referent	Referent
Breech	13.64	0.891	0.466	1.705	0.728
Others [a]	16.03	1.739	0.926	3.263	0.085
Nature of Membranes [b]					
Intact	44.70	1.000	Referent	Referent	Referent
Ruptured/Punctured	55.30	0.939	0.589	1.496	0.791

Key:
a: Others: Malpresentation (Table A3.10) – Breech
b: Nature of Membranes on Admission

TABLE 3.5.7:TEST OF ASSOCIATION BETWEEN FETAL ABNORMALITY, HAEMOGLOBIN LEVEL, REFERRAL STATUS, AND DIAGNOSES WITH STILLBIRTH

Determinants	Still Births (n=204)				
			95% CI		
	Percentage	OR	Lower	Upper	p
Fetal Abnormality					
No abnormality Present	90.00	1.000	Referent	Referent	Referent
Abnormality Present	10.00	1.848	0.486	7.025	0.367
Haemoglobin Level					
<5.0	3.20	0.985	0.176	5.501	0.986
5.0-10.0	40.50	0.862	0.534	1.393	0.545
>10.0	56.30	1.000	Referent	Referent	Referent
Referral Status					
Not Referred	61.80	1.000	Referent	Referent	Referent
Referred	**38.20**	**1.761**	**1.093**	**2.835**	**0.020**
Ass. Factors/Diagnoses					
APH	11.48	1.350	0.666	2.738	0.405
PIH	**9.09**	**6.541**	**2.566**	**16.674**	**0.000**
Cord Prolapse	**4.31**	**6.068**	**1.601**	**22.998**	**0.008**
Retained Twin	3.83	2.009	0.607	6.644	0.253
Others [a]	71.29	1.000	Referent	Referent	Referent

Key:
APH: Ante-Partum Haemorrhage
PIH: Pregnancy Induced Hypertension
a: Others: All Diagnoses in Table A3.10 (Appendix 3) – (APH + PIH + Cord Prolapse + Retained Twin)

Similarly patients with cord prolapse were 6 times (OR= 6.068; 95% CI= 1.601-22.998) more likely to have stillbirths than the referent group. Fetal abnormalities (OR= 1.848; 95%CI= 0.486-7.025) and very low haemoglobin level, Hb < 5.0g/dl (OR= 0.985; 95% CI= 0.176-5.501) did not show any significant association with stillbirth.

The complications encountered in this study following stillbirth are shown in Table A3.13 in Appendix 3. Post partum haemorrhage was the most occurring with a frequency of 12, followed by perineal tear (8), puerperal sepsis (4), ruptured uterus (4), wound sepsis (3), post partum psychosis (2), disseminated intravascular coagulation (2), post partum eclampsia (2), and bladder injury (2) among several others.

3.6.: MATERNAL MORTALITY

This sub-section describes how the implementation of health insurance (Okwawuman Mutual Health Insurance Scheme) affected the trend of maternal deaths in the Kwahu South and West districts of Ghana. Other factors that influenced maternal deaths were also investigated to provide a holistic picture of the socioeconomic, sociodemographic and medical indicators of maternal deaths. Representative samples were taken from Kwahu Government Hospital representing the Kwahu South district and the Holy Family Hospital representing the Kwahu West district. This sub-section is treated under two headings: Trend analysis and impact analysis.

3.6.1: TREND ANALYSIS

The trend of maternal mortality prior to (pre-insurance) and after (post-insurance) the introduction of the health scheme is demonstrated in Table 3.6.1 below. This trend is diagrammatically demonstrated in Figures A3.10 and A3.11 in Appendix 3. The total number of maternal deaths in the district during the last four years prior to the introduction of the health scheme was 94 and this declined to 77 in the first four years after the introduction of the health scheme. The average maternal deaths per annum declined by 18.09% between the pre-insurance (47) and the post-insurance (38.5) periods. Similarly, the mean annual maternal mortality ratio declined from 908.29 maternal deaths per 100,000 live births to 655.80 maternal deaths per 100,000 live births; a drop of 27.80% after the health scheme was introduced. This trend is suggestive of a positive influence of the health scheme on maternal mortality in the district.

The trend of maternal deaths in KGH and HFH is shown in Figure A3.10 in Appendix 3. The number of maternal deaths in the KGH had been on a gentle decline for the period under review except for three marginal ascents between 1998 to 1999, 2000 to 2001 and 2003 to 2004. This had not been the case for HFH which showed an undulating picture with a rise in the number of deaths from 3 to 7 (2002 to 2005) in the post-insurance period. This trend reflected in the district average which demonstrated a gentle rise in the number of maternal deaths from 9 in 2002 to 10 in 2005.

TABLE 3.6.1:TREND OF MATERNAL MORTALITY†: A COMPARISON BETWEEN PRE-INSURANCE AND POST-INSURANCE PERIODS

PRE-INSURANCE							POST-INSURANCE						
	KGH		HFH		Average			KGH		HFH		Average	
Year	No.	Ratio	No.	Ratio	No.	Ratio	**Year**	No.	Ratio	No.	Ratio	No.	Ratio
1998	5	925.96	14	750.27	9.5	838.12	**2002**	3	381.68	15	860.09	9	620.89
1999	5	649.35	20	1027.22	12.5	838.29	**2003**	5	586.85	14	818.71	9.5	702.78
2000	9	1181.10	15	779.63	12	980.37	**2004**	5	533.62	15	817.88	10	675.75
2001	8	1036.27	18	916.50	13	976.39	**2005**	7	556.44	13	691.12	10	623.78
Total	27		67		**47**		**Total**	20		57		**38.5**	
Mean	6.75	948.17	16.75	868.41	11.75	**908.29**	**Mean**	5	514.65	14.25	796.95	9.63	**655.80**
Percentage Change in Average number of Maternal Deaths							-18.09%						
Percentage Change in Maternal Mortality Ratio							-27.80%						

Key: **KGH**: Kwahu Government Hospital **HFH**: Holy Family Hospital **No.**: Number

TABLE 3.6.2: TREND OF SUPERVISED DELIVERY, PER CAPITA ANC ATTENDANCE AND MATERNAL MORTALITY RATIO†

Year	Health Institutions						District Average		
	KGH			HFH					
	Supervised Delivery	Per Capita ANC Att.	Maternal Mortality Ratio	Supervised Delivery	Per Capita ANC Att.	Maternal Mortality Ratio	Supervised Delivery	Per Capita ANC Att.	Maternal Mortality Ratio
1998	557	1.49	925.96	1942	2.55	750.27	1249.5	2.02	838.115
1999	761	1.75	649.35	2044	2.10	1027.22	1402.5	1.925	838.285
2000	792	2.05	1181.1	1949	2.44	779.63	1370.5	2.245	980.365
2001	807	1.90	1036.27	1993	2.57	916.5	1400	2.235	976.385
2002	816	2.81	381.68	1744	3.24	860.09	1280	3.025	620.885
2003	886	3.83	586.85	1762	2.89	818.71	1324	3.36	702.78
2004	1002	4.19	533.62	1880	3.14	817.88	1441	3.665	675.75
2005	1395	3.69	556.44	1934	3.72	691.12	1664.5	3.705	623.78

Key: **ANC Att.**: Ante-Natal Clinic Attendance

†: *The figures demonstrated are institutional thus the maternal mortality ratios are also institutional*

Figure A3.11 in Appendix 3 also shows the trend of maternal mortality ratios in the KGH and HFH. The trend had been erratic especially for HFH. The same erratic picture was reflected in the pre-insurance phase of the period under review. Generally however, the maternal mortality ratio had declined considerably after the introduction of the health scheme and had assumed a very steady decline post-insurance. The most conspicuous change had been the phenomenal decline of 36.41% between 2001 and 2002 just before the start of the health scheme. This picture suggest that, other factors aside finance (insurance) affected the maternal mortality ratio and this is further evaluated in section 3.6.2 – impact analysis.

The trend of supervised delivery, per capita ANC attendance and maternal mortality ratio is demonstrated in Table 3.6.2 above and also in Figure A3.12 in Appendix 3. Between 1998 and 2001, the average supervised delivery showed unspecific trend with periods of troughs and ascent. The general trend however was a rise from 1,250 in 1998 to 1,400 in 2001. The per capita ANC attendance showed a similar picture with an overall marginal rise from 2.02 in 1998 to 2.24 in 2001. The dependent maternal mortality ratio displayed a consistent rise from 838.12 in 1998 to 980.37 maternal deaths per 100,000 live births in 2000 then a very gentle decline to 976.39 maternal deaths per 100,000 live births in 2001. In all three scenarios, there was a phenomenal change in gradient between 2001 and 2002, just before the start of the health scheme. The maternal mortality ratio dropped from 976.39 to 620.89 deaths per 100,000 live births with a concomitant increase in per capita ANC attendance from 2.24 to 3.03. Simultaneously and unexpected however, the supervised delivery declined from 1,400 to 1,280.

Hereafter and in the post-insurance period of 2002 to 2005 under review, supervised delivery increased remarkably (from 1,280 in 2002 to 1,665 in 2005) as well as per capita ANC attendance (from 3.03 in 2002 to 3.71 in 2005). However, the corresponding change in the maternal mortality ratio between 2002 and 2003 was discordant recording an increase from 620.89 to 702.78 maternal deaths per 100,000 live births. In the year after until 2005, there was a gradual decline to 623.78 maternal deaths per 100,000 live births. This trend reveals that, there must be some other factors and determinants influencing the maternal mortality ratio in the district.

The percentage change of average supervised delivery, average per capita ANC attendance and average maternal mortality ratio is shown in Table 3.6.3 below and in Figure A3.13 in Appendix 3. No definite pattern was observed prior to 2002 (the insurance year) and the trend was erratic during this period when compared to the period after the introduction of the insurance (post-insurance-2002 to 2005). The average per capita ANC attendance and average supervised delivery did not show synergy in their influence on maternal mortality ratio. Using 1998 as the reference year, average supervised delivery increased by 12.25% in 1999 and average per capita ANC attendance decreased by 4.7% the same year. The resultant effect on the maternal mortality ratio (MMR) was an increase of 0.02%. The following year, 2000, the trend reversed with average supervised delivery decreasing by 2.28% and per capita ANC attendance increasing by 16.62%. The MMR correspondingly increased several folds (847.5 times more compared to the previous year) to 16.95%. This trend again reversed in 2001, this time with less marked percentage changes; average supervised delivery increased by 2.15%, per capita ANC attendance decreased by 0.45% and MMR also decreased by 0.41%. In the insurance year 2002, there was yet another inversion; average supervised delivery decreased by 8.57%, per capita ANC attendance increased by 35.35% and MMR decreased by 36.41%. The changes in average per capita ANC attendance and maternal mortality ratio were rather phenomenal.

TABLE 3.6.3:PERCENTAGE CHANGE OF AVERAGE SUPERVISED DELIVERY, AVERAGE PER CAPITA ANC ATTENDANCE AND AVERAGE MATERNAL MORTALITY RATIO (MMR)

Year	**Supervised Delivery**		**Per Capita ANC Attendance**		**Maternal Mortality Ratio**	
	Average Number	% Change	Average	% Change	Average	% Change
1998	1249.5		2.02		838.115	
1999	1402.5	12.25	1.925	-4.70	838.285	0.02
2000	1370.5	-2.28	2.245	16.62	980.365	16.95
2001	1400	2.15	2.235	-0.45	976.385	-0.41
2002	1280	-8.57	3.025	35.35	620.885	-36.41
2003	1324	3.44	3.36	11.07	702.78	13.19
2004	1441	8.84	3.665	9.08	675.75	-3.85
2005	1664.5	15.51	3.705	1.09	623.78	-7.69

The observed trend in the pre-insurance period does not put premium on any of the two determinants – average supervised delivery, and average per capita ANC attendance.

Subsequently, between 2003 and 2005, a trend began to emerge (Figure A3.13 in Appendix 3). Average supervised delivery increased from 3.44% to 15.51% and average per capita ANC attendance declined from 11.07% to 1.09%. Concomitantly, maternal mortality ratio (MMR) decreased. Therefore, supervised delivery played a more pivotal role in affecting maternal mortality ratio than per capita ANC attendance during the post-insurance period in the Kwahu South and West districts of Ghana.

3.6.2: IMPACT ANALYSES

The classification of maternal deaths is shown in Table 3.6.4 below. Direct obstetric causes constituted 66.0% of all maternal deaths. Non obstetric causes came second in prevalence with 17.0% followed by indirect causes with 11.3%. Maternal deaths that did not fall under any of the above and which aetiology was uncertain were classified as unknown and this constituted 5.7% of maternal deaths.

TABLE 3.6.4:CLASSIFICATION OF MATERNAL DEATHS (n = 53; 30.99% RECORDS RECOVERY)

Classification according to CDC Guidelines		
Classification	Frequency	Percentage
Direct Obstetric Cause [1] *Anaesthetic Accident*	35 (including anaesthetic accident) *2*	66.0
Indirect Obstetric Cause [2]	6	11.3
Non Obstetric Cause [3]	9	17.0
Unknown	3	5.7
Total	53	100.0

CDC: Centre for Disease Control, Atlanta

Key (Definitions):

1: *Direct obstetric deaths are maternal deaths resulting from obstetrical complications of the pregnancy state, labour or puerperium and from interventions, omissions, incorrect treatment or a chain of events due to any of these complications.*

2: *Indirect obstetric deaths are maternal deaths resulting from previously existing disease or diseases that developed during pregnancy, labour or the puerperium that were not directly due to obstetric causes but possibly aggravated by the physiologic effects of pregnancy.*

3: *Non-obstetric deaths are maternal deaths resulting from accidental or incidental causes not related to pregnancy or its management (Scott et al, 1994).*

TABLE 3.6.5:AETIOLOGY OF DIRECT MATERNAL DEATHS

PRIMARY DIAGNOSES		SECONDARY DIAGNOSES (COMPLICATIONS)	
Diagnoses	Frequency [1]	Diagnoses	Frequency [1]
Postpartum Haemorrhage [a]	10	Severe Anaemia	8
Abortion *Unsafe Abortion* [b] *Inevitable Abortion* *Complete Abortion*	8 *6* *1* *1*	Septicaemia Acute Renal Failure Haemorrhagic / Hypovolaemic Shock	6 3 3
Eclampsia	8	Congestive Cardiac Failure	2
Antepartum Haemorrhage *Abruptio Placenta* *Placenta Praevia*	4 *2* *2*	Disseminated Intravascular Coagulation	2
PIH (Pre-eclampsia) Puerperal Sepsis	4 2	Cardiovascular Accident / Cerebral Haemorrhage	2
Ruptured Uterus	2	Aspiration Pneumonia (Anaesthetic Accident)	1
Cardiopulmonary Arrest 2^0 General Anaesthesia	1	HELLP Syndrome	1
Ruptured Ectopic Gestation	1	Hypertensive Encephalopathy	1
Total Responses	**40**	**Total Responses**	**29**

1: Multiple Response

Key:

a: Post Partum Haemorrhage: Includes Retained Placenta (1) and Post Caesarean Section Uterine Atony (1).

b: Unsafe Abortion: Includes Criminal and Septic Abortions

PIH: Pregnancy Induced Hypertension

HELLP: Haemolysis, Elevated Liver Enzymes, and Low Prothrombin

The aetiology of direct maternal deaths is demonstrated in Table 3.6.5 above. The primary diagnoses are the principal causes of death whiles the secondary diagnoses are the complications arising from the primary diagnoses. Among the primary causes of death, post partum haemorrhage stood out as the most common direct obstetric cause of maternal death registering a frequency of 10. In decreasing order, abortion, all types (8) and eclampsia (8) came next followed by ante-partum haemorrhage (4), pregnancy induced hypertension (4), puerperal sepsis (2), ruptured uterus (2), anaesthetic accident (1), and ruptured ectopic gestation (1).

Severe anaemia (8), septicaemia (6), acute renal failure (3), and hypovolaemic shock (3) were among the top three complications arising from the primary diagnoses. Severe anaemia may be due to haemorrhage (ante-partum and post-partum), ruptured uterus and ruptured ectopic gestation. Septicaemia was principally caused by unsafe abortion and puerperal sepsis. Acute renal failure was documented to have been caused by severe anaemia and its causes, hypovolaemic shock, pre-eclampsia and eclampsia. In the case of hypovolaemic shock, severe anaemia and its causes were implicated and the same were also implicated for congestive cardiac failure. Disseminated intravascular coagulation, cerebral haemorrhage, HELLP syndrome and hypertensive encephalopathy have been documented to be complications of eclampsia and pregnancy induced hypertension (PIH).

In Table 3.6.6 below, the aetiology of maternal deaths by indirect obstetric causes, non obstetric causes and unknown causes is demonstrated. Congestive cardiac failure (2) and sickle cell anaemia (2) were the most implicated in the indirect obstetric causes of maternal deaths. The three top ranking diagnoses for non-obstetric causes of maternal deaths included, bronchial asthma (2), HIV/AIDS (2), and pneumonia (2). The diagnoses captured under the unknown causes of maternal deaths in Table 3.6.6 were unspecific and could not be tagged to any of the above classifications.

TABLE 3.6 6:AETIOLOGY OF MATERNAL DEATHS BY CLASSIFICATION

INDIRECT OBSTETRIC CAUSES	
Diagnoses	***Number of Responses*** [1]
Biventricular Failure / Congestive Cardiac Failure	2
Sickle Cell Anaemia / Crisis	2
Anaemia in Pregnancy	1
Malaria in Pregnancy	1
NON-OBSTETRIC CAUSES	
Diagnoses	***Number of Responses*** [1]
Bronchial Asthma (with Acute Respiratory Distress)	2
HIV/AIDS	2
Pneumonia	2
Acute Renal Failure 2^0 Enema Colitis	1
Carvenous Sinus Thrombosis (Left)	1
Diabetic Ketoacidosis	1
Encephalitis	1
Hepatitis	1
Hepato-Renal Syndrome	1
Milliary Tuberculosis	1
Septicaemia	1
UNKNOWN	
Diagnoses	***Number of Responses*** [1]
Acute Abdomen / Haemoperitoneum (26/52 Gestation)	1
Septicaemia (Unborn Fetus at 20/52 Gestation)	1
Septicaemia (Unborn Fetus at 26/52 Gestation)	1

1: Multiple Response

Key:

2^0: Secondary to

HIV/AIDS: Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome

The summary statistics of selected quantitative determinants of maternal mortality is shown in Table 3.6.7 below. The mean maternal age was 27.92 (±6.64) years with a minimum of 15 years and a maximum of 42 years. The number of ANC visits ranged from 1 to 13 visits with a mean of 3.47 (±3.15) visits. The birth weight of the babies ranged from 1.60kg to 3.60kg with a mean of 2.74 (±0.62) kg. The mean gravidity was 3 (±2) and ranged from a minimum of 1 to a maximum of 10. The parity ranged from 0 to 9 deliveries with a median of 2 deliveries. The haemoglobin level ranged from a low of 2.20g/dl to 15.40g/dl with a mean of 9.70 (±2.88)g/dl. The minimum length of stay in the hospital was 2.4 minutes and a maximum of 36 hours. The median length of stay was 1 hour.

TABLE 3.6.7: SUMMARY STATISTICS OF SELECTED QUANTITATIVE DETERMINANTS OF MATERNAL MORTALITY (n = 53 equivalent to 30.99% Record Recovery)

Stats	**Mat. Age**	**No. of ANC Visits**	**Birth Weight (kg)**	**Gravidity**	**Parity**	**Hb. Level (g/dl)**	**LOS in Hospital (hrs)**
Mode	27	1	3.30	1	1	10.20	1.00
Median	27.00	3.00	2.75	3.00	2.00	9.70	1.00
Mean	27.92	3.47	2.74	3.42	2.84	9.70	3.87
SD	6.64	3.15	0.62	2.39	2.46	2.88	6.52
Min.	15	1	1.60	1	0	2.20	0.04 (2.4 min)
Max.	42	13	3.60	10	9	15.40	36.00

Key:

Stats.: Statistics
SD: Standard Deviation
Min: Minimum
Max: Maximum
No.: Number
Mat. Age: Maternal Age
ANC: Ante-Natal Clinic
Hb: Haemoglobin
LOS: Length of Stay

TABLE 3.6.8: CHARACTERISTICS OF LENGTH OF STAY (LOS) AND SOURCE OF REFERRAL AS DETERMINANTS OF MATERNAL MORTALITY

Length of Stay in Hospital (hrs) (n=53)		**Source of Referral (n=18; 34%)**	
Variable	**Percentage**	**Variable**	**Percentage**
< 30 mins	24.50	TBA	11.80
30mins – 1 hr	34.00	Maternity Home	11.80
>1hr – 6hrs	20.70	Public Hospital/Clinic	52.90
> 6hrs – 24hrs	18.90	Private Clinic	11.80
> 24hrs	1.90	Home	11.80

Key: TBA: Traditional Birth Attendants

TABLE 3.6.9: CHARACTERISTICS OF DELIVERY STATUS, PLACE OF DELIVERY AND DURATION BETWEEN DELIVERY AND TIME OF SEEKING MEDICAL ATTENTION AS DETERMINANTS OF MATERNAL MORTALITY

Delivery Status on Arrival at Dist. Hosp. (n=53)		**Place of Delivery if delivered (n=11; 20.8%)**		**Duration between Delivery and Time Seeking Medical Care (n=11; 20.8%)**	
Variable	**Percentage**	**Variable**	**Percentage**	**Variable**	**Percentage**
Gravid	71.70	Clinic	9.09	1 day	36.36
Delivered	20.80	HFH	18.18	1 week	36.36
Aborted	5.70	Home	72.73	2 weeks	36.36
No Record	1.90			1 months	36.36
				No Record	63.64

Key: HFH: Holy Family Hospital

The characteristics of length of stay (LOS) and source of referral as determinants of maternal mortality is shown in Table 3.6.8 above. Over 24% of the maternal deaths spent < 30 minutes in the hospital and another 34% spent between 30 minutes and 1 hour culminating in 58% of maternal deaths with < 1 hour stay in the hospital. Nearly 21% of the mothers who died, lived for over an hour on arrival in the hospital but died before their sixth hour. Over 98% of the maternal deaths occurred within 24 hours on arrival in the hospital.

Thirty four per cent of the maternal deaths were referred cases and the main source of referrals was the public hospitals and clinics (52.90%) including the health centres and CHPS compounds.

In Table 3.6.9 above, the characteristics of the delivery status, place of delivery, and the duration between delivery and time of seeking medical attention as determinants of maternal mortality is demonstrated. Nearly 72% of mothers who presented themselves at the hospitals before dying were still gravid with their babies and another 21% had already delivered. Of those who had delivered, 73% of them gave birth at home.

The test of association of insurance status, marital status, maternal age, referral status and the use of partograph with maternal mortality is shown in Table 3.6.10 below. The test of association between the uninsured and maternal mortality was not significant (p= 0.568) though the uninsured mother was 59% (OR=1.587; 95% CI= 0.325 to 7.761) more likely to die of complications of pregnancy, labour and puerperium than her insured counterpart. Single mothers (OR= 2.545; 95% CI= 0.918 to 7.053), teenagers < 20 years (OR= 0.340; 95% CI= 0.056 to 2.067), and advanced maternal age >35 years (OR= 0.967; 95% CI= 0.258 to 3.631) were not significantly associated with maternal mortality. However, referred cases (OR= 0.338; 95% CI= 0.116 to 0.984) and the non-use of the partograph (OR= 11.204; 95% CI= 1.335 to 94.003) were significantly associated with maternal mortality. Patients who were not monitored with the partograph were 11 times more likely to die than those monitored with the partograph.

TABLE 3.6.10: TEST OF ASSOCIATION BETWEEN INSURANCE STATUS, MARITAL STATUS, MATERNAL AGE, REFERRAL STATUS AND THE USE OF PARTOGRAPH WITH MATERNAL MORTALITY

Determinants	**Maternal Mortality**				
			95% CI		
	Percentage (%)	**OR**	**Lower**	**Upper**	**p**
Insurance Status					
Insured	9.32	1.000	Referent	Referent	Referent
Uninsured	90.68	1.587	0.325	7.761	0.568
Marital/Partner Status					
Partnered/Paired	93.37	1.000	Referent	Referent	Referent
Single	6.63	2.545	0.918	7.053	0.072
Maternal Age (Years)					
15 – 19 (< 20)	12.19	0.340	0.056	2.067	0.241
20 – 34	67.03	1.000	Referent	Referent	Referent
35 – 49 (≥ 35)	20.79	0.967	0.258	3.631	0.960
Referral Status					
Not Referred	65.77	1.000	Referent	Referent	Referent
Referred	**34.23**	**0.338**	**0.116**	**0.984**	**0.047**
Use of Partograph					
Yes	19.18	1.000	Referent	Referent	Referent
No	**80.82**	**11.204**	**1.335**	**94.003**	**0.026**

Key:
1) Single ≈ Divorced ≈ Widowed *2) Partnered/Paired ≈ Married ≈ Cohabitation* *3)* ***OR****: Odds Ratio*

TABLE 3.6.11: TEST OF ASSOCIATION BETWEEN ANC VISITS, NUMBER OF ANC VISITS, RISK FACTORS, ASSOCIATED MEDICAL CONDITIONS AND GRAVIDITY WITH MATERNAL MORTALITY

Determinants	**Maternal Mortality**				
			95% CI		
	Percentage	**OR**	**Lower**	**Upper**	**p**
ANC Visits					
Yes	74.19	1.000	Referent	Referent	Referent
No	25.81	1.117	0.548	2.275	0.761
Number of ANC Visits					
<4	81.00	1.000	Referent	Referent	Referent
≥4 (4+)	**19.00**	**0.264**	**0.088**	**0.790**	**0.017**
Risk Factors					
Yes	**6.45**	**14.208**	**3.348**	**60.298**	**0.000**
No	93.55	1.000	Referent	Referent	Referent
Associated Medical Conditions					
Present	**3.58**	**4.536**	**1.270**	**16.199**	**0.020**
Absent	96.42	1.000	Referent	Referent	Referent
Gravidity					
1	**30.82**	**7.902**	**1.375**	**45.414**	**0.021**
2-4	43.37	1.000	Referent	Referent	Referent
≥5 (5+)	25.81	0.458	0.083	2.531	0.371

Key:

***ANC**: Ante-Natal Clinic*

***CI**: Confidence Interval*

Table 3.6.11 above demonstrates the test of association of ANC visits, number of ANC visits, risk factors, associated medical conditions and gravidity with maternal mortality. The number of ANC visits ≥ 4 (OR= 0.264; 95% CI= 0.088 to 0.790), primigravida (OR= 7.902; 95% CI= 1.375 to 45.414), the presence of risk factors (OR= 14.208; 95% CI= 3.348 to 60.298) and associated medical conditions (OR= 4.536; 95% CI= 1.270 to 16.199) were found to be significantly associated with maternal mortality.

Patients with ANC visits $\geq$4 were 0.26 times less likely to die of complications of pregnancy, labour and puerperium compared to their counterparts with <4 ANC visits. Primigravida (gravidity= 1) were nearly 8 times more likely to experience maternal deaths than those who had experienced 2-4 pregnancies (gravidity). Similarly, patients identified to have risk factors were 14 times more likely to experience maternal death than their counterparts without any identifiable risk factors. The patients with associated medical conditions were also 4.5 times more likely to die of complications of pregnancy, labour, and puerperium than their counterparts without any medical conditions.

The test of association of parity, mode of delivery, gestational age, and birth weight with maternal mortality is shown in Table 3.6.12 below. There was no association between parity and maternal mortality. The following were however significantly associated with maternal mortality: SVD (OR= 0.018; 95% CI= 0.004-0.077), C/S (OR= 0.055; 95% CI= 0.013-0.240), V/E (OR= 0.011; 95% CI= 0.001-0.171), preterm baby (OR= 4.985; 95% CI= 2.318-10.722), and low birth weight, < 2.5kg babies (OR= 13.112; 95% CI= 4.571-37.618).

Patients who had spontaneous vaginal delivery (SVD) were 0.02 times less likely to experience maternal deaths when compared to the referent group [including laparotomy and evacuation of uterus (EOU)]. Similarly, patients who underwent caesarean section (C/S) were 0.06 times less likely to experience maternal death than their counterparts who had laparotomy and / or EOU performed on them. Likewise, patients who had vacuum extraction (V/E) done were 0.01 times less likely to die from complications of pregnancy, labour and puerperium as were their counterparts who had either a laparotomy or an EOU done for them.

TABLE 3.6.12: TEST OF ASSOCIATION OF PARITY, MODE OF DELIVERY, GESTATIONAL AGE AND BIRTH WEIGHT WITH MATERNAL MORTALITY

Determinants	Maternal Mortality				
			95% CI		
	Percentage	**OR**	**Lower**	**Upper**	**p**
Parity					
0	34.41	0.224	0.040	1.252	0.088
1	17.74	0.856	0.228	3.214	0.818
2-4	32.80	1.000	Referent	Referent	Referent
≥5 (5+)	15.05	1.733	0.274	10.968	0.559
Mode of Delivery					
SVD	**48.39**	**0.018**	**0.004**	**0.077**	**0.000**
C/S	**31.36**	**0.055**	**0.013**	**0.240**	**0.000**
V/E	**13.80**	**0.011**	**0.001**	**0.171**	**0.001**
Others[1]	6.45	1.000	Referent	Referent	Referent
Gestational Age (Weeks)					
Term	88.89	1.000	Referent	Referent	Referent
Pre-term	**11.11**	**4.985**	**2.318**	**10.722**	**0.000**
Birth Weight (kg)					
< 2.5	**24.73**	**13.112**	**4.571**	**37.618**	**0.000**
≥ 2.5 (2.5+)	75.27	1.000	Referent	Referent	Referent

Key: ***SVD***: *Spontaneous Vaginal Delivery* ***C/S***: *Caesarean Section* ***V/E***: *Vacuum Extraction*
[1] ***Others***: *Laparotomy, Evacuation of Uterus-EOU*
Pre-term: *< 37 Weeks Gestation* ***Term***: *> 37 Weeks Gestation*

Mothers of preterm babies were nearly 5 times more likely to experience maternal death than mothers of term babies. Similarly, mothers of low birth weight (<2.5kg) babies were about 13 times more likely to experience maternal death than their counterparts who had babies weighing ≥2.5kg.

The test of association between haemoglobin level, diagnoses and labour complications with maternal mortality is shown in Table 3.6.13 below. There was no significant association between haemoglobin level and maternal mortality. However, post-partum haemorrhage (PPH) [OR= 4.028; 95% CI= 1.240-13.088], pre-eclampsia/eclampsia (OR= 5.494; 95% CI= 2.268-13.309), severe anaemia (OR= 4.749; 95% CI= 1.179-19.123) and the presence of labour complications (OR= 30.320; 95% CI= 9.748-94.309) were significantly associated with maternal mortality.

Patients who had PPH were 4 times more likely to experience maternal death than the referent group. Similarly, patients who had pre-eclampsia/eclampsia were 5.5 times more likely to also experience maternal death than the referent group. Likewise, clinically diagnosed severe anaemic patients (mostly acute blood loss) were 4.8 times more likely to die from complications of pregnancy, labour and / or puerperium than the referent group. Patients who developed labour complications were 30 times more likely to experience maternal death than their counterparts without complications.

The risk factors, medical conditions and complications associated with maternal mortality is shown in Table A3.14 in Appendix 3. During ante-natal visits, 24.53% of the mothers who later died were found to have associated risk factors, 11.32% had medical conditions and 49.06% died of complications of the pregnancy, labour and/or the puerperium.

Among the top five risk factors were, APH (3), breech in primipara (2), grand multiparity (2), threatened abortion (2), and old age, > 35 years (2). The medical conditions detected in the mothers were bronchial asthma (1), diabetes mellitus (1), HIV/AIDS (1), pulmonary tuberculosis (1), sickle cell disease-HbAS (1), and sickle cell anaemia-HbSC (1). Among the top five complications observed were, post-partum haemorrhage (13), congestive cardiac failure (3), DIC (2), septicaemia (2), and acute renal failure (2).

TABLE 3.6.13: TEST OF ASSOCIATION OF HAEMOGLOBIN LEVEL, DIAGNOSES, AND LABOUR COMPLICATIONS WITH MATERNAL MORTALITY

Determinants	**Maternal Mortality**				
			95% CI		
	Percentage	**OR**	**Lower**	**Upper**	**p**
Haemoglobin Level (g/dl)					
<5.0	1.79	0.146	0.007	3.124	0.218
5.0-10.0	63.98	0.493	0.199	1.223	0.127
>10.0	34.23	1.000	Referent	Referent	Referent
Ass. Factors/Diagnoses					
PPH	**4.66**	**4.028**	**1.240**	**13.088**	**0.020**
Pre-eclampsia / Eclampsia	**9.32**	**5.494**	**2.268**	**13.309**	**0.000**
Abortion (all types)	4.84	2.025	0.559	7.331	0.283
APH (Abr. Pl. & Plac Pr.)	10.39	1.049	0.311	3.537	0.939
Septicaemia	8.07	2.246	0.758	6.655	0.144
Severe Anaemia [1]	**4.30**	**4.749**	**1.179**	**19.123**	**0.028**
Others [2]	58.42	1.000	Referent	Referent	Referent
Labour Complications					
Present	**21.15**	**30.320**	**9.748**	**94.309**	**0.000**
Absent	78.85	1.000	Referent	Referent	Referent

Key: *Ass. Factors/Diagnoses:* *Associated Factors/Diagnoses*
PPH: *Post-Partum Haemorrhage* ***APH***: *Ante-Partum Haemorrhage* ***Abr. Pl.***: *Abruptio Placenta*
Plac. Pr.: *Placenta Praevia*
1: Severe Anaemia: Purely a Clinical diagnosis
2: Others: All diagnoses (Table3.4.5)-(PPH + Pre-eclampsia/Eclampsia + Abortion + APH + Septicaemia + Sev.An.)

CHAPTER FOUR

4.0: DISCUSSION OF RESULTS

4.1: COMMUNITY CHARACTERISTICS

The mean annual income of uninsured households (GH¢558.98) was less than that of the insured households (GH¢ 602.51) and most uninsured households earned half (GH¢120.00) as much as insured households (GH¢240.00) (Table 3.2.1). This picture portrays stronger financial security for the insured households than the uninsured. The gap between the rich and the poor was also more outstanding in the uninsured households (GH¢ 2.00- GH¢4,500.00) than in the insured household (GH¢ 20.00- GH¢3,000.00) (Table 3.2.1). Clients in the uninsured households were either too poor (GH¢2.00/annum) to afford the health insurance premium or were relatively rich (GH¢ 4,500.00/annum) and therefore were able to place their health security in their wealth.

Thus, though the health scheme was introduced to break the financial barrier imposed by user-fees (Creese, 1997; Nabyonga et al, 2005) and to increase access (Fuda and Immekus, 2006), there is still a "core-poor" who are unable to afford the basic health insurance premium and cannot benefit from the health scheme. This calls for practical strategies to insure the very poor who are most vulnerable and need the health insurance the most.

Clearly, there is a wide inequality gap between the rich and the poor among the uninsured (GH¢2.00- GH¢4,500.00) (Bonu et al, 2003; Burstrom et al, 2002) than the insured household (GH¢20.00- GH¢3,000.00). The role of health insurance in bridging this gap cannot be overemphasized. Unfortunately, the Okwawuman Mutual Health Insurance Scheme did not have any built-in mechanism to address inequality. There is thus the need to develop strategies to absorb the rich in society into the scheme so that they cross-subsidize the poor thereby reducing the inequality gap. The national health insurance scheme has such a strategy for formal sector workers where 2.5% of the Social Security and National Insurance Trust (SSNIT) contribution is made available to the National Health Insurance Authority (NHIA). Thus, higher salary workers contribute more towards the national health insurance scheme than lower salary earners and by so doing cross-subsidize the poor. The same argument holds for Value Added Tax (VAT) accredited enterprises where such institutions pay 2.5% of their revenue into the National

Health Insurance Levy (NHIL). Certainly, the higher earning institutions will pay more. The breach that remains to be filled is how to capture the rich in the informal sector who do not contribute to SSNIT or the NHIL via a VAT accredited institution. Future strategies must target this group to enhance equity between the rich and the poor.

The spending pattern (Table 3.2.2 and Figure A3.1) of this typical agrarian population was predominantly on house keeping (GH¢847.51). This was followed by education (GH¢164.50), funeral (GH¢73.45), health (GH¢63.50) and then utilities (GH¢38.48). Surprisingly, contributions towards the dead were given more priority than health. Some communities made contributions towards the funeral of family and community members even if there were no deaths at the time. A family on the average paid GH¢50.00 per annum. The payment schedule was flexible spanning the whole year. A few communities made a mandatory quarterly payment. Defaulters were not supported any time they were bereaved. In fact, funerals were a platform to display wealth and social status and people were more willing to pay towards the dead than the living.

The need for a massive and intensive education to turn this situation around cannot be over stated. The educational campaign must be designed towards a targeted audience and the message must be clear. The use of generic educational tools and methods may not be useful in view of cultural differences. This is derived from the premise demonstrated in Table A4.1 in Appendix 4. The large majority of the populace did not have an idea of the insurance package and thought of it as a government policy (2 responses) for free medical care (254 responses). This group was certain to complain if they were asked to pay for drugs prescribed that were not covered by the health insurance. In fact, this is how the message of health insurance had been presented on the electronic media and thus their understanding and perception. In contrast, the message of the the exemption policy was well understood and the contents of the package was relatively well known to the populace (Table A4.2 in Appendix 4). Agreeably, the exemption policy had been operating longer than the health insurance scheme but that not withstanding there must have been a basic difference in the way the education was carried out. Lessons learnt from the implementation of the exemption policy may have to be visited and probably adapted to address the lapses observed in the promotion of the health scheme.

4.2: PERFORMANCE OF THE SCHEME

4.2.1: COVERAGE

The number of registrants in respect of the Okwawuman Mutual Health Insurance Scheme (OMHIS) increased steadily from 2002 to 2005 for both the general and the WIFA (Women In Fertility Age: 15-49 years) populations. The general population experienced a decline in growth rate (from 124.59 to 52.97) in 2004 but recovered (139.01) in 2005. The WIFA population however had a consistent growth from 2002 through 2005 at an average rate of 82.04% (Figure 3.3.1). The high growth rates experienced by both populations in 2005 can be attributed to the introduction of the national health insurance scheme and the injection of more capital into the sector. For example, the government took over the payment of the salaries of the staff of the health scheme and also contributed to the payment of medical claims.

The coverage rate of the scheme had also been increasing steadily from 3.71% in 2002 to 26.98% in 2005; an average growth rate of 96.71% per annum (Figure 3.3.2). With an initial growth rate of 125.34%, the rate declined to 50.84% in 2004 and then increased precipitously by 113.96% in 2005. This may also be attributed to the introduction of the national health insurance scheme. The WIFA population also followed a similar pattern.

A growth from 3.71% to 26.98% in 3 years is rather remarkable when compared to the well resourced and robust social health insurance schemes of some European countries. It took Austria 40 years (1890-1930) to increase coverage from 7% to 60% and another 35-37 years (1930 to 1965-1967) to extend coverage to 96%. In Germany, it took 47 years (1883-1930) to increase coverage from 10% to 50% and another 58 years to extend coverage to 88% by bringing in the informal sector. Costa Rica took 20 years to achieve 17% coverage and another 5 years to double coverage to 34% through the government policy of universality. Another 10 years was required to again double the rate to 68% (Carrin and James, 2004). The growth/coverage of the Okwawuman Mutual Health Insurance Scheme is rather outstanding when compared to these European schemes.

The Okwawuman health scheme does not stand in isolation in respect of its small size, structural and organizational weakness. There are several such schemes in Africa with similarities and coverage rates ranging from 5% to 66%. The Bwamanda Hospital Insurance Scheme in the Democratic Republic of Congo had a coverage rate of 41%-66% between 1987 and 1995. The coverage rate for Dangwe West Health Insurance scheme in Ghana was estimated at 5% in 2000 and the oldest Mutual Health Insurance Scheme in Ghana-the Nkoranza Community Financing Health Insurance Scheme had a coverage rate of 27% in under 10 years (Arhin-Tenkorang, 2001). In all these instances, the performance of the Okwawuman Mutual Health Insurance Scheme in respect of coverage was remarkable.

A survey of the two district hospitals revealed an insurance coverage rate of 79.5% in respect of clients visiting the hospitals (Figure 3.3.3). This is similar to the finding of Zun and Downey (2006) who observed a 78.2% insurance coverage in respect of clients (patients) visiting the emergency department of a hospital in the United States. This high rate in hospital attendance by the insured can drive the scheme insolvent and thus the need to regulate. The institution of co-payment can control this adverse behaviour. With this high rate of the insured attending hospital, a delay in payment of medical claims by the insurance scheme may run the hospitals into financial difficulties. However, revenue from co-payments can keep the hospitals (health institutions) running until the medical claims are settled. This is supported by findings of Wouters (1995) in the Boboye district of Niger who demonstrated that, revenues from co-payments alone covered about 34% of the cost of medicines or about 20% of the cost of drugs and administration.

The percentage of the community's population without health insurance was estimated at 64.9%, far in excess of the 15.6% observed in the United States (US Census Bureau, 2004). This high rate of uninsured in the community was largely (38.9%) attributed to the lack of money (Table 3.3.3). This is supported by the very low annual minimum income (GH¢2.00) recorded for the uninsured households in the community (Table 3.2.1). This assertion is corroborated by Adams et al (2006 & 2007), Schiller et al (2005) and Chernew et al (2005) in the United States. They attributed the lack of insurance to cost (increasing premium) and change of employment.

The timing of the registration process was yet another cause of the high rate of the uninsured in the community. Thirteen per cent of the population said they were not around during the registration period (Table 3.3.3). In view of this, an all year round registration may be useful. It will be prudent to investigate the feasibility: Viability and cost-effectiveness of an all year round registration for possible implementation if coverage is expected to increase remarkably. For some, the desire to register peaks after a catastrophic health event and a delay in registration will diminish the interest. For rural communities, the flow of money is seasonal and if the registration period does not coincide with this seasonality, many potential clients will be lost.

The steady growth of the scheme from 3.71% in 2002 to 26.98% in 2005 (Figure 3.3.2) may be attributed to the optimistic perception of the community members. Approximately 38% rated the schemes performance as very good, 14.4% rated it good and another 3.9% rated it satisfactory (Table 3.3.1). The reasons ascribed to these ratings include; “the insured benefiting from the scheme” (28.8%), “having not to pay medical bills at the hospital” (18.4%) and “helping to save money” (1.5%) among others (Table A3.1).

4.2.2: PERFORMANCE RATIOS

The expense ratio had been on the decline from 0.42 in 2002 to 0.12 in 2005. The rate of decline had also been increasing from 2.38% in 2003, 14.63% in 2004 and a phenomenal decline, 65.71% in 2005. The ratios, compared to mature Social Health Insurance systems in the European Union have not been impressive. The expense ratio was 0.02 in Japan and 0.066 in Switzerland. In the Republic of Korea, the administrative cost in health spending came to 0.119 in 1990 comparable to the 2005 expense ratio (0.12) for the Okwawuman scheme. However, by 1999, the expense ratio in the Republic of Korea had declined to 0.064 (Carrin and James, 2004 & 2005). An analysis of matured Social Health Insurance schemes in 20 Organisation for Economic Cooperation and Development (OECD) countries provided evidence to recommend a maximum expense ratio of 0.06-0.07 for matured health schemes (Carrin and James, ibid). In respect of this value, the Okwawuman health scheme was still far from best performance.

This however was not unexpected because of the scheme’s immaturity. Meanwhile, this performance was compensated for by the phenomenal decrease in the expense ratios from 0.42 in 2002 to 0.12 in 2005 which is characteristic of young schemes. The mean rate of decline of the expense ratio was estimated at 27.57% per annum which is far in excess of the recommended 0.1% per annum for matured schemes (Carrin and James, ibid).

Unlike the matured social health insurance systems in the European countries; Aikins (2003) in an analysis of 17 Mutual Health Insurance Schemes in Ghana estimated an annual average administrative cost of 29.03% (expense ratio= 0.29), quite similar to that observed for the Okwawuman scheme (0.33). Aikins (ibid) also demonstrated a declining expense ratio between 2000 and 2002 as the schemes grew, a phenomenon similar to the Okwawuman scheme. The rate of decline of the expense ratio averaged 27.79% per annum for the seventeen schemes evaluated and this was also comparable to the finding in the Okwawuman scheme (27.57%).

Whiles schemes in the United States devised mechanisms to control supply side issues and moral hazard through structured co-payments, utilization review, selective contracting with preferred providers among others; insurers in the European Union generally operated on the demand side issues like risk selection so as to contain cost (Mossialos and Thomson, 2004). However the Okwawuman Mutual Health Insurance Scheme did not have specific mechanisms in place to contain risks like moral hazard, abuse and fraud to justify the high operating cost (expense ratio). The scheme however made group insurance a requirement for registration to control adverse selection.

The claims ratio ranged from 0.38 in 2003 to 1.01 in 2004 (Table 3.3.5). The mean claims ratio was estimated at 0.67 per annum. Comparably, the Okwawuman scheme did well in respect of this ratio against Germany which had 0.80 in 1995 and 0.658 in 1999. Against Denmark (0.917 in 1998) and Netherland and Spain (>0.80) it performed even better (Mossialos and Thomson, 2004). Generally, the claims ratio (loss ratio) normally ranged between 0.72 and 0.76 for many European Union countries (Mossialos and Thomson, ibid) and by this standard, the Okwawuman scheme faired well.

Meanwhile the Okwawuman Mutual Health Insurance Scheme had seen a consistent surplus from 2002 to 2005 with a mean growth rate of 1,249% per annum (Figure 3.3.4). The highest profit/surplus (GH¢ 700,290) was made in 2005 when the scheme experienced a phenomenal growth rate (114%) as a result of increased registration in response to the introduction of the national health insurance.

The surplus catapulted from a growth rate of approximately 9% in 2004 to 3,374% in 2005 (Figure 3.3.4). This was in response to a reduction in the growth rate of medical claims; from 506% in 2004 to 349% in 2005 and an increase in the growth rate of premium income, from 130% in 2004 to 697% in 2005 (Figure 3.3.4). Additionally, the central government had taken over the payment of personal emoluments from the last quarter of 2004 (August, 2004) thus reducing administrative cost and overall burden on the schemes finances thereby enhancing the profit margin.

The observed surpluses however do not necessarily make the scheme a viable one. The scheme can only be said to be viable when the combined ratio is < 1.0 (Table 3.3.5). The scheme registered a combined ratio of < 1.0 in 2003 and 2005 and > 1.0 in 2002 and 2004. The mean combined ratio from 2002 to 2005 was 0.9975 (< 1.0). Thus the scheme was viable in 2003 and 2005. Overall, the Okwawuman Mutual Health Insurance Scheme can be considered as a viable scheme or at worse "breaking-even". The null hypothesis [section 1.5; 1) H_O] is thus rejected.

Meanwhile, the insolvency of the scheme in 2002 and 2004 was mainly due to the absence of government subvention for these two years (Table 3.3.4).

4.2.3: HEALTH SERVICES UTILISATION

The utilization of health services generally increased following the introduction of the health scheme. This is in consonance with the findings of Fuda and Immekus (2006), Hunt et al (2006), Jeffrey and Newacheck (2006) and Agyepong et al (2006).

The per capita ANC attendance increased from 2.11 to 3.44 following the introduction of the health scheme. Similarly, the rate of growth in the per capita ANC attendance also increased from 3.89% during the pre-insurance period to 7.07% in the post-insurance period (Table 3.3.6).

Supervised delivery also increased from 1,356 to 1,427 and the mean rate of growth similarly increased from 4% to 9% after the introduction of the health scheme (Table 3.3.7).

Likewise, there was a phenomenal increase in the utilization of ultrasound services, from 819 scans during the pre-insurance period to 1,365 scans after insurance was introduced in the district in 2002. The rate of growth in utilization however declined from 69.36% to 2.16% post-insurance (Table 3.3.8). Increased utilization was also observed in the usage of the x-ray services in both district hospitals (Figure A3.2).

The utilization of the Out Patient Department (OPD) services however declined from 219,668 to 218,090 (Table A3.2) whiles that for the In-Patients (Admissions) services increased (Tables A3.3 & A3.4) after the introduction of the health insurance scheme. This contrasting trend in the utilization of OPD and In-Patient services was a consequence of the benefit package (Table A1.3). The package allowed for the full payment of In-Patient services but paid for only Out-Patient services with a cost exceeding GH¢ 20.00. Thus clients waited until their illnesses were severe enough to warrant admission before attending hospital so as to benefit from the scheme. Some clients feigned serious illness so as to get admitted or used some other tricks all to enable them benefit from the scheme therefore inflating the number of admissions.

The health insurance scheme (OMHIS) therefore changed the health seeking behaviour of insured clients and generally increased utilization. Meanwhile, the increase in utilization of health services may not be due to the health insurance alone but could possibly be influenced by the increasing population.

4.2.4: LENGTH OF STAY (LOS) IN HEALTH FACILITY

The length of stay (LOS) declined from 5.93 days to 5.18 days after the introduction of the health insurance scheme (Figure 3.3.8). It however increased with the development of complications following caesarean section and vacuum extraction and the trend of association was significant [(p= 0.000); (Table 3.3.9)]. This finding is corroborated by Reynolds et al (2006) who similarly established an association between LOS and complications following cardioverter-defibrillator implantation. Reynolds et al (ibid) estimated that, any complication increased adjusted LOS by 3.4 days. Druzin and El-Sayed (2006) also observed that, rising caesarean section rates were associated with longer LOS and higher bed occupancy rate.

In this study however, the mode of payment did not dictate the LOS in hospital (Table 3.3.10) contrary to the findings of Sepehri et al (2006) in Vietnam who observed that, the compulsory insurance scheme and the insurance scheme for the poor increased the expected LOS by factors of 1.18 and 1.39 respectively. They also found that, the likelihood of hospital admission increased for members of the compulsory insurance scheme.

Therefore, the length of stay in the two district hospitals during the study period (1998-2005) was significantly influenced (p= 0.000) by complications following caesarean section and vacuum extraction but not the mode of payment. The null hypothesis [section 1.5; 2) H_O] stating that "the length of stay in hospital was not influenced by the mode of payment" is thus accepted.

4.2.5: DRUG AVAILABILITY AND PRESCRIPTION PATTERN

The drug availability in the two district hospitals in the Kwahu South and West districts was 95.29% (Table 3.3.11). This performance is above the 80% drug availability reported in private health facilities in Tanzania (Hussein and Mujinja, 1997) even when the user-fee policy was in place. Hussein and Mujinja (ibid) at the same time reported very low levels of drug availability, 27.30% in public health facilities in Tanzania in spite of the introduction of user charges to remedy the situation.

The median number (types/categories) of drugs prescribed was 4 and the mode was 3. Occasionally, clients (patients) went home with a maximum of 7 types (categories) of drugs (Table 3.3.11). This finding is contrary to the observation in Autralia when the Universal Pharmaceutical Subsidies-Pharmaceutical Benefit Scheme was operational and many people took advantage of it and used more medicines than were necessary (Doran et al, 2005). This was a recipe for cost-escalation.

There was much similarity between the essential drug list and the national health insurance drug list (Tables 3.3.12 and 3.3.13). However the range of drugs in the national health insurance drug list was observed to be slightly wider than for the essential drug list. In spite of this, practitioners can safely apply the EDL for the national health insurance drug list should they not have copies of the later and still be confident that the drug prescribed is covered by the health scheme.

There was a negative correlation between the prescription of generic (rINN) drugs and Out-of-Pocket Payment (r= -0.029; p= 0.616) but a positive correlation with Exemption (r= 0.012; p= 0.834), and Insurance (r= 0.032; p= 0.578). The prescription of proprietary drugs showed positive correlation with Out-of-Pocket (r= 0.091; p= 0.111), Exemption (r= 0.043; p= 0.449) and Insurance (r= 0.040; p= 0.480). In all these associations, the correlation coefficients were weak and insignificant [(p>0.025); (Table A3.7)]. The Pearson Chi-Square test of significance also demonstrated an insignificant association between insurance status and generic drug (rINN) prescription (p= 0.777) and proprietary drug prescription [(p= 0.213); (Table 3.3.15)]. This is contrary to the findings of Kartal et al (2007) in Turkey who observed that, the preference of drugs was affected by health insurance types and the gender of patients in favour of expensive new drugs. Corroborating the findings of Kartal et al (ibid), Chen and Wu (2008) also observed that, uninsured patients were more likely than privately insured patients to have a generic drug dispensed than brand-name drugs (OR= 1.42; 95% CI= 1.10-1.84). Federman et al (2006) expressed the same opinion as Kartal et al (2007) and Chen and Wu (2008). The drug prescription pattern was also within the perview of a district hospital. Only drugs permissible for prescription at the level of a district hospital were dispensed. No specialist drugs were served (Table 3.3.14).

Thus the risk of cost escalation through the prescription of expensive brand-name drugs and poly-pharmacy was not observed in this study but need to be tracked.

4.3: CAESAREAN SECTION AND ASSISTED VAGINAL DELIVERY (VACUUM EXTRACTION)

4.3.1: TREND ANALYSIS

4.3.1.1: CAESAREAN SECTION

The district mean caesarean section per annum during the pre-insurance period was 259.38 and 306.63 for the post-insurance period; a marginal increase of 18.22%. Similarly, the district mean caesarean section rate was 21.25% and this increased to 22.44% after the introduction of the health insurance scheme in the district in 2002 (Table 3.4.1). This increment was also marginal, 5.59%. The marginal increases in both mean number of caesarean sections and mean caesarean section rate after the health insurance scheme was introduced suggest that the health scheme did not impact seriously on increasing the rate. These marginal increases may well be due to legitimate medical reasons as is reflected in the high proportion of emergency caesarean sections, 90.6% (Table 3.4.4).

Contrary to this, Barros et al (1986) in Brazil observed a 15% increase in caesarean sections in 1970 to over 30% in 1980 which rise was largely attributed to financial reward. They asserted that, the doctor's concentrated their effort on the low risk and high income mothers, with 50% of private patients having an operative delivery compared to 13% of uninsured mothers. Certainly this reason is not plausible for the Kwahu South and West districts where 90.6% of the cases were emergency caesarean sections (Table 3.4.4) and the insurance coverage rate in the community was just over 34% (Figure 3.3.3). However, the relatively high rate of caesarean section in the district can possibly be attributed to poor management of labour in view of the fact that 73% of the cases that had caesarean section were not monitored by the partogragh. Meanwhile, though the fifth indication for caesarean section was prolonged labour (n= 19), 88% of the mothers who underwent caesarean section did not benefit from any form of augmentation of labour. Similarly, though the leading indication for vacuum extraction was prolonged second stage of labour (n=61), 62.3% of cases who had vacuum extraction did not benefit from augmentation of labour (Table 3.4.5).

The Kwahu South and West districts were not the only culprits of high caesarean section rates. Several other countries or institutions had similar rates or higher. The Korle-Bu Teaching Hospital in Ghana recorded rates (22.7%) comparable to that of the Kwahu South and West districts (Nkyekyer, 2003). Low rates have been observed in Madagascar, 0.6% in 1997. This was blamed on the high cost of the procedure (Robitail et al, 2004). In contrast, very high rates have been recorded in Brazil with rates into 40% of all deliveries (Waniez et al, 2006).

Between these two extremes, the rates have varied. In the United States, 1 of 20 babies was delivered by caesarean section during the 1970's with this rate reaching 1 in 4 during the 1990's. In France, an increase in caesarean section from 10.7% in 1981 to 15.3% in 1995 was observed.

In the midst of these varying rates of caesarean section and the uncertainty on the acceptable limits, the WHO, based on studies of medical indications suggested a range of 7 to 14% (Mossialos et al, 2005). In their submission, Mossialos et al (ibid) indicated that, there was no justification for any region to have rates higher than 10 to 15%. Similarly, WHO, FNUAP and UNICEF estimated that, the minimum acceptable rate of caesarean section in developing countries must reach 5% to guarantee safety for both new born and mother (Robitail, 2004).

Thus the caesrean section rates of 21.25%, pre-insurance and 22.44%, post-insurance (Table 3.4.1) are just marginally above the upper limit of 15% recommended by WHO. By this standard, there was an annual mean of 151 excess caesarean sections in the Kwahu South and West districts (Table 3.4.3). This record (151 unnecessary caesarean sections) does not compare to the records of Latin American Countries. Panama recorded the least of 1,982 and Brazil, sometimes described as the "world champions" of caesarean sections (Waniez et al, 2006) recorded the highest of 388,410 unnecessary caesarean sections (Belizan et al, 1999; Table 2.2.2).

In spite of the comparably low value (151) of unnecessary caesarean sections recorded by the Kwahu South and West districts, the implications are far reaching for the country's developing economy. The cost of one caesarean section multiplied over 151 times per annum is enormous for a young scheme like the Okwawuman health scheme to contain. In fact, caesarean deliveries in the United Kingdom significantly increased health care cost to twice as much as spontaneous vaginal delivery. Likewise in Mexico, the large proportion of caesarean deliveries created serious burden on public health care spending (Mossialos et al, 2005). In addition to cost, increased caesarean section rates come with increased morbidities, mortalities and disabilities. In this study, 14.3% of patients who underwent caesarean section developed complications which included; wound sepsis (n=11), post-partum haemorrhage (n=7), bladder injury (n=4), intra-operative haemorrhage (n=4) among others (Table A3.9). The development of complications would certainly increase the length of stay in hospital (Table 3.3.9) and its concomitant financial implications cannot be overlooked. This is corroborated by Mossialos et al (2005) who observed that, in the early 1990's, the USA, Netherlands and the UK reported maternal mortality rates 2 to 4 times higher and incidence of morbidity was 5 to 10 times greater for caesarean deliveries as compared to vaginal deliveries.

The responsibility is thus great to reduce the unnecessary caesarean sections to the bearest minimum to forestall the increased cost, morbidity, mortality and disability. The burden to reduce the unnecessary caesarean sections becomes even weightier when nearly 50% of all major surgeries performed in the two districts were caesarean sections (Figure 3.4.1). From the above premise, control of caesarean delivery alone could save the insurance scheme a lot of money.

In fact, caesarean section is one type of surgery that can easily be abused but at the same time one that can be very easily controlled. Some authors have suggested a few methods to check the unnecessary caesarean sections. These include, mandatory second opinion especially for elective caesarean sections (Fernando Althabe et al, 2004; Zahniser et al, 1992), applying the same payment for both vaginal and caesarean deliveries (Murray, 2000), comprehensive system of peer review of all caesarean sections at staff conferences and the use of standardized protocols (Zahniser et al, 1992). Additionally, “solo practices” must be discouraged (Xirasagar et al, 2006).

4.3.1.2: ASSISTED VAGINAL DELIVERY-VACUUM EXTRACTION

The vacuum extraction rates were generally low in the Kwahu South and West districts. The mean for the pre-insurance period was 1.35% and for the post-insurance period, 0.95% of all deliveries (Table 3.4.2). There was no remarkable time trend. The rates were on the average higher in the Holy Family Hospital than in the Kwahu Government Hospital. In fact, it was not a preferred form of delivery even when the indications were seemingly present (Table A3.8). There is a little evidence to suggest that competence was probably lacking in the performance of the procedure. Indications like pelvic deformity, cephalopelvic disproportion and previous caesarean sections (Table A3.8) for vacuum extraction are untenable.

The low rate of vacuum extraction observed in this study was corroborated by Bertollini et al (1992) in the Lazio region of Italy. They found that, forceps delivery and vacuum extraction (assisted vaginal delivery) constituted 2.8% of total deliveries but without significant time trends. Zahniser et al (1992) in the United States observed that women with private health insurance were significantly more likely to receive caesarean section (RR= 1.2), forceps procedure (RR= 1.7) and vacuum extraction (RR= 1.8) than were women without private health insurance. However, in this study, no significant association was established between vacuum extraction and insurance.

In a related development, Zahniser et al (ibid) observed a 48% increase in the rate of caesarean delivery from 1980 through 1987 in the United States and during the same period, forceps procedure declined by 43%. It was thus hypothesized that, the upsurge in the caesarean rate was a result of the decline in forceps procedure. If one is to go by this association, then unnecessary caesarean sections can be reduced through assisted vaginal deliveries including vacuum extraction if the indications are present.

4.3.2: IMPACT ANALYSIS

4.3.2.1: CAESAREAN SECTION

Among the indicators for caesarean section, delayed second stage of labour and cervical dystocia were significantly associated. Compared with the referent group of bad obstetric history, failed vacuum extraction, failed induction of labour, pelvic deformity, eminent uterine rupture, malpresentation and eclampsia; delayed second stage of labour was 0.011 times less likely to influence the decision for a caesarean section (95% CI= 0.002-0.054; P= 0.000). Similarly, cervical dystocia was 0.049 times less likely to be the indication for a caesarean delivery (95% CI= 0.017-0.144; P= 0.000) compared to the referent group. Cephalopelvic disproportion (OR= 5.23; 95% CI= 0.652-41.946), ante-partum haemorrhage (OR= 4.024; 95% CI= 0.498-32.514), and fetal distress (OR=1.051; 95% CI= 0.365-3.025) were 5.23 folds, 4.024 folds and 5% respectively more likely to be the indication for a caesarean section than the referent group but their association was statistically insignificant (Table 3.4.6). Lei et al (2003) similarly found that, the most common indication for emergency caesarean section was cephalopelvic disproportion which was a second leading cause in this study (Table A3.8). Lei et al (ibid) also strongly associated placenta praevia (ante-partum haemorrhage), pre-eclampsia and eclampsia with emergency caesarean section; findings which were similarly observed in this study (Table A3.8).

Maternal age was not significantly associated with caesarean section contrary to the findings of Bertollini et al (1992). Maternal age < 20 years was 0.932 times (95% CI= 0.204-4.252) less likely to undergo caesarean delivery and > 35 years were 1.901 times (95% CI= 0.28-12.913) more likely to undergo caesarean delivery when compared to the 20-34 years age group but the association was not significant. However, Bertollini et al (ibid) established that, maternal age >39 years was 3.97 times (95% CI= 3.54-4.45) more likely to undergo caesarean section than the age group <20 years.

Similarly, the number of ante-natal visits and parity did not significantly influence caesarean delivery. Unlike Bertollini et al (ibid) who observed significant decrease in caesarean section with increasing parity, this study revealed otherwise. The chances of a caesarean section was 0.85 times (95% CI= 0.198-3.642) less likely for parity 0 and 0.658 times (95% CI= 0.083-5.202) less likely for parity ≥5 but 1.310 fold or 31% (95% CI= 0.222-7.728) more likely for parity 1 when compared to the referent group, parity 2-4 (Table 3.4.8). These associations were however not significant.

Referrals from peripheral health institutions (Table 3.4.10) to the district hospitals were also 0.48 times (95% CI= 0.147-1.579) less likely to have caesarean delivery but this association too was insignificant.

In consonance with Bertollini et al (1992) who observed the highest caesarean section rate in mothers of low birth weight infants, this study also revealed a 3.506 fold (95% CI= 0.498-24.668) more likelihood of a caesarean delivery than mothers with infant birth weight of 2.5kg-3.8kg. In the study of Bertollini et al (ibid), caesarean section rate decreased with increasing birth weight then slightly increased for large babies. This inversion in trend observed in their study was contrary to the findings in this work when birth weight >3.9kg (OR= 0.299; 95% CI= 0.047-1.911) still showed a decreasing trend of caesarean section rate compared with the birth weight in the range 2.5-3.8kg but the association was not significant (Table 3.4.9).

Unlike the many studies that associated increased caesarean section rate with insurance (Renwick, 1991; Ribeiro et al, 2007; Mossialos et al, 2005; Barros et al, 1986), this study insignificantly revealed the contrary. The insured were 0.337 times (95% CI= 0.025-4.493) less likely to undergo caesarean section when compared to the insured (Table 3.4.9). This may be due to the low coverage (34%) of the health insurance scheme in the community (Figure 3.3.3) and the high proportion (90.6%) of emergency caesarean section (Table 3.4.4). The decision to perform a caesarean section in the two district hospitals was therefore largely due to medical reasons than for financial reasons thereby accepting the null hypothesis: “the choice of caesarean section as a preferred method of delivery was not influenced by health insurance” (section 1.5; 3) H_O).

4.3.2.2: VACUUM EXTRACTION

Vacuum extraction was not significantly associated with maternal age, number of ante-natal visits, parity, referrals, birth weight and insurance status. However, mothers aged <20 years were 1.073 times (95% CI= 0.235-4.897) more likely to have vacuum extraction than maternal age group 20-34 years and so were nulliparous (parity= 1) mothers who also were 1.177 times (95% CI= 0.275-5.042) more likely to experience the procedure than their counterparts in parity group 2-4. Though these associations were insignificant, it brings to the fore the difficulties encountered in first deliveries.

Contrary to the observation made for caesarean section when the referred patients were less likely to undergo the procedure (OR= 0.48), these referred cases were however twice more likely to experience vacuum extraction than the non-referred patients (OR= 2.078; 95% CI= 0.633-6.815). The insured were also 2.97 times (95% CI= 0.223-39.627) more likely to have vacuum extraction than the uninsured contrary to the findings for caesarean section where they were less likely by 0.337 fold to experience the procedure. Corroborating this finding, Zahniser et al (1992) observed that, the insured were likely to undergo vacuum extraction (RR= 1.8) than the uninsured women.

4.4: STILLBIRTH

4.4.1: TREND ANALYSIS

After the introduction of the Okwawuman Mutual Health Insurance Scheme, the stillbirth rate in the district declined. The decrease in 2005 was phenomenal and this coincided with the introduction of the national health insurance scheme as demonstrated in Figure A3.8.

The rate of stillbirths observed in the Kwahu districts was twice the national average and still higher than the average rate for sub-Saharan Africa. The rate in this study was comparable to that observed in Zimbabwe (Feresu et al, 2004) and certainly higher than those observed in the developed countries in spite of the fact that they used a lower cut of point off ≥20 weeks of gestation (Aliyu et al, 2008; Zanconato et al, 2007).

Higher stillbirth rates were also observed more in the highland areas of the Kwahu Government hospital (54.63/1,000 births) than in the low lying areas of the Holy Family hospital (52.85/1,000 births) as demonstrated in Figure A3.8. This is in consonance with the findings of Gonzales et al (2008) in Peru. This may be a consequence of lower oxygen saturation at higher altitudes.

The trend of stillbirth rate was consistent with the trend of per capita ANC attendance than supervised delivery as shown in Figure A3.9. This suggest that, ante-partum stillbirth was a major contributor to the overall stillbirth rate and this is supported by the large number of mothers (74.6%) who presented at the hospital without a fetal cardiac activity. Therefore improving the number of ante-natal visits and the quality of ante-natal care can certainly decrease the stillbirth rate in the Kwahu districts.

Meanwhile, the stillbirth rate was already on a decline though erratic prior to the introduction of the Okwawuman Mutual Health Insurace Scheme as shown in Figure A3.8. This suggests that, in addition to insurance, per capita ANC attendance and supervised delivery, there may be some other determinants of stillbirth.

The fact that, the introduction of the Okwawuman health insurance scheme and the national health insurance scheme accelerated the decline of the stillbirth rate in the Kwahu Districts provides prima facia evidence that health insurance can enhance favourable neonatal outcomes in the Kwahu Districts of Ghana.

4.4.2: IMPACT ANALYSIS

The pivotal role the per capita ANC attendance played in affecting stillbirth rate in the Kwahu districts is reinforced when the study further established that, the uninsured mothers were 3.2 times more likely to experience stillbirth than the insured mothers ($p= 0.002$). This gives credence to the suggestion that, per capita ANC attendance and insurance are interactive with the former being dependent on insurance in a linear manner. Thus the null hypothesis [4) Ho] is rejected for the alternative hypothesis which states that, “the occurrence of stillbirth was due to the lack of health insurance”.

In the trend analysis, some other factors above and beyond insurance, per capita ANC attendance and supervised delivery also influenced stillbirth. The study, in a further analysis established that, low birth weight (<2.5kg), referred cases, pregnancy induced hypertension and cord prolapse were significantly associated with increased stillbirth rate. Low birth weight (<2.5kg) was the single most influencial determinant for stillbirth (OR= 89.979; 95% CI= 12.002-674.564). These determinants are clinical conditions that are not directly influenced by health insurance and are independent determinants of stillbirth.

However, health insurance is able to facilitate increased ANC attendance thereby promoting the early detection of these determinants for prompt treatment which necessarily can affect the stillbirth rate.

4.5: MATERNAL MORTALITY

4.5.1: TREND ANALYSIS

Higher institutional mortality ratios were observed in the Kwahu Government and Holy Family hospitals than the national average of 540 maternal deaths per 100,000 live births. This is similar to the findings of Okusanya et al (2007) and Ozumba et al (2008) in separate studies conducted in Nigeria.

After the introduction of the Okwawuman health scheme in the Kwahu South and West districts of Ghana, the annual mean number of maternal deaths and the annual mean maternal mortality ratio declined by 18.09% and 27.80% respectively as shown in Table 3.6.1. The erratic pattern of the maternal mortality ratios observed during the pre-insurance period also regularized to a steady decline after the health scheme was introduced. This is demonstrated in Figure A3.11. These findings have been corroborated by Okusanya et al (2007) and Ozumba et al (2008) who also established the negative effects financial constraints had on maternal mortality in Nigeria.

One year prior to the introduction of the Okwawuman health scheme in the district, there was a phenomenal decline in the maternal mortality ratio as demonstrated in Figure A3.11. This suggests that, some other factors besides health insurance may also be influencing this index.

The trends in average supervised delivery, per capita ANC attendance and maternal mortality ratio revealed that, average supervised delivery played a superior role in influencing maternal mortality ratio than per capita ANC attendance. However, periods of discordance in the trend again suggested that, some other factors other than mentioned above may as well be playing a part in affecting the maternal mortality ratio (The trends are demonstrated in Figures A3.12 and A3.13).

Meanwhile, the per capita ANC attendance is very much influenced by health insurance whiles average supervised delivery is strictly dependent on clinical competence. Therefore, it follows that the maternal mortality ratio in the Kwahu districts would not be very much influenced by the Okwawuman health scheme.

4.5.2: IMPACT ANALYSIS

In this study, the insurance status was not significantly associated with maternal mortality. This reinforces the findings in the trend analysis which placed more emphasis on supervised delivery than on per capita ANC attendance which reflected the influence of health insurance. Therefore the null hypothesis that, "maternal death was not a consequence of the lack of health insurance" is confirmed (OR=1.587; 95% CI= 0.325-7.761).

ANC visits which are reflected in the per capita ANC attendance and health insurance was found to be significantly associated with maternal mortality. Mothers who had ≥4 ANC visits were 0.264 times (0.088-0.790) less likely to experience maternal death than their counterparts with<4 ANC visits. This goes to support the role per capita ANC attendance played in the trend analysis though its role was not pivotal. In this regard, health insurance still had a role to play and that is why uninsured mothers were 1.587 times more likely to die from complications of pregnancy than their insured counterparts ($p > 0.05$).

The superior role played by supervised delivery in the control of maternal mortality is again supported by the significant association between the non-use of partograph and maternal death ($p = 0.026$). Mothers who were not monitored with the partograph were 11.2 times more likely to experience maternal death than those monitored with the partograph. This determinant impinges directly on supervised delivery.

However, this determinant may be constrained by the length of stay of patients in the hospital. Nearly 59% of the maternal deaths spent ≤1 hour and another 20.70% spent between 1hour and 6 hours in the hospital so that it was difficult to monitor these groups with a partograph and also allowing very little time for clinical intervention. In fact, the length of stay in hospital was remarkably far shorter than was observed by Ozumba et al (2008) in Nigeria. This is a situation beyond the influence of health insurance though could have been avoided if the mothers had sought medical assistance early (type 1 delay). Additionally, the non-use of the partograph was further constrained by virtue of the fact that, 20.80% of mothers delivered before arrival and another 5.70% had aborted before reporting to hospital.

The trend analysis revealed some other factors besides per capita ANC attendance and supervised delivery that influenced the maternal mortality ratio. The presence of risk factors and maternal medical conditions, primigravida (gravidity= 1), pre-term delivery, low birth weight infants (<2.5kg), post-partum haemorrhage, pre-eclampsia/eclampsia, severe anaemia, and the presence of complications in pregnancy, labour and puerperium were significantly associated with an increased tendency to cause maternal death when compared to their referent groups. Meanwhile, referred cases (vs non-referrals), spontaneous vaginal delivery, caesarean section and vacuum extraction (vs laparotomy) were comparatively found to be significantly protective against maternal death. These assertions have been corroborated by Jacob et al (1994) in Utah, Clark et al (2008) in the US, Rosenstein et al (2008) in Argentina, Beathe Andersgaard et al (2008) in Norway Miguil and Chekairi (2008). These determinants are purely medical factors and are not influenced by health insurance except for early detection at ante-natal clinics. They are thus independent determinants of maternal mortality.

Therefore, the role of the health scheme in controlling maternal deaths is mainly through improving access and utilization through ante-natal visits as well as truncating type 1 delay. However, this must necessarily operate synergistically with good clinical competence and supervised delivery to achieve good results. By itself, the health scheme has no significant impact on maternal mortality.

CHAPTER FIVE

5.0: CONCLUSION AND RECOMMENDATIONS

5.1: CONCLUSIONS

TABLE 5.1.1:SUMMARY OF HYPOTHESES

S.NO.	HYPOTHESES	CONCLUSION/S
1	The Okwawuman Mutual Health Insurance Scheme was not viable (combined ratio > 1.0) over the study period.	**Accepted; 2002 &2004** **Rejected; 2003 & 2005**
2	The length of stay in hospital was not influenced by the mode of payment	**Accepted**
3	The choice of caesarean section / vacuum extraction as a preferred method of delivery was not influenced by health insurance.	**Accepted**
4	The occurrence of stillbirth was not due to the lack of health insurance.	**Rejected**
5	Maternal death was not a consequence of the lack of health insurance.	**Accepted**

The mean annual household income was greater for the insured households than the uninsured and the inequality gap between the rich and the poor was wider for the uninsured households than the insured. Therefore, insurance bridged the gap between the rich and the poor and also decreased poverty.

The coverage of the Okwawuman health scheme increased each year during the period under review (2002-2005) in both the general population and the WIFA population with a phenomenal increase in 2005 following the introduction of the national health insurance scheme. However, the growth rate was restricted by the limited period for registration and inappropriate educational messages. The insured constituted approximately 80% of patients attending hospital. In fact, the introduction of the health insurance scheme increased accessibility to health services.

There was a consistent surplus of funds during the period under review (2002-2005). The expense ratio was remarkably high but was decreasing at a phenomenal rate over the period under review. The mean claims ratio was within the recommended normal range. The overall combined ratio was <1.0 thus making the scheme viable for the period under review thereby rejecting the null hypothesis. However, the combined ratio was >1.0 on the two occasions that government subvention was withheld.

Overall, the utilization of health services increased. The per capita ANC attendance, average supervised delivery, utilization of ultrasound and X-ray services all increased with the introduction of the Okwawuman Mutual Health Insurance Scheme and later the national health insurance scheme. However, OPD attendance declined in favour of an increased admission rate in response to the skewed insurance benefit package towards admissions. Thus, utilization increased in line with the insurance package.

The length of stay in hospital had generally been on the decline even prior to the introduction of the health scheme. The length of stay was not significantly influenced by the mode of payment but rather the complications developed following a caesarean section or a vacuum extraction ($p < 0.025$). Thus the null hypothesis that, "the length of stay in hospital was not influenced by the mode of payment" is accepted.

The drug availability in the two district hospitals was 95.29%. The national health insurance drug list was similar to but slightly broader than the essential drug list. The drug prescription pattern was rationale. Additionally, the prescription of generic (rINN) or proprietary drugs was not influenced by insurance status ($p > 0.025$).

The introduction of the Okwawuman health scheme did not significantly increase the rate of caesarean section and vacuum extraction in the Kwahu districts. The determinants for caesarean section and vacuum extraction were largely medical and a large proportion of the cases were emergencies. Thus the null hypothesis that, "the choice of caesarean section and vacuum extraction as a preferred method of delivery was not influenced by health insurance" is accepted. However, there was poor management/monitoring of labour in the district hospitals and the use of vacuum extraction was low in favour of excess and unnecessary caesarean sections (151 excess caesarean sections per annum).

There was a significant impact of the Okwawuman health scheme on the stillbirth rate in the two district hospitals. Thus the null hypothesis on stillbirth was rejected for the alternative which stated that, "the occurrence of stillbirth was due to the lack of health insurance". Meanwhile, per capita ANC attendance played a more pivotal role in affecting stillbirth than supervised delivery. Some other medical determinants including low birth weight (<2.5kg) were significantly associated with stillbirth. Poor labour management was a contributing factor to the high stillbirth rate which if had been well managed could have saved 25.4% of fetuses.

The introduction of the Okwawuman health scheme was followed by a decline in the maternal mortality ratio in the two district hospitals. However, the impact was not significant ($p>0.05$) thus accepting the null hypothesis in effect. Medical determinants especially complications of labour ($p= 0.000$) were the most significant determinants of maternal deaths. Meanwhile, supervised delivery played a more pivotal role in affecting maternal mortality than per capita ANC attendance. Thus improving clinical skills is more likely to improve maternal mortality rates.

TABLE 5.1.2: SUMMARY OF KEY FINDINGS

S.No.	Findings
1	The overall combined ratio of the OMHIS for the period under review was less than 1.0 making it a viable scheme.
2	Health services utilization was generally increased against a declining length of stay which was influenced by complications of caesarean section and vacuum extraction rather than mode of payment.
3	Drug availability was 95% and the prescription of generic (rINN) or proprietary drugs was not influenced by insurance status.
4	The mean annual caesarean section rate was high (21-22%) and that for vacuum extraction was low (0.95-1.35%). There was a mean annual excess caesarean section of 151 cases. Caesarean section and vacuum extraction were not significantly affected by health insurance.
5	Insurance impacted significantly on stillbirth. Among the medical determinants of stillbirth, low birth weight (<2.5kg) had the strongest impact. Stillbirth was more affected by per capita ANC attendance than supervised delivery.
6	Insurance did not impact significantly on maternal mortality but rather medical determinants such as complications of labour having the strongest impact.
7	Supervised delivery played a more pivotal role in influencing maternal mortality than per capita ANC attendance.

5.2: RECOMMENDATIONS

TABLE 5.2.1: KEY RECOMMENDATIONS

1	The performance of Health Insurance Schemes should be based on Performance Ratios (Claims Ratio, Expense Ratio, and Combined Ratio).
2	The use of the Vacuum Extractor should be encouraged and Caesarean Sections monitored closely so as to control Unnecessary Caesarean Sections.
3	Access to and quality of Ante-Natal Clinics should be improved to reduce Stillbirth Rate.
4	Access to Supervised Delivery should be maximized to reduce Maternal Mortality.

5.2.1: PERFORMANCE OF THE SCHEME

1) To close the inequality gap, differential premium levying will be useful: For example, the sliding scale method. In this respect, clients further away from the hospital should pay lower premiums than those living closer to the health facilities. In another dimension, the premium should be tagged to income level and provision made for the poor and unemployed (which is not the case with the Mutual Health Insurance Scheme).

2) It may be necessary to introduce a form of differential co-payment to better control moral hazard and abuse and the income generated can be used in running the health facilities until the medical claims are paid. This is in view of the high proportion (80%) of insured patients accessing health care.

3) The need for monitoring mechanisms including patient appeals mechanisms, full information on claimant rights, peer review committee and claims review may be necessary in the face of asymmetry of information in favour of the care provider in what is known as the “agency relationship”. This may also serve to check malpractice on the part of the care provider. Certainly this will control unnecessary and excess caesarean sections. The use of itemized bills is encouraged since this will also enhance monitoring of claims but more importantly, the quality of care.

4) An all year round registration may be useful to facilitate a wider coverage.

5) With the introduction of the national health insurance scheme comprising the various district mutual health schemes, multiple risk pools may have been created. Thus there is a need for risk equalization through a solidarity fund. The risk equalization may either be by risk adjusters or ex post risk sharing. Mutual Health Schemes cited in deprived and economically unproductive districts should have greater support from the National Health Insurane Authority based on socio-demographic and socio-economic variables.

6) The accreditation of the health facilities must be tagged to performance and non-performing facilities must have their accreditation revoked.

5.2.2: CAESAREAN SECTION AND ASSISTED VAGINAL DELIVERY-VACUUM EXTRACTION

1) To reduce the excess and unnecessary caesarean section rate, the following measures may be useful:

   i) The provision of standardized protocol.

   ii) Mandatory second opinion especially for elective cases and emergency cases with relative indications.

   iii) A comprehensive system of peer review and discussion of all caesarean sections at staff conferences-eg morning meetings.

   iv) The avoidance of "solo-practice" as much as practicable. Private health facilities are the most culprits in this regard. The advantages of team practice cannot be overemphasized.

   v) At least one senior medical officer or specialist (especially one with a postgraduate qualification in obstetrics and gynaecology) should be attached to each district.

2) Encourage the use of monitoring instruments like the partograph.

5.2.3: STILLBIRTHS

1) The Ghana Health Service and the Ministry of Health should have a clear definition of what constitutes stillbirth in respect of birth weight and gestational age and have this information disseminated to all health institutions in the country.

2) The following are likely to improve the ante-partum stillbirth rate:

   i) Encourage family planning to reduce fertility rate and increase birth intervals.

   ii) Provide quality ante-natal care along side the increasing utilization of the services in response to the insurance scheme and free medical care services for pregnant women. This should include risk detection, management and prompt referral.

3) The following are also likely to reduce intra-partum stillbirth rate:

   i) Improving the use of monitoring instruments like the partograph.

   ii) Improving upon delivery skills with prompt intervention when necessary.

   iii) Skill acquisition in the use of the vacuum extractor may be useful.

4) As much as stillbirth is dependent on per capita ANC attendance and insurance, there is the need to balance the increased utilization and the resources available so as to ensure quality. A prudent balance may be able to save just under 75% of fetuses. Additinally, a well equipped health facility with knowledgeable and competent staff may well be able to save another 25% of fetuses. The quality of the ANC care is supreme.

5.2.4: MATERNAL MORTALITY

1) In view of the fact that a large proportion of the maternal deaths occurred <6hours in hospital, a strategy towards quick and rapid response to obstetric emergencies is absolutely necessary. This may require the doctor on duty staying in the hospital (call room) rather than at home from where he/she is fetched when the is an emergency.

2) An improvement in the quality of ante-natal care with early risk detection, prompt and appropriate management with early referrals when necessary may reduce the maternal deaths.

3) In view of the gross non-use of the partograph, an improvement in labour management may necessarily also better the maternal outcomes.

4) Community education as to the dangers of unsafe abortion and home delivery may also improve the situation. This may also call for the intensification of family

planning education and provision of family planning services. Provisions for safe abortions may be considered in the future for victims of rape and unwanted pregnancies.

5) Maternal mortality was more dependent on medical determinants in this study. However, the insurance scheme can take a lead role on behalf of its clients by making sure the accredited health facilities are equipped both in human and material resources to handle obstetric and other emergencies. A simple facility inspection will provide a lot of information.

Some more recommendations on how to improve the health scheme and suggestions on how to reduce stillbirths and maternal deaths in the Kwahu districts have been provided in Tables A5.1, A5.2 and A5.3 in Appendix 5. These are the opinions of a cross section of senior health workers in the district. This information was collected through a self administered questionnaire.

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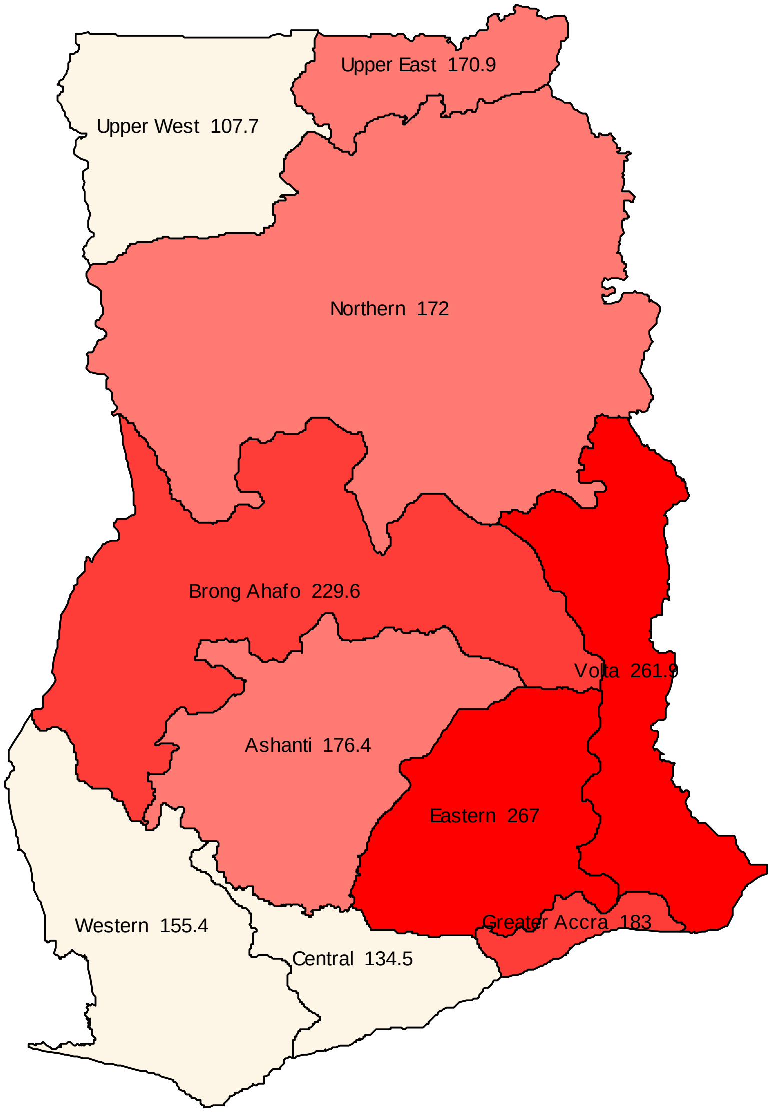
APPENDIX 1

A1.0: SUPPORTING MAPS, GRAPHS AND TABLES FOR CHAPTER ONE IN MAIN TEXT

MAPS



MAP A1.1: MATERNAL MORTALITY RATE (* 100,000); 2004 - GHANA

SOURCE: Ghana Info Version 2.0

FIGURES

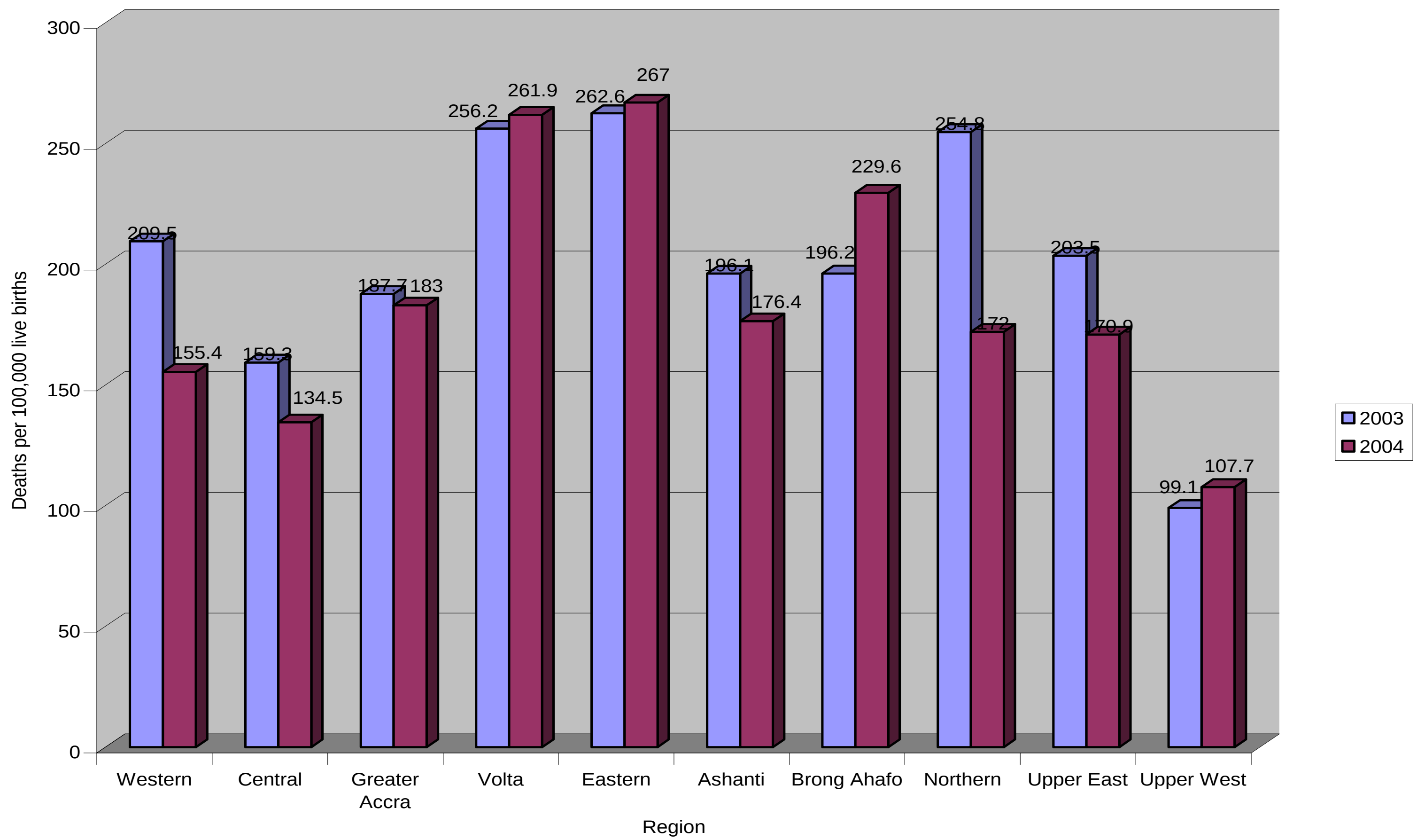


FIGURE A1.1 MATERNAL MORTALITY RATE BY REGION – GHANA (2003 – 2004)

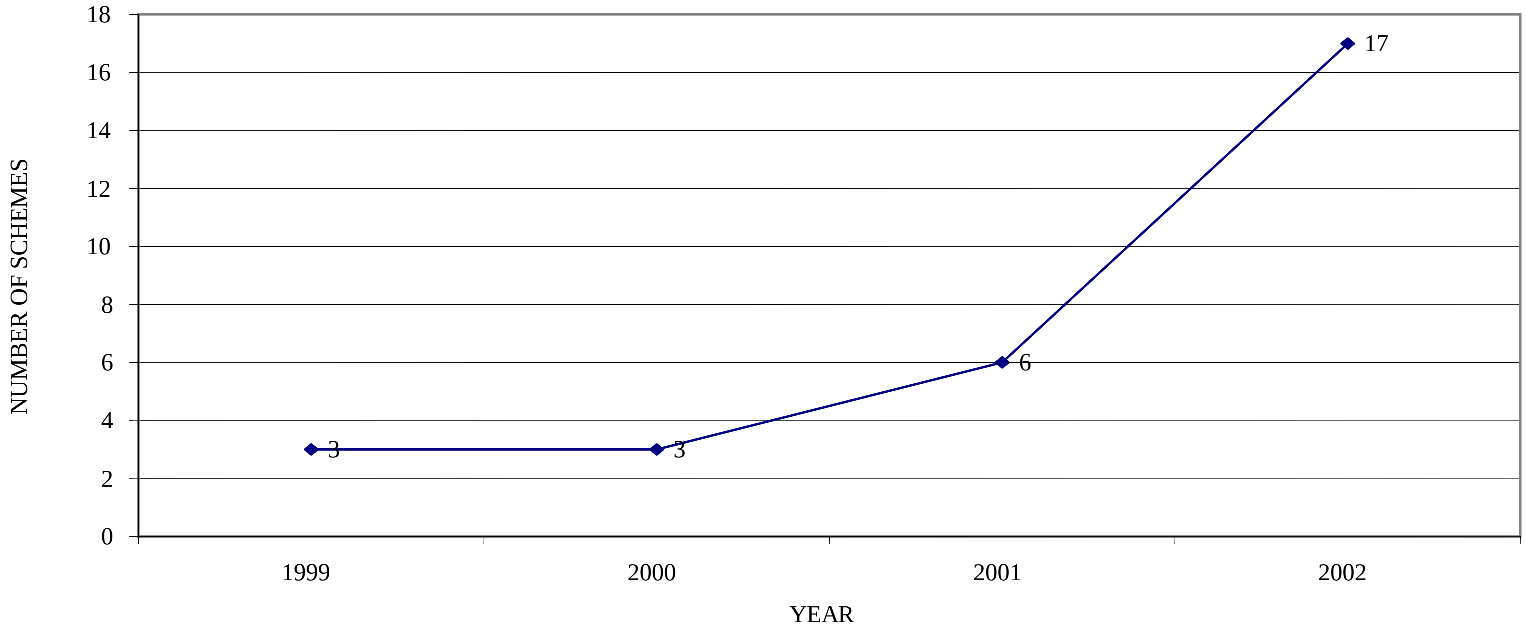


FIGURE A1.2: TREND OF GROWTH OF SCHEMES

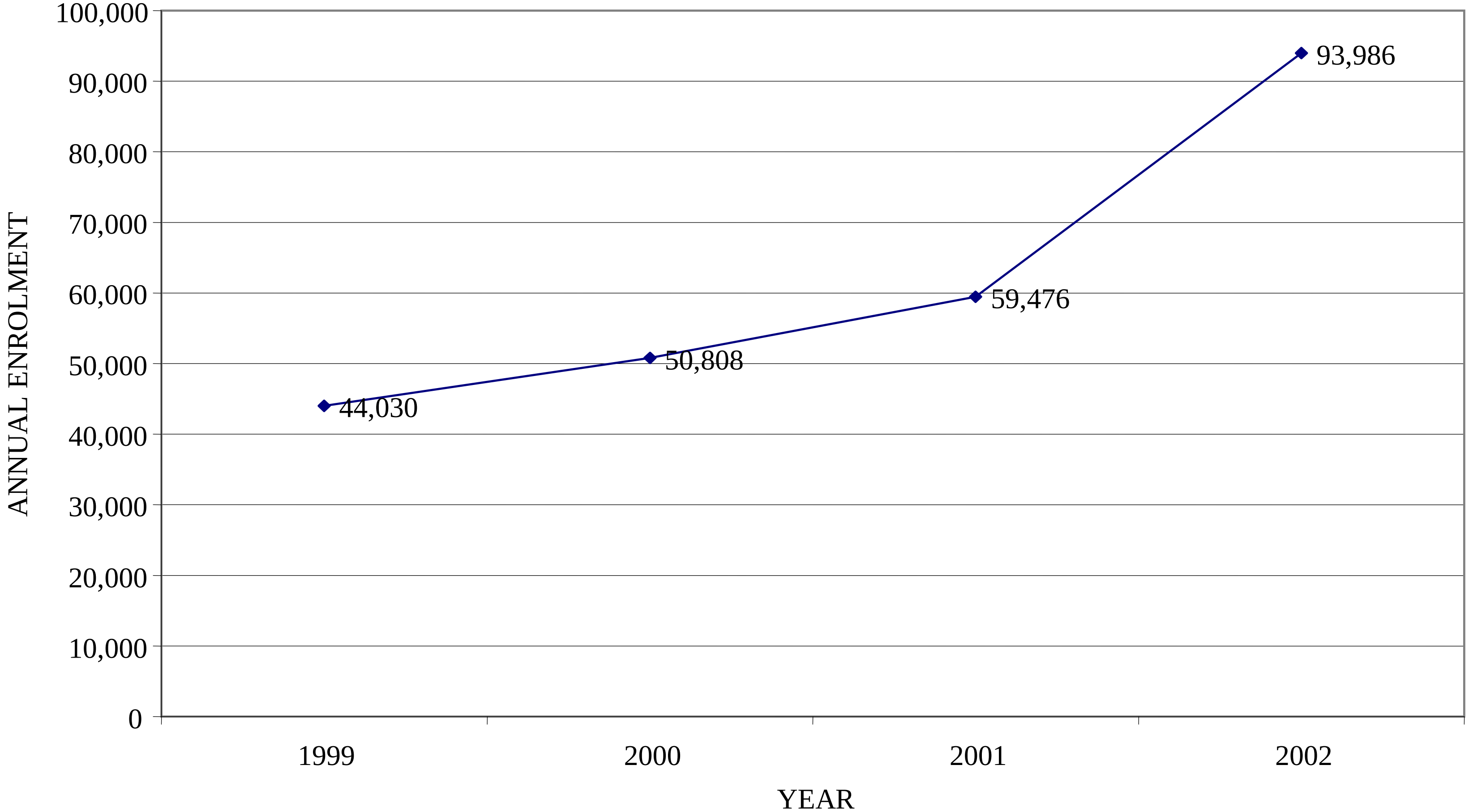


FIGURE A1.3: ANNUAL ENROLMENT OF HEALTH SCHEMES

TABLES

TABLE A1.1: PREVALENCE, ODDS RATIOS AND POPULATION ATTRIBUTABLE RISK PER CENT FOR ANTENATAL MARKERS, PREMATURITY AND LABOUR COMPLICATIONS, MATLAB, BANGLADESH, 1987 - 93

	Antenatal markers [a]	**Gestational age < 37 weeks**	**Labour complications** [b]
Prevalence (%)	42.4	20.0	12.0
No. of perinatal deaths per 1000 births	99.8	148.2	219.8
Adjusted odds ratio [c]	1.99 (1.54 - 2.58)[d,e]	3.36 (2.57 – 4.38) [e]	5.36 (4.06 – 7.07) [e]
Population-attributable risk percent	26.3	27.3	30.2

[a] Antenatal markers include: maternal age ≤ 18 years, bad obstetric history, maternal upper-arm circumference ≥ 250mm, maternal weight = 10th percentile for gestational age, pre-eclampsia, and jaundice.

[b] Labour complications include: breech or other malpresentation, prolonged or obstructed labour and eclampsia.

[c] Adjusted for demographic and nutritional markers, signs and symptoms in pregnancy, length of gestation and complications during labour.

[d] Figures in parentheses are 95% confidence intervals.

[e] $p < 0.01$

SOURCE: Kusiako et al (2000)

TABLE A1.2: SELECTED MATERNAL CARE INDICATORS IN THE AKUAPEM SOUTH DISTRICT OF GHANA: 2001 – 2003

INDICATORS (ABSOLUTE NUMBERS)		**YEAR**		
		2001	**2002**	**2003**
ANC	REGISTRANTS	5,055	5,869	6,289
	ATTENDANTS	18,162	17,252	18,127
TETANUS TOXOID		4,121	4,766	4,237
SUPERVISED DELIVERY		2,974	3,056	3,239
PNC		2,822	2,575	3,274
MATERNAL DEATHS		17	10	18
STILL BIRTHS		21	61	116

KEY:

ANC: Antenatal care
PNC: Postnatal care

SOURCE: Gyakobo (2004)

TABLE A1.3: BENEFIT PACKAGE OF OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME (BEFORE START OF NATIONAL HEALTH INSURANCE)

1) Out Patient Care cost exceeding ¢200,000 (GH¢20)
2) In-Patient Care
3) Dog, Snake, and Cat bites
4) Payment of monthly average In-patient care cost for all referral cases.

TABLE A1.4: POPULATION OF THE KWAHU SOUTH DISTRICT FROM 1998 TO 2005

Target Popn.	**Year**								
	1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005 (KS)**	**2005 (KW)**
Child 0-11 mnths		12,093		8,949	9,101	6,802	9,197	6,737	
Child. 12-23 mnths		12,093		8,949	9,101	6,802	9,197	6,737	
Child. 24-60 mnths		36,280		26,847	27,304	27,210	27,591	20,209	
Child. 5-14 years		84,654		62,642	63,710	63,489	64,378	47,155	
Women 15-49 years		63,491		46,981	47,782	47,617	48,284	35,367	
Men 15-49 years		63,491		46,981	47,782	47,617		35,367	
Men and Women 50-60 years		24,187		17,898	18,203	18,140	18,394	13,473	
Men and Women 60+ years		6,041		4,474	4,551	9,071	4,597	3,368	
TOTAL	**293,492**	**302330**	**216,994**	**223,721**	**227,535**	**226,748**	**229,922**	**168,413**	**100,157**

KEY:
KW: Kwahu West
KS: Kwahu South

TABLE A1.5: DIRECTORY OF HEALTH SCHEMES IN GHANA - 2003

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
1	Ashanti	Adansi East	Adansi East Health Insurance Scheme	Community - Based	October, 2000	Not yet Operational	1)In-patient care 2)Co-payment for Out-patient care
2	Ashanti	Kumasi Metro	Micro-care Ghana Health Insurance Scheme	Community-Based	1997	1998 - 99	1)OPD-Consultation 2)IPC Bed charges 3)Drugs 4)Laboratory cost 5)Surgery 6)Deliveries,etc
3	Brong Ahafo	Asutifi	Asutifi Health Insurance Scheme	District-wide Community-Based	2001	2003	1)IPC 2)Certified Snake/Dog bite-Out patient level 3)Farm injuries
4	Brong Ahafo	Berekum	Berekum District Health Insurance Scheme	District-Wide Community-Based	November, 2002	May, 2003	1)IPC 2)Certified Snake/Dog 3)Bite at OPD level 4)Accident 5)Surgical delivery 6)Payment EDL
5	Brong Ahafo	Dormaa	Dormaa Community Health Insurance Scheme	Community-Based	May,2001	April, 2004 (Proposed)	1)IPC 2)Certified Snake/Dog Bite on OPD bases 3)℞ of fractures by approved bone setters

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
6	Brong Ahafo	Jaman	Jaman North District Health Insurance Scheme	Community-Based	September, 2001	March, 2003	1)IPC 2)Emergency Cases 3)Accident Cases 4)Certified Snake/Dog Bites on OPD bases
7	Brong Ahafo	Jaman	Jaman South Health Insurance Scheme	Community-Based	September, 2001	November, 2001	1)IPC & Referrals 2)Certified Snake/Dog Bites on OPD bases 3)Accident cases
8	Brong Ahafo	Nkoranza	Nkoranza Community Health Insurance Scheme	Community-Based	1989 - 1991	February, 1992	1)Certified Snake/Dog Bites on OPD bases 2)IPC (admission, medication & surgery) 3)Detention ≥ 24hrs 4)Refund for drugs in EDL 5)Refund of IPC bills
9	Brong Ahafo	Tano	Tano District Health Insurance Scheme	Community-Based District Wide	May, 2001	January, 2002	1)Certified Snake/Dog Bites on OPD bases 2)IPC-excluding illegal abortion 3)OPC≥¢200,000/episode 4)Referral bills≥¢100,000/episode
10	Central	Ajumako Enyan Essiam	Ajumako Enyan Essiam Mutual Health Insurance Scheme	Community-Based	January, 2002	Not yet determined	1)3* OPC annually 2)3* IPC annually

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
11	Central	Gomoa	Gomoaman Health Insurance Scheme	Institutional-Based	October, 2002	January, 2004	Not determined
12	Eastern	Akwapim North	Agbenyo (Nkwa Ye)	Community-Based	January, 2003 ??	Not yet determined ??	1)OPC 2)IPC
13	Eastern	Akwapim North	Awo Pa Health Scheme	Special Group: Maternal and Child Care	January, 2002	January, 2003	1)General health care for pregnant women & babies 2)Financial support for registered mothers
14	Eastern	Kwahu South	Okwawuman Health Insurance Scheme	Community-Based	November, 2001	January, 2002	1)Certified Snake/Dog Bites on OPD bases 2)IPC 3)OPC≥¢200,000 4)IPC bills of Referrals
15	Eastern	Kwaebibirem	Kwaebibirem District Health Insurance Scheme	Community-Based District-Wide	August, 2001	2003	1)℞ of 3 episodes of acute/chronic illness/year 2) Basic lab. Service 3)Basic ancillary service 4)Drug cost(EDL) 5)Minor & Emergency surgery

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
16	Eastern	New Juaben	Methodist Mutual Health Scheme-Koforidua Diocese	Religion-Based	August, 2000	October, 2001	IPC
17	Eastern	New Juaben	Mile 50 Presbytarian Church Mutual Health Organization	Religion-Based	February, 2002	August, 2002	Refund of Drug Cost
18	Greater Accra	Dangme West	Dangme West Health Insurance Scheme	District-Wide Community-Based	Between 1996 & 2000	October, 2000	1)All primary OP-Clinical Care 2) Basic lab. Test 3)ANC 4)Delivery & Postnatal care 5)Family Planning 6)Dental Care Services 7)Re-imbursement for Referrals≤₵400,000/episode
19	Northern	East Mamprusi	Tisomteb Health Scheme (Zone A & B)	Community-Based	2001	2002	1)OPC ≥ ¢20,000 2)IPC 3)General Surgery 4)Referrals
20	Northern	East Mamprusi	Ti Suhin Bora	Community-Based (Small Group)	November, 2001	January, 2002	IPC
21	Northern	Tamale Municipality	Salamba Health Insurance Scheme	Community-Based	June, 2001	June, 2002	1)Payment of ₵100,000 after OPC 2)Loan (≤₵200,000)

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
22	Northern	Tamale Municipality	Tiyumtaaba Welfare Association	Community-Based	1999	2002	1)IPC 2)Transport Cost 3)Drug Cost 4)X-ray Services
23	Northern	West Gonja	West Gonja District Health Insurance Scheme	District-Wide Community-Based	May, 1993	October, 1995	1)IPC 2)Payment for prescribed drugs 3)IPC cost for Referrals
24	Northern	Saboba-Chereponi	Saboba-Chereponi Health Scheme	District-Wide Community-Based	November, 2002	May, 2003	1)OPC 2)IPC 3)Approved Specialist Services
25	Northern	Yendi	Sang Health Insurance Scheme	Community-Based	July, 2003	Not determined	OPC Refund, Prescribed drugs≤¢100,000
26	Upper East	Bawku East	Bawku East Mutual Health Organization	District-Wide Community-Based	2002	Not determined	Not yet determined
27	Upper West	Jirapa-Lambussie	Jirapa-Lambussie Health Insurance Scheme	Proposed Community-Based District-Wide	–	–	Not yet determined
28	Upper West	Lawra	Lawra Health Insurance Scheme	Proposed Community-Based District-Wide	–	–	Not yet determined

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
29	Upper West	Nadowli	Nadowli People's support for each others Good Health	Proposed Community-Based & District-Wide	2001	_	Not yet determined
30	Upper West	Sissala	Sissala Health Insurance Scheme	Proposed Community-Based & District-Wide	_	_	Not yet determined Proposed IPC & OPC
31	Upper West	Wa	South Sissala Mutual Health Insurance Scheme	Proposed Community-Based & District-Wide	2000	Not yet determined	1)OPC at sub-district clinics & approved Referral hospitals 2)IPC at Referral Hospitals 3)Ambulance Services 4)Pregnancy; Normal and Complicated Delivery 5)Drug Cost Refund (EDL)
32	Upper West	Wa	Wa District Mutual Health Insurance Scheme	Proposed Community-Based & District-Wide	_	_	Not yet determined Proposed IPC & OPC
33	Volta	Nkwanta	Nkwanta Community-Based Health Insurance Scheme	Community-Based	1998	August, 2003 (proposed)	IPC OPC(varies according to groups, associations & communities choices)

S.No.	Region	District	Name of Scheme	Type of Scheme	Date set - up	Operational Date	Benefit Package
34	Western	Juabeso-Bia	Juabeso-Bia Community Solidarity Health Insurance	Community-Based	November, 2001	Not yet operational	Not yet determined

KEY:

IPC: In – Patient Care

OPC: Out – Patient Care

SOURCE: Aikins (2003)

TABLE A1.6: EMERGING SCHEMES BY TYPE AND STATUS

Schemes	**District**	**Type**	**Status**
Aburi Girl's Health Scheme	Akuapem South	School Pre-Paid Based	Operational
St. Roses Health Scheme	Kwaebibirem	School Pre-Paid Based	Operational
St. Mary School Health Scheme	West Akim	School Pre-Paid	Operational
Pope John SSS Health Scheme	New Juaben Municipality	School Pre-Paid	Registration
Employer Pre-Paid Scheme	New Juaben Municipality	Institutional-Based	Operational
Saw Millers Health Scheme		Employer-Based	Operational
Ghana Private Road & Transport Union	New Juaben Municipality	Employer-Based	Mobilization
Emergency Health Fund	Fanteakwa	Community-Based	Operational
Employee Credit Facility	Akwapim North	Employer-Based	Operational
Lower Manya Health Scheme	Manya Krobo	Community-Based	Mobilization
Civil Servant's Health Scheme	New Juaben Municipality	Civil Servants	Mobilization
Rural Health Scheme	Kwaebibirem	Community-Based	Mobilization
Susu Health Scheme	Birim North	Community-Based	Mobilization
Central Market Health Scheme	New Juaben Municipality	Traders	Mobilization
Islamic Health Scheme	New Juaben Municipality	Community-Based	Mobilization
Koforidua Presbytarian Health Insurance Scheme	New Juaben Municipality	Church-Based	Mobilization
Grace Presbytarian Health Scheme	West Akim	Church-Based	Registration
Tigobdia Health Scheme	East Mamprusi	Community-Based	Mobilization
Nawunzoya Health Scheme	East Mamprusi	Community-Based	Operational
Gushiegu/Karaga District Health Scheme	Gushiegu/Karaga	Community-Based	Mobilization
Nanumba Health Scheme	Nanumba	Community-Based	Operational

Schemes	District	Type	Status
Savelugu Health Scheme	Savelugu/Nanton	District-Wide & Community-Based	Mobilization
Vittin Health Scheme	Tamale Metropolitan Area	Community-Based	Operational
Tisungtaaba Health Association	Tamale Metropolitan Area	Community-Based	Mobilization
St. Charles Health Scheme	Tamale Metropolitan Area	School-Based	Operational
SDA Health Scheme	Tamale Metropolitan Area	Church-Based	Mobilization
Tolon Health Scheme	Tolon/Kumbungu	Community-Based	Mobilization
West Mamprusi Health Scheme	West Mamprusi	District-Wide & Community-Based	Mobilization

SOURCE: Aikins (2003)

APPENDIX 2

A2.0: COMPLEMENTARY FIGURES AND TABLES FOR CHAPTER TWO

TABLE A2.1: INSURED INDIVIDUALS AS A PERCENTAGE OF THE TOTAL POPULATION IN SELECT EU MEMBER STATES, 1992 - 1998

Country	*1992*	*1995*	*% change 1992-1995*	*1998*	*% change 1995-1998*	*% change 1992-1998*
Austria*	36.8	34.2	-2.7	33.0	-1.2	-3.8
Belgium**	-	30.1	-	32.8	1.7	-
Denmark	25.1	24.9	-0.3	26.4	1.5	1.3
France	18.9	19.4	0.5	19.9	0.4	1.0
Germany	15.8	17.0	1.2	19.2	2.1	3.4
Netherlands	31.7	30.3	-1.3	30.1	-0.2	-1.5
Portugal	10.1	8.3	-1.8	12.2	3.9	2.1
Spain***	-	-	-	16.4	-	-
United kingdom	11.4	11.1	-0.2	11.5	0.4	0.1

Source: Mossialos and Thomson, 2004

* The high figure for Austria reflects the propensity of Austrians to purchase complementary VHI covering per diem hospital charges. However, many of these policies cover minor amounts, and this type of VHI only accounted for about 11% of total VHI benefits in 2000.

** The high figures for Belgium may be a result of including compulsory complementary VHI coverage offered by mutual associations, which have not been included in the figures shown in Table 2.4.

*** The figure for Spain includes the special schemes for civil servants covering 5% of the population, which have not been included in the definition of VHI. This explains the difference from the 11.4% VHI coverage shown in Table 2.4.

TABLE A2.2: FINANCIAL RISK PROTECTION (FRP) PERFORMANCE OF SELECTED AFRICAN COMMUNITY HEALTH INSURANCE SCHEMES

Schemes	**Indicators of Financial Risk Protection (FRP)**					**Assessment of Financial Risk Protection (FRP)**
	Affordability	Percentage of Target Population Enrolled	Appropriateness of Payment Schedule	Completeness of Package	Level of Access	
1. Carte d' Assurance Malaidie (CAM) program, Burundi (Provider Insurance Model-by government)	Affordable to about 77%	54% ever enrolled (in 1 province studied in 1992)	Generally appropriate	Full clinic and inpatient care when referred	Increased – insured / non-insured illness episodes	Significant FRP provided
2. Community Health Fund (CHF), Tanzania (Mutual-Provider Partnership Model)	Affordable to majority – includes exemption mechanism	5.3% (in 2 districts studied in 1999)		Variable – dependent on the services at facility	Increased – 75% of patients receiving care are uninsured	Modest FRP provided
3. Abota Village Insurance Scheme, Guinea-Bissau (Mutual Benefit Society Model)	Affordable to majority – level determined by villagers		Appropriate – Determined by villagers	Full clinic and inpatient care when referred	Increased – primary health care available in villages	Significant FRP provided
4. Nkoranza Community Financing Health Insurance Scheme, Ghana (Provider Insurance Model – by hospital)	Premiums assessed as unaffordable by two-thirds of households and health workers	Approx. 27%	Inappropriate – low cash availability between Nov – Dec.	Inpatient care	Increased – insured / non-insured admissions = 2.4 responsible for 9% increase in admissions	Suboptimal FRP provided
5. Bwamanda Hospital Insurance Scheme, DR Congo (Provider Insurance Model-by hospital)	Affordable premiums but co-payment unaffordable to households living far from hospital	41% - 66% (1987 - 1995)	Appropriate – time chosen by community	Inpatient care	Increased – insured / non-insured admissions = 6.7	Suboptimal FRP provided
6. Dangme West Health Insurance Scheme (Dangme Hewami Nami Kpee), Ghana (Mutual-Proveder Partnership Model)	WTP data (in 1998) implies affordable to approximately 35% of households	Approx. 5% of households (first enrollment period 2000)	Inappropriate – low cash availability at time of first enrollment	Full clinic and inpatient care when referred		Suboptimal FRP provided

Source: Arhin-Tenkorang, 2001

TABLE A2.3: ADMINISTRATIVE COSTS AS A PROPORTION OF VHI PREMIUM INCOME COMPARED TO ADMINISTRATIVE COSTS IN THE STATUTORY HEALTH CARE SYSTEM.

Country	*Voluntary Health Insurers*	*Public Expenditure on Administration as a % of Public Expenditure on Health*
Austria	22% (early 1990s)	3.6% (2000)
Belgium	25.8% commercial individual (1999) 26.8% commercial group (1999)	4.8% (1999)
Denmark	-	1.1%*
Finland	-	3.1%*
France	10-15% (mutual associations) 15-25% (commercial)	4-8%
Germany	10.2% (1999)	5.09% (2000)
Greece	15-18% (commercial life insurers)	5.1%
Ireland	11.8% (Vhi Healthcare in 2001) 5.4% (Vhi Healthcare in 1997)	2.8%*
Italy	27.8% (2000) 26.8% (1999)	0.4%*
Luxembourg	10-12% (mutual associations)	5%
Netherlands	12.7% (1999)	0.7% AWBZ (1999) 4.4% ZFW (1999)
Portugal	About 25%	-
Spain	About 13-15%	5%
United Kingdom	14.2% (BUPA in 1999) 16.9% (PPP in Healthcare 1998)	3.5%

AWBZ: Algemene Wet Biszondere Ziektekosten; ZFW : Ziekenfondswet.
Note: No data available for Sweden. * OECD data for 1995.

Source: Mossialos and Thomson, 2004

TABLE A2.4a: COUNTRY DISTRIBUTION OF MATERNAL MORTALITY RATIOS AND STILLBIRTH RATES IN SUB-SAHARAN AFRICA

Country	Total population	Annual births	MMR per 100,000 live births	Annual number of maternal deaths	Stillbirth rate per 1,000 deliveries	Annual number of stillbirths
Year	2004	2004	2004	2004	2000	2000
1.Angola	15,490,000	749,000	1,700	12,700	33	25,200
2. Benin	8,177,000	341,000	850	2,900	30	10,400
3. Botswana	1,769,000	46,000	100	<100	19	900
4. Burkina Faso	12,822,000	601,000	1,000	6,000	26	16,000
5. Burundi	7,282,000	330,000	1,000	3,300	34	11,600
6. Cameroon	16,038,000	562,000	730	4,100	27	15,600
7. Cape Verde	495,000	15,000	150	<100	16	200
8. Central African Republic	3,986,000	149,000	1,100	1,600	29	4,400
9. Chad	9,448,000	456,000	1,099*	5,000	34	15,900
10. Comoros	777,000	28,000	480	100	26	700
11. Congo	3,883,000	172,000	510	900	28	4,900
12. Congo, Democratic Republic of the	55,853,000	2,788,000	990	27,600	34	98,000
13. Côte d'Ivoire	17,872,000	661,000	690	4,600	34	23,200
14. Equatorial Guinea	492,000	21,000	880	200	26	600
15. Eritrea	4,232,000	166,000	630	1,000	27	4,600
16. Ethiopia	75,600,000	3,064,000	850	26,000	36	114,600
17. Gabon	1,362,000	42,000	420	200	19	800
18. Gambia,The	1,478,000	52,000	540	300	27	1,500
19. Ghana	**21,664,000**	**679,000**	**540**	**3,700**	**24**	**16,300**
20. Guinea	9,202,000	383,000	980*	3,700	28	11,200
21. Guinea-Bissau	1,540,000	77,000	1,100	800	35	2,800
22. Kenya	33,467,000	1,322,000	1,000	13,200	45	61,400
23. Lesotho	1,798,000	50,000	550	300	23	1,200
24. Liberia	3,241,000	164,000	760	1,200	32	5,400
25. Madagascar	18,113,000	704,000	550	3,900	29	20,800
26. Malawi	12,608,000	550,000	984*	5,400	39	22,200
27. Mali	13,124,000	647,000	1,200	7,800	24	15,900
28. Mauritania	2,980,000	123,000	1,000	1,200	30	3,800
29. Mauritius	1,233,000	20,000	24	<100	11	200
30. Mozambique	19,424,000	769,000	1,000	7,700	32	25,200

Source: WHO, 2006

TABLE A2.4b: COUNTRY DISTRIBUTION OF MATERNAL MORTALITY RATIOS AND STILLBIRTH RATES IN SUB-SAHARAN AFRICA

Country	Total population	Annual births	MMR per 100,000 live births	Annual number of maternal deaths	Stillbirth rate per 1,000 deliveries	Annual number of stillbirths
Year	2004	2004	2004	2004	2000	2000
31. Namibia	2,009,000	56,000	300	200	19	1,100
32. Niger	13,499,000	734,000	1,600	11,700	38	29,200
33. Nigeria	128,709,000	5,323,000	800	42,600	30	163,400
34. Rwanda	8,882,000	365,000	1,400	5,100	30	11,200
35. Sao Tome and Principe	153,000	5,000	-	-	25	100
36. Senegal	11,386,000	419,000	401*	1,700	27	11,500
37. Seychelles	80,000	3,000	-	-	10	<100
38. Sierra Leone	5,336,000	245,000	2,000	4,900	37	9,300
39. Somalia	7,964,000	359,000	1,100	3,900	45	16,800
40. South Africa	47,208,000	1,093,000	230	2,500	18	19,500
41. Swaziland	1,034,000	30,000	370	100	22	700
42.Tanzania, United Republic of	37,627,000	1,403,000	578*	8,100	29	42,500
43.Togo	5,988,000	233,000	570	1,300	26	6,200
44. Uganda	27,821,000	1,412,000	880	12,400	31	45,100
45. Zambia	11,479,000	468,000	750	3,500	31	14,800
46. Zimbabwe	12,936,000	384,000	1,100	4,200	22	8,700
47. Sub-Saharan Africa	697,561,000	28,263,000	940^	247,300	32	890,000

Source: WHO, 2006

TABLE A2.5a: COMPOSITION OF REGIONAL GROUPS IN TABLE 2.4.1

Averages given at the end of each table are calculated using data from the countries and territories as grouped below

Sub-Saharan Africa Angola; Benin; Botswana; Burkina Faso; Burundi; Cameroon; Cape Verde; Central African Republic; Chad; Comoros; Congo; Congo, Democratic Republic of the; Côte d'Ivoire; Equatorial Guinea; Eritrea; Ethiopia; Gabon; Gambia; Ghana; Guinea; Guinea-Bissau; Kenya; Lesotho; Liberia; Madagascar; Malawi; Mali; Mauritania; Mauritius; Mozambique; Namibia; Niger; Nigeria; Rwanda; Sao Tome and Principe; Senegal; Seychelles; Sierra Leone; Somalia; South Africa; Swaziland; Tanzania, United Republic of; Togo; Uganda; Zambia; Zimbabwe **Middle East and North Africa** Algeria; Bahrain; Djibouti; Egypt; Iran (Islamic Republic of); Iraq; Jordan; Kuwait; Lebanon; Libyan Arab Jamahiriya; Morocco; Occupied Palestinian Territory; Oman; Qatar; Saudi Arabia; Sudan; Syrian Arab Republic; Tunisia; United Arab Emirates; Yemen **South Asia** Afghanistan; Bangladesh; Bhutan; India; Maldives; Nepal; Pakistan; Sri Lanka **East Asia and Pacific** Brunei Darussalam; Cambodia; China; Cook Islands; Fiji; Indonesia; Kiribati; Korea, Democratic People's Republic of; Korea, Republic of; Lao People's Democratic Republic; Malaysia; Marshall Islands; Micronesia (Federated States of); Mongolia; Myanmar; Nauru; Niue; Palau; Papua New Guinea; Philippines; Samoa; Singapore; Solomon Islands; Thailand; Timor-Leste; Tonga; Tuvalu; Vanuatu; Viet Nam **Latin America and Caribbean** Antigua and Barbuda; Argentina; Bahamas; Barbados; Belize; Bolivia; Brazil; Chile; Colombia; Costa Rica; Cuba; Dominica; Dominican Republic; Ecuador; El Salvador; Grenada; Guatemala; Guyana; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Paraguay; Peru; Saint Kitts and Nevis; Saint Lucia; Saint Vincent and the Grenadines; Suriname; Trinidad and Tobago; Uruguay; Venezuela (Bolivarian Republic of)	**Developing countries/territories** Afghanistan; Algeria; Angola; Antigua and Barbuda; Argentina; Armenia; Azerbaijan; Bahamas; Bahrain; Bangladesh; Barbados; Belize; Benin; Bhutan; Bolivia; Botswana; Brazil; Brunei Darussalam; Burkina Faso; Burundi; Cambodia; Cameroon; Cape Verde; Central African Republic; Chad; Chile; China; Colombia; Comoros; Congo; Congo, Democratic Republic of the; Cook Islands; Costa Rica; Côte d'Ivoire; Cuba; Cyprus; Djibouti; Dominica; Dominican Republic; Ecuador; Egypt; El Salvador; Equatorial Guinea; Eritrea; Ethiopia; Fiji; Gabon; Gambia; Georgia; Ghana; Grenada; Guatemala; Guinea; Guinea-Bissau; Guyana; Haiti; Honduras; India; Indonesia; Iran (Islamic Republic of); Iraq; Israel; Jamaica; Jordan; Kazakhstan; Kenya; Kiribati; Korea, Democratic People's Republic of; Korea, Republic of; Kuwait; Kyrgyzstan; Lao People's Democratic Republic; Lebanon; Lesotho; Liberia; Libyan Arab Jamahiriya; Madagascar; Malawi; Malaysia; Maldives; Mali; Marshall Islands; Mauritania; Mauritius; Mexico; Micronesia (Federated States of); Mongolia; Morocco; Mozambique; Myanmar; Namibia; Nauru; Nepal; Nicaragua; Niger; Nigeria; Niue; Occupied Palestinian Territory; Oman; Pakistan; Palau; Panama; Papua New Guinea; Paraguay; Peru; Philippines; Qatar; Rwanda; Saint Kitts and Nevis; Saint Lucia; Saint Vincent/Grenadines; Samoa; Sao Tome and Principe; Saudi Arabia; Senegal; Seychelles; Sierra Leone; Singapore; Solomon Islands; Somalia; South Africa; Sri Lanka; Sudan; Suriname; Swaziland; Syrian Arab Republic; Tajikistan; Tanzania, United Republic of; Thailand; Timor-Leste; Togo; Tonga; Trinidad and Tobago; Tunisia; Turkey; Turkmenistan; Tuvalu; Uganda; United Arab Emirates; Uruguay; Uzbekistan; Vanuatu; Venezuela (Bolivarian Republic of); Viet Nam; Yemen; Zambia; Zimbabwe

Source: UNICEF, 2006

TABLE A2.5b: COMPOSITION OF REGIONAL GROUPS IN TABLE 2.4.1

Averages given at the end of each table are calculated using data from the countries and territories as grouped below	
CEE/CIS Albania; Armenia; Azerbaijan; Belarus; Bosnia and Herzegovina; Bulgaria; Croatia; Georgia; Kazakhstan; Kyrgyzstan; Moldova, Republic of; Montenegro; Romania; Russian Federation; Serbia; Tajikistan; the former Yugoslav Republic of Macedonia; Turkey; Turkmenistan; Ukraine; Uzbekistan **Industrialized countries/territories** Andorra; Australia; Austria; Belgium; Canada; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Holy See; Hungary; Iceland; Ireland; Israel; Italy; Japan; Latvia; Liechtenstein; Lithuania; Luxembourg; Malta; Monaco; Netherlands; New Zealand; Norway; Poland; Portugal; San Marino; Slovakia; Slovenia; Spain; Sweden; Switzerland; United Kingdom; United States	**Least developed countries/territories** Afghanistan; Angola; Bangladesh; Benin; Bhutan; Burkina Faso; Burundi; Cambodia; Cape Verde; Central African Republic; Chad; Comoros; Congo, Democratic Republic of the; Djibouti; Equatorial Guinea; Eritrea; Ethiopia; Gambia; Guinea; Guinea-Bissau; Haiti; Kiribati; Lao People's Democratic Republic; Lesotho; Liberia; Madagascar; Malawi; Maldives; Mali; Mauritania; Mozambique; Myanmar; Nepal; Niger; Rwanda; Samoa; Sao Tome and Principe; Senegal; Sierra Leone; Solomon Islands; Somalia; Sudan; Tanzania, United Republic of; Timor-Leste; Togo; Tuvalu; Uganda; Vanuatu; Yemen; Zambia

Source: UNICEF, 2006

APPENDIX 3

A3.0: COMPLEMENTARY GRAPHS AND TABLES OF RESULT

PERFORMANCE AND COMMUNITY SURVEY

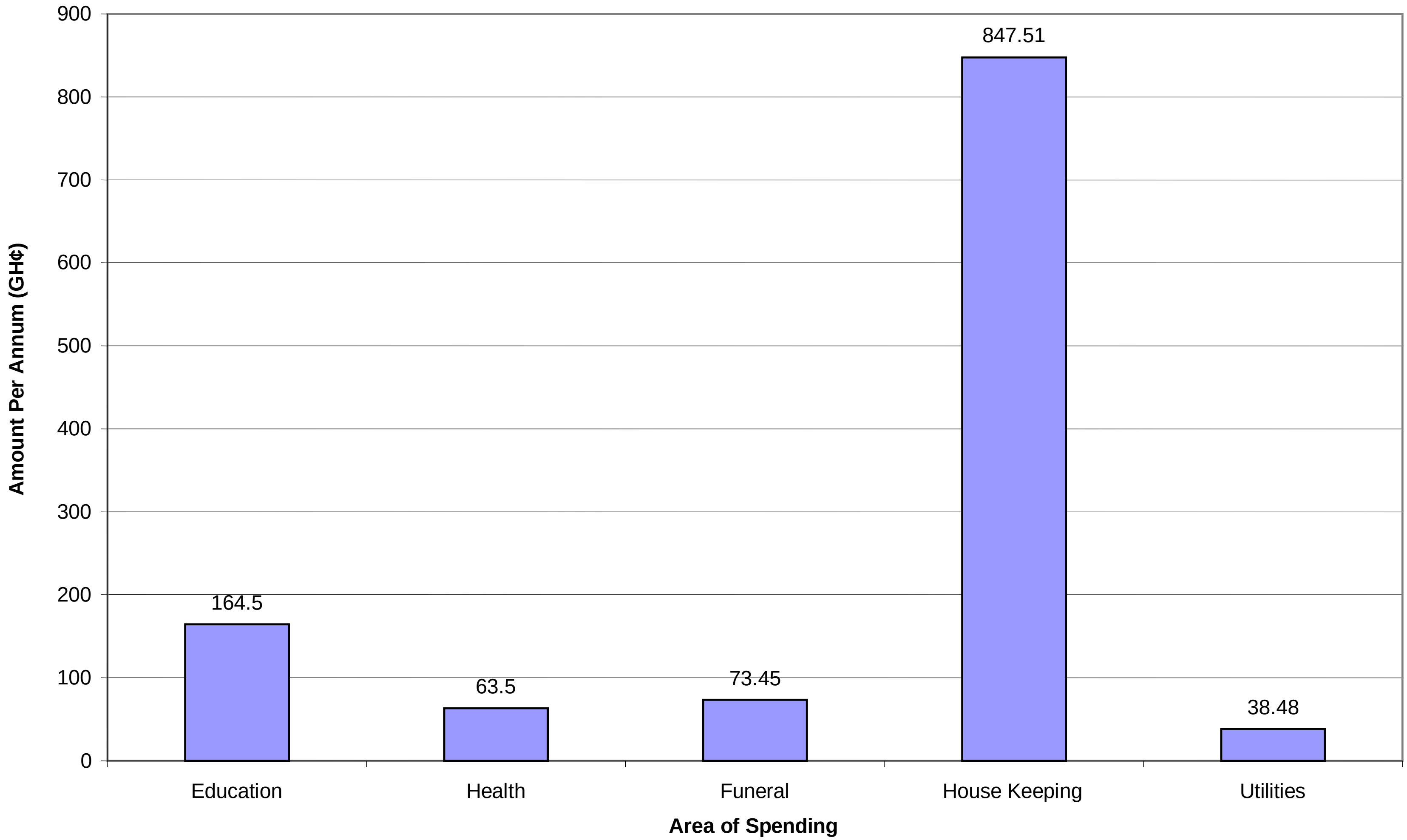


FIGURE A3.1: SPENDING PATTERN

TABLE A3.1: REASONS FOR THE PERFORMANCE RATING

REASONS	FREQUENCY / COUNT	PERCENTAGE OF RESPONSES
HIGH RATING		
People are benefiting from the scheme	94	28.8
I did not pay medical bills on visiting the hospital	60	18.4
The staff of the hospitals and the insurance secretariat are very respectful	30	9.2
Access health facility always and easily	17	5.2
Support emergency care	16	4.9
The hospitals give quality drugs	10	3.1
Reduce death in the community	8	2.5
Solve health problems that were hitherto problematic due to lack of funds	6	1.8
Help us to save money	5	1.5
The scheme keep to their promise (Trustworthy)	3	0.9
Contributing to support the poor	2	0.6
Improvement in the performance of the health institutions	1	0.3
LOW RATING		
I don't know where to place the performance (Not taken notice of any change the insurance scheme may have brought)	18	5.6
Still pay medical bills	18	5.5
They give attention to those without insurance	16	4.9
Am not interested	4	1.2
They don't supply all the drugs	4	1.2
No nation wide coverage	4	1.2
I have not been to the health facility before and so can't comment.	3	0.9
Drugs not available	3	0.9
Cheap drugs provided at the health institutions to insured clients	2	0.6
Total responses	326	100.0

UTILISATION

TABLE A3.2: TREND OF OPD ATTENDANCE – HFH AND KGH

YEAR	OPD ATTENDANCE		
	HFH	KGH/ER	AVERAGE
1998	79507	31425	55466
1999	76348	32744	54546
2000	74289	32503	53396
2001	78175	34345	56260
Sub-Total	**308319**	**131017**	**219668**
2002	65951	41964	53957.5
2003	70398	31658	51028
2004	70503	38072	54287.5
2005	75498	42136	58817
Sub-Total	**282350**	**153830**	**218090**

NB: KGH/ER: Figures for OPD attendance for KGH are inclusive Emergency Room cases

TABLE A3.3: TREND OF ADMISSIONS - HFH

YEAR	ADMISSIONS					
	TOT.ADM	MAT	MALE	FEMALE	CHD	FEVERS
1998	8281	3125	1658	1294	1924	280
1999	8417	3358	1505	1255	2053	246
2000	8658	3193	1398	1217	2627	223
2001	8455	3229	1347	1290	2387	202
Sub-Total	**33811**	**12905**	**5908**	**5056**	**8991**	**951**
2002	7858	2831	1308	1330	2136	253
2003	8610	2818	1682	1631	2300	179
2004	8329	3023	1460	1586	2158	102
2005	8439	3145	1538	1638	2033	85
Sub-Total	**33236**	**11817**	**5988**	**6185**	**8627**	**619**

Key: TOT. ADM.: Total Admissions MAT.: Maternity (Ward)
CHD.: Children's (Ward)

TABLE A3.4: TREND OF ADMISSIONS - KGH

YEAR	ADMISSIONS				
	TOT ADM	MAT	MALE	FEMALE	CHD
1998	3805	733		916	
1999	3956	1428		845	
2000	4213	1577		819	
2001	4470	1609		866	
Sub-Total	**16444**	**5347**		**3446**	
2002	4738	1708	1039	986	1005
2003	4576	1766	1036	841	933
2004	4620	1920	972	860	868
2005	4976	2387	890	792	907
Sub-Total	**18910**	**7781**	**3937**	**3479**	**3713**

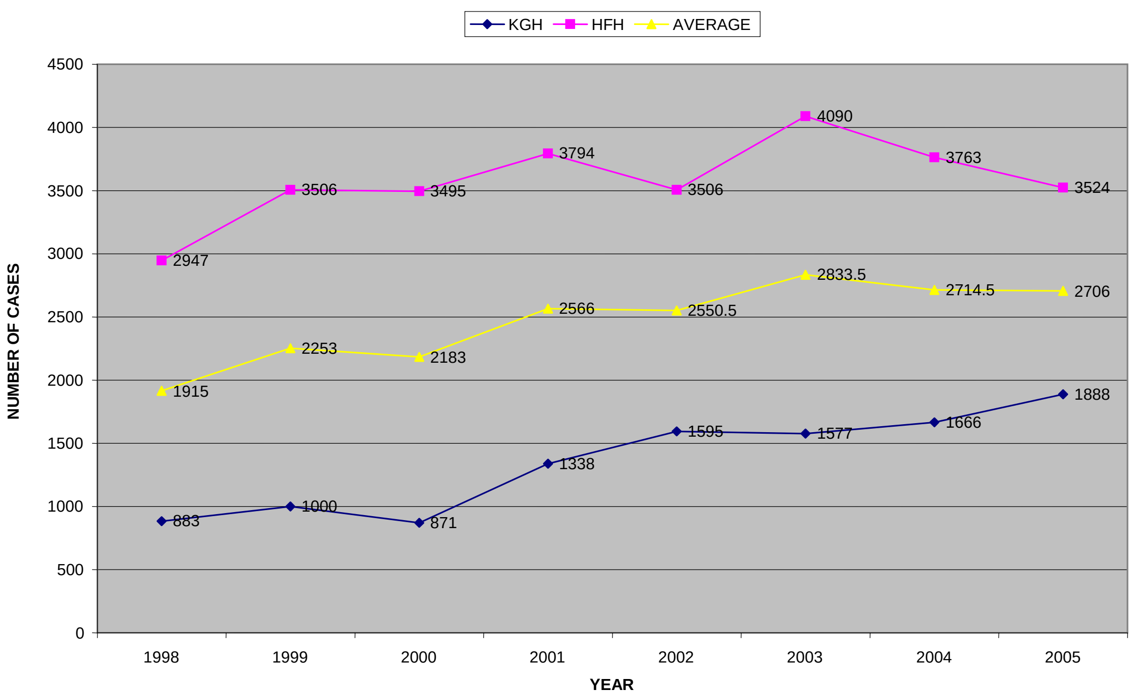


FIGURE A3.2: TREND OF UTILISATION OF X-RAY (KGH AND HFH)

LENGTH OF STAY (LOS)

TABLE A3.5: MODE OF PAYMENT OF BILLS – CAESAREAN SECTION AND VACUUM EXTRACTION

Mode of Payment	PROCEDURE	
	Vacuum Extraction	***Caesarean Section***
	Number of Clients	Number of Clients
Out of Pocket	69	189
Exemption	4	21
Insurance	4	30
Others	0	2

2: Multiple Response

TABLE A3.6: CORRELATION BETWEEN LENGTH OF STAY (LOS) AND MODE OF PAYMENT

	LOS	Out-of-pocket	Exemption	Insurance	Others (Employer)
LOS					
r	1	-0.143	-0.001	0.014	0.064
p		0.013	0.985	0.806	0.270
Out-of-Pocket					
r	-0.143	1	0.669	0.555	0.475
p	0.013		0.000	0.000	0.000
Exemption					
r	-0.001	0.669	1	0.933	0.692
p	0.985	0.000		0.000	0.000
Insurance					
r	0.014	0.555	0.933	1	0.691
p	0.806	0.000	0.000		0.000
Others (Employer)					
r	0.064	0.475	0.692	0.691	1
p	0.270	0.000	0.000	0.000	

Key:

LOS: Length of Stay r: Pearson Correlation p: Level of Significance (2-sided)

DRUG AVAILABILITY AND PRESCRIPTION PATTERN

TABLE A3.7: CORRELATION BETWEEN MODE OF PAYMENT AND PRESCRIBED DRUG (rINN, Proprietary)

	rINN	*Proprietary*	*Out-of-Pocket*	*Exemption*	*Insurance*	*Paid For*
rINN						
r	1	-0.126	-0.029	0.012	0.032	0.014
p		0.027	0.616	0.834	0.578	0.807
Proprietary						
r	-0.126	1	0.091	0.043	0.040	0.066
p	0.027		0.111	0.449	0.480	0.247
Out-of-Pocket						
r	-0.029	0.091	1	-0.046	-0.685	-0.561
p	0.616	0.111		0.420	0.000	0.000
Exemption						
r	0.012	0.043	-0.046	1	-0.101	-0.113
p	0.834	0.449	0.420		0.077	0.048
Insurance						
r	0.032	0.040	-0.685	-0.101	1	0.819
p	0.578	0.480	0.000	0.077		0.000
Paid For						
r	0.014	0.066	-0.561	-0.113	0.819	1
p	0.807	0.247	0.000	0.048	0.000	

Key:

rINN:	Recommended International Non-Proprietary Name (Generic Names)
Paid For:	Insured + Insured-in-Waiting Period + Exemption + Employer Payments
r:	Pearson Correlation
p:	Level of Significance (2-tailed)

CAESAREAN SECTION AND ASSISTED VAGINAL DELIVERY – VACUUM EXTRACTION

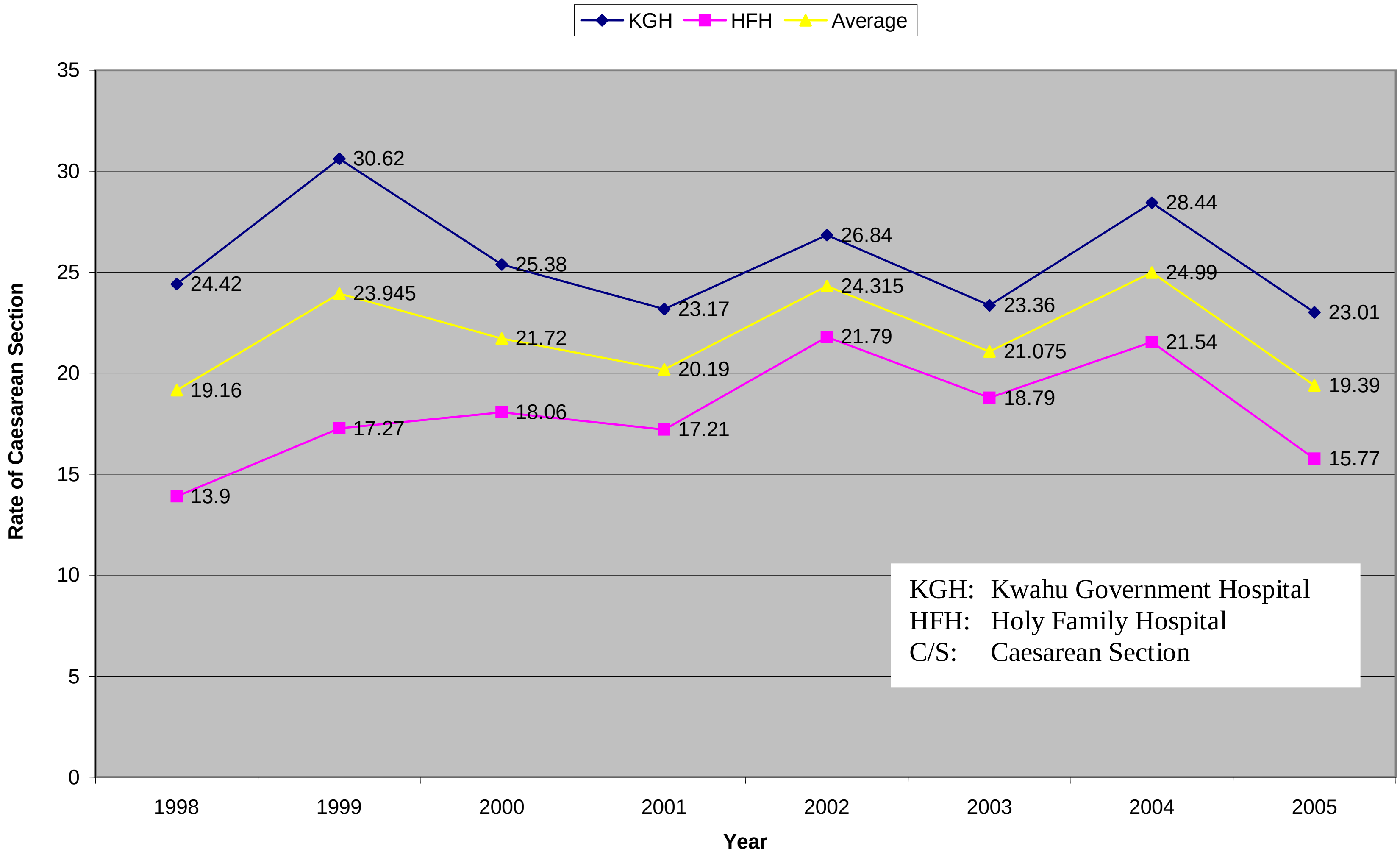


FIGURE A3.3: TREND OF THE RATE OF C/S IN KGH AND HFH

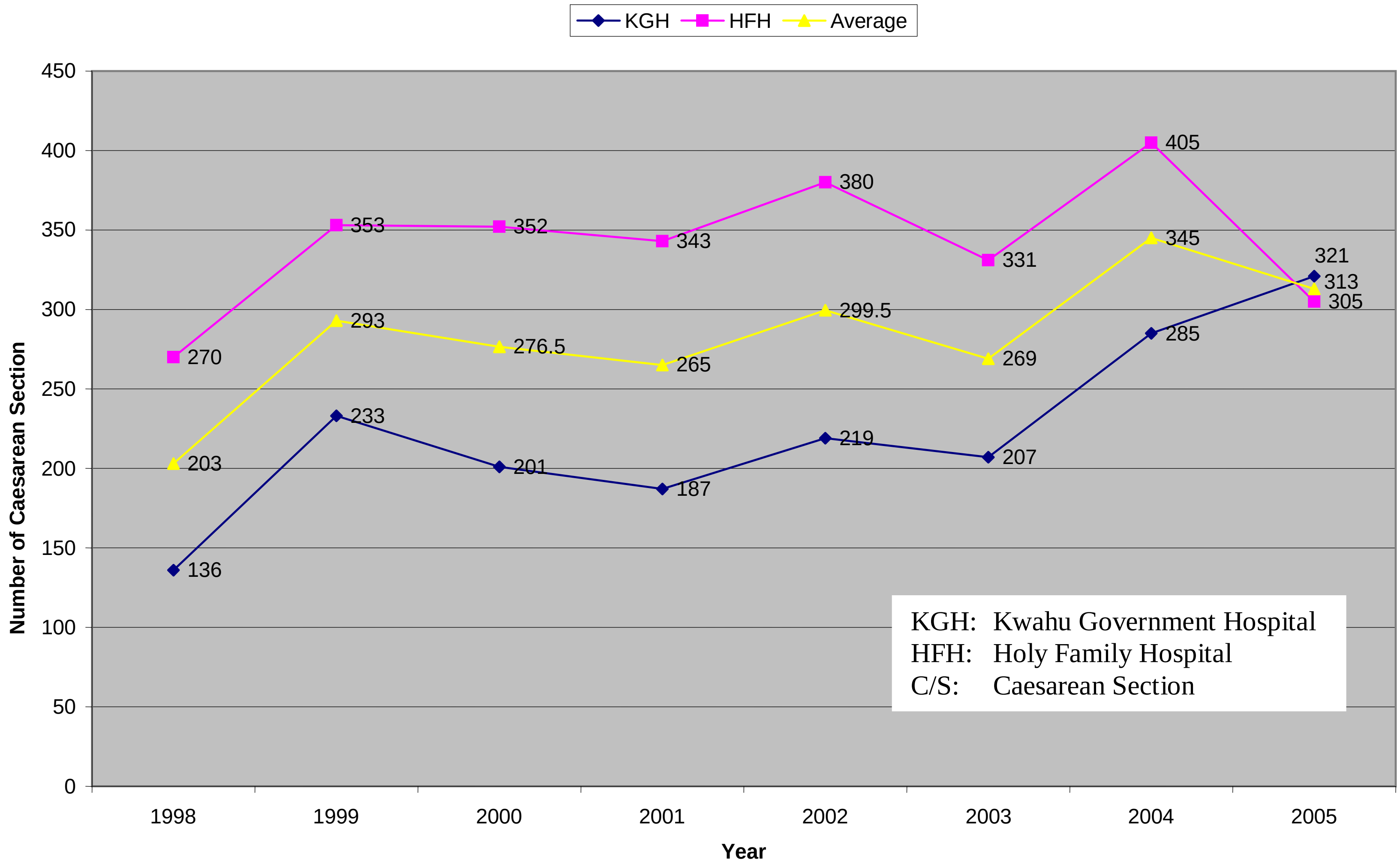


FIGURE A3.4: TREND OF THE NUMBER OF C/S IN KGH AND HFH

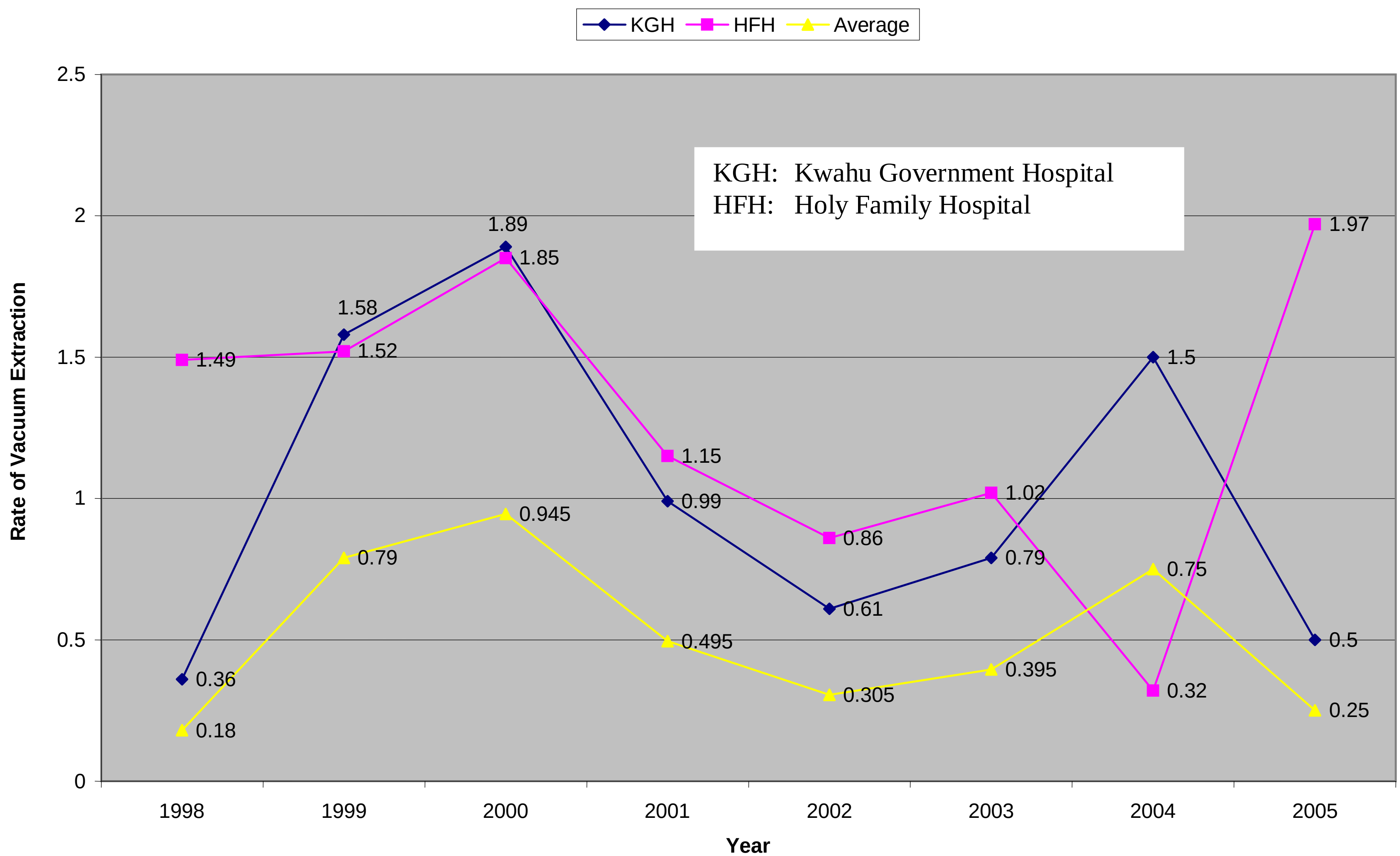


FIGURE A3.5: TREND OF VACUUM EXTRACTION RATE

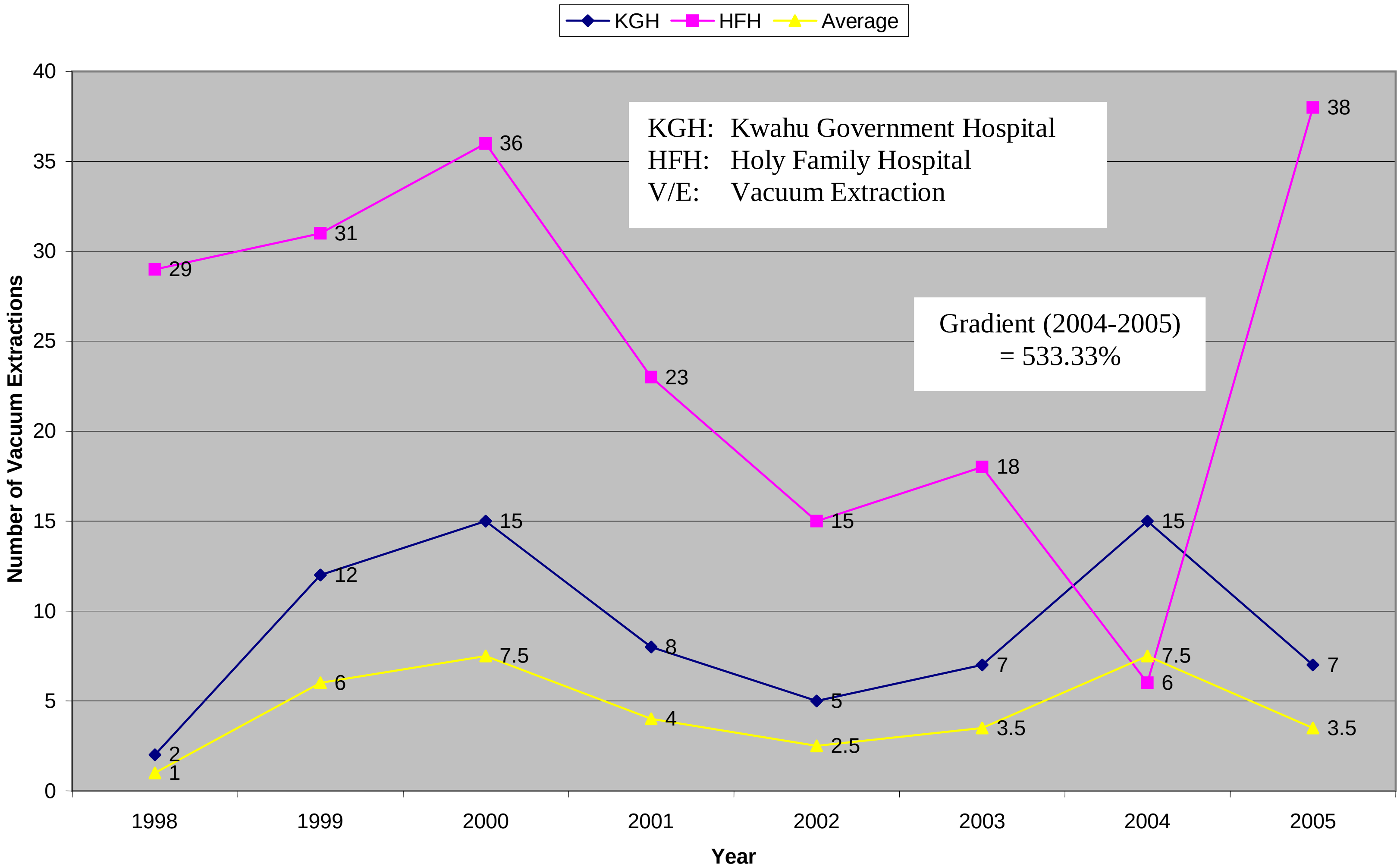


FIGURE A3.6: TREND OF THE NUMBER OF V/E IN KGH AND HFH

TABLE A3.8: INDICATIONS F0R CAESAREAN SECTION AND VACUUM EXTRACTION

CAESAREAN SECTION		**VACUUM EXTRACTION**	
DIAGNOSES / INDICATIONS [a]	NUMBER	DIAGNOSES / INDICATIONS [a]	NUMBER
Fetal Distress	54	Prolong/Delayed Second Stage of Labour	61
Cephalopelvic Disproportion	45	Fetal Distress	9
Antepartum Haemorrhage	38	Poor Uterine Contractions	2
Previous Caesarean Section	27	Eclampsia	1
Prolong Labour	19	Pregnancy Induced Hypertension	1
Eclampsia	11	Retained Twin	1
Malpresentation	8		
Delayed Second Stage of Labour	7		
Cervical Dystocia	7		
Macrosomia	7		
Retained Twin	7		
Breech Presentation	7		
Intrauterine Fetal Death	6		
Post Date	6		
Premature Rupture of Membranes	5		
Multiple Pregnancy	5		
Bad Obstetric History	4		
Cord Prolapse	4		
Failed Vacuum Extraction	3		
Failed Induction	1		
Pelvic Deformity	1		
Eminent Uterine Rupture	1		
Obstructed Labour	1		
Elderly Primip	1		

Some of the indications screened out as inappropriate: Soft Tissue Resistance (1), Pelvic Deformity (1), Cephalopelvic Disproportion (1), Post Date (1), Stillbirth (1), Intrauterine Death (2), Previous Caesarean Section (4).

a: Multiple Response

TABLE A3.9: COMPLICATIONS

CAESAREAN SECTION (14.3%)		**VACUUM EXTRACTION (31.2%)**	
Diagnoses [a]	Number	Diagnoses [a]	Number
Wound Sepsis	11	Perineal Tear	12
Post Partum Haemorrhage	7	Post Partum Haemorrhage	12
Bladder Injury	4	Multiple Vaginal Tears	2
Intra-operative Haemorrhage	4	Vesico-Vaginal Fistula	1
DIC	2	Infected Episiotomy	1
Uterine Rupture	2	Cardiopulmonary Arrest	1
Haematoma	1	Foot drop	1
Urinary Tract Infection	1	Erbs Palsy (Baby)	1
Post Spinal Headache	1		
Post Partum Eclampsia	1		
Cardiopulmonary Arrest	1		
Acute Renal Failure	1		
CCF	1		
Cellulitis of the Gluteal Region	1		
Endometritis	1		

Key:

DIC: Disseminated Intravascular Coagulation

CCF: Congestive Cardiac Failure

POC: Product of Conception

a: Multiple Responses

STILLBIRTH

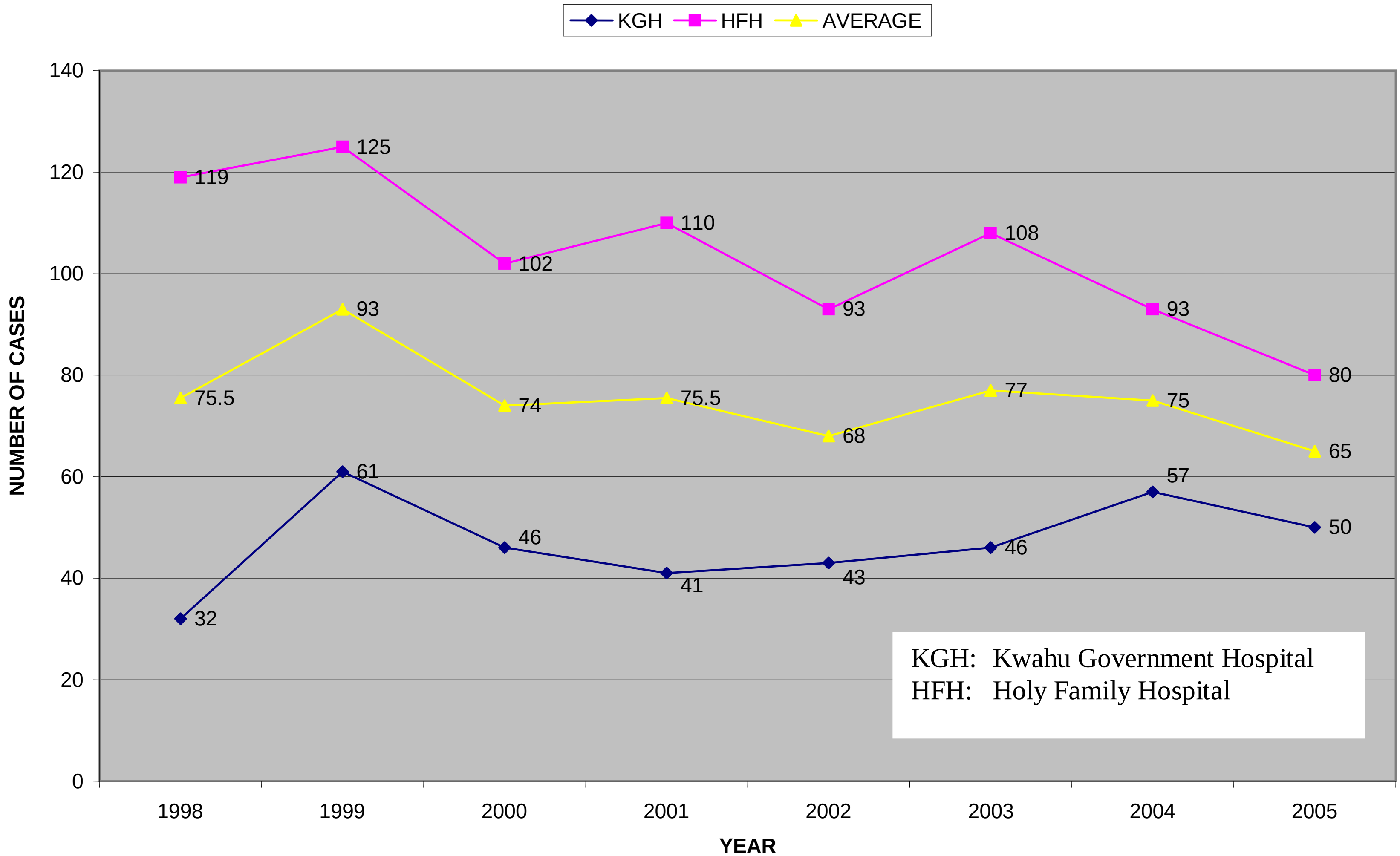
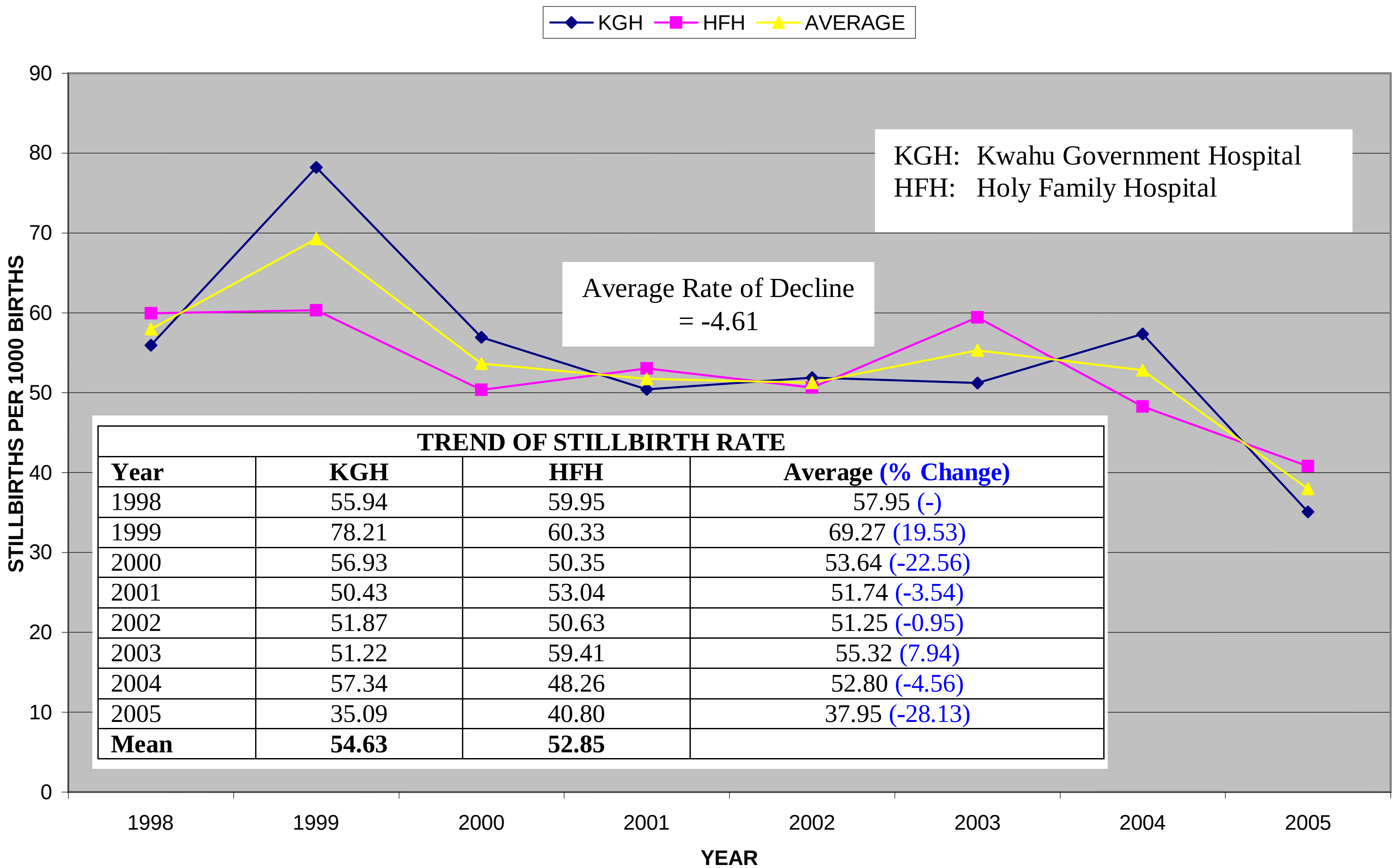


FIGURE A3.7: TREND OF STILLBIRTHS (KGH AND HFH)



TREND OF STILLBIRTH RATE			
Year	**KGH**	**HFH**	**Average (% Change)**
1998	55.94	59.95	57.95 (-)
1999	78.21	60.33	69.27 (19.53)
2000	56.93	50.35	53.64 (-22.56)
2001	50.43	53.04	51.74 (-3.54)
2002	51.87	50.63	51.25 (-0.95)
2003	51.22	59.41	55.32 (7.94)
2004	57.34	48.26	52.80 (-4.56)
2005	35.09	40.80	37.95 (-28.13)
Mean	**54.63**	**52.85**	

FIGURE A3.8: TREND OF STILLBIRTH RATE (KGH AND HFH)

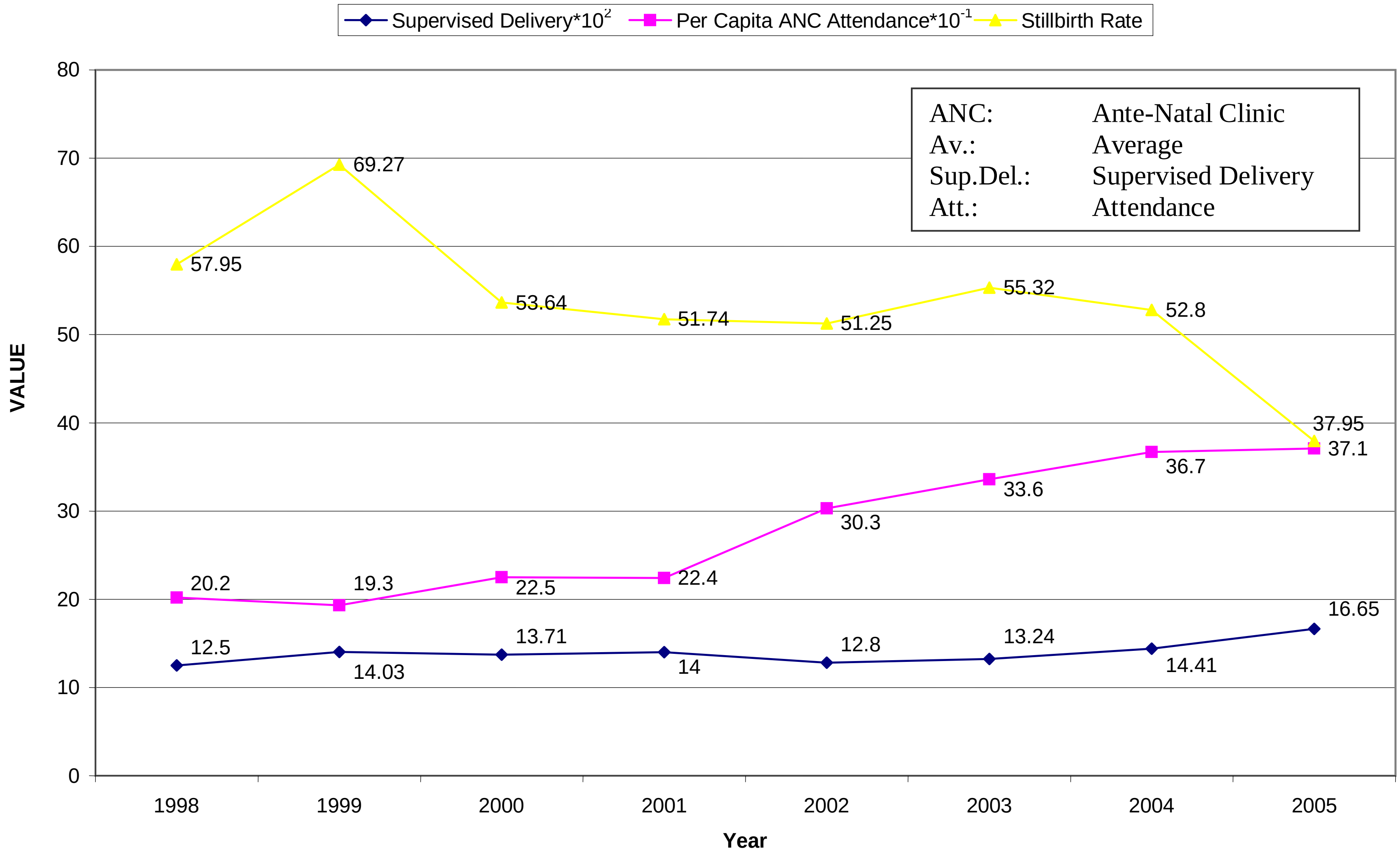


FIGURE A3.9: TREND OF AV. SUP. DEL., PER CAPITA ANC ATT., AND STILLBIRTH RATE

TABLE A3.10: DIAGNOSES AND FACTORS ASSOCIATED WITH STILL BIRTHS [a]

Diagnoses	**Frequency**	**Diagnoses**	**Frequency**
Pregnancy Induced Hypertension	29	Sickle Cell Anaemia	3
Ante-Partum Haemorrhage	26	Failed Vacuum Extraction	2
Premature Rupture of Membranes	18	Recurrent Pyelonephritis / Urinary Tract Infection	2
Cord Prolapse	15	Septicaemia	2
Malaria	10	Acute Renal Failure	1
Retained Twin	10	Breech Delivery with Transected Cord	1
Fetal Distress	9	Cardiomegaly	1
Ruptured Uterus	9	Cervical Dystocia	1
Obstructed Labour	7	Couvelaire Uterus	1
Anaemia	5	Delayed Intervention	1
Arrested After Coming Head	5	Diabetes Mellitus	1
Chorioamnionitis	5	Disseminated Intravascular Coagulation	1
Eclampsia	4	Gestational Diabetes	1
Fetal Anomaly (Anencephaly/Hydrocephalus)	4	Habitual Abortion	1
Prematurity	4	HELLP Syndrome	1
Prolong Second Stage of Labour	4	Hepatitis	1
Big Baby / Macrosomia	3	HIV/AIDS	1
Cephalo-Pelvic Disproportion	3	Home Delivery	1
Cord Around Neck	3	Incidental Haemorrhage	1
Post Date	3	Intravascular Haemorrhage	1
Malpresentation		**14**	
1) Arm Prolapse		4	
2) Footling Breech		4	
3) Breech		1	
4) Shoulder Dystocia		1	
5) Shoulder Presentation		1	
6) Face to Pubis		1	
7) Oblique Lie		1	
8) Compound Presentation		1	

a: multiple response

TABLE A3.11:DISTRIBUTION OF MODE OF DELIVERY, ASSOCIATED MEDICAL CONDITIONS AND ABNORMALITIES

Mode of Delivery			**Associated Medical Condition (3.9%)**			**Abnormalities (10.0%)**		
	n	%		n	%		n	%
Spontaneous Vaginal Delivery	159	77.9	HIV/AIDS	1	12.5	Hydrocephalus	4	57.14
Vacuum Extraction	2	1.0	Diabetes Mellitus	1	12.5	Hydrops Fetalis	1	14.29
Caesarean Section	32	15.7	Hypertension	1	12.5	One Nostril	1	14.29
Destructive Delivery	3	1.5	Myoma	1	12.5	Short Limbs	1	14.29
Laparotomy	6	2.9	Sickle Cell Anaemia	4	50			
Breech Extraction	1	0.5						
Sub-Total Hysterectomy	1	0.5						

TABLE A3.12: CHARACTERISATION OF REFERRAL STATUS, PARTOGRAPH USE AND FETAL HEART

Referral Status (38.2)			**Partograph**			**Fetal Heart**		
	n	%		n	%		n	%
From TBA	8	10.8	Used	22	10.8	Present	50	25.4
From Home	7	9.5	Not Used	182	89.2	Absent	147	74.6
Health Centre	40	54.1						
Maternity Home	19	25.7						

TABLE A3.13: COMPLICATIONS[a] AFTER STILLBIRTH

Diagnoses	**Frequency[a]**
Post Partum Haemorrhage	12
Perineal Tear	8
Puerperal Sepsis	4
Ruptured Uterus	4
Wound Sepsis	3
Post Partum Psychosis	2
Disseminated Intravascular Coagulation	2
Post Partum Eclampsia	2
Bladder Injury	2
Pregnancy Induced Hypertension	1
Foot Drop	1
Cervical Tear	1
Arrested After Coming Head	1
Acute Renal Failure	1

a: multiple response

MATERNAL MORTALITY

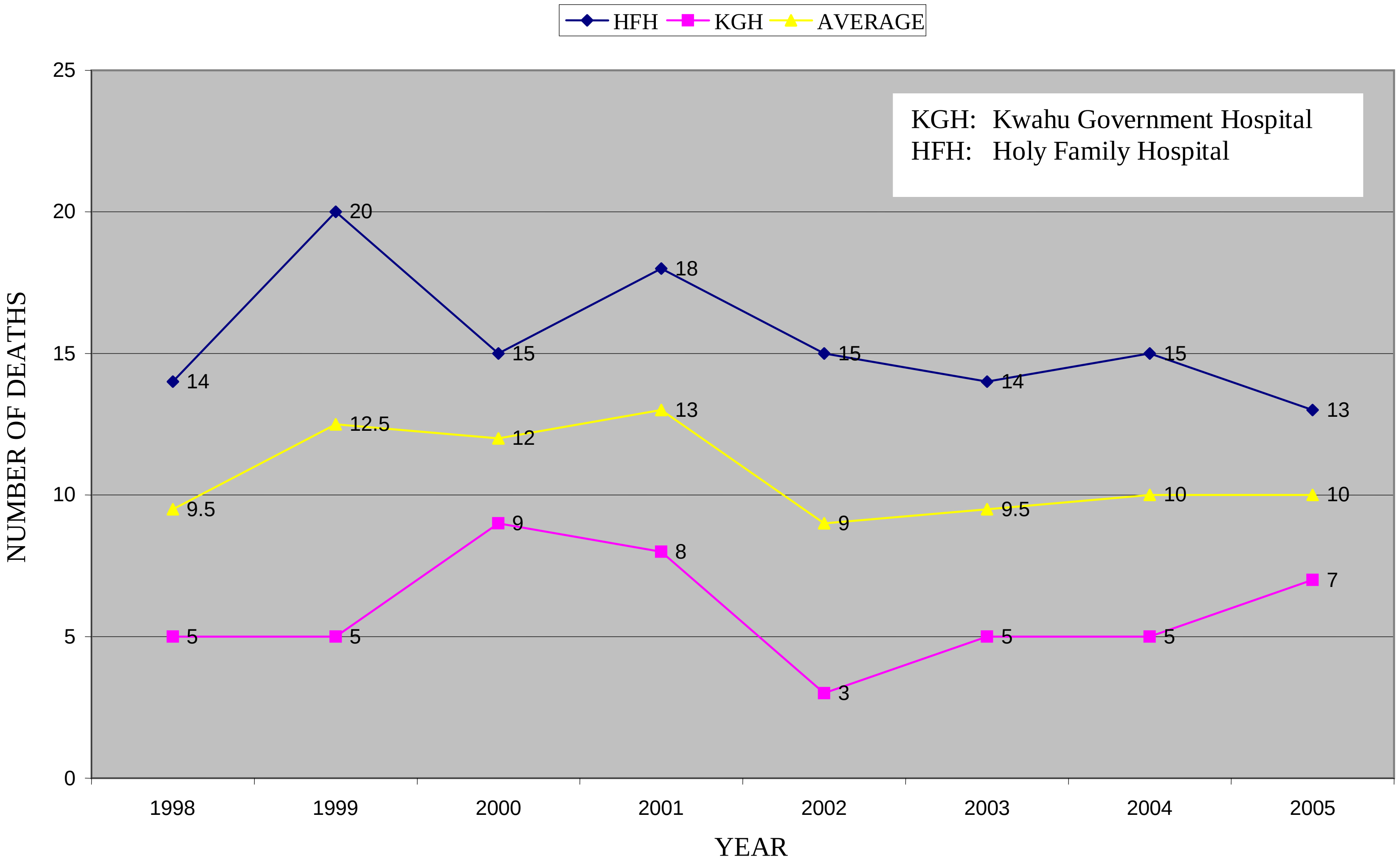
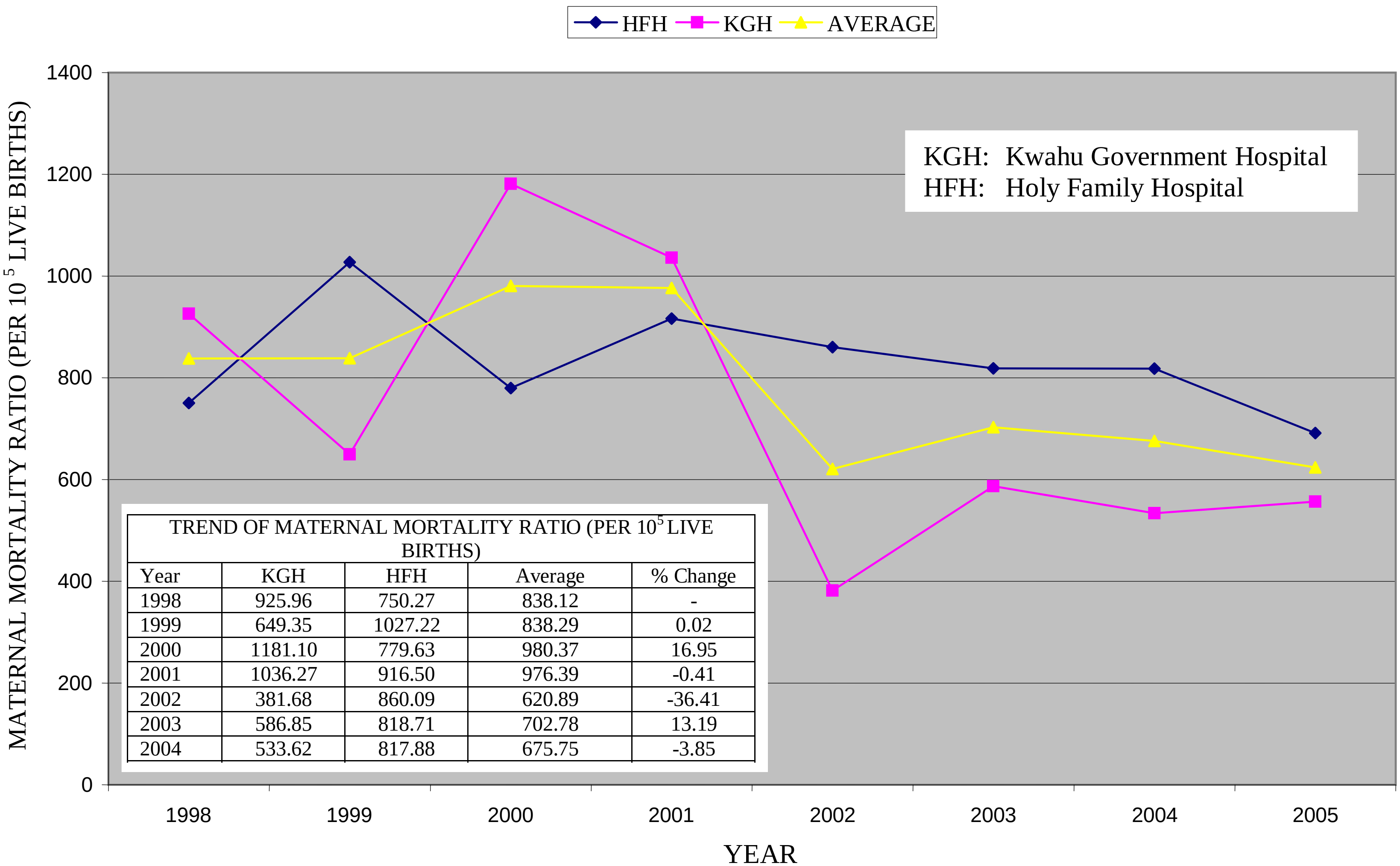


FIGURE A3.10: TREND OF MATERNAL DEATHS-HFH AND KGH



TREND OF MATERNAL MORTALITY RATIO (PER 10^{5} LIVE BIRTHS)

Year	KGH	HFH	Average	% Change
1998	925.96	750.27	838.12	-
1999	649.35	1027.22	838.29	0.02
2000	1181.10	779.63	980.37	16.95
2001	1036.27	916.50	976.39	-0.41
2002	381.68	860.09	620.89	-36.41
2003	586.85	818.71	702.78	13.19
2004	533.62	817.88	675.75	-3.85

FIGURE A3.11: TREND OF MATERNAL MORTALITY RATIOS (PER 10 ^{5} LIVE BIRTHS)-HFH AND KGH

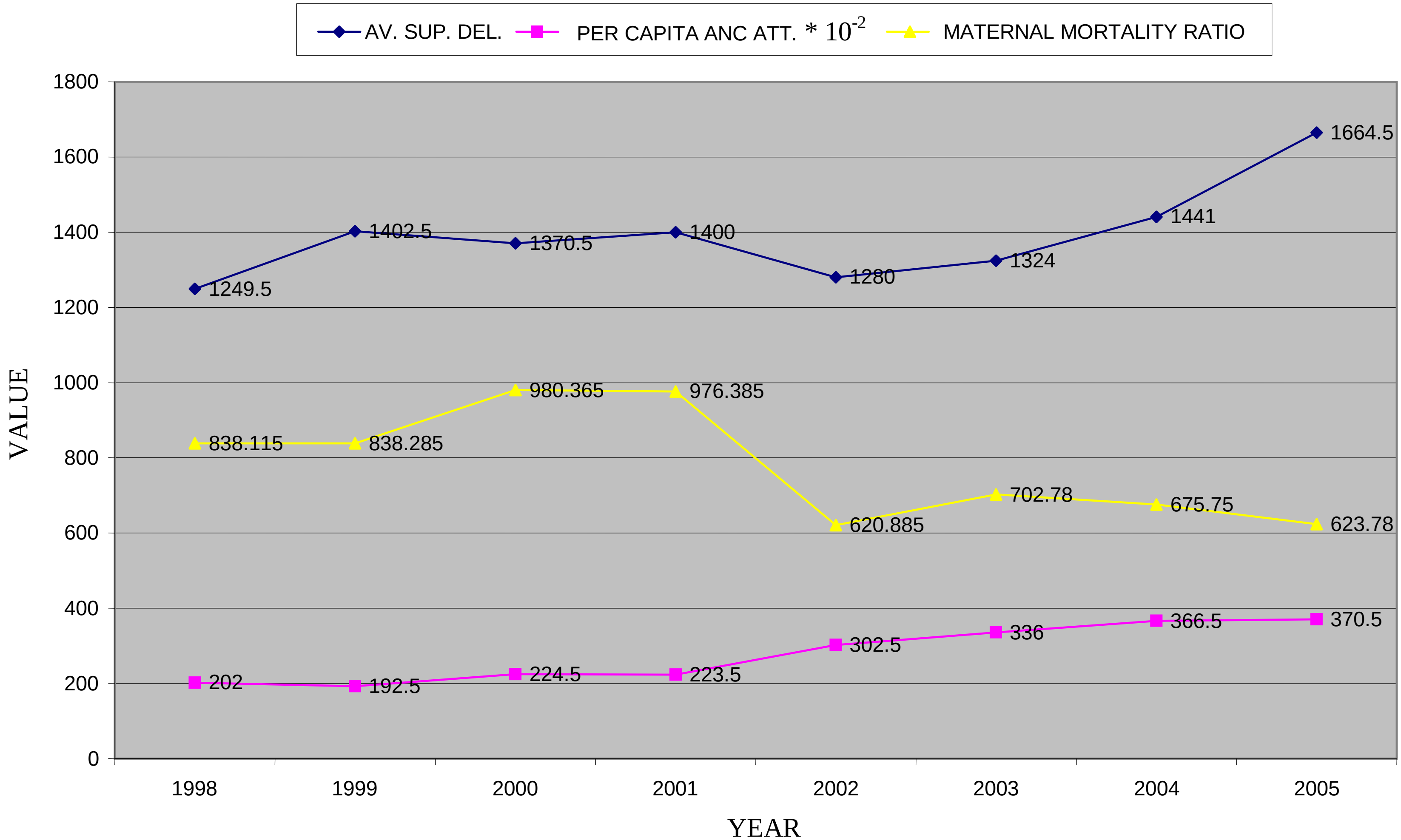


FIGURE A3.12: TREND OF AVERAGE SUPERVISED DELIVERY, PER CAPITA ANC ATTENDANCE AND MATERNAL MORTALITY RATIO

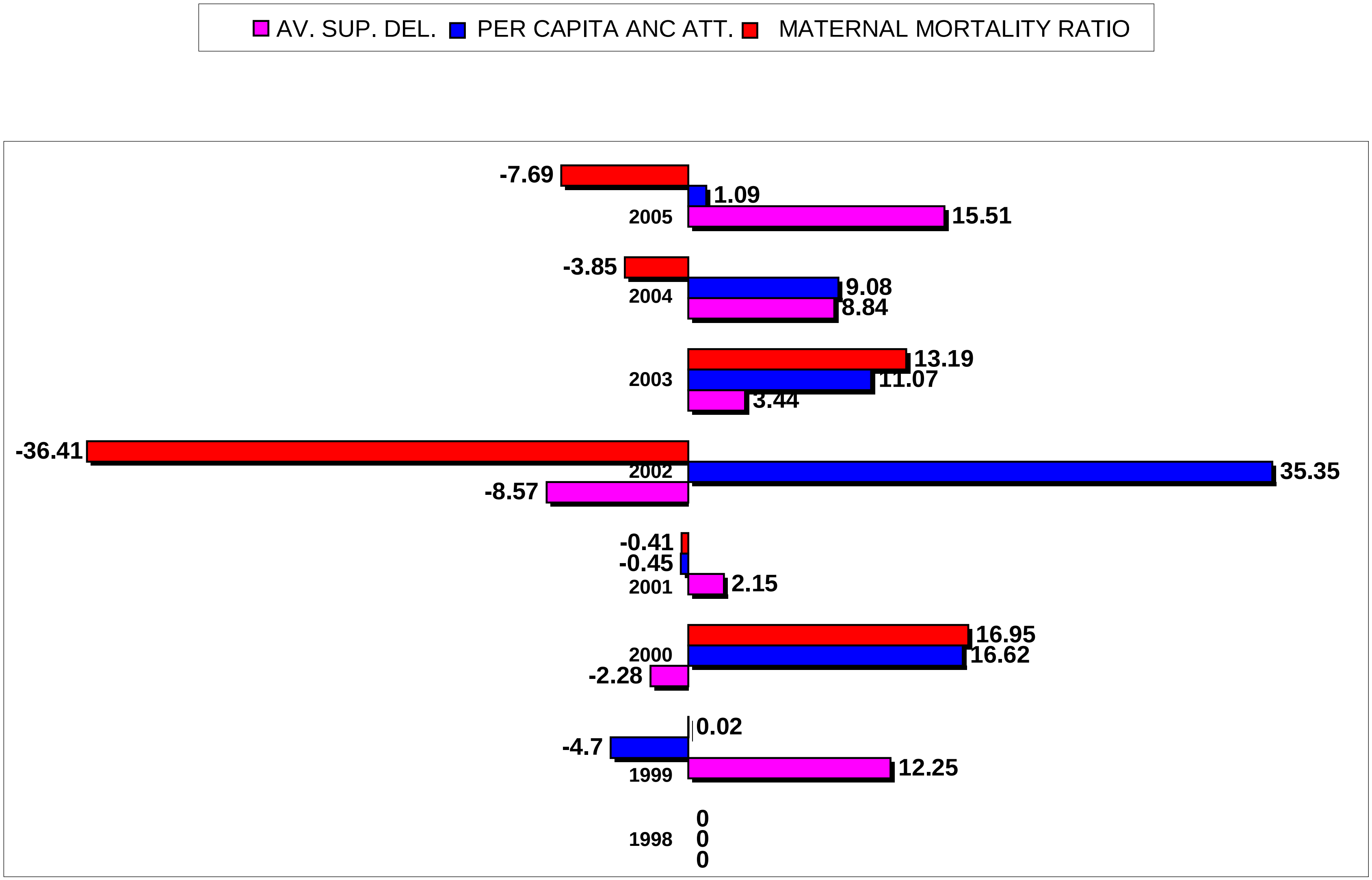


FIGURE A3.13: PERCENTAGE CHANGE OF AVERAGE SUPERVISED DELIVERY, AVERAGE PER CAPITA ANC ATTENDANCE AND AVERAGE MATERNAL MORTALITY RATIO

TABLE A3.14: RISK FACTORS, MEDICAL CONDITIONS AND COMPLICATIONS ASSOCIATED WITH MATERNAL MORTALITY (n=53)

Risk Factors (n=13; 24.53%)		**Medical Conditions (n=6; 11.32%)**		**Complications (n=26; 49.06%)**	
Variable	**Frequency [a]**	**Variable**	**Frequency (%)**	**Variable**	**Frequency [a]**
APH	3	Bronchial Asthma	1 (16.67)	Post-Partum Haemorrhage	13
Breech in Primipara	2	Diabetes Mellitus	1 (16.67)	Congestive Cardiac Failure	3
Grand Multiparity	2	HIV/AIDS	1 (16.67)	DIC	2
Threatened Abortion	2	Pulmonary Tuberculosis	1 (16.67)	Septicaemia	2
Old Age >35 yrs	2	Sickle Cell Disease (HbAS)	1 (16.67)	Acute Renal Failure	2
Teenage Pregnancy	1	Sickle Cell Anaemia (HbSC)	1 (16.67)	Perineal and Cervico-Vaginal Tear	2
Previous history of PPH	1	HELLP Syndrome: Haemolysis, Elevated Liver Enzymes, Low Prothrombin		Ruptured Uterus	1
Pelvic Deformity	1			Respiratory Distress	1
Jaundice	1			Puerperal Sepsis	1
Bronchial Asthma	1			Puerperal Psychosis	1
Pre-Eclampsia	1			HELLP Syndrome	1
Anaemia in Preg.	1			Eclampsia	1
Tranverse Lie	1			Cardiopulmonary Arrest	1
Sickling Cell Anaemia (HbSC)	1				
Pulmonary Tuberculosis	1				
Multiple Pregnancy	1				

Key: APH: Ante-Partum Haemorrhage PPH: Post-Partum Haemorrhage Anaemia in Preg.: Anaemia in Pregnancy
HIV/AIDS: Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
DIC: Disseminated Intravascular Coagulation
a: Multiple Response

APPENDIX 4

A4.0: ADDITIONAL TABLES TO SUPPORT DISCUSSION

TABLE A4.1: KNOWLEDGE OF HEALTH INSURANCE [a]

Knowledge	**No. of Responses**
For free medical treatment	254
To reduce hospital bills	21
For future events and security	9
Solves health problems	7
For emergencies	4
To help others	3
It covers dependents below 18 years	***3***
It pays for non serious conditions	2
Don't have any knowledge about health insurance	2
It is a government policy	2
Does not cover all diseases	1
NHIS clients are given preferential treatment	1
It facilitates access to medical care by the poor	1
It improves health care	1

Key: a: multiple response

TABLE A4.2: KNOWLEDGE OF EXEMPTION POLICY [b]

Knowledge	**No. of Responses**
For the treatment of the Aged (>70 years)	98
Covers children under 5 years	34
Antenatal care (ANC)	31
Covers the treatment of Tuberculosis (TB)	30
No knowledge of the policy	8
For the disabled	6
Covers the treatment of AIDS patients	4
Covers the treatment of Leprosy	4
For high government officials	2
Covers the treatment of Snake and Dog bites	2
For Paupers	2
Covers the treatment of Sicklers	1
For the treatment of formal sector workers	1

Key: b: multiple response

APPENDIX 5

A5.0: TABLES TO SUPPORT RECOMMENDATIONS

TABLE A5.1: SUGGESTIONS TOWARDS IMPROVING THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME

REASONS	**FREQUENCY** [a]
Intensify public education on the scheme	42
Scheme members should be able to access health care in any facility in the country	23
The scheme should increase it's personnel level	22
Registration should be all year round	20
The scheme should consider including all drugs	13
Registration fee should be reduced	11
All diseases should be covered in the benefit package	8
The scheme should persevere to pay all medical claims promptly	7
Revenue collectors should be well remunerated	5
The scheme should provide incentives to health workers	5
The scheme should increase the premium collected	4
Clients should be allowed to start benefiting from the scheme immediately upon registering-no waiting period	3
Timely processing of identity cards	3
Part of the premium should be use to provide drugs	2
Free registration for students	1
Abuse of the system must be check	1

a: Multiple Response

TABLE A5.2: SUGGESTIONS TOWARDS REDUCING STILL BIRTHS IN THE KWAHU DISTRICTS

REASONS	**FREQUENCY** [a]
Intensify the education of mothers on the need for ANC	50
TBA's should be given training	18
Free treatment for all pregnant women	11
Provision of health care facilities in all the villages/communities	10
Proper screening of pregnant women	9
Improve road network and surfacing	9
Expectant mothers must attend ANC regularly	9
Cases should be referred early	6
Pregnant women must join the health scheme	5
Training of more midwives	4
Mothers must be encouraged to use treated nets	4
Avoidance of the use of unapproved drugs	3
There should be community involvement in health care activities	3
Fathers should accompany expectant wives to clinic	3
Pregnant women should report any unusual sign	2
Have ANC in every village/community either static or mobile	2
Stop the use of herbal concoctions	2
Pregnant women should be educated on the progress of labour	1
The insurance package should cover pregnancy and delivery	1
A resident specialist should be provided for each district	1
Have a malaria programme running in the district	1
Proper records taking during ANC	1
Intensify outreach clinics	1
Eating of a balance diet	1
Self medication must stop	1
All primigravida must deliver at the hospital	1
Expectant mothers must get closer to a health facility as the delivery time draws closer	1

a: Multiple Response

TABLE A5.3: SUGGESTIONS TOWARDS REDUCING MATERNAL DEATHS IN THE KWAHU DISTRICTS

REASONS	**FREQUENCY [a]**
Education of expectant mothers on risky behaviour and warning signs in pregnancy should be intensified	43
Complicated cases should be referred early	14
Develop good eating habits	13
Provision of good roads to facilitate easy and quick transport of patients	12
Training of more midwives	11
Patients should be encouraged to attend ANC regularly	10
Regular training workshop for TBA's	10
Encourage the use of partographs to monitor progress of labour	9
All pregnant women should be insured	8
Communities should train health personnel for their needs by sponsoring eligible and interested persons in the community	6
Discouraging traditional beliefs that endanger the health of mothers	4
There should be enough blood at the blood bank	4
Adequately equip health facilities with logistics	3
Alcohol intake by pregnant women should be discouraged	2
Experienced health workers should man the maternity wards	2
Punish health workers whose negligence result in the death of mothers	2
An obstetrician/gynaecologist should be posted in each district	2
Health workers should upgrade their knowledge regularly	2
Encourage women to avoid unsafe abortion	1
Involvement of male partners should be encouraged	1
Multigravidae should be encouraged to practice family planning	1
High risk pregnancies should be encouraged to deliver in hospital	1
Care providers should be well equipped to manage post-partum haemorrhage	1
Free treatment for pregnant women	1

a: Multiple Response

APPENDIX 6

A6.0: STUDY INSTRUMENTS

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

QUESTIONNAIRE TO APPRAISE THE PERFORMANCE OF MUTUAL HEALTH INSURANCE SCHEMES

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

The information elicited is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: …………………………….. SERIAL NO: ………………………………

SCHEME: ……………………………………………………………………………….

DESIGNATION OF RESPONDENT: …………………………………………………….

1) Kindly state the problems or constraints you face with the implementation of the insurance scheme with regards (itemize points but can give narrative to explain point):

   i) Office Management:

……………………………………………………………………………………

……………………………………………………………………………………

   ii) Logistics:

..……………………………………………………………………………………

……………………………………………………………………………………..

   iii) Organizations' Administration/Management, Accounting, and Banking:

……………………………………………………………………………………

……………………………………………………………………………………

   iv) Premium Collection:

…………………………………………………………………………………………

…………………………………………………………………………………………

v) Claims Management:

…………………………………………………………………………………………

…………………………………………………………………………………………

vi) Other Areas Worthy of Comment:

…………………………………………………………………………………………

…………………………………………………………………………………………

2) What suggestions would you make towards improving the schemes performance in the following areas (itemize points but can give narrative to explain point):

i) Office Management:

…………………………………………………………………………………………

…………………………………………………………………………………………

ii) Logistics:

…………………………………………………………………………………………

…………………………………………………………………………………………

iii) Organizations' Administration/Management, Accounting, and Banking:

…………………………………………………………………………………………

…………………………………………………………………………………………

iv) Premium Collection:

…………………………………………………………………………………………

…………………………………………………………………………………………

v) Claims Management:

…………………………………………………………………………………………

vi) Other Areas Worthy of Comment:

…………………………………………………………………………………………

Thank you for your time.

Principal Investigator ***Mawuli Gyakobo***

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

CHECK LIST TO APPRAISE THE PERFORMANCE OF MUTUAL HEALTH INSURANCE SCHEMES

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

The information elicited is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: …………………………….. SERIAL NO: ………………………………

SCHEME: ………………………………………………………………………….

YEAR ESTABLISHED: …………………………………………………………...

YEAR OPERATIONAL: …………………………………………………………..

NUMBER OF YEARS OPERATIONAL: ………………………………………...

YEAR UNDER REVIEW: ……………………………………………………......

A) MEMBERSHIP

1) Annual number of registrants: …………………………………………….
2) Registrants in WIFA[1]: ……………………………………………………
3) District WIFA[1] population: ………………………………………………
4) District Population: ……………………………………………………...
5) Percentage Coverage of WIFA[1]: ……………………………………………...
6) Percentage Coverage of Population: ……………………………………….

B) STRUCTURE OF SCHEME

7) Registration type:
   (i) Per Person: [ ]
   (ii) Per Household: [ ]

1 WIFA: Women in Fertility Age (15 – 49 years)

8) Registration fees:

Year	Amount Paid	
	New Registrants	Old Registrants

9) Mode of payment of premium:

(i) Per Person: [ ]

(ii) Per Household: [ ]

10) Schedule of payment of premium:

(i) Monthly: [ ]

(ii) Quarterly: [ ]

(iii) Bi-annually: [ ]

(iv) Annually: [ ]

(v) Others; specify: ……………………………………………………

11) Premium Rates:

Year	Amount

12a) Any differential premium payment or special concession for special groups as shown in Q12b below: Yes [ ] No [ ]

12b) If yes; which of the following categories has the special concession:

(i) Aged; ≥ 70 years: [ ]

(ii) Under 5 years: [ ]

(iii) Maternal Care Services; including ANC, Pregnancy, Delivery, Labour, etc: [ ]

(iv) Distance from hospital: [ ]

(v) Paupers: [ ]

(vi) Others; specify: ……………………………………………………

13) If any of the above applies; please provide details:

…………………………………………………………………………………………

…………………………………………………………………………………………

14) Benefit Package of Scheme:

Benefit Package	
Before NHIS	After NHIS

C) SCHEME MANAGEMENT / PERFORMANCE

15) What is the staff strength of the scheme: ……………………………….

16) Kindly categorize the staff numbers into various groups or classes (eg Administrator 1; Secretary 2)

Category / Class	Number	Qualification/s
Total		

17ai) Do you have any special training for the personnel of the scheme?

Yes: [ ] No: [ ]

17aii) If yes; how often and which category of personnel are involved (eg claims personnel, *quarterly*; accounting personnel, *bi-annually*; etc).

……………………………………………………………………………………

……………………………………………………………………………………

17aiii) Where are the facilitators usually from (eg Headquarters, Accra; etc.)?

……………………………………………………………………………………

……………………………………………………………………………………

17aiv) What type of training sessions are these?

Structured: [ ]

Unstructured: [ ]

Others; specify: ……………………………………………………………

17b) Kindly summarize the above into the following table:

TRAINING SCHEDULE FOR THE YEAR

Date/Month/Year	Group of Personnel Trained	Number Trained	Number of Days of Training	Facilitators	Type of Training Session

18) Describe the schemes organizational structure?

………………………………………………………………………………………

………………………………………………………………………………………

19) Who are the Official Bankers of the scheme?

………………………………………………………………………………………

……………………………………………………………………………………....

20i) How often do you do Reconciliation Accounts:

(a) Monthly: [ ]

(b) Quarterly: [ ]

(c) Bi-annually: [ ]

(d) Annually: [ ]

(e) Others; specify: ……………………………………………………

20ii) Can you please provide some samples/copies of bank reconciliation statements for this year (kindly attach to questionnaire). Extract salient findings onto space below.

………………………………………………………………………………………

....

21) How many times have you been audited this year: ………………………...

22) Name of Auditors (Firm): ………………………………………………….

23) Kindly provide samples/copies of the Auditors' Report (Please attach to questionnaire). Extract salient findings onto space below.

………………………………………………………………………………………

....

24) Management of Claims.

(i) Can you kindly describe the claims management **process?**

………………………………………………………………………………………

………………………………………………………………………………………

(ii) Do you have any standard format for the submission of bills?

Yes [ ] No [ ]

(iii) If yes, what is the format and kindly provide a sample.

………………………………………………………………………………………

………………………………………………………………………………………

(iv) How do you verify the authenticity of the bills submitted (kindly describe the process).

………………………………………………………………………………………

………………………………………………………………………………………

D) FINANCE

25) Annual Income from Registration: ………………………………………...

26) Annual Income from Premium: ……………………………………………

27) Total Income from Premium & Registration: …………………………….

28) Annual Income from Donations: …………………………………………..

29) Annual Income from Investments: ……………………………………….

30) Annual Gross Total Income: ………………………………………………

31) (i) Total Annual Medical Claims: ……………………………………

(ii) Claims; Maternal Health – Pregnancy, Labour, and Puerperium:

…………………………………………………………………….

(iii) Claims; Aged ≥ 70 years: …………………………………………

(iv) Claims; Children < 5 years: ……………………………………….

(v) Other breakdown details (eg OPD and Admissions):

……………………………………………………………………………………

……………………………………………………………………………………

32) Administrative Cost (Overhead): …………………………………………

33) Annual Gross (Total) Expenditure: ………………………………………..

34) Percentage of Administrative Cost to Total Expenditure: …………………

35) Annual Surplus / Deficit: ………………………………………………..

36) Premium Income : Medical Claims Ratio: ………………………………..

37) Premium Income : Administrative Cost Ratio: …………………………….

Thank you for your time and cooperation.

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

CHECKLIST FOR ASSESSING THE UTILIZATION OF HEALTH FACILITIES

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

HEALTH FACILITY: ……………………………………………………………………..

DISTRICT: ……………………………………………………………………………

SUB-DISTRICT: ……………………………………………………………………….

YEAR UNDER REVIEW: ……………………………………………………………

DISTRICT POPULATION: …………………………………………………………..

WIFA[1] POPULATION: ……………………………………………………………..

1) Total OPD attendance: ……………………………………………………….

2a) Emergency Ward Attendance: ……………………………………………………

2b) Total Admissions (All Wards): ………………………………………………

i) Admissions for Maternity **only** (Gynaecology, Delivery / Labour, and Lying – Inn Wards): ……………………………………………………

ii) Male Surgical Ward: ……………………………………………………

iii) Male Medical Ward: …………………………………………………….

iv) Sub-Total Male Ward: …………………………………………………..

v) Female Surgical Ward: ………………………………………………….

vi) Female Medical Ward: ………………………………………………….

vii) Sub-Total Female Ward: ………………………………………………..

viii) Children's Ward: ……………………………………………………….

ix) Fevers Unit: …………………………………………………………..

3) Average Length of Hospitalization: ……………………………………………

4) Number of X-ray Examinations: ……………………………………………….

5) Number of Ultrasound Scans: ………………………………………………….

6) Total Number of Deaths: …………………………………………………..

i) Maternity **only** (Gynaecology, Delivery / Labour, and Lying – Inn Wards): ……………………………………………………………………………

ii) Male Surgical Ward: ……………………………………………………

iii) Male Medical Ward: …………………………………………………….

iv) Sub-Total Male Ward: …………………………………………………..

v) Female Surgical Ward: ………………………………………………….

vi) Female Medical Ward: ………………………………………………….

vii) Sub-Total Female Ward: ………………………………………………..

viii) Children's Ward: ………………………………………………………

ix) Fevers Unit: …………………………………………………………..

7) Total Registrants; Antenatal Clinic (ANC): …………………………………...

8) Total Attendance; Antenatal Clinic (ANC): …………………………………..

9) Average Attendance per Client (Please skip): ………………………………..

10) Total Number of Deliveries: …………………………………………………...

a) Normal Vaginal: ……………………………………………………………

i) Multiple (Twins+) Deliveries: ……………………………………

ii) Singleton Deliveries: ……………………………………………….

b) Instrumental Deliveries: ………………………………………………….

i) Vacuum Extraction: ………………………………………………..

ii) Vacuum Extraction Rate: ……………………………………………..

iii) Caesarean Section: ………………………………………………….

iv) Caesarean Section Rate: ……………………………………………

c) (i) Number of Deliveries conducted by Midwives / CHN+Midwives / PHN+Midwives and Other Trained Nurses: ……………………………….

(ii) Percentage of Deliveries conducted by Midwives: ………………...

(iii) Number of Deliveries conducted by Trained TBA's: ……………...

(iv) Percentage of deliveries conducted by Trained TBA's: …………...

(v) Number of Deliveries conducted by Medical Doctors: ……………

(vi) Percentage of Deliveries conducted by Medical Doctors: …………

11) Number of Live Births: ……………………………………………………...

12) Total Number of Births (Live and Still): ………………………………………

13) (i) Number of Still Births: …………………………………………………

(ii) Still Birth Rate: ……………………………………………………………

14) (i) Number of Maternal Deaths: ……………………………………………

(ii) Maternal Mortality Rate: …………………………………………………...

(iii)Maternal Mortality Ratio: ……………………………………………….

15) Number of Babies with Birth Weight < 2.5kg: ………………………………...

16) Percentage of Babies with Birth Weight < 2.5kg: ……………………………..

17) Total Number of Teenage Mothers (Deliveries): ……………………………….

18) Total Number of Mothers Aged 35 years and Above: …………………………

19) Total Number of Major Surgeries: ……………………………………………..

20) Percentage of Caesarean Section to Major Surgeries: …………………………

***Thank you for your time and cooperation Principal Investigator – Mawuli Gyakobo*.**

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

REGISTER OF HOSPITAL NUMBERS

VACUUM EXTRACTION

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

DISTRICT: …………… REGION: Eastern INSTITUTION: ……………

CODE: …………… SERIAL NO: …………… YEAR: …………..

Serial Numbers	**Hospital Numbers**		**Mode of Payment**			
	OPD	**IP. No.**	**Out of Pocket**	**Insurance**	**Exemption**	**Others, specify**

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TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

REGISTER OF HOSPITAL NUMBERS

CAESAREAN SECTION

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

DISTRICT: ………… REGION: Eastern INSTITUTION: …………..

CODE: …………… SERIAL NO: …………… YEAR: ……………………..

Serial Numbers	Hospital Numbers		Mode of Payment			
	OPD	IP. No.	Out of Pocket	Insurance	Exemption	Others, specify

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TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

REGISTER OF HOSPITAL NUMBERS

STILL BIRTHS

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

DISTRICT: ………… REGION: Eastern INSTITUTION: …………..

CODE: …………… SERIAL NO: …………… YEAR: ……………………..

Serial Numbers	**Hospital Numbers**		**Mode of Payment**			
	OPD	**IP. No.**	**Out of Pocket**	**Insurance**	**Exemption**	**Others, specify**

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TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

REGISTER OF HOSPITAL NUMBERS

MATERNAL MORTALITY

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

DISTRICT: ………… REGION: Eastern INSTITUTION: …………..

CODE: …………… SERIAL NO: …………… YEAR: ……………………..

Serial Numbers	**Hospital Numbers**		**Mode of Payment**			
	OPD	**IP. No.**	**Out of Pocket**	**Insurance**	**Exemption**	**Others, specify**

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

CHECK LIST FOR THE AUDIT OF INSTRUMENTAL DELIVERIES

The information elicited by this checklist is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: ……………………………… SERIAL NO: ………………………

DATE OF ADMISSION: ………………. PAT.ID.NO: ………………………..

PROCEDURE: ……………………………………………………………………..

A) PERSONAL DETAILS

1) Age: …………………..

2) Marital Status:

Single [ ] Married [ ] Separated [ ] Divorced [ ] Widow [ ]

3) Educational Level:

Nil [ ] Basic [ ] Secondary [ ] Tertiary [ ]

4) Insurance Status:

Insured	[ ]	Uninsured	[ ]
Waiting Period	[ ]	Expired	[ ]

Others; specify: ………………………………………………………

5) Occupation:

Economically Active		Economically Inactive (Unemployed)	
Professional	[ ]	Home Worker	[ ]
Technical (Artisans)	[ ]		
Administrative/Managerial	[ ]	Student/Pupil	[ ]
Civil/Public Servant	[ ]	Old Age	[ ]
Traders	[ ]	Retired/Pensioner	[ ]
Religious Leaders	[ ]	Disabled	[ ]
Agriculture	[ ]	Pauper	[ ]

Entrepreneurship / Industrialist	[ ]	Others	[ ]
Others (eg Labourers)	[ ]		

6) Place of Residence: …………………………………………………..

B) SUMMARY OF PATIENT RECORDS

7) Duration in Hospital: ……………………………………………………

8) Main Procedure: …………………………………………………………

9) Subsidiary Procedure(s): ………………………………………………...

10) Final Diagnosis: …………………………………………………………

11) Outcome of Delivery:

i) Mother: Alive: [ ] Dead: [ ]

ii) Baby: Alive: [ ] Dead: [ ]

C) ANTENATAL RECORD

12) Antenatal visits: Yes: [ ] No: [ ]

13) If yes; number of visits: ……………………………………….

14) Gestation at First Visit: ………………………………………..

15) Ultrasound scan: Yes: [ ] No: [ ]

16) If yes; number of scans: …………………………………………..

17) Maternal Weight: …………………………………………………

18) Risk Factor noticed: Yes: [ ] No: [ ]

19) If yes; list the Risk Factor(s):

…………………………………………………………………………………

20) Number of times seen by Midwife: ……………………………………..

21) Number of times seen by Doctor: ………………………………………

D) PAST OBSTETRIC HISTORY

22) Gravidity: ………………………………………………………………..

23) Parity: ……………………………………………………………………

24) Number of Abortions / Miscarriages: …………………………………...

25) Bad Obstetric History: Yes: [ ] No: [ ]

26) Characterization of previous pregnancies:

Serial Number	Maternal Age	Duration of Preg.	Complicatn. In Preg.	Complicatn. In Labour	Complicatn. In Puerp.	Birth Weight	Fetal Outcome	If Dead	
								Age at Death	Cause of Death
1									
2									
3									
4									
5									
6									
7									

E) PRESENT OBSTETRIC HISTORY

27) Gestational Age of Fetus: ………………………………………………

28) Presentation of Fetus:

i) Cephalic: [ ]

ii) Breech: [ ]

iii) Others; specify: ………………………………………………………

29) Lie of Fetus:

i) Longitudinal: [ ]

ii) Oblique: [ ]

iii) Transverse: [ ]

iv) Others; specify: ………………………………………………………

30) Fetal Heart Rate on Admission: Present: [ ] Absent: [ ]

31) If present; state the Rate: ………………………………………………

32) Cervical State:

………………………………………………………………………………

33) Nature of membranes on admission: Intact: [ ] Punctured/Broken:[ ]

34) Augmentation during Labour: Yes: [ ] No: [ ]

35) Duration in Hospital before procedure: …………………………………

36) Indication for procedure:

………………………………………………………………………………

37) Complications following procedure: Yes: [ ] No: [ ]

38) If yes; list complication(s):

………………………………………………………………………………………

39) Characterization of Labour:

Stage of Labour	Duration
1st Stage	
2nd Stage	
3rd Stage	
Total Time	

40) Use of Partograph: Yes: [ ] No: [ ]

41) Medical condition associated with pregnancy: Yes: [ ] No: [ ]
Don't Known: [ ]

42) If yes; state condition:
……………………………………………………………………………………

F) SYMPTOMS AND SIGNS DURING PREGNANCY

43) Pre-eclampsia: Yes: [ ] No: [ ]

44) Fever: Yes: [ ] No: [ ]

45) Jaundice: Yes: [ ] No: [ ]

46) Vaginal Bleed: Yes: [ ] No: [ ]

G) OTHER COMPLICATIONS OF PREGNANCY AND CHILD BIRTH

47) Complication during pregnancy: Yes: [ ] No: [ ]
Don't Know: [ ]

48) If yes; state complication(s):
……………………………………………………………………………………………

H) ASSOCIATED FACTORS

49) Source of Patient:
- i) OPD / ANC: [ ]
- ii) In-Patient: [ ]
- iii) Referred: [ ]
- iv) Others; specify: ………………………………………………..

50) If referred; point / source of referral:
- (i) TBA: [ ]
- (ii) Maternity Home: [ ]
- (iii) Clinic / Hospital (Public): [ ]
- (iv) Private Clinic / Hospital: [ ]
- (v) Home Case: [ ]
- (vi) Others (Specify): ……………………………………………

51) Type of Provider at referral point:

(i) Trained TBA: [ ]

(ii) Midwife: [ ]

(iii) Doctor(s): [ ]

(iv) Medical Assistant: [ ]

(v) Others; specify: ……………………………………………………

I) CHARACTERISTICS OF BABY

52) Birth Weight: …………………………………………………………

53) Gender: Male: [ ] Female: [ ]

54) Head Circumference: ....

55) Length: ....

56) Abnormality: Yes: [ ] No: [ ]

57) If yes; state the type: ……………………………………………………

J) INVESTIGATIIONS

58) Haemoglobin Level (g/dl): ………………………………………………

59) Fasting Blood Sugar (mmol/l): ……………………………………………

60) Other investigations; specify:

……………………………………………………………………………………

……………………………………………………………………………………

K) FINANCE

61) Mode of Payment of Bills:

(i) Out-of-Pocket [ ]

(ii) Exemption [ ]

(iii) Insurance [ ]

(iv) Others; specify: ………………………………………………

PRINCIPAL INVESTIGATOR ***MAWULI GYAKOBO.***

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

CHECK LIST FOR THE AUDIT OF STILL BIRTHS

The information elicited by this checklist is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: ……………………………… SERIAL NO: ……………………….

DATE OF ADMISSION: ………………… PAT. ID.NO: ……………………….

A) PERSONAL DETAILS

1) Mothers' Name: ………………………………………………………

2) Maternal Age: …………………..

3) Marital Status:

Single [ ] Married [ ] Separated [ ] Divorced [ ] Widow [ ]

4) Educational Level:

Nil [ ] Basic [ ] Secondary [ ] Tertiary [ ]

5) Insurance Status:

Insured	[ ]	Uninsured	[ ]
Waiting Period	[ ]	Expired	[ ]

Others; specify: ……………………………………………………….

6) Occupation:

Economically Active		Economically Inactive (Unemployed)	
Professional	[ ]	Home Worker	[ ]
Technical (Artisans)	[ ]		
Administrative/Managerial	[ ]	Student/Pupil	[ ]
Civil/Public Servant	[ ]	Old Age	[ ]
Traders	[ ]	Retired/Pensioner	[ ]
Religious Leaders	[ ]	Disabled	[ ]

Agriculture	[ ]	Pauper	[ ]
Entrepreneurship / Industrialist	[ ]	Others	[ ]
Others (eg Labourers)	[ ]		

7) Place of Residence: ………………………………

B) SUMMARY OF PATIENT RECORD

8) Duration in Hospital: ……………………………………………………

9) Final Diagnosis: ………………………………………………………

10) Procedure for Delivery:

i) Spontaneous Vaginal Delivery: [ ]

ii) Vacuum Extraction: [ ]

iii) Caesarean Section: [ ]

iv) Destructive Delivery: [ ]

v) Others; specify: ……………………………………………………

11) Outcome of Delivery:

i) Mother: Alive: [ ] Dead: [ ]

ii) Baby: Alive: [ ] Dead: [ ]

C) ANTENATAL RECORD

12) Antenatal visits: Yes: [ ] No: [ ]

13) If yes; number of visits: ……………………………………

14) Ultrasound scan: Yes: [ ] No: [ ]

15) If yes; number of scans: …………………………………..

16) Record of using Herbs/Enema: Yes: [ ] No: [ ]

17) Maternal Weight; percentile of gestational age: …………………………

18) Risk Factor noticed: Yes: [ ] No: [ ]

19) If yes; list the Risk Factor(s):

……………………………………………………………………………

20) Number of times seen by Midwife: ……………………………………

21) Number of times seen by other Nurses: …………………………………

22) Number of times seen by Obstetrician/Gynaecologist: ……………………

23) Number of times seen by other Physicians: ……………………………

D) PAST OBSTETRIC HISTORY

24) Gravidity: …………………………………………………………………..

25) Parity: ……………………………………………………………………

26) Number of Abortions / Miscarriages: ……………………………………...

27) Bad Obstetric History: Yes: [ ] No: [ ]

28) Characterization of previous pregnancies:

Serial Number	Maternal Age	Mode of Delivery	Complications at Labour	Fetal Outcome	Comments
1					
2					

E) PRESENT OBSTETRIC HISTORY

29) Gestational Age of Fetus: ………………………………………………

30) Presentation of Fetus:

i) Cephalic: [ ]

ii) Breech: [ ]

iii) Others; specify: ……………………………………………………….

31) Fetal Heart Rate on Admission: Present: [ ] Absent: [ ]

32) If present; state the Rate: ……………………………………………….

33) Cervical State:

i) Effacement: Yes: [ ] No: [ ]

ii) Dilatation: Yes: [ ] No: [ ]

iii) If dilated; by how much: ……………………………………………...

34) Nature of membranes on admission: Intact: [ ] Punctured/Broken:[ ]

35) Mode of Delivery:

(i) Vaginal [ ]

(ii) Vacuum Extraction [ ]

(iii) Caesarean Section [ ]

(iv) Destructive Delivery [ ]

(v) Others (Specify): ………………………………………………….

36) Labour Complications (List):

……………………………………………………………………………………

37) Characterization of Labour:

Stage of Labour	Duration
1st Stage	
2nd Stage	
3rd Stage	
Total Time	

38) Use of Partograph: Yes: [ ] No: [ ]

39) Medical condition associated with pregnancy: Yes: [ ] No: [ ]

40) If yes; state condition:

……………………………………………………………………………

……………………………………………………………………………

F) SYMPTOMS AND SIGNS DURING PREGNANCY

41) Pre-eclampsia: Yes: [ ] No: [ ]

42) Fever: Yes: [ ] No: [ ]

43) Jaundice: Yes: [ ] No: [ ]

44) Vaginal Bleed: Yes: [ ] No: [ ]

G) CHARACTERISTICS OF BABY

45) Birth Weight: ………………………………………………………………

46) Gender: Male: [ ] Female: [ ]

47) Head Circumference: ………………………………………………………

48) Length: …………………………………………………………………

49) Abnormality: Yes: [ ] No: [ ]

50) If yes; state the type: …………………………………………………

H) LABORATORIES

51) Haemoglobin Level (g/dl): ………………………………………………

52) Fasting Blood Sugar (mmol/l): ……………………………………………

I) FINANCE

53) Mode of Payment of Bills:

(i) Out-of-Pocket [ ]

(ii) Exemption [ ]

(iii) Insurance [ ]

(iv) Others; specify: ……………………………………………

J) MISCELLANEOUS

54) IPT administration: Yes: [ ] No: [ ] NA: [ ]

55) Referral Status:

i) From TBA: [ ]

ii) From Home: [ ]

iii) Ward Case: [ ]

iv) Others; specify: ………………………………………………

PRINCIPAL INVESTIGATOR ***MAWULI GYAKOBO.***

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

CHECK LIST FOR THE AUDIT OF MATERNAL DEATHS

The information elicited by this checklist is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: ……………………………… SERIAL NO: ……………………….

DATE OF ADMISSION: ……………….. DATE OF DEATH: ………………..

PATIENT IDENTIFICATION.NUMBER: ………………………………………..

B) PERSONAL DETAILS

1) Name: ………………………………………………………………………

2) Age: …………………..

3) Marital Status:

Single [ ] Married [ ] Separated [ ] Divorced [ ] Widow [ ]

4) Educational Level:

Nil [ ] Basic [ ] Secondary [ ] Tertiary [ ]

5) Insurance Status:

Insured	[ ]	Uninsured	[ ]
Waiting Period	[ ]	Expired	[ ]

Others; specify: …………………………………………………………

6) Occupation:

Economically Active		Economically Inactive (Unemployed)	
Professional	[ ]	Home Worker	[ ]
Technical (Artisans)	[ ]		
Administrative/Managerial	[ ]	Student/Pupil	[ ]
Civil/Public Servant	[ ]	Old Age	[ ]
Traders	[ ]	Retired/Pensioner	[ ]

Religious Leaders	[ ]	Disabled	[ ]
Agriculture	[ ]	Pauper	[ ]
Entrepreneurship / Industrialist	[ ]	Others	[ ]
Others (eg Labourers)	[ ]		

7) Place of Residence: ……………………………………………………..

B) SUMMARY OF PATIENT RECORDS

8) Duration in Hospital: ………………………………………………………

9) Final Diagnosis: ……………………………………………………………

10) Mode of Delivery:

i) Spontaneous Vaginal Delivery: [ ]

ii) Vacuum Extraction: [ ]

iii) Caesarean Section: [ ]

iv) Destructive Delivery: [ ]

v) Others; specify: ……………………………………………………

11) Outcome of Delivery:

i) Mother: Alive: [ ] Dead: [ ]

ii) Baby: Alive: [ ] Dead: [ ]

C) ANTENATAL RECORD

12) Antenatal visits: Yes: [ ] No: [ ]

13) If yes; number of visits: ……………………………………………

14) Gestation at First Visit: …………………………………………..

15) Ultrasound scan: Yes: [ ] No: [ ]

16) If yes; number of scans: ……………………………………..

17) Record of using Herbs/Enema: Yes: [ ] No: [ ]

Don't Know: [ ]

18) Maternal Weight; percentile of gestational age: …………………………

19) Risk Factor noticed: Yes: [ ] No: [ ]

20) If yes; list the Risk Factor(s):

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

……………………………………………………………………………………

21) IPT Administration: Yes: [ ] No: [ ] NA: [ ]

22) If yes; number of times: ……………………………………………………

23) T/T Administration: Yes: [ ] No: [ ]

24) If yes, number of times: ……………………………………………………

25) Number of times seen by Midwife: ……………………………………………..

26) Number of times seen by Doctor: …………………………………………

D) PAST OBSTETRIC HISTORY

27) Gravidity: ……………………………………………………………………..

28) Parity: ………………………………………………………………………

29) Number of Abortions / Miscarriages: ………………………………………...

30) Bad Obstetric History: Yes: [ ] No: [ ]

31) Characterization of previous pregnancies:

Serial Number	Maternal Age	Duration of Preg.	Complicatn. In Preg.	Complicatn. In Labour	Complicatn. In Puerp.	Birth Weight	Fetal Outcome	If Dead	
								Age at Death	Cause of Death
1									
2									
3									
4									
5									
6									
7									

E) PRESENT OBSTETRIC HISTORY

32) Gestational Age of Fetus: ………………………………………………

33) Presentation of Fetus:

i) Cephalic: [ ]

ii) Breech: [ ]

iii) Others; specify: …………………………………………………….

34) Fetal Heart Rate on Admission: Present: [ ] Absent: [ ]

35) If present; state the Rate: ……………………………………………….

36) Cervical State:

……………………………………………………………………………

37) Nature of membranes on admission: Intact: [ ] Punctured/Broken:[ ]

38) Mode of Delivery:

(i) Vaginal [ ]

(ii) Vacuum Extraction [ ]

(iii) Caesarean Section [ ]

(iv) Destructive Delivery [ ]

(v) Others (Specify): ……………………………………………….

39) Labour Complications: Yes: [ ] No: [ ]

40) If yes; list complication(s):

……………………………………………………………………………………

41) Characterization of Labour:

Stage of Labour	Duration
1st Stage	
2nd Stage	
3rd Stage	
Total Time	

42) Use of Partograph: Yes: [ ] No: [ ]

43) Medical condition associated with pregnancy: Yes: [ ] No: [ ]

Don't Known: [ ]

44) If yes; state condition:

……………………………………………………………………………………

……………………………………………………………………………………

F) SYMPTOMS AND SIGNS DURING PREGNANCY

45) Pre-eclampsia: Yes: [ ] No: [ ]

46) Fever: Yes: [ ] No: [ ]

47) Jaundice: Yes: [ ] No: [ ]

48) Vaginal Bleed: Yes: [ ] No: [ ]

G) OTHER COMPLICATIONS OF PREGNANCY AND CHILD BIRTH

49) Complication during pregnancy: Yes: [ ] No: [ ]

Don't Know: [ ]

50) If yes; state complication(s):

……………………………………………………………………………………

……………………………………………………………………………………

51) Complication during puerperium: Yes: [ ] No: [ ]

Don't Know: [ ]

52) If yes; state complication(s):

……………………………………………………………………………………

……………………………………………………………………………………

H) ASSOCIATED FACTORS

53) Was patient a referred case: Yes: [ ] No: [ ]

54) If yes; point / source of referral:

(i) TBA: [ ]

(ii) Maternity Home: [ ]

(iii) Clinic / Hospital (Public): [ ]

(iv) Private Clinic / Hospital: [ ]

(v) Home Case: [ ]

(vi) Others (Specify): ……………………………………………

55) Delivery status on arrival: Gravid: [ ] Delivered: [ ]

56) If delivered:

i) Place of Delivery: …………………………………………………

ii) How long ago was the delivery: …………………………………..

57) Type of Provider:

(i) Trained TBA: [ ]

(ii) Midwife: [ ]

(iii) Doctor(s) [ ]

(iv) Others; specify: ……………………………………………………

I) CAUSE OF DEATH

58) Immediate cause of Death: …………………………………………………

59) Place of Death: ……………………………………………………………..

60) a) Classification of Maternal Death 1 (**please skip**):

(i) Direct obstetric cause [ ]

(ii) Indirect obstetric cause [ ]

(iii) Non – obstetric cause [ ]

(iv) Unknown [ ]

b) Classification of Maternal Death 2 (**please skip**):

(i) Obstetric causes: [ ]

(ii) Associated Medical Conditions: [ ]

(iii) Incidental / Accidental causes: [ ]

(iv) Other causes: ……………………………………

61) Was autopsy performed: Yes: [ ] No: [ ]

62) If yes; state autopsy cause of death:

……………………………………………………………………………………

……………………………………………………………………………………

63) Identify other contributory factors to death:

……………………………………………………………………………………

……………………………………………………………………………………

J) CHARACTERISTICS OF BABY

64) Birth Weight: …………………………………………………………………

65) Gender: Male: [ ] Female: [ ]

66) Head Circumference: ....

67) Length: ....

68) Abnormality: Yes: [ ] No: [ ]

69) If yes; state the type: ……………………………………………………….

K) INVESTIGATIIONS

70) Haemoglobin Level (g/dl): ……………………………………………………

71) Fasting Blood Sugar (mmol/l): ………………………………………………

72) Other investigations; specify:

………………………………………………………………………………………

………………………………………………………………………………………

………………………………………………………………………………………

………………………………………………………………………………………

L) FINANCE

73) Mode of Payment of Bills:

(i) Out-of-Pocket [ ]

(ii) Exemption [ ]

(iii) Insurance [ ]

(iv) Others; specify: ………………………………………………

PRINCIPAL INVESTIGATOR ***MAWULI GYAKOBO.***

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

STRUCTURED INTERVIEW GUIDE FOR COMMUNITY SURVEY

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

*This Interview Guide is to be administered to household heads (**bread winners**). Part II will involve a group discussion of Household members.*

DISTRICT: Kwahu South REGION: Eastern

CODE: ……………………………… SERIAL NO: ……………………….

PART I

A) PERSONAL DETAILS

1) Age of Household Head: ……………………………………………..

2) Gender: Male: [ ] Female: [ ]

3) Educational Level:

Nil: [ ] Basic: [ ] Secondary: [ ] Tertiary: [ ]

4) Occupation:

Economically Active		Economically Inactive (Unemployed)	
Professional	[ ]	Home Worker	[ ]
Technical (Artisans)	[ ]		
Administrative/Managerial	[ ]	Student/Pupil	[ ]
Civil/Public Servant	[ ]	Old Age	[ ]
Traders	[ ]	Retired/Pensioner	[ ]
Religious Leaders	[ ]	Disabled	[ ]
Agriculture	[ ]	Pauper	[ ]
Entrepreneurship / Industrialist	[ ]	Others	[ ]
Others (eg Labourers)	[ ]		

5) Marital Status:

- (i) Single: [ ]
- (ii) Married: [ ]
- (iii) Separated: [ ]
- (iv) Divorced: [ ]
- (v) Widow: [ ]
- (vi) Widower: [ ]

6) Number of Children: …………………………………….

7) Household Size (**dependants**): ………………………….

8) Insurance Status:

(i)	Insured:	[ ]	(ii)	Uninsured:	[ ]
(iii)	Waiting Period:	[ ]	(iv)	Expired:	[ ]

(v) Others; specify: ……………………………………………………

B) INSURANCE

9) Have you heard about the health insurance policy? Yes: [ ] No:[ ]

10) If yes, how did you hear about it?

- (i) Friends / Relatives [ ]
- (ii) Public Announcement by local authority: [ ]
- (iii) Mass Media (TV & Radio): [ ]
- (iv) Others; specify: ……………………………….

11a) What do you know about the health insurance:

…………………………………………………………………………………

11b) (i) Consistent with policy: [ ] ***NB**: Please Skip*

(ii) Non-consistent with policy: [ ]

12) Are you and your household members insured? Yes: [ ] No:[ ]

13) What are the reasons for your choice?

…………………………………………………………………………………

…………………………………………………………………………………

14a) How many of your household members are insured? ……………………..

14b) How many were insured:

Year	**Number**
This Year	…………
Last Year	…………
Two Years Ago	…………
Three Years Ago	…………
Four Years Ago	…………

(Please record year of registration or participation each time)

14c) Why this pattern?

…………………………………………………………………………………………

15a) How will you rate the performance of the mutual health insurance schemes?

(i) Very Good: [ ]

(ii) Good: [ ]

(iii) Satisfactory: [ ]

(iv) Poor: [ ]

15b) Why this choice?

…………………………………………………………………………………

16a) Have any members of your household benefited from the health insurance policy before? Yes: [ ] No: [ ]

16b) If yes; how many times:

Year	No. of Persons	No. of Times	Total
This Year	………………	…………….	……..
Last Year	………………	…………….	……...
Two Years Ago	……………	…………….	………
Three Years Ago	…………..	…………….	………..
Four Years Ago	……………..	…………….	………..
Total	…………….	…………….	………..

(Please record year of registration or participation each time)

17) Has the health insurance affected the health of the household?

Yes: [ ] No: [ ]

18) How has it affected the health of the household?

………………………………………………………………………………………

19) How has the health insurance affected the health of pregnant women in the community?

(i) Increase in Maternal Deaths: [ ]

(ii) Decrease in Maternal Deaths: [ ]

(iii) No Change: [ ]

(iv) Others; specify: ……………………………………………………

20) Explain how it caused your choice in Q.19.

………………………………………………………………………………………

C) HEALTH SEEKING BEHAVIOUR

21) Where were you attending clinic when sick **before** the insurance?

(i) District Hospital: [ ]

(ii) CHPS/MCH/CLINIC: [ ]

(iii) Private Hospital/Clinic: [ ]

(iv) Herbalist/Traditionalist: [ ]

(v) Spiritualist: [ ]

(vi) Others; specify: …………………………

22) Where do you attend clinic now (**after** the health insurance)?

(i) District Hospital: [ ]

(ii) CHPS/MCH/CLINIC: [ ]

(iii) Private Hospital/Clinic: [ ]

(iv) Herbalist/Traditionalist: [ ]

(v) Spiritualist: [ ]

(vi) Others; specify: …………………………

23) If there is a change in health seeking behaviour, please give reasons.

……………………………………………………………………………………………

24) Do you get all your drugs from the hospital dispensary?

Yes: [ ] No: [ ]

25) Is distance a problem when attending hospital? Yes: [ ] No:[ ]

26) Is transport a problem when attending hospital?

Yes: [ ] No: [ ]

D) EXEMPTION

27) Have you heard of the exemption policy before?

Yes: [ ] No: [ ]

28) If yes; how did you hear of it?

(i) Friend/Relative: [ ]

(ii) Public announcement by local authority: [ ]

(iii) Mass Media (TV/Radio): [ ]

(iv) Others; specify: ………………………………………

29) What do you know about the exemption package?

……………………………………………………………………………………………

30) Is knowledge consistent with policy? (***NB***: *Please Skip*)

Yes: [ ] No: [ ]

31) Have you or any members of your household benefited from the exemption package before? Yes: [ ] No: [ ]

32) For what conditions were you or your dependents exempted?

……………………………………………………………………………………………

……………………………………………………………………………………………

……………………………………………………………………………………………

E) INCOME LEVEL AND SPENDING PATTERN

33) How regular is your income?

(i) Weekly: [ ]

(ii) Monthly: [ ]

(iii) Quarterly: [ ]

(iv) Bi-annually: [ ]

(v) Annually: [ ]

(vi) Others; specify: ………………………………………………

34 a) (i) What is your average income (please state per time period – eg. ¢x / month)?

…………………………………………………………………………………
…………………………………………………………………………………
…………………………………………………………………………………
…………………………………………………………………………………

(ii) Annual Income (**please skip**): …………………………………..

34 b)(ii) List in order of priority, areas you spend on most:

(a) …………………………………………………………………

(b) ………………………………………………………………….

© …………………………………………………………………

(d) ………………………………………………………………….

35) In your estimation, how much do you spend on (state per annum)?

(i) Education: ……………………………………………….

(ii) Health: …………………………………………………..

(iii) Funerals: ………………………………………………..

(iv) House Keeping – food, clothing, etc: ……………………..

(v) Others, specify: ……………………………………………

Space for rough estimation.

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………

PART II (GROUP DISCUSSION) - DEATH AUDIT THROUGH VERBAL AUTOPSY

36) Any record of pregnancy related death in last 10 years:

(i) Still Births (>28/52 gestation): Yes: [ ] No: [ ]

(ii) Maternal Deaths: Yes: [ ] No: [ ]

(Retrieve hospital Records – ANC Card or CWC Card if possible)

37) Details of pregnancy related deaths:

See next page.

DETAILS OF PREGNANCY RELATED DEATHS

S. No.	Maternal Age (a)	Gestational Age (b)	Neonatal Age (c)	Place of Death (d)	Year of Death (e)	Parity (f)	Marital Status (g)	Insurance Status at time of Death (h)	Event leading to Death (i)	Suspected Diagnosis (j)
1										
2										
3										

DETAILS OF PREGNANCY RELATED DEATHS

S. No.	Contributory factors to Death eg Transport (k)	Duration in Hospital (l)	Who attended to Client eg TBA; Mid-Wife (m)	Referred From: Yes / No (n)	ANC Attendance: Yes / No (o)	Neonatal Outcome (applicable to Mat. Deaths) (p)	Mode of Delivery (q)	Time to Closest Health Institution (r)	Any form of Delay (the 3D's) (s)
1									
2									
3									

COMMENTS ON ABOVE (IF SPACE NOT SUFFICIENT)

………

………

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………

Thank you for your time. Signature (Name of Interviewer): ……………………………………………………….

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

STRUCTURED INTERVIEW GUIDE ON THE PERFORMANCE OF THE HOSPITAL DISPENSARY (AVAILABILITY OF DRUGS)

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: …………………………….. SERIAL NO: ………………………………

B) PERSONAL DETAILS

1) Age: ………………………….

2) Gender: Male [ ] Female [ ]

3) Educational Level:
Nil [ ] Basic [ ] Secondary [ ] Tertiary [ ]

4) Marital Status:
Single [ ] Married [ ] Separated [ ] Divorced.[ ] Widow [ ]
Widower [ ]

5) Occupation:

Economically Active		Economically Inactive (Unemployed)	
Professional	[ ]	Home Worker	[ ]
Technical (Artisans)	[ ]		
Administrative/Managerial	[ ]	Student/Pupil	[ ]
Civil/Public Servant	[ ]	Old Age	[ ]
Traders	[ ]	Retired/Pensioner	[ ]
Religious Leaders	[ ]	Disabled	[ ]
Agriculture	[ ]	Pauper	[ ]
Entrepreneurship / Industrialist	[ ]	Others	[ ]
Others (eg Labourers)	[ ]		

6) District of Residence: ……………………………………………………………….

7) Insurance Status:

Insured	[ ]	Uninsured	[ ]
Waiting Period	[ ]	Expired	[ ]

Others; specify: ………………………………………………………………..

B) DRUG INFORMATION

8) Number of drugs prescribed: ……………………………………….

9) Number of drugs obtained from the hospital dispensary: …………..

10) Number of drugs unavailable: ……………………………………….

11) List of drugs unavailable:

i) ……………………………………………………………….

ii) ………………………………………………………………

iii) ……………………………………………………………..

iv) ……………………………………………………………...

12) List of drugs available:

i) ……………………………………………………………….

ii) ……………………………………………………………….

iii) ………………………………………………………………

iv) ………………………………………………………………

13) Category of unavailable drugs (**please skip**):

(a)	(i)	NHIS drug list:	[ ]
	(ii)	Non-NHIS drug list:	[ ]
(b)	(i)	EDL:	[ ]
	(ii)	Non-EDL:	[ ]

(c) (i) Drugs not in either NHIS drug list or EDL (No.): [ ]

(ii) Specify above category:

……………………………………………………………………………………

14) Category of available drugs (**please skip**):

(a) (i) NHIS drug list: [ ]

(ii) Non-NHIS drug list: [ ]

(b) (i) EDL: [ ]

(ii) Non-EDL: [ ]

(c) (i) Drugs not in either NHIS drug list or EDL (No.): [ ]

(ii) Specify above category:

……………………………………………………………………………………

……………………………………………………………………………………

15) Other categories of drug prescription (number of drugs prescribed):

(a) (i) Level A [ ]

(ii) Level B1 [ ]

(iii) Level B2 [ ]

(iv) Level C [ ]

(v) Level D [ ]

(vi) Level SD [ ]

(vii) Level PD [ ]

(b) (viii) rINN [ ]

(ix) Proprietary Names [ ]

(c) (x) Abbreviations [ ]

(xi) Unspecified [ ]

C) FINANCE

16) Mode of payment of bills:

Out-of-Pocket [ ]

Exemption [ ]

Insurance [ ]

D) PERFORMANCE GRADING

17) What is your opinion about the performance of the dispensary?

Poor [ ] Satisfactory [ ] Good [ ] Excellent [ ]

18) What are the reasons for your choice?

…………………………………………………………………..

…………………………………………………………………..

…………………………………………………………………..

…………………………………………………………………..

…………………………………………………………………..

…………………………………………………………………..

Thank you for your time and cooperation.

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA
P. O. BOX LG 13
LEGON-ACCRA
GHANA

4th September, 2006

Dear Sir/Madam,

COMPLETION OF QUESTIONNAIRE

I would be most grateful if you could complete this questionnaire expressing your candid and personal opinion with regards the questions posed. The responses will be treated with utmost confidence.

Your cooperation is so much desired as your responses would go beyond academia to foster the strengthening of the insurance schemes by the weaknesses and achievements you identify, and so much also your suggestions towards improving the scheme.

I look forward to further cooperation.

Yours sincerely,

Mawuli Gyakobo
(Principal Investigator).

SCHOOL OF PUBLIC HEALTH
COLLEGE OF HEALTH SCIENCES
UNIVERSITY OF GHANA

QUESTIONNAIRE FOR SELECTED HEALTH STAFF

TOPIC

PERFORMANCE OF THE OKWAWUMAN MUTUAL HEALTH INSURANCE SCHEME AND IMPACT ON THE UTILIZATION AND OUTCOME OF MATERNAL CARE SERVICES

The information elicited by this interview is strictly for academic purpose and will be treated confidential.

DISTRICT: Kwahu South/West REGION: Eastern

CODE: …………………………….. SERIAL NO: ………………………

A) PERSONAL DETAILS

1) Designation (Position): ……………………………………………………….
2) Address (Institution): …………………………………Tel. No: …………….
3) Age of Respondent: ………………………………………………………..
4) Gender:

   Male [ ] Female [ ]

5) Educational Level:

   Nil [ ] Basic [ ] Secondary [ ] Tertiary [ ]

6) Marital Status:

   Single [ ] Married [ ] Separated [ ] Divorced [ ]

   Widow[ ] Widower [ ]

7) Insurance Status:

   Insured [ ] Uninsured [ ]

   Waiting Period [ ] Expired [ ]

   Others; specify: …………………………………………………………..

B) PERFORMANCE OF INSURANCE; STILL BIRTHS AND MATERNAL DEATHS

8) What is your opinion on the performance of the Mutual Health Insurance Scheme in your district – achievements and shortfalls (Please itemize points. Can give a narrative of point for clarification).

i) ACHIEVEMENTS:

……………………………………………………………………………………
……………………………………………………………………………………

ii) SHORTFALLS:

……………………………………………………………………………………
……………………………………………………………………………………

9) What are your suggestions towards improving the performance of the scheme (Please itemize points. Can provide narrative for clarification).

……………………………………………………………………………………
……………………………………………………………………………………

10) What are the possible causes and factors influencing ***Still Births*** in this district (Please itemize points but can provide narrative to clarify point).

……………………………………………………………………………………
……………………………………………………………………………………

11) What are your suggestions towards reducing ***Still Births*** in the district (Please itemize points but can provide narrative for clarification of points).

……………………………………………………………………………………
……………………………………………………………………………………

12) What are the possible causes and factors influencing ***Maternal Deaths*** in this district (Please itemize points but can provide narrative to clarify point).

……………………………………………………………………………………
……………………………………………………………………………………

13) What are your suggestions towards reducing ***Maternal Deaths*** in the district (Please itemize points but can provide narrative for clarification of points).

……………………………………………………………………………………
……………………………………………………………………………………

Principal Investigator (Mawuli Gyakobo) ***Tel. No.*** ***024 4582196***