RESOURCE AVAILABILTY AND MATERNAL MORTALITY IN BUDAKA DISTRICT, UGANDA 2005-2011

A research Proposal presented to the College of Higher Degrees and Research Kampala International University Kampala, Uganda

In Partial Fulfillment of the Requirements for the Degree Master of Science in Statistics

By:

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MSTAT/33769/111/DU

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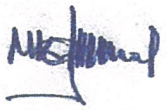

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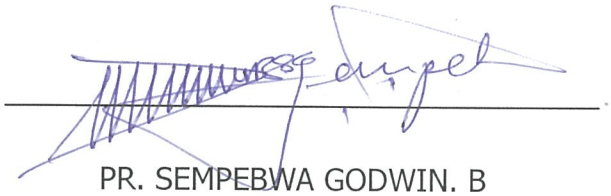

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APPROVAL SHEET

This thesis **"Resource Availability and Maternal Mortality in Budaka district Uganda"** prepared and submitted by KAWISO MARTIN WILFRED in partial fulfillment of the requirement for the degree of Master of Science in Statistics has been examined and approved by the panel on oral examination.

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DEDICATION

I dedicate this thesis to my father, Mr. John Kamiza Nganga who continuously supported me throughout my education, financially and morally; my mother Mrs. Daphne Nganga, and my wife Joanita Kirabo N. N Zewurine who have always encouraged me through their prayers, love and support.

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It was not easy coming up with this thesis without the cooperation of a large number of highly talented individuals, so it a great pleasure to thank them.

First I thank the Almighty God who has enabled me to further my academic carrier to yet another level.

My appreciation goes to my supervisors; Pr. Sempebwa Godwin B and Ms. Namata Gladys S who guided, read several chapters and made many useful suggestions for the successful design and presentation of my research.

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I appreciate the support received from my colleagues; David, Edson and John.

ABSTRACT

This study was set to investigate the relationship between resource availability and maternal mortality in Budaka District, Uganda from 2005 to 2011. The study basically examined secondary data. It was also a descriptive-correlation since it sought to examine the relationship between the independent variables (resource availability) and the dependent variable (maternal mortality). The population of this study was the records on the variables of the study from 2005 to 2011. The study targeted annual reports by the Budaka District health department and Ministry of Health. The study had three (3) objectives and these were; to investigate the level of resource availability in Budaka District, Uganda, to determine the level of maternal mortality in Budaka District, Uganda, and to establish whether there is a significant relationship between the level of resource availability and the level of maternal mortality in the following ways; skilled health personnel and maternal mortality; equipment and maternal mortality; essential supplies and maternal mortality from 2005 to 2011. The study found out that the level of level of resource availability in Budaka district was increasing over time, level of maternal mortality was decreasing over time, and that there was no significant relationship between skilled health personnel and maternal mortality thus; the null hypothesis was accepted basing on the findings, leading to a conclusion that there is no significant relationship between skilled health personnel and maternal mortality.

The researcher had a few recommendations thus; Budaka district's local government together with the central government should put efficient health systems in place that can design public policies, implement, audit and other checks and balances to ensure efficient use of public funds so as to maintain and promote a significant impact on maternal mortality and maternal health. And that Budaka district local government should have a data base system that captures information on health related issues, like births, child mortality, adult mortality (men and women aged 15 – 49), diseases and others. The central government especially ministry of health and Uganda bureau of statistics should have data broke down up to district level instead of having it by region and the whole country

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ACRONYMS

AC - Antenatal Care

CEMACH - Confidential Enquiry into Maternal and Child Health

EMOC - Emergency Obstetric Care

ETM - Epidemiological Transition or Model

HC - Health Centre

HSSP - Health Sector Strategic Program

MD - Maternal Death

MDG - Millennium Development Goals

MM - Maternal Mortality

MMR - Maternal Mortality Rates / Ratios

MOH - Ministry of Health

NDA - National Drug Authority

NICE - National Institute Excellence

PAC - Post Abortion Care

PMMN - Prevention of Maternal Mortality Network

PNFP - Private Not For Profit

TBAs - Traditional Birth Attendants

UBOS - Uganda Bureau of Statistics

UDHS - Uganda Demographic Health Surveys

UN - United Nations

UNFPA - United Nations Population Fund

UNICEF - United Nations Children's Fund

WAHO - West African Health Organization

WHO - World Health Organization

CHAPTER ONE

THE PROBLEM AND ITS SCOPE

Background of the Study

Since the late 1980s, improving maternal health and reducing maternal mortality have been key concerns of several international summits and conferences, including the United Nations Millennium Summit in 2000. One of the eight Millennium Development Goals (MDG) adopted following the Millennium Summit involves improving maternal health (MDG5). Within the MDG monitoring framework, the international community committed itself to reducing the maternal mortality ratio (MMR), and set a target of a decline of three quarters between 1990 and 2015. Thus, the MMR is a key indicator for monitoring progress towards the achievement of MDG5. However, the highest maternal mortality rates are in Africa, with a lifetime risk of 1 in 16; the lowest rates are in Western nations with a lifetime risk of 1 in 2800, with a global ratio of 400 maternal deaths per 100,000 live births.

The Government of Uganda recognizes that its population is its most valuable asset and is an integral component of the development process. The development goals are therefore geared towards the improvement of the quality of life of its population. Indeed, improving the quality of life is one of the four pillars of the Poverty Eradication Plan of the Government of Uganda. High fertility, maternal and infant morbidity and mortality, however, hamper the attainment of these goals.

The Uganda Demographic and Health Survey of 2006 revealed the fact that Uganda registered a decline in maternal mortality ratio (maternal deaths per 100,000 live births) over the past 10 years, MMR was 557 in 1995, and this declined to 505 in 2001 and to 435 in 2006. However these levels have remained high compared to those in developed countries which has been attributed to substandard health facilities, early pregnancies, illegal abortions, poor accessibility to health centres, limited qualified personnel and socio cultural factors such as use of local birth attendants and herbs

among the mothers staying in rural areas, hence resulting to childbirth and after birth complications.

Budaka district is located in the Eastern region of Uganda, was created by combing Budaka county and Kakoro, Kabwangasi, Kirika and Kadama sub-counties of Pallisa district as on 01- 07- 2005. Its Population based on the 13-09-2002 census is estimated to be * 221,525.

The World Health Organization (WHO 2008) defines "Maternal Mortality as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

Maternal death, or maternal mortality, also "obstetrical death" is the death of a woman during pregnancy or shortly after delivery or childbirth.

According to Stanley Feld (2007), resource availability is defined as "The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."

Maternal mortality therefore refers to those deaths which are caused by complications due to pregnancy or childbirth. These complications may be experienced during pregnancy or delivery itself, or may occur up to 42 days following childbirth.

Panos (2000) noted Maternal mortality as a health indicator with the most disparity between developed and developing countries, with almost all maternal deaths (95 percent) occurring in Africa and Asia (UNFPA, 2004). Sub-Sahara has the highest maternal mortality in the world, where 1 in 16 women face a lifetime risk of maternal death, compared to 1 in 55 in South East Asia, 1 in 75 in the Caribbean, 1 in 140 in South America and 1 in 4,000 in Northern Europe.

Bulatao, R.A et al (2000) estimated that Worldwide, over 500,000 women and girls die of complications related to pregnancy and childbirth each year. Over 99 percent of those deaths occur in developing countries such as Uganda. But maternal deaths only tell part of the story. For every woman or girl who dies as a result of

pregnancy-related causes, between 20 and 30 more will develop short- and long-term disabilities, such as obstetric fistula, a ruptured uterus, or pelvic inflammatory disease.

According to Hon. Dr. Mallinga, et al (2008) stated that; The geographical accessibility of households to health facilities increased from 49 percent pre HSSP to 72 percent in 2004 as a result of construction of new Health Centre (HC)-IIs. There has however, been a mismatch between construction of new health facilities and the capacity to make them functional in terms of human resources, medical equipment and operational budgets. Many Health Centres are in a sorry state, with maternities lacking water and lighting, hence inappropriate for maternal newborn health care. In most HC-IVs, the theatres are either non-existent or non-functional due to lack of equipment, staff and/or staff housing, hence intended basic surgery like; caesarean section are not carried out. Women have to travel long distances looking for these services.

Due to the low per-capita, Uganda experiences shortages of essential equipment and supplies. According to the 2004 Status of Emergency Obstetric Care (EmOC) in Uganda report, 77.5 percent of districts lacked specific signal functions for EmOC. In addition, only 31.5 percent of Health Centre-IVs and 425 of districts hospitals had oxytocics in stock, while most health units including referral hospitals had stock-outs of key antibiotics. According to the study on the functionality of HC-IVs in 2005/06, 17 percent of the HC-IVs provided blood transfusion services. In the same study, 81 percent of HCIVs had completed theatres. Of those with completed theatres 75 percent were equipped and of those equipped 34 percent were functional. Reasons for non functionality of theatres included, lack of reliable source of power, lack water and lack of facilities for blood transfusion.

The report further noted that about 15 percent of all pregnancies develop life-threatening complications and require emergency obstetric care. According to the 2004 EmOC Needs Assessment, the national met need for EmOC was 23.9 percent whereas it should be 100 percent, if all women with complications were to be treated. Approximately 11.7 percent of women give birth in fully functional comprehensive EmOC facilities as opposed to 15 percent, which is the minimum required. The nearest health facility to the community at which Basic EmOC is provided is HC III and yet, only

14.4 percent could provide this service. Comprehensive EmOC is available in 8.1 percent of the facilities, while signal functions such as use of parenteral sedatives (63.6 percent), manual removal of the placenta (62.8 percent), removal of retained products (79.8 percent) and assisted vaginal delivery (94.6 percent) are predominantly missing. These are life saving procedures, which should be available at any first referral health facility if mothers are to be saved.

Statement of the Problem

The Ugandan Government has tried to improve the geographical accessibility of households to health facilities which increased from 49 percent before HSSP to 72 percent in 2004 as a result of construction of new Health Centre (HC)-IIs.

Uganda has and continues to have high maternal mortality rate levels estimated at 505 maternal deaths per 100,000 live births. However, maternal mortality figures vary widely by source and are highly controversial; the best estimates for Uganda suggest that roughly between 6,500 and 13,500 women and girls die each year due to pregnancy-related complications. Additionally, another 130,000 to 405,000 women and girls will suffer from disabilities caused by complications during pregnancy and childbirth each year. This has only confirmed the multiple challenges facing maternity provision in the Ugandan hospitals and health centres, which is short of qualified hospital staff, medical supplies and equipment. Health units country wide lack midwives and basic equipment for expectant mothers. This has forced many mothers to deliver at the hands of unskilled/traditional birth attendants and a number of them together with their babies have died in the process.

It's therefore against this background that this study ***"resource availability and maternal mortality in Budaka district, Uganda from 2005 - 2011";*** is proposed as to ascertain the influence of resource availability to maternal mortality in Budaka district's health status. The findings for this study will help to inform stakeholders in finding out ways of reducing the gap between resource scarcity and maternal mortality/ health.

Purpose of the Study

The purpose of this study was to investigate the relationship between resource availability and maternal mortality in Budaka district, Uganda.

Research Objectives

General Objective

To investigate the relationship between resource availability and maternal mortality in Budaka district, Uganda from 2005 to 2011.

Specific Objective

1. To investigate the level of resource availability in Budaka district, Uganda from 2005 to 2011.
2. To determine the level of maternal mortality in Budaka district, Uganda.
3. To establish whether there is a significant relationship between the level of resource availability and the level of maternal mortality in the following ways;

3.1 Skilled health personnel and maternal mortality.

3.2 Equipment and maternal mortality.

3.3 Essential supplies and maternal mortality.

Research Questions

This research sought answers to the following questions constructed within the framework of the objectives;

1. What were the levels of resource availability and the level of maternal mortality in Budaka district, Uganda between 2005 and 2011?
2. What were the levels of maternal mortality in Budaka district, Uganda between 2005 and 2011?
3. What were the relationships between resource availability and maternal mortality in the following ways;

3.1 Skilled health personnel and maternal mortality.

3.2 Equipment and maternal mortality.

3.3 Essential supplies and maternal mortality.

Hypotheses of the Study

a, H_{O1}: There is no significant relationship between skilled health personnel and maternal mortality.

b, H_{A1}: There is a significant relationship between skilled health personnel and maternal mortality.

c, H_{O2}: There is no significant relationship between availability of equipment and maternal mortality.

b, H_{A2}: There is a significant relationship between equipment and maternal mortality.

d, H_{O3}: There is no significant relationship between essential supplies and maternal mortality.

e, H_{A3}: There is a significant relationship between essential supplies and maternal mortality.

Scope

Geographical scope

The study covered all the health centres of Budaka district. Budaka district is found in Eastern Uganda and was created by combing Budaka county with Kakoro, Kabwangasi, Kirika and Kadama sub-counties from Pallisa district as on 01- 07- 2005. Its Population based on the 13-09-2002 census is estimated to be * 221,525.

Theoretical Scope

The study based on the theory of Epidemiological Transition Model (ETM), as developed by Van Nort el at 1955, Kurt Mayer 1962 and Micklin 1968. The theory of epidemiological transition focuses on the complex change in patterns of health and disease and on the interactions between these patterns and their demographic, economic and sociologic determinants and consequences. (The Milbank Quarterly, 2005).

Content Scope

The content covered was basically on resource availability as the independent variable and maternal mortality as the dependent variable. Comparison was made between levels of resource availability and maternal mortality in Budaka district, Uganda.

Time Scope

The data for this study covered a period of seven years from 2005 to 2011. This time period is important since time series data will be used as an indicator for the variables under study. This provided a wide coverage hence reducing the degree of biasness in the variables under study.

Significance of the Study

Since this study was demographic and socio-economic in nature and quantitatively biased, it were to benefit stakeholders engaged interventions relating to Ministry of Health, for example both local and international private health investors within government ministries, other institutions like National Drug Authority (NDA) and researchers. It provided the access to trends and maternal deaths for the past seven (7) years and explanations in their variations, such information is of importance to other researchers, policy makers and stakeholders in planning, decision making for government, implementers and potential investors. Hence creating an informed source of information to be based on in making decisions and creating solutions to demographic and socio-economic problems that face Ugandan communities especially Budaka district.

Operational definition of key terms

Infrastructure - Is the geographical accessibility of households to health facilities.

The Referral System – Is an effective and efficient access that is a step-wise from the community to the health centers and the hospital.

Equipment – IS an instrumentality needed for an undertaking or to perform a service

Medical Equipment – Are nonexpendable articles primarily used for medical purposes in cases of illness or injury; this includes hospital beds, respirators, walkers, apnea monitors, and many others.

Essential Supplies - Are those things that satisfy the priority health care needs of the population like the functionality of theatres, reliable source of power, water and facilities for blood transfusion.

Emergency Obstetric Care (EmOC) – These are life saving procedures, which should be available at any first referral health facility if mothers are to be saved.

Antenatal Care - It is the care given to a pregnant woman, during pregnancy by skilled health personnel (excluding trained or untrained traditional birth attendants) for reasons relating to pregnancy.

Maternal Mortality - Is the death of a woman during pregnancy, childbirth or up to 42 days after delivery.

Maternal mortality ratio - Number of ***maternal deaths*** during a given time period per 100, 000 ***live births*** during the same time-period.

Maternal mortality rate - Number of ***maternal deaths*** in a given period per 1, 000 aged 15 – 49 during the same time-period.

Pregnancy-related death - The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death.

Late maternal death - The death of a woman from direct or indirect obstetric causes, more than 42 days but less than one year after termination of pregnancy.

Adult lifetime risk of maternal death - The probability of dying from a maternal cause during a woman's reproductive lifespan.

Resource Availability – The opportunity of pregnant women to use / get attended to by health staff.

Prenatal Mortality Rate - Deaths occurring during late pregnancy (at 22 completed weeks gestation and over), during childbirth and up to seven completed days of life.

Skilled Health Personnel - Refers to doctor (specialist or non-specialist), and/or persons with midwifery skills who can manage normal deliveries and diagnose or refer obstetric complications. Both trained and untrained TBAs are excluded.

Traditional Birth Attendant (TBA) - A community-based provider of care during pregnancy and childbirth.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

Concepts, Opinions, Ideas from Authors/ Experts

Maternal Mortality

Maternal death, or maternal mortality, also "obstetrical death" is the death of a woman during pregnancy or shortly after delivery or childbirth.

Maternal mortality is measured in ratios and rates; maternal mortality ratio (MMR) is defined as the number of ***maternal deaths*** during a given time period per 100 000 ***live births*** **during** the same time-period. And maternal mortality rate (MMR) is defined as the number of maternal deaths per 1,000 women aged 15 – 49 in a given period and measures a woman's risk of dying from pregnancy related causes and her risk of being pregnant at a particular period of time (Panos, 2000).

The World Health Organization (WHO 2000) defines "A Maternal Mortality as the death of a woman while pregnant or within 42 days of termination of a pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.

However, the World Health Organization estimated that a total of 536 000 maternal deaths worldwide in 2005, developing countries accounted for 99 percent (533 000) of these deaths. Slightly more than half of the maternal deaths (270 000) occurred in the sub-Saharan Africa region alone, followed by South Asia (188 000). Thus, sub-Saharan Africa and South Asia accounted for 86 percent of global maternal deaths.

In a report from the Population Action International (2002/2003) notes that for every 4 of 10 women who die of pregnancy related causes each year live in Sub-Saharan Africa, though the region only accounts for 1 in 10 of the world's women. The report goes on to reveal an average of 980 women in 45 African countries dies of maternal causes for every 100,000 births. In these countries, the maternal mortality

ratio ranges from 120 deaths per 100,000 births in Mauritius to 1,800 per 100,000 in Sierra Leone. There are at least 1,000 maternal deaths per 100,000 births in 16 countries, and in 6 of these, there are at least 1,500 per 100,000. 11 of the 16 countries have total fertility rates of 7 or more lifetime births per woman; in only 1 of the 16 are more than 10 percent of women using modern contraceptives (13 percent in Rwanda).The authors of this report note that "better access to family planning services would reduce the exposure of women to the risk of maternal death and illness, lower the number of pregnancies to high-risk women and reduce the number of unwanted pregnancies that might otherwise end in unsafe abortion."

Maternal Mortality Ratio (MMR) is mostly affecting the developing countries. 47 percent of global Maternal Mortality (MM) occurred in Africa, with the highest rate in Sub-Saharan countries. It is a great calamity and because 85 percent of all maternal deaths are direct results of complications arising during pregnancy, delivery or the puerperium. Home deliveries are over 60 percent, largely in rural areas without skilled attendant. Many organizations try to fight the plague, among which we can mention: WAHO - West African Health Organization, WHO – World Health Organization, PMMN - Prevention of Maternal Mortality Network, UNFPA – United Nations Population Fund, USAID/AWARE-RH/WARP, CEMACH -Confidential Enquiry into Maternal and Child Health (Ex CEMD & CESDI) under the umbrella of the NICE - National Institute of Clinical Excellence.

During a study by Royston in 1989, he sighted that MMR was high in ages under 20 years old mothers, it constitutes 30 percent. I agree with Royston because teenage pregnancy puts mothers at a high risk since these are usually in their adolescent periods, the poor antenatal care to mothers during their pregnancy period has exposed them to obstetric complications like abstracted labor and operative deliveries.

The fact that teenagers are so disadvantaged, they have resorted to unsafe abortions which accounts for 39 percent of maternal deaths from sepsis found 46.5 percent of the deaths occurred in rural areas, abortion due to poverty accounted for 54

percent of direct obstetric death while in Nigeria it accounted for 35 percent (Omu, 1981).

The National abortion survey report of 2005, estimated that unsafe abortion contributes about 26 percent of maternal deaths and a higher proportion of reproductive ill health. The report also gives an estimated 297,000 unsafe abortions occur every year with over half of them (55 percent) occurring among young women aged 15 to 20 years. In an environment of restrictive laws on abortion and lack of other supportive services there is a high risk of unsafe abortion with consequences of ill health and death. Approximately 15-23 percent of female youths (15-24 years of age) who had ever been pregnant have had an abortion and as many as 1,200 unsafe abortions result in death each year. Nearly a quarter (23 percent) abortions result in serious complications. While Post Abortion Care (PAC) service are supposed to be provided in HC IIIs and HC IVs, most of the health facilities require to be fully equipped to provide PAC services. Therefore for this problem to be address, Uganda should strengthen family planning services among young people and provide emergency care especially post abortion care.

Harrison K.A (1985) in his study noted that early marriage is widely spread in less developed countries for example, 70 percent of women are married before the age of 18 years in Bangladesh, women aged 10-19 years had a MMR five times higher than those aged 20-24, and those aged 15-19 their rate was twice as high as the 20-24 years old. This is because young mothers have not developed fully physically and often end up with operative deliveries; this is evidenced by 3.7 percent of mothers dying from sepsis and 16 percent dying from hemorrhage as a result of caesarean section; thus marrying at teen age means early child birth that comes with too many children.

Uganda's fertility rate as revealed by UDHS (1995) is 6.9; this ends the reproductive period of a socially disadvantaged woman. Most women regard children in big number as prestige and strengthening of marriage and males in particular as propagation or maintenance of the clan. The health facilities for the under 20 years should be provided adequately in hospitals so that delivery from the health units are normal and Antenatal care is promptly dealt with. Education should keep girls in school

until they reach a right age of getting married and by doing so it will reduce on the cases of maternal mortality.

However, the UDHS report of 1988/89 showed that fertility was highest among females aged 20-24; only complications of labor have seen mothers die at the gates of labor ward, and this age group also got involved in illegal abortion. In Royston's study of 1989, he emphasized that if the women were able to avoid unwanted pregnancies, at least a quarter of the maternal cases that occur would not be deaths. The UDHS report of 1988/89 estimated only 4 percent of rural women who are most voluble to maternal death use contraceptives. Polts in his report of 1986 recommended the need to increase public involvement in provision of family planning services especially in rural areas where maternal deaths occur farthest from institutional health care.

In their study, Alnwick et al (1985) found that 43 percent of Uganda's population lives more than 10km away from any health facility and this shows that majority of the mothers walk to the health units since there is no public transportation in rural and some urban areas is limited, this was confirmed in Adkison's study of 1989. The UDHS 1988/89 found that although 70 percent of mothers attend AC but only 30 percent delivered by doctors and the other percentage were deliveries by relatives or themselves.

G. Carroli et al 2000 in their report noted that the lifetime risk of death as a result of pregnancy or childbirth is estimated at 1 in 23 for women in some African countries, as compared with about 1 in 7,000 for women in Northern Europe. However, less reliable information exists on levels of serious morbidity related to pregnancy and childbirth, and on differentials between developed and developing countries. It is clear that those conditions can lead to maternal mortality to occur much more commonly in developing countries, and give rise to higher case fatality rates.

It is however said, in Adel A.E Kaddy et al (1989) study that caesarean section accounted for 17 percent and grand multiparty 15 percent; thus these two conditions predispose mothers to ruptured uterus and hemorrhage since health facilities attendance is poor, these conditions risk mothers who come when it is too late to save their lives and by time they reach the hospital there are high chances that blood may

not be available, 37 percent of mothers die from caesarean section associated with either sepsis or hemorrhage in Mulago.

The Draft on Human Resource Development Policy (1997), in recognition of the importance of midwives for the improvement of maternal health, their professional scope has been expanded to include responsibilities that had previously been reserved for medical doctors. Noted that the administration of intravenous fluids, prescription of antibiotics, and manual 13 removal of the placenta and use of manual vacuum aspiration machines in post-abortion management are some of the new responsibilities had been transferred to midwives. As a further stopgap measure, medical doctors and nurses or midwives are being trained in basic obstetric anaesthetic skills to increase the service coverage for obstetric emergencies in the context of a scarcity of anaesthetic personnel. However, these interventions have not been evaluated to ascertain their coverage and effectiveness.

Resource Availability

Resource Availability is the opportunity of pregnant women to use / get attended to by health staff. According to Stanley Feld (2007), resource availability is defined as "The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge."

Lori Bollinger et al (2004) found out that hospitals were being utilized for routine care quite frequently, despite the large numbers of Health Centre IIIs (789) and IVs (159) as compared to hospitals (105). Hospitals are providing the most normal delivery care, compared to Health Centre IIIs and Health Centre IVs, and are providing more antenatal care and family planning services than Health Centre IVs. This can be explained by the low levels of functionality of Health Centre IIIs and IVs in providing basic health services.

Skilled Health Personnel

The cornerstone in the implementation of safe motherhood is midwifery skills. According to a joint statement by WHO, UNFPA, UNICEF and World Bank, skilled attendance at birth is the most effective way of ensuring that women get proper assistance when facing the unpredictable risk of pregnancy complications. Coupled with access to referral care and fertility regulation, skilled attendance at birth would lead to a substantial reduction in the number of maternal deaths.

The Ministry of finance, planning and economic development (1999), indicated that there is a general shortage of human resources, but disaggregating these numbers also showed that there is an inequitable distribution of personnel between districts and between urban and rural settings. Over 80 percent of doctors and 60 percent of midwives and nurses are located in hospitals, which mostly serve urban populations. Such discrepancies may be difficult to overcome, as poor rural districts have the least capacity to provide additional incentives to attract personnel.

Equipment

These are instrumentalities needed for an undertaking or to perform a service; Medical Equipment are those nonexpendable articles primarily used for medical purposes in cases of illness or injury; this includes hospital beds, respirators, walkers, and apnea monitors.

Essential Supplies

These are things that satisfy the priority health care needs of the population like the functionality of theatres, reliable source of power, water and facilities for blood transfusion.

Theoretical perspective

The study based on the theory of epidemiological transition or model (ETM), as developed by Van Nort and Karon 1955; Kurt Mayer 1962; Micklin 1968. The theory of epidemiological transition focuses on the complex change in patterns of health and disease and on the interactions between these patterns and their demographic, economic and sociologic determinants and consequences. (The Milbank Quarterly, 2005). Mayer K, (1962) stated that "Any meaningful interpretation of the cause and effects of population changes must extend beyond formal statistical measurement of the components of change, i.e. fertility, mortality and migration.

Related Studies

Skilled Health Personnel and Maternal Mortality

The United Nations Millennium Summit (2000) noted that there was poor attitude of health workers towards their patients, as a result of low logistical support and motivation.

Emergency obstetric care (EmOC) facilities that provide basic emergency Obstetric care for women with pregnancy –related complications should provide a set of interventions called signal functions. The six basic signal functions are the administration of parenteral antibiotics, oxytoctic drugs, and anticonvulsants, the manual removal of the placenta, manual vacuum aspiration of retained products of conception, and assisted vaginal delivery.

Amandua (2001) estimated that about 60 percent of the annual output of nurses and midwives are trained in schools affiliated to PNFP hospitals. However, trained staff may lack the competence to handle common emergencies. For example, medical doctors leaving medical school can choose to not complete an Obstetrics and Gynaecology rotation during internship, despite obstetric complications being the most common emergency faced in medical practice. Lack of competence in handling obstetric emergencies has been perceived as unacceptable luxury for Ugandan doctors and nurses. Comprehensive training schools have been established in the last 5 years to

train Comprehensive Nurses; a cadre that will have both general nursing and midwifery skills.

Equipment and Maternal Mortality

Given the high rate of maternal death due to abortion, some countries, such as South Africa, Tunisia, and Cape Verde, are recognizing the importance of developing wider access to safe abortions. In countries such as Mali, Sudan, Benin, and Burkina Faso, where legally, politically, and culturally access to abortion creates internal dispute, governments have allowed women access to safe abortions under specific circumstances, such as in cases of rape or fetal malformation. There are still some countries where women's access to safe abortions is nonexistent and medical communities face resistance when advocating policy change. Women who seek help may be ostracized.

Following the Safe Motherhood Conference, a key action point was improving antepartum care in order to identify high-risk pregnancies. Although it seems logical that it should be a core component to maternal health, programme evaluations demonstrate that antepartum care shows little impact on reducing maternal mortality. Screening tests during the antenatal period were found to be inefficient and to overwhelm referral health centers. Also, women offered free antenatal care did not necessarily use it because they felt that they were well and did not need to see a healthcare provider. This does not disprove the need for antepartum care or its importance, but rather indicates that resources might be allocated elsewhere to make a greater impact on maternal mortality.

Essential Supplies and Maternal Mortality

The presence of low logistical support and motivation to health workers as noted during the United Nations Millennium Summit (2000) led to a poor attitude of health workers towards their patients, and this has resulted to mothers dying during pregnancy, childbirth and after childbirth.

Donors, UN organizations, and governments have made great strides in promoting family planning and contraceptive use. Due to this effort, millions of maternal deaths have been prevented. However, contraceptive use in many resources - poor Nations is still not at optimal levels. The overall lack of contraceptive access rate is 50 percent, with a low of 4 percent in Europe and high of 57 percent in countries in Africa. This lack of access to contraception leads to unwanted pregnancies, increased demand for abortions, and deaths related to unsafe abortions. Measuring maternal mortality requires that the mother be pregnant, so prevention of pregnancy makes it difficult to quantify how many deaths have been prevented. Nevertheless, if unwanted pregnancies are prevented, data suggest that between 25 percent and 40 percent of maternal deaths could be eliminated.

CHAPTER THREE

METHODOLOGY

Research Design

Quantitative design sampling techniques such as simple random sampling, systematic random sampling and stratified random sampling techniques were not adopted since secondary data was used. Tests to check for the problems of autocorrelation, multi co-linearity tests and F-test for every variable were made. Regression models were developed to establish the direction of the relationship between the variables. Quantitative data was generated from secondary sources that enabled a comparative assessment on the quantifiable elements related to Resource Availability and Maternal Mortality. However, the study was quantitatively biased though qualitative techniques could not be fully ignored.

Research Population

The population under study was women and girls in the reproductive age 15-49 years records on resource availability and maternal mortality of all the health centres (13) were investigated. The study focused on the three distinct resource availability channels like skilled health personnel, equipment and essential supplies. It was on these focused areas that the relationship between resource availability and maternal mortality was studied. The researcher visited organizations which are partners in maternal health to capture information from experienced senior officials on their experiences in working with those agencies; these included Uganda Bureau of Statistics (UBOS), Ministry of Health, and Budaka district health officer (Dr. Sam). Their records on resource availability and maternal mortality were studied and data has been used in the study.

Target population

The study targeted women and girls in the reproductive age 15-49 years. The computed annual maternal mortality deaths, annual resources availability in Budaka district over the years were reviewed. The study enlisted three different forms of resource availability. First were the skilled health personnel who have been trained and enhanced with Uganda's health sector. The second group was equipment which is basically financed by government and finally essential supplies which are important in quality service delivery.

Sample Size

Using the Slovene's formula to compute the sample size (n);

Sample size **n;** would then be got by $n = \frac{N}{1+(N*e^2)}$, but since I will be reviewing already existing data (secondary source); the sample size n was not needed, records for all the health centres were used from 2005 up to 2011 which covered a period of seven (7) years and these were obtained from the district health records.

Sampling Procedure

This study adopted no sampling procedure, given the fact that data records on resource availability and maternal mortality for all the health centres from 2005 to 2011 were utilized in the analysis.

Research Instrument

Time series and cross sectional data for this study was collected from secondary sources (documents and records were reviewed). Data was recorded in the record sheets which were designed to suit the data required to attain the stated objectives of this study.

Document review

This involved collection, studying and analyzing of existing written government records like; Ministry of Health (published and unpublished) material. Documents that were reviewed included official institutional publications, semi autonomous body's reports, statistics and figures, development reports, international agencies publications like WHO, World Bank, UNICEF, PMMN, CEMACH, NICE reports, Published articles in journals, and news paper reports.

Data Gathering Procedures

Started with obtaining a letter that introduced me to the organizations from which data was collected, I was accepted and allowed to carry out the study in these organizations. This was followed by desk research of reviewing their publications; repots, journals and all related literature that enabled me obtain the required data. The data was organized in record sheets and entered into the computer for analysis.

Data Analysis

The collected data was edited, categorized and entered into a computer data base system for analysis, GENSTAT (Excel) and STATA were used to do descriptive statistics in form of tables like; percentage distributions were drawn to determine the level of resource availability and maternal mortality, line graph.

Regression analysis both at bivariate and at multivariate levels were conducted, correlation and muliticolinearity between the variables were also be determined. The data was analyzed to establish the multiple linear relationships between the dependent and independent variables and other statistics at multivariate level. The formula that exhibited this relationship was represented by;

$$y = \alpha + \beta 1x1 + \beta_2 x_2 + \varepsilon_i$$

The H_o: $\beta_1 = \beta_2 = 0$. The null hypothesis is that all βs are equal to zero (0) and

The H_A: is that at least one of the βs is not equal to zero (0); H_A: $\beta_i \neq 0$,

F - test was computed, $f = \frac{MS\,model}{MS\,residual}$

If f is not significant, it means that none of resources influence maternal mortality. Then individual tests were done to check which of the resources is stronger in the model. The Pearson's coefficient of correlation and the student's t test statistic was computed to determine the strength of the relationship. The Pearson's coefficient of correlation, r formula is given below

$$r = \frac{n\Sigma xy - (\Sigma x)(\Sigma y)}{\sqrt{[n(\Sigma x^2) - (\Sigma x)^2][n(\Sigma y^2) - (\Sigma y)^2]}}$$

and the student's t test statistic is,

$$t = \frac{r\sqrt{\frac{n-2}{1-r^2}}}{}$$

Where, r^2 is the coefficient of determination.

Ethical Considerations

The principles underlying research ethics are paramount and concern issues such as confidentiality, honesty and respect for individual rights. Welmer, Kruger and Mitchell (2000:201) identify consent, right of privacy, protection from harm and deception as ethical problems that require serious consideration by researchers. Ethical standards in this study were assured. Some sources of data preferred to with hold their identity, and only designations were used in the citation of their contributions, use of officially publicized data by reputable local and international agencies, voluntary participation of the respondents, guaranteeing confidentiality on information given by the respondents, and reporting study findings basing on the data collected and analyzed using appropriate techniques.

Limitations of the Study

The study met the following threats; the data required was very scattered so it required extensive reading and comparison from various records and publications.
The fact that secondary data was used, this had its own short comings like problems of retrieval, display of author subjectivity, limitation of its accessibility, which led to uncompleted information. However the researcher tried to minimize the bias by considering seven (7) years which was quite a long period of time and through comparing the data published by different organizations at different time periods.

In view of the above threats to validity, the researcher claimed an allowable 5 percent margin of error at; 0.05 level of significance.

CHAPTER FOUR

PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA

Skilled health personnel, equipment and essential supplies in Budaka HCs from 1999 – 2010

The first objective in this study was to investigate the level of resource availability in Budaka, district Uganda from 1999 to 2010; but according to the data collected, only data from 2005 to 2011 was available therefore the reference period changed from 1999 to 2010; to a new one of 2005 to 2011.

TABLE 1

LEVEL OF RESOURCE AVAILABILITY IN BUDAKA DISTRICT, UGANDA FROM 2005 -2011

Health Centre Type	Health Centres			Skilled Health Personnel		
	Required	Available	-/+	Required	Available	-/+
IV - Referral Level	1	1	0	42	38	- 4
III - S/C Level (13)	13	9	- 4	221	80	- 141
II - Parish Level (58)	58	3	- 55	464	10	- 454
Total	**72**	**13**	**- 59**	**727**	**128**	**- 599**
PERCENTAGE LEVEL		**18.06**		**17.61**		

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

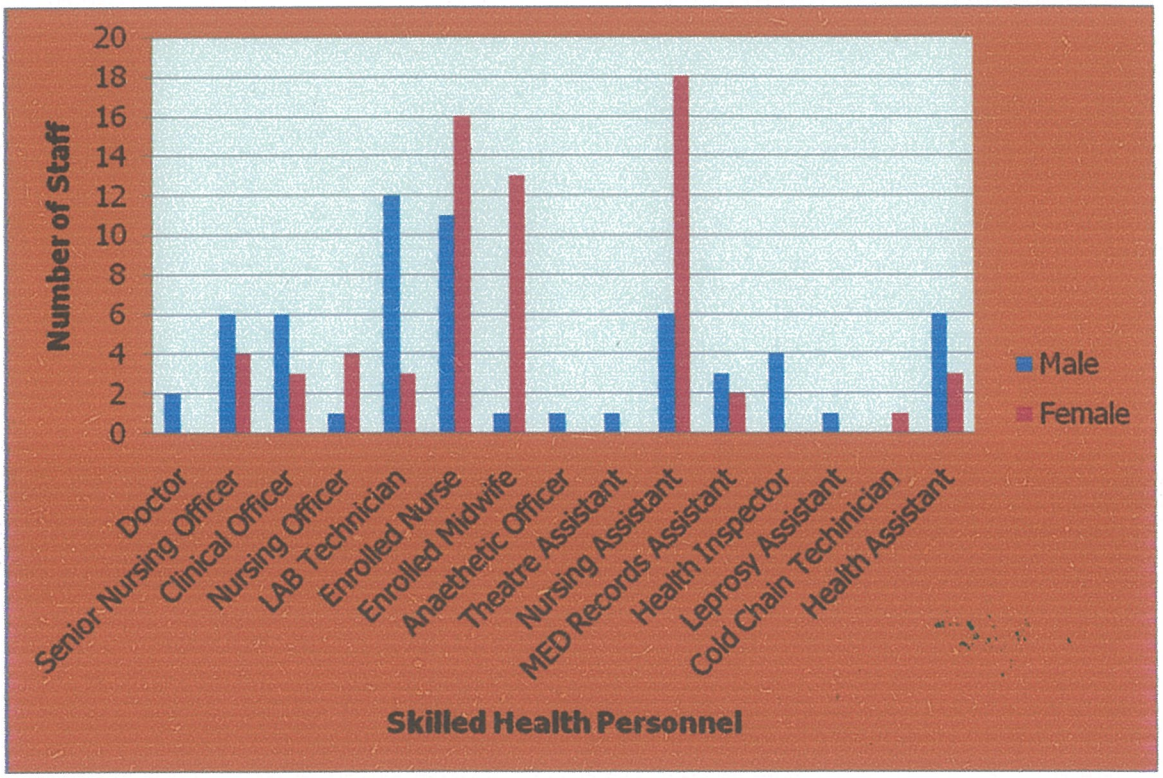
According to the Ugandan government's health policy, every parish is supposed to have a health centre II; this facility and it should serve a few thousand people, should be able to treat common diseases like malaria. It is supposed to be led by an enrolled nurse, working with a midwife, running an out-patient clinic, treating common diseases and offering antenatal care. The health policy also states that every sub-county in Uganda should have a health centre III having about 18 skilled health staff, led by a senior clinical officer, it should also have a functioning laboratory. The health policy goes on to indicate that health centre IVs should be at county level. In addition

to services found at health centre III, it should have wards for men, women, and children and should be able to admit patients. It should have a senior medical officer and another doctor as well as a theatre for carrying out emergency operations.

However, table 1 above reveals that Budaka district has got a very low level of resource availability, out of the 72 health centres Budaka is supposed to have; the district has only 13 about 18.1 percent health centres. Budaka has 128 about 17.6 percent of the 727 skilled health personnel staff required.

FIGURE 1

A COLUMN GRAPH SHOWING SKILLED HEALTH PERSONNEL WORKING IN BUDAKA DISTRICT FROM 2005 to 2011, BY GENDER



Source: *Drawn by the Researcher Using Data in Appendix IV,* ***2012.***

TABLE 2

NUMBER OF SKILLED HEALTH PERSONNEL IN BUDAKA DISTRICT, UGANDA

PROFESSION	Male	Female	
Doctor	2	0	
Senior Nursing Officer	6	4	
Clinical Officer	6	3	
Nursing Officer	1	4	
LAB Technician	12	3	
Enrolled Nurse	11	16	
Enrolled Midwife	1	13	
Anaethetic Officer	1	0	
Theatre Assistant	1	0	
Nursing Assistant	6	18	
MED Records Assistant	3	2	
Health Inspector	4	0	
Leprosy Assistant	1	0	
Cold Chain Technician	0	1	
Health Assistant	6	3	
TOTAL	**61**	**67**	
Percentage Levels	**47.66**	**52.34**	
GRAND TOTAL			**128**

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

Budaka district has got a total of 128 skilled health personnel/staff with 61 male staff represented by 47.66 percent and 67 female staff which is about 52.34 percent

TABLE 3

REGRESSION ANALYSIS OF RESOURCE AVAILABILITY OVER TIME IN BUDAKA DISTRICT FROM 2005 TO 2011 (S.L = 0.05)

Variables Regressed	**Adjusted R^2**	**F value**	**Sign. value**	**Interpretation**
Resource Availability and Time	0.9217	71.61	0.0004	Significant Positive Effect
Coefficients	**Beta**	**t-value**	**Sign. value**	
Constant	-24643.86	-8.43	0.000	Significant
Time (x)	12.32143	8.46	0.000	Significant

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

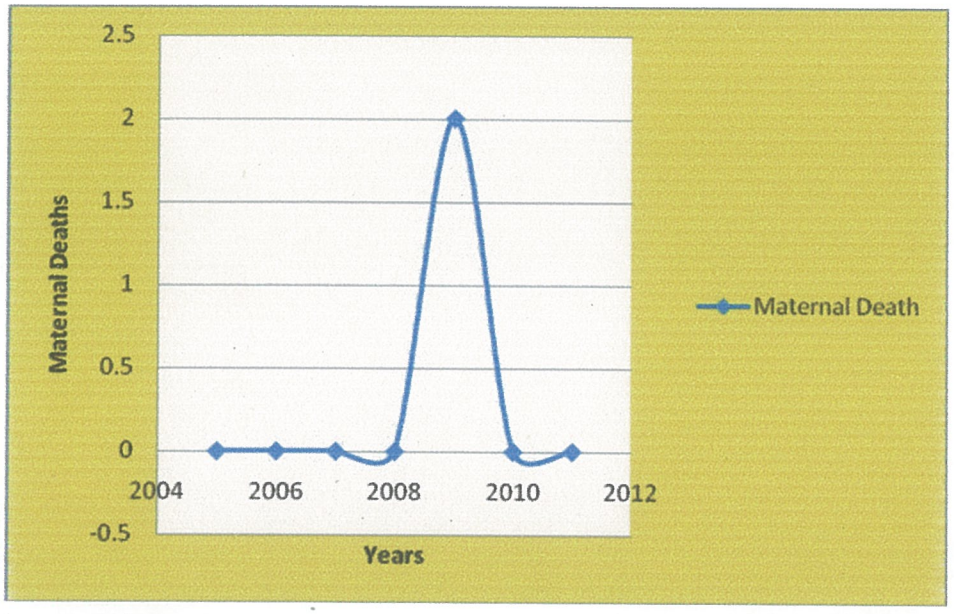
The Linear regression results from the Table above indicate that time has a significant effect resource availability (F = 71.61, sig. = 0.0004 < 0.05). The results also indicate that time explains 92.17 percent variations in resource availability. (Adjusted R^2 = 0.9217). The coefficients section of this table indicates the extent to which the explanatory variable (time explains the explained variable resource availability) and this is indicated by Beta values. That is to say, if the explanatory variable time increased by one unit, it implies that the explained variable resource availability increases by 12.32143.

Level of maternal mortality in Budaka district between 2005 and 2011

The study's second objective was to determine the level of maternal mortality in Budaka district from 2005 to 2011; however, it is evident from the line graph that maternal mortality levels were generally very low for the last seven (7) years.

FIGURE 2

A LINE GRAPH SHOWING THE LEVEL OF MATERNAL MORTALITY OF BUDAKA DISTRICT FROM 2005 to 2011



Source: *Drawn by the Researcher Using Data in Appendix IV,* ***2012.***

Budaka district's maternal mortality shows a very low trend throughout the period 2005 to 2011. The declining maternal mortality has been attributed to political stability, education levels and government health policies. The two (2) maternal deaths were reported to have occurred at Kameruka health centre III due to administrative problems and staff concerned was actually punished; this was revealed by one of the staff (an Enrolled Nurse).

TABLE 4

REGRESSION ANALYSIS OF MATERNAL MORTALITY OVER TIME IN BUDAKA DISTRICT FROM 2005 TO 2011 (S.L = 0.05)

Variables Regressed	**Adjusted R^2**	**F value**	**Sign. value**	**Interpretation**
Maternal Mortality and Time	-0.1500	0.22	0.6606	No Significant Effect
Coefficients	**Beta**	**t-value**	**Sign. value**	
Constant	-143.1429	-0.47	0.661	
Time (x) in years	.0714286	0.47	0.661	Not Significant

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

The estimated liner model from above table is found to be of the form;

Y = -143.1429 constant + 0.0714286 time in years

Where; Y = Maternal mortality

X = Time in years

Implying that irrespective of variations in time Budaka district's maternal mortality would reduce by -143.1429 and a unit change in time affects maternal mortality by 0.0714286. This therefore means that maternal mortality has reduced over the years which have been attributed to political stability, education levels and government health policies. The Linear regression results in table 4 indicate that time has no significant effect on maternal mortality (F = 0.22, sign. = 0.6606). The results indicate that time explains -15 percent of the variations in maternal mortality (Adjusted R^2 = -143.1429).

Establishing the relationship between resource availability and maternal mortality in the following forms

The study's third objective was to establish the relationship between each of the three resource availability strata and maternal mortality.

Skilled Health Personnel and Maternal Mortality

Skilled health personnel and maternal mortality were correlated and a table of results obtained; under this objective a null hypothesis that there is no significant relationship between skilled health personnel and maternal mortality in Budaka district was tested.

TABLE 5

PEARSON'S LINEAR CORRELATION COEFFICIENT TEST RESULTS FOR SKILLED HEALTH PERSONNEL AND MATERNAL MORTALITY

Variables Correlated	r-value	Sign. value	Interpretation	Decision on H_o
Skilled health personnel and maternal mortality	0.3753	0.407	Positive but not significant	Accepted

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

The results in table indicate that the skilled health personnel do not have a significant correlation with maternal mortality rates in Budaka district from 2005 to 2011 (sign. = 0.407). Results also indicate that skilled health personnel is positively correlated with maternal mortality rates in Budaka district for the reference period 2005 to 2010 (r-value = 0.3753).

TABLE 6

REGRESSION ANALYSIS BETWEEN SKILLED HEALTH PERSONNEL AND MATERNAL MORTALITY RATE IN BUDAKA DISTRICT FROM 2005 TO 2011 (S.L = 0.05)

Variables Regressed	**Adjusted R^2**	**F value**	**Sign. value**	**Interpretation**	**Decision on H_o**
Skilled health personnel and Maternal Mortality	-0.0310	0.82	0.4068	No Significant Effect	Accepted
Coefficients	**Beta**	**t-value**	**Sign. value**		
Constant	-.719608	-0.63	0.558		
Skilled health personnel	.0103034	0.91	0.407	Not Significant	Accepted

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

The Linear regression results in table above indicates skilled health personnel has no significant effect on maternal mortality (F = 0.82, sign. = 0.407 > 0.05). The results indicate that skilled health personnel accounts for -3.1 percent of the variations in maternal mortality. (Adjusted R^2 = -0.0310). The coefficients section of this table indicates the extent to which the explanatory variable (skilled health personnel explains the explained variable maternal mortality) as indicated by Beta values. That is, if the explanatory variable which is skilled health personnel is increased by one unit it implies that the explained variable which is maternal mortality increases by 0.0103034.

Equipment and Maternal Mortality

Under this resource availability stratum and maternal mortality, the researcher wished to consider a functioning theater and presence of an ambulance. However, during an interaction with one of the staff; an Enrolled Nurse told me that the so called theater has never handled any complicated delivery case and in cases of complicated deliveries, these are referred to Mbale hospital. The Budaka district health officer said

the district only has a pick-up which it uses as an ambulance and that very pick-up is used to monitor other activities of the district. It was therefore impossible for the researcher to come with a Pearson's linear correlation coefficient and a regression analysis in order to find out the relationship between equipment and maternal mortality as well as coming up with a linear regression model.

Essential supplies and Maternal Mortality

This resource availability stratum and maternal mortality, the researcher was told by the medical records assistant that of the entire nine (9) health centre IIIs, its only Naboa health centre III that is well facilitated for the reason he did not tell. It was therefore hard for the researcher to come with either a Pearson's linear correlation coefficient or a regression analysis in order to find out the relationship between essential supplies and maternal mortality as well as coming up with a linear regression model.

CHAPTER FIVE

FINDINGS, CONCLUSIONS, RECOMMENDATIONS

Findings

The study was done with the purpose of investigating whether there is a significant relationship between resource availability and maternal mortality in Budaka district from 2005 to 2011. It was basically guided by three specific research objectives that were set to investigate the level of resource availability by studying the level of total resource availability in Budaka district over time, determine the level of maternal mortality by studying the maternal deaths over time, establish whether there is a significant relationship between resource availability and maternal mortality in the following forms; skilled health personnel and maternal mortality, equipment and maternal mortality, essential supplies and maternal mortality.

The first objective was to investigate the level of resource availability in Budaka district and findings on this were done by studying time series data on total resource availability as a percentage of maternal deaths over time. A simple linear regression model to capture the two variables shows that the resource availability would be (Beta = -24643.86) as a percentage of maternal deaths irrespective of changes overtime, a unit change over time affects total resource availability by 12.32143.
The results therefore show that change over time explains 92.17 percent of the variations in total resource availability (adjusted R^2 = 0.9217), since the (sign. = 0.0004) the trend is positive and significant.

The second objective was to determine the level of maternal mortality by studying the maternal deaths over time. Findings on this were done by studying time series data on maternal deaths as an indicator of maternal mortality over time. A simple linear regression model to capture the two variables shows that the maternal deaths would be (Beta = - 143.1429) irrespective of changes overtime, a unit change over time affects maternal mortality by 0.0714286. The results therefore show that change over time explains a negative (-) 15 percent of the variations in maternal mortality

(adjusted R^2 = - 0.1500), since the (sign. = 0.6606) the trend is negative and not significant.

The third question was to establish whether there is a significant relationship between resource availability and maternal mortality in the following forms; skilled health personnel and maternal mortality, equipment and maternal mortality, essential supplies and maternal mortality.

Results using Pearson's linear Correlation Coefficient found that skilled health personnel is positively relate with maternal mortality but the relationship is not significant since (r = 0.3753, sign. = 0.407). Thus the null hypothesis is accepted that there is no significant relationship between skilled health personnel and maternal mortality. Regression analysis results indicated that the level of maternal mortality is not affected by skilled health personnel is (Beta = -0.719608) and a unit decrease in level of skilled health personnel investment influences maternal mortality by 0.0103034. The analysis therefore finds out that change in skilled health personnel accounts for only -03 percent of the variations in maternal mortality. (Adjusted R^2 = - 0.0310)

However during the process of data collection, I was told that there is no functioning theater to handle complicated deliveries and in cases where complications come, they are referred to Mbale referral hospital. Budaka district also lacks an ambulance that can be used to take such cases to Mbale referral hospital.

Conclusions

Level of resource availability in Budaka district from 2005 to 2011

The first objective was to investigate the level of resource availability in Budaka district. It was found out that the level of resource availability in Budaka district has been increasing over time since the coefficient on resource availability is positive (12.32143), this significant increase is attributed to the several government policies that have made it possible to attract both domestic and foreign based investment in Uganda, they include Privatization, Plan for modernization of agriculture, PEAP, and trade liberalization.

Level of maternal mortality in Budaka district from 2005 to 2011

The second objective aimed at determining the level of maternal mortality in Budaka district. The researcher used maternal deaths as a measure of maternal mortality, it was found out that the level of maternal mortality has been decreasing over time since the linear regression model is positive (0.0714286) hence the relationship was found not to be significant.

Relationship between resource availability and maternal mortality

The last objective of the study was this and it was analyzed in three sections which include; skilled health personnel and maternal mortality, equipment and maternal mortality, essential supplies and maternal mortality.

Skilled health personnel and maternal mortality

This section of the last objective was set to seek whether there is a significant relationship between skilled health personnel and maternal mortality which it was hypothesized there is no significant relationship between skilled health personnel and maternal mortality in Budaka district. The null hypothesis was accepted basing on the findings, leading to a conclusion that there is no significant relationship between skilled health personnel and maternal mortality. This justification is revealed by the level of significant value that is greater than 0.05 i.e. ($r = 0.3753$, sign. = 0.407).

The same results are supported by the linear regression results, which also indicate that skilled health personnel have no significant relationship with maternal mortality. ($F = 0.82$, sign. = 0.407); and since $F_{Computed}$ (0.82) < $F_{critical}$ (6.61), sign. = 0.407 > 0.05. Thus; the null hypothesis is accepted at 95 percent level of confidence that there is no significant relationship between skilled health personnel and maternal mortality.

Equipment and Maternal Mortality

This section of the last objective was went on set to seek whether there is a significant relationship between equipment and maternal mortality which it was hypothesized, that there is no significant relationship between equipment and maternal mortality in Budaka district. However the null hypothesis was neither accepted nor rejected because it was impossible for the researcher to come with a Pearson's linear correlation coefficient and a regression analysis in order to find out the relationship between equipment and maternal mortality as well as coming up with a linear regression model.

Essential supplies and Maternal Mortality

This section of the last objective was also on set to seek whether there is a significant relationship between essential supplies and maternal mortality which it was hypothesized, that there is no significant relationship between essential supplies and maternal mortality in Budaka district. However the null hypothesis was not rejected or accepted because it was hard for the researcher to come with a Pearson's linear correlation coefficient and a regression analysis in order to find out the relationship between essential supplies and maternal mortality as well as coming up with a linear regression model.

Recommendations

The study realized several circumstances demanding government, in particular the Ministry of health and Ministry of finance planning and economic development. Maternal mortality of a district and country at large depends much on government policies designed to increase health service delivery. This study noticed that Budaka district local government and the central government should adhere to the following principles in order to promote resource availability that would lead to improved maternal mortality.

Budaka district's local government together with the central government should put efficient health systems in place that can design public policies, implement, audit and other checks and balances to ensure efficient use of public funds so as to maintain and promote a significant impact on maternal mortality and maternal health.

Budaka district local government should have a data base system that captures information on health related issues, like births, child mortality, adult mortality (men and women aged 15 – 49), diseases and others. The central government especially ministry of health and Uganda bureau of statistics should have data broke down up to district level instead of having it by region and the whole country

Areas suggested for further research

A study on "essential supplies and maternal health in Uganda" should be carried out.

"Medical equipment and mortality in Uganda" is yet another study recommended.

The other recommended study is "The impact of Reproductive Health Uganda towards maternal health".

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APPENDIX I

TRANSMITTAL LETTER
OFFICE OF THE DEPUTY VICE CHANCELLOR (DVC)

COLLEGE OF HIGHER DEGREES AND RESEARCH (CHDR)

Dear Sir/Madam,

RE: INTRODUCTION LETTER FOR MR. KAWISO MARTIN WILFRED REG. NO. MSTAT/33769/111/DU TO CONDUCT RESEARCH IN YOUR INSTITUTION

The above mentioned candidate is a bonafide student of Kampala International University pursuing a Master of Science in Statistics.

He is currently conducting a field research entitled, **"Resource Availability and Maternal Mortality in Budaka District, Uganda from 1999 to 2010".**

Your institution has been identified as a valuable source of information pertaining to his research project. The purpose of this letter then is to request you to avail him with the pertinent information he may need.

Any data shared with him will be used for academic purposes only and shall be kept with utmost confidentiality.

Any assistance rendered to him will be highly appreciated.

Yours truly,

_____

DR. OTINDO IRENE

Coordinator

Economics and Statistics

KAMPALA INTERNATIONAL UNIVERSITY
DRIVE THE HEIGHTS

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SCHOOL OF ECONOMICS AND APPLIED STATISTICS

To Whom It May Concern

11th June, 2012

Dear Sir/Madam,

RE: INTRODUCTION LETTER FOR MR. KAWISO MARTIN WILFRED REG. NO. MSTAT/33769/111/DU TO CONDUCT RESEARCH IN YOUR INSTITUTION

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Yours truly,

Pr. SEMPEBWA GODWIN B

H.O.D: School of Economics and Applied Statistics

APPENDIX II

CLEARANCE FROM ETHICS COMMITTEE

Date_____

Candidate's Data

Name_____

Reg.# _____

Course _____

Title of Study

_____

_____

Ethical Review Checklist

The study reviewed considered the following:

___ Physical Safety of Human Subjects

___ Psychological Safety

___ Emotional Security

___ Privacy

___ Written Request for Author of Standardized Instrument

___ Coding of Questionnaires/Anonymity/Confidentiality

___ Permission to Conduct the Study

___ Informed Consent

___ Citations/Authors Recognized

Results of Ethical Review

___ Approved

___ Conditional (to provide the Ethics Committee with corrections)

___ Disapproved/ Resubmit Proposal

Ethics Committee (Name and Signature)

Chairperson _____

Members _____

APPENDIX III

INFORMED CONSENT

I am giving my consent to be part of the research study of Mr. Kawiso Martin Wilfred that will focus on resource availability and maternal mortality in Budaka District, Uganda from 1999 to 2010

I shall be assured of privacy, anonymity and confidentiality and that I will be given the option to refuse participation and right to withdraw my participation anytime.

I have been informed that the research is voluntary and that the results will be given to me if I ask for it.

Initials:_____

Date_____

APPENDIX IV

RESERCH INSTRUMENT (RECORD SHEET)

HEALTH CENTRE (HC) IV		
Staff Required		**Status**
Senior Medical Officer	1	0
Medical Officer	1	1
Senior Clinical Nursing Officer	1	1
Public Health Nurse	1	0
Clinical officer	2	2
Ophthalmic Clinical Officer	1	0
Health Inspector	1	2
Dispensor	1	0
Public Health Dental Officer	1	0
Laboratory Technician	1	2
Assistant Entomological Officer (Medical)	1	0
Nursing Officer (Nursing)	1	3
Nursing Officer (Midwifery)	1	4
Nursing Officer (Psychiatry)	1	0
Assistant Health Educator	1	0
Anaesthetic Officer	1	1
Enrolled Psychiatric Nurse	1	0
Enrolled Nurse	3	4
Enrolled Midwife	3	4
Cold Chain Assistant	1	1
Laboratory Assistant	1	0
Health Assistant	1	1
Health Information Assistant	1	0
Nursing Assistant	5	5
Total	**33**	**31**
Supporting Staff		
Office Typist	1	0
Stores Assistant	1	0
Driver	1	1
Askari	3	3
Porter	3	3
Total	**42**	**38**

Source: *District Health Records,* ***2012.***

HEALTH CENTRE (HC) IIIs										
Staff Required		Kaderuna	Iki-Iki	Naboa	Sapiri	Kamonkoli	Lyama	Kerekerene	Katira	Kameruka
Senior Clinical Officer	1	1	1	0	1	1	1	0	1	0
Clinical officer	1	1	1	2	0	1	1	1	1	1
Nursing Officer (Nursing)	1	1	0	0	0	0	0	0	0	0
Laboratory Technician	1	1	1	1	0	1	1	1	1	1
Enrolled Midwife	2	1	1	0	1	1	1	2	1	1
Enrolled Nurse	3	1	3	2	3	3	3	2	2	3
Laboratory Assistant	1	1	1	0	0	0	0	0	0	1
Health Assistant	1	0	0	1	0	0	0	1	1	0
Health Information Assistant	1	0	0	0	0	1	1	0	0	0
Nursing Assistant	3	1	2	2	2	1	1	2	2	1
Health Inspector	1	1	1	0	0	0	0	0	0	0
Medical Records Assistant	1	0	1	0	0	0	0	0	0	0
Total	**17**	**9**	**12**	**8**	**7**	**9**	**9**	**9**	**9**	**8**
Supporting Staff										
Askari	2	1	1	1	0	1	1	1	1	1
Porter	2	0	1	1	0	2	1	1	1	1
Total	**4**	**1**	**2**	**2**	**0**	**3**	**2**	**2**	**2**	**2**

Source: *District Health Records,* ***2012.***

NB: *There are 13 Sub - counties but only 9 of them have got HC IIIs.*

HEALTH CENTRE (HC) IIs				
Staff Required		**Butove**	**Kebula**	**Namusita**
Enrolled Nurse	2	1	1	1
Nursing Assistant	2	2	0	2
Health Assistant	2	0	1	1
Enrolled Midwife	2	0	1	0
Total	**8**	**3**	**3**	**4**
Supporting Staff				
Askari	2	1	0	1
Porter	2	1	0	1
Total	**4**	**2**	**0**	**2**

Source: *District Health Records,* ***2012.***

NB: *There are 58 parishes but only 3of them have got HC IIs*

Relationship between resource availability and maternal mortality

Year	Skilled H Personnel	Maternal Death	Equipment
2005	64	0	0
2006	72	0	0
2007	80	0	0
2008	90	0	0
2009	121	2	0
2010	128	0	0
2011	128	0	0

Source: *District Health Records,* ***2012.***

APPENDIX V

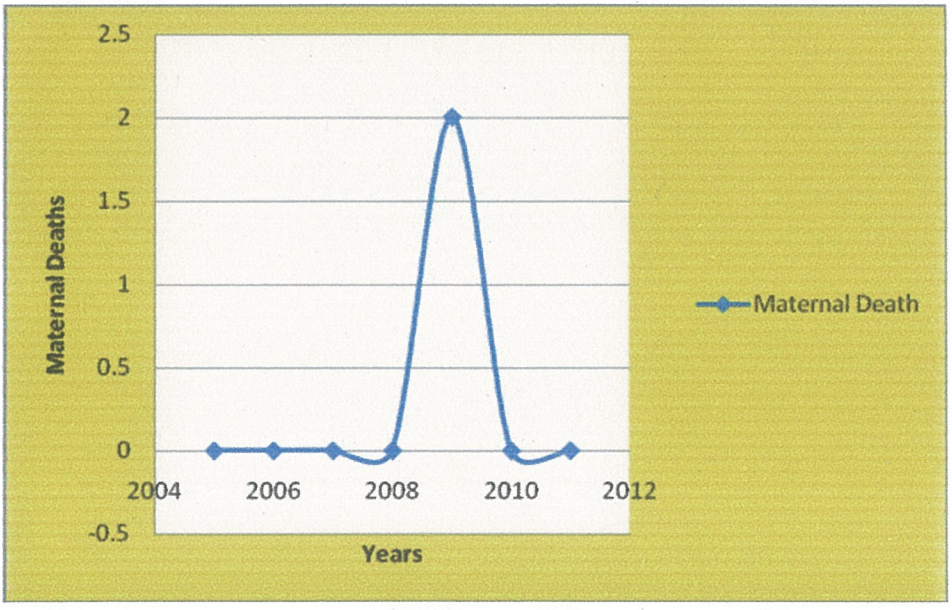
PROPOSED DATA PRESENTATION TROUGH TABLES

Level of Resource Availability in percentage

Health Centre Type	Health Centres			Skilled Health Personnel		
	Required	Available	-/+	Required	Available	-/+
IV - Referral Level	1	1	0	42	38	- 4
III - S/C Level (13)	13	9	- 4	221	80	- 141
II - Parish Level (58)	58	3	- 55	464	10	- 454
Total	**72**	**13**	**- 59**	**727**	**128**	**- 599**
PERCENTAGE LEVEL		**18.06**		**17.61**		

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

Level of Maternal Mortality



Source: *Drawn by the Researcher Using Data in Appendix IV,* ***2012.***

Regression analysis of maternal mortality over time in years (2005 – 2011) for Budaka, district.

Source	SS	DF	MS	Number of Observations = 7	
Model	.142857143	1	.142857143	F(1, 5) = 0.22	
Residual	3.28571429	5	.657142857	Prob >F = 0.6606	
Total	3.42857143	6	.571428571	R-squared = 0.0417	
				Adj R-squared = -0.1500	
				Root MSE = .81064	
Maternal Death	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]
Time	.0714286	.1531972	0.47	0.661	-.3223774 .4652346
Constant	-143.1429	307.6202	-0.47	0.661	-933.9057 647.62

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

Level of Resource Availability in percentage

Year	Skilled H Personnel	
	Number	Percentage Levels
2005	64	9.37
2006	72	10.54
2007	80	11.71
2008	90	13.18
2009	121	17.72
2010	128	18.74
2011	128	18.74
Total	**683**	**100.00**

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

Pearson's linear correlation coefficient test result for maternal death and skilled health personnel (Observations = 7)

	Maternal Death	Equipment	Skilled Health Personnel
Equipment	-	-	-
Skilled Health Personnel	0.3753	-	1.0000

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

Regression of maternal death and skilled health personnel

Source	SS	DF	MS	Number of Observations =7	
Model	.482790188	1	.482790188	F(1, 5) = 0.82	
Residual	2.94578124	5	.589156248	Prob >F = 0.4068	
Total	3.42857143	6	.571428571	R-squared = 0.1408	
				Adj R-squared = -0.0310	
				Root MSE = .76757	
Maternal Death	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]
Skilled H Person	.0103034	.011382	0.91	0.407	-.0189549 .0395618
Equipment	(dropped)	-	-	-	-
Constant	-.719608	1.147826	-0.63	0.558	-3.670189 2.230973

Source: *Computed by the Researcher Using Data in Appendix IV,* ***2012.***

APPENDIX VI

TIME FRAME

ıctivity	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
roposal writing										
roposal presentation										
roposal corrections										
iloting										
ata collection										
ata editing and entry										
ata analysis										
eport writing										
iva defense										
orrections and Submissions										

RESEARCHER'S CURRICULUM VITAE

Names & Contact	**KAWISO Martin Wilfred; Mob: +256 772 510 494;** **Email:** martin_wilfredk@yahoo.co.uk
Place & Date of Birth	**Budaka District; 01st October 1983.**
Gender	**Male**
Marital Status	**Single**

Educational Background

2011-2012 Pursuing Master of Science in Statistics; Kampala International University

2004-2007 Bachelor of Science in Population Studies; Makerere University, Kampala

2002-2003 Uganda Advanced Certificate of Education; MerryLand High School

1998-2001 Uganda Certificate of Education; Busoga College Mwiri, Jinja

Responsibilities Held

2005-2007 Programme (B.Sc. Population Studies) Representative; Makerere University

1999-2001 Junior Prefect Nabikamba House; Busoga College Mwiri

1999 Assistant Timekeeper; Busoga College Mwiri

Other Training Areas and Awards

Certificate in Entrepreneurship Development Course; Makerere University Business School and Uganda Investment Authority **(2009)**

Other Relevant Data

Computer literacy

Honesty

Hard working

Languages Spoken: English, Lugwere, Lusoga, Luganda, Some Ruyakitara and Kiswahiri.

Referees

Mrs. Robinah Gimbo Kweri, **Programme Manager** World Vision, Mukono – Buikwe, office Mob: +256 772 949 999.

Pastor. Sempebwa Godwin, **Head of Department**; **School of Economics and Applied Statistics**, Kampala International University Mob: +256 772 444 628.

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