



UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

DEPARTMENT OF POST BASIC NURSING

**A STUDY TO DETERMINE FACTORS CONTRIBUTING TO A HIGH
INCIDENCE OF
LOW BIRTH WEIGHT DELIVERIES AT THE UNIVERSITY TEACHING
HOSPITAL**

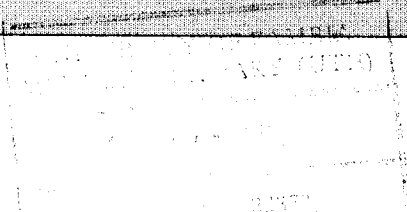
BY

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ZRN UTH 1988
ZRM UTH 1994**

**A RESEARCH STUDY SUBMITTED TO THE DEPARTMENT OF POST BASIC
NURSING, SCHOOL OF MEDICINE IN PARTIAL FULFILMENT FOR THE
BACHELOR OF SCIENCE IN NURSING.**

LUSAKA – ZAMBIA

DECEMBER 2000.



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LIST OF ABBREVIATIONS

APH	: Antepartum Haemorrhage
CBoH-HIA	: Central Board of Health- Health Information Analysis
DHMT	: District Health Management Team
Hb	: Haemoglobin
PROM	: Premature rupture of membranes
UNICEF	: United Nation Children's Fund
UNZA	: University of Zambia
UTH	:University Teaching Hospital
TDRC	:Tropical Diseases Research Centre
VDRL	: Venereal Disease Research Laboratory
WHO	: World Health Organisation

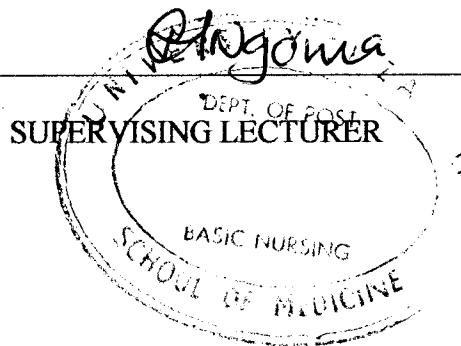
DECLARATION

I NKOLE CHANDA Hereby declare that the work presented in this study for Bachelor of Science Degree in Nursing has not been presented either wholly or in part for another degree and is not being currently submitted for any other degree.

Signed Nkole Chanda

CANDIDATE.

Approved by _____



STATEMENT

I hereby certify that this project is entirely the result of my own independent study. The various sources to which I am indebted are clearly indicated in the text and in the references.

SIGNED Nehanda

CANDIDATE

ACKNOWLEDGEMENTS

I am grateful to those who have given their talent, energy and support to make this study a reality.

Sincere gratitude goes to Ms E. Lambwe, Head of Department for having corrected the project from the beginning till the end despite her busy schedule.

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Special thanks go to my husband Roy, for his encouragement and moral support and for having helped me make this study a reality.

DEDICATION

This study is dedicated to my dear husband Roy, and my adorable daughter Kumeza whose love, support, encouragement and patience made it possible for me to undertake this extensive training.

ABSTRACT

This study was undertaken to determine some of the factors contributing to a high incidence of low birth weight deliveries in the University Teaching Hospital. It was aimed at finding measures of preventing low birth weight and reducing its incidence. A pilot study was done at Kalingalinga health Centre for pre testing.

A review of relevant literature, based on previous studies done on low birth weight deliveries, showed that low socio economic status, low maternal education, poor quality of antenatal care services, non-contraceptive use, young maternal age and maternal morbidity are some of the factors contributing to low birth weight deliveries.

A descriptive non-intervention research design was used. Review of records in the department of Obstetric and gynaecology in the University Teaching Hospital was done to obtain the required information about this study. Data collected from the records included mother's social demographic characteristics, past obstetric history, prevalence of pregnancy related diseases and data relating to foetal outcome. A self-devised interview schedule was used to obtain additional information from the fifty mothers of low birth weight infants delivered in the UTH Labour ward. The subjects were selected using convenient sampling method. Data were analysed manually using a

scientific calculator. The results showed that the incidence of low birth weight deliveries was 20.2%. The majority of the mothers (94%) were from the low income group as compared to 6% from the high income group, the low educated group (62%), and among mothers delivering at eight months of gestation or less (98%). The mean gravidity of the mothers was 2.5 with 44% being primiparae. Of the mothers who delivered low birth weight babies, 10% gave history of previous abortion and 22% gave history of previous premature delivery. The commonest antenatal complications associated with low birth weight delivery were premature rupture of membranes before term (24%), pyrexia due to Malaria (16%), respiratory infections (14%), Hypertension disease (12%), and Antepartum Haemorrhage (8%). 26% of the mothers had no known antenatal complication.

The study findings proved the study hypothesis that the lower the socio economic status of a woman the higher the chances of delivering to a low birth weight infant. The above results indicate that the highest number of low birth weight deliveries was among women from low socio economic status group and low education group. Firstly mother's education is seen to have a rather substantial effect on child's birth weight. It is assumed that level of mother's education and knowledge about practices of personal hygiene; sanitation, preventive measures, nutrition and the willingness to use health services are positively associated. Low socio economic status is also associated with stressors like poor living and working conditions, heavy

workload that is, hours spent on housekeeping activities, type of profession and number of working hours. The results of this study will also support that social well being is a major factor influencing low birth weight at delivery.

Recommendations to improve the quality of antenatal care services have been made to relevant authorities like the Lusaka District Health Management Team, the Government and Non-Governmental Organizations. Some of the recommendations made include provision of laboratory services in all urban clinics for easy detection and treatment of infections in antenatal mothers. Another recommendation is for the training of antenatal care providers in integrated management in reproductive health. This is done by providing more services to individuals who already make use of health facilities in other ways and by using simple screening instruments to produce changes in the knowledge and behaviour of clients and providers.

It is hoped that the study findings would stimulate the District management Team in Lusaka to take an active role in improving the quality of Maternal and Child health services since quality is the key to success.

CHAPTER ONE

1.1 BACKGROUND INFORMATION.

A low birth weight infant is an infant weighing less than 2, 500 grams regardless of gestational age (Novak and Broom, 1995). Low birth weight is one of the most serious challenges in Maternal and Child Health in both developing and developed countries. It is the greatest single hazard for infants increasing vulnerability to developmental problems such as growth problems; occurrence of mental retardation; birth defects; blindness and cerebral palsy and it is the main contributor to neonatal morbidity and mortality (McCormick, et al 1991). Globally it is estimated that of the total percentage of neonatal deaths attributed to different causes low birth weight contributes about 57.7% (UNICEF, 1994).

Low birth weight, preterm and small for gestational age are three terms commonly used to describe poor foetal growth and immaturity in the newborn. Birth weight is recognised as a reliable index of intra uterine growth and has assumed significance world wide as a major factor determining a newborns' survival, viability and future growth (Nelson, 1992). Low Birth weight is said to be influenced by two major factors namely a short duration of gestation in which the baby born will be premature or, intra uterine growth retardation in which the baby born will be small for gestational age. In 1961 the World Health Organisation recommended that babies of birth weight less than or equal to 2, 500 grams be designated low birth weight infants, this

being irrespective of the cause and regardless of gestational age (WHO, 1998).

It is generally recognised that preterm delivery is the predominant cause of low birth weight in developed countries and intra uterine growth retardation characterizes much of the low birth weight in many developing countries. The incidence of low birth weight is higher in developing countries ranging between 18 % in Nigeria to 30 % in India as compared to that of Norway and France at 4 % and 5 % respectively (UNICEF 1994).

Zambia like many developing countries in the sub-Saharan Africa suffers a high prevalence of low birth weight rate (Table 2). It has been stated that 80 % of low birth weight in developing countries is due to retarded intra uterine growth largely caused by maternal malnutrition (Fishman and Hansch 1995). At population level, a low birth weight rate greater than 10 % indicates a high prevalence of malnutrition among women of reproductive age.

In Lusaka, the problem of high rates of low birth weight babies born at the University Teaching Hospital has been increasing despite the city having several accessible health centres rendering integrated services in almost every compound. University Teaching Hospital is a referral hospital for all the peri urban clinics in the province. After review of records at the Department of Obstetric and Gynaecology in UTH it was observed that out of the total

number of 11 034 deliveries, a total of 2 195(19%) were of low birth weight deliveries in the year 1998. A further increase of 3% was observed in 1999 when out of 10 525 deliveries, 2 342(22%) were of low birth weight deliveries (UTH STATISTICS, 2000). Review of records in D. Block which is a paediatric neonatal intensive care ward reveals that most of these low birth weight infants were born of mothers from low socio economic status families residing in the highly densely populated compounds in Lusaka.

The incidence of low birth weight deliveries can be reduced significantly if causes can be identified and proper preventive measures taken. In recent years the government of Zambia through the Ministry of Health has given attention to ways and means of preventing low birth weight through better maternity care services and intervention programs during pregnancy rather than treatment of low birth weight babies later. The direct intervention has been through early detection and treatment of acute and chronic obstetric conditions. The indirect intervention has been through programmes like Family Planning, Girl Child education, improved housing and sanitation, nutrition education and promotion of healthful living through behavioural change.

It is therefore the intention of this study to explore factors contributing to the high incidence of low birth weight deliveries in the University Teaching Hospital so that corrective measures could be worked out.

1.2 STATEMENT OF THE PROBLEM

The incidence of low birth weight is high in developing countries and Zambia is included. Of the 25 million low birth weight infants born in 1990; about 24 million (95 %) were born in developing countries (Shah, 1994). In Zambia the incidence of low birth weight is also high and statistics from the Ministry of Health has shown a steady increase. In 1977, the rate was 5.5% and in 1982 this increased to 7.5% of the total live births (Himoonga, 1984). The incidence of low birth weight deliveries is high in Lusaka as a district. A rate of 10% was observed in the year 1999 from the health centres only (CboH, 2000).

The weight of a newborn is closely linked to its chances of survival and subsequent growth and development (Ebrahim, 1993). During the neonatal period and infancy, the low birth weight infant is at greater risk of morbidity and mortality than a full term infant. Low birth weight infants have a three to four times greater risk of dying from diarrhoeal diseases, acute respiratory infections and communicable diseases. Low birth weight infants susceptibility to mortality from cardiovascular diseases and diabetes in adulthood has been documented (Mark, 1993).

Factors known to affect birth weight are divided into subgroups as follows; genetic or constitutional; demographic and psychosocial; obstetric; nutritional; maternal morbidity during pregnancy; toxic exposures and care during the

antenatal period (Kramer, 1987). While recognising that the aetiology of low birth weight is multifactor, it is most likely if that emphasis is given to those maternal factors believed to be of importance such as, poor maternal health and nutrition, certain infections, pre eclampsia, arduous work after mid pregnancy, short birth intervals, teenage pregnancy and inadequate weight gain in pregnancy the situation would be corrected. Anaemia, malnutrition, parasitic infections, malaria, tuberculosis, and recurrent ill health can influence the birth weight of the baby (Ebrahim, 1993).

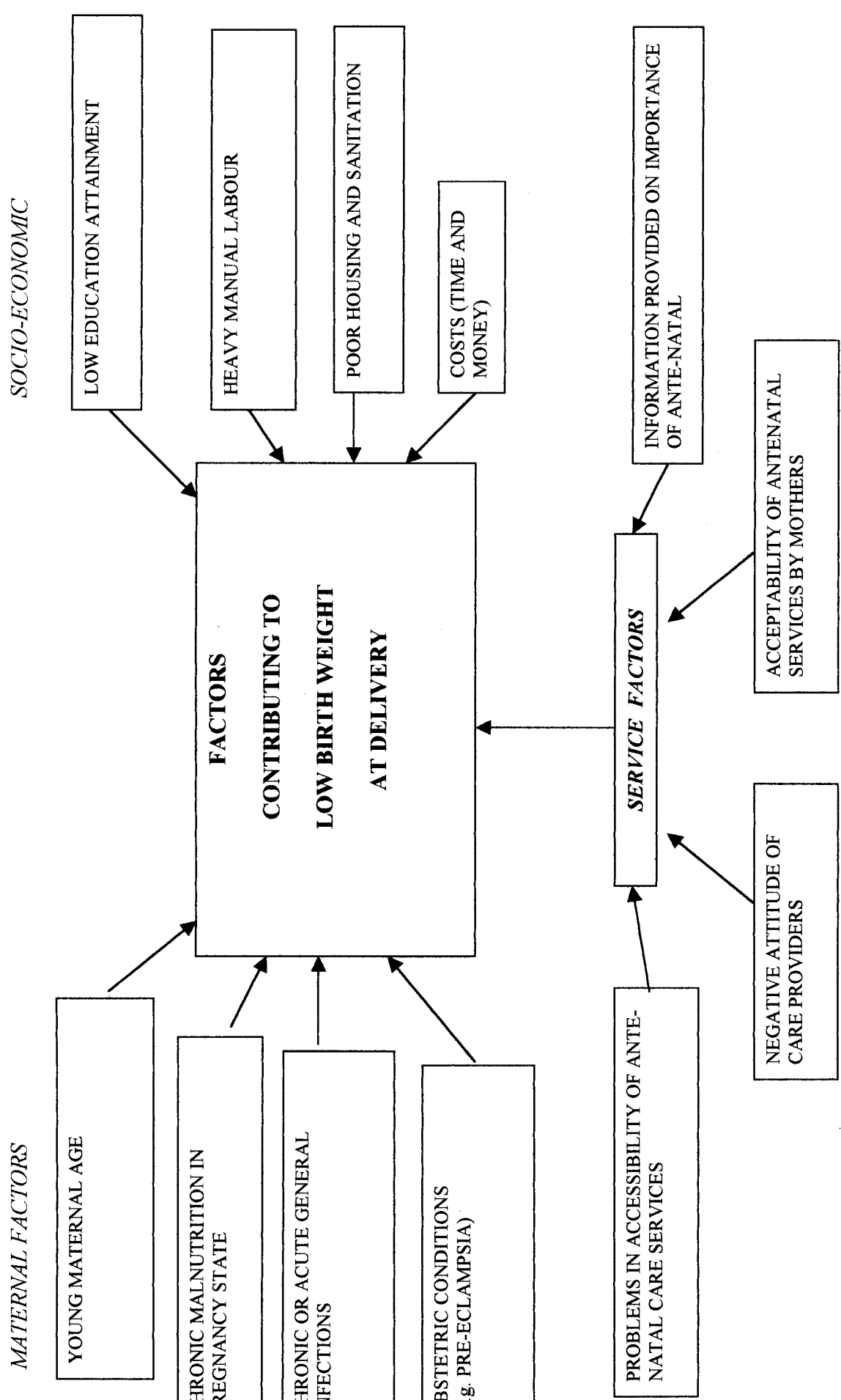
The general health of the mother cannot be looked at separately from the general health of the population as a whole. A community which is better nourished with better health facilities will tend to produce heavier babies than a community which is less fortunate in these matters. A number of social factors may also be associated with low birth weight deliveries. Such factors are heavy physical labour especially after mid pregnancy, poor housing, and low socio economic status and social habits like cigarette smoking. The other factor that is likely to contribute to a high prevalence of low birth weight is low utilization of antenatal care services. The common reasons given by mothers for under utilization of the services are inconvenient hours of operation, inadequacy of the services, poor quality of care, costs and distance and negative attitudes of the staff.

Therefore, there is need to explore factors contributing to high incidences of low birth weight deliveries in the University Teaching Hospital. Though research done in the area of midwifery has identified a number of causative factors of low birth weight babies the researcher found it necessary to conduct a study in UTH to try and find out what could have contributed or caused low

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1.3 DIAGRAM OF FACTORS CONTRIBUTING TO LOW BIRTH WEIGHT



1.4 STUDY JUSTIFICATION

Low birth weight is one of the most serious challenges in maternal and child health, in both developed and developing countries. The low birth weight baby faces difficulties in adjusting to extra uterine existence. Resistance to infections is poor and immunity is low, so that the slightest infection can be fatal. Even in those who survive there is a high incidence of cerebral palsy and other physical defects. They frequently have prolonged, complicated and expensive hospitalisations with uncertain outlooks at the time of discharge from the hospital.

The causes of low birth weight in Zambia are still not clear and the incidence of low birth weight is on the increase despite the tremendous efforts made by the government to improve maternity care. The fact that some of the causes of low birth weight delivery in Zambia are not clear, prompted the researcher to carry out this study to identify some factors contributing to low birth weight deliveries and make recommendations to relevant authorities to improve the situation. Not many studies have been conducted in our country on this problem. The study is also being conducted in partial fulfilment of Bachelor of Science in Nursing degree.

1.5 OBJECTIVES OF THE STUDY

1.5.1 GENERAL OBJECTIVE

To identify some of the factors contributing to a high incidence of low birth weight deliveries at the University Teaching Hospital in order to influence the intervention programs for child survival.

1.5.2 SPECIFIC OBJECTIVES

- 1) To determine the incidence of low birth weight deliveries in the University Teaching Hospital.
- 2) To identify factors contributing to low birth weight at delivery.
- 3) To make recommendations to all relevant sectors on how the problem of low birth weights infants could be reduced.

1.6 INDICATORS AND CUT OFF POINTS

VARIABLE	INDICATOR	CUT OFF POINT
DEPENDENT	<ul style="list-style-type: none">• Low	<ul style="list-style-type: none">• Less than 10%
Low birth weight	<ul style="list-style-type: none">• High	<ul style="list-style-type: none">• More than 10%
INDEPENDENT	<ul style="list-style-type: none">• Low• High	<ul style="list-style-type: none">• Primary.• Secondary and college
Level of education.		
Occupation	<ul style="list-style-type: none">• Low• High	<ul style="list-style-type: none">• Unskilled and non-professional.• Skilled and professional
Family Income	<ul style="list-style-type: none">• Low• High	<ul style="list-style-type: none">• Less than K200, 000• K200, 000and above

Independent variables

These are factors, which the mother already posses at the time she is pregnant. These are maternal characteristics like age, occupation, socio economic status and general health status.

Dependent variables

These are factors influenced by the independent factors above and have an effect on the foetus. These are:

- 1) Low birth weight which leads to –
- 2) High morbidity which leads to-
- 3) High mortality

In my study, I will concentrate on variable (1), which is Low birth weight.

1.7 HYPOTHESIS

The lower the socio economic status of a pregnant mother the greater the chance of delivering a low birth weight infant.

1.8 OPERATIONAL DEFINITIONS OF TERMS

Low birth weight –a birth weight of less than 2 500grams regardless of gestational age.

Preterm infant – an infant born before the completion of 37 weeks of gestation regardless of birth weight.

Small for Dates - an infant whose rate of intra uterine growth was slowed and whose birth weight falls below the tenth percentile on the growth curve.

Term baby – an infant delivered between 37th and 42nd week of gestation inclusive.

Parity – number of deliveries over 28 weeks regardless of whether the baby was born or not.

Abortion – expulsion of products of conception before 28 weeks gestation.

Education – Mothers who will have attained grade seven certificate or less will be recorded as of low education. Those who will have attempted or completed secondary or post secondary education will be recorded as of high education.

Occupation – Mothers who are unemployed will be recorded as low social economic status and those who are employed and earning a salary will be classified as high socio economic status.

Residence – Mothers who live in high-density areas will be classified as low socio economic status group and those from low-density areas will be classified as high socio economic status group.

Antenatal Visits – Any mother with antenatal visits not exceeding 3 will be classified as of poor antenatal care where as those with more than 4 antenatal care visits will be classified as good antenatal attendance.

Interval between Pregnancies – Long interval between pregnancies will be more than one year between pregnancies and less than one year between pregnancies will be regarded as short interval.

Family Income – Low income will be classified as a monthly salary of less than K200 000 and high income will be classified as a monthly income of K200 000 and above.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 GLOBAL PERSPECTIVE

Low birth weight is internationally recognised as a birth weight less than 2 500 grams regardless of gestation and irrespective of the cause (WHO, 1998). The prevalence of low birth weight as the single most powerful predictor of death in the first few months of life still stands at 19% for developing countries as a whole with figures reaching 30% and beyond for South Asia, where as for developed countries this figure stands at 6% (WHO databases, 1999). The incidence of low birth weight varies widely between regions of the world (see figure 2). Due to the magnitude of the problem in developing countries WHO and UNICEF included the reduction in the prevalence of low birth weight to less than 10% as one of their priority objectives between 1990 the year 2000 (Mavalanka, et al, 1999). Research results have shown birth weight to be the single most important determinant of mortality in the neonatal period and an important determinant of survival chances during infancy and childhood (McCormick et al, 1991). The wide gap that exists between the rates for infant mortality rate for developed and developing countries is primarily due to the higher rate of low birth weight babies born to African women (Novak and Broom, 1995).

In developing countries the incidence of low birth weight can be as high as 30% and attributes to 70% of neonatal mortality and up to half the infant mortality rate (Ebrahim, 1993). The health of newborns is intimately and intrinsically linked with that of their mothers. The health problems of mothers and children have their origin in

the inherently vulnerable stages of the human cycle of reproduction, growth and development. Social, cultural, economic and environmental factors have more influence on foetal, neonatal and childhood periods than on any other stage of human life. Failure to meet to meet the growth and development needs at these intervals adversely affects later stages of life (Perla et al, 1994). Low birth weight is an appropriate example that demonstrates this close inter-relationship between the mother, the child, and the environment (figure 3). Low birth weight is said to be the end result of a mother's life time of ill health, malnutrition, parasitic infection, overwork, smoking, and infections during pre-conception and pregnancy periods.

Low birth weight may be due to a variety of factors. The major factors associated with low birth weight in developing countries include mother's pre-pregnancy weight, height, weight gain during pregnancy, anaemia and infections, particularly malaria. In industrialized countries, cigarette smoking accounts for one-third of low birth weight infants (Hu Ching-Li, 1993) (Figure 4).

Socio economic development, particularly when it benefits women

is associated with a reduction in the incidence of low birth weight. A comparative study was done in India in 1994 between pregnant women from low and high socio economic classes covering a total of 7,109 live births. Research results revealed that 38% of children born to women from the slums of Delhi were less than 2 500grams at birth where as amongst women who registered at a prestigious medical centre reported only 26 % of low birth weight deliveries (WHO, 1999).

Figure 2

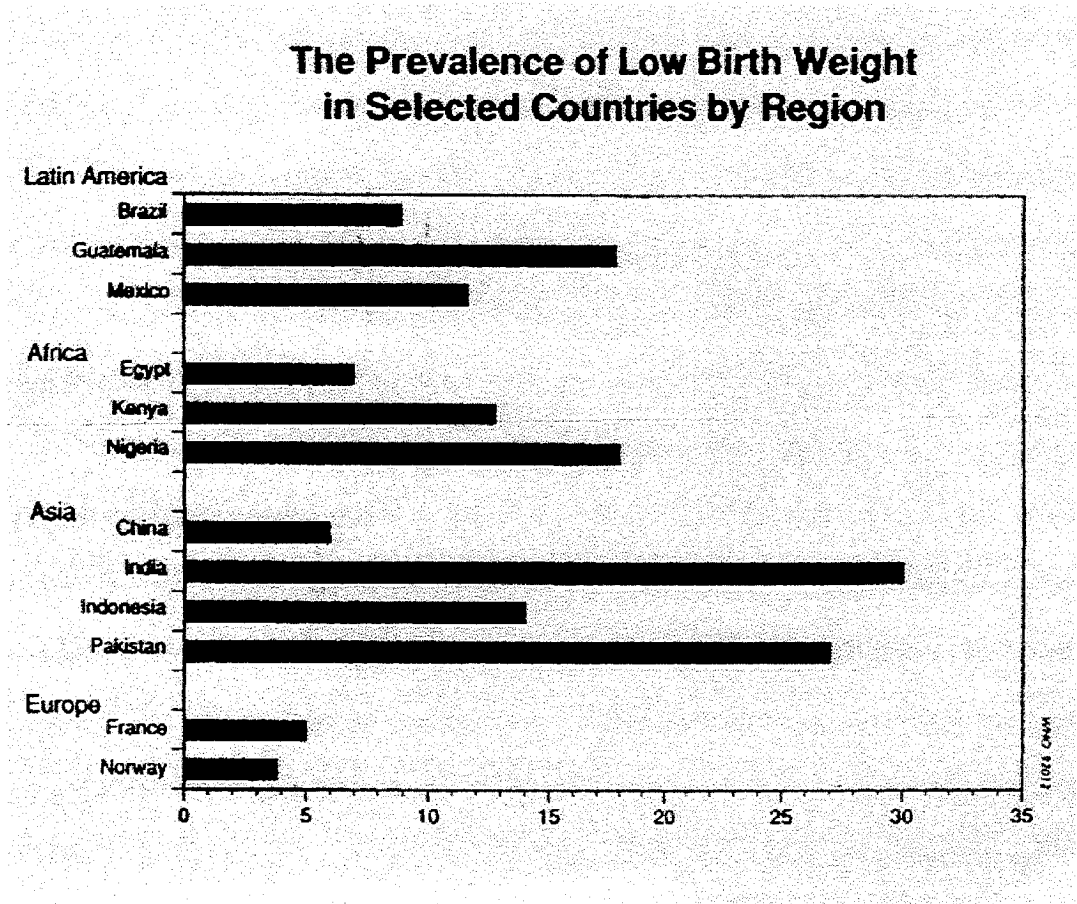
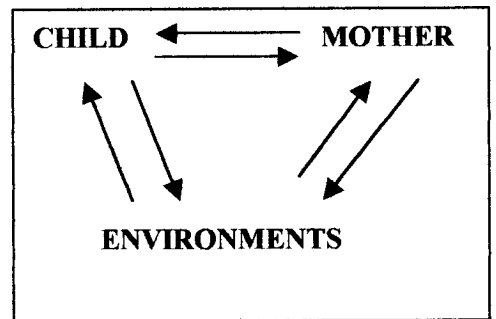
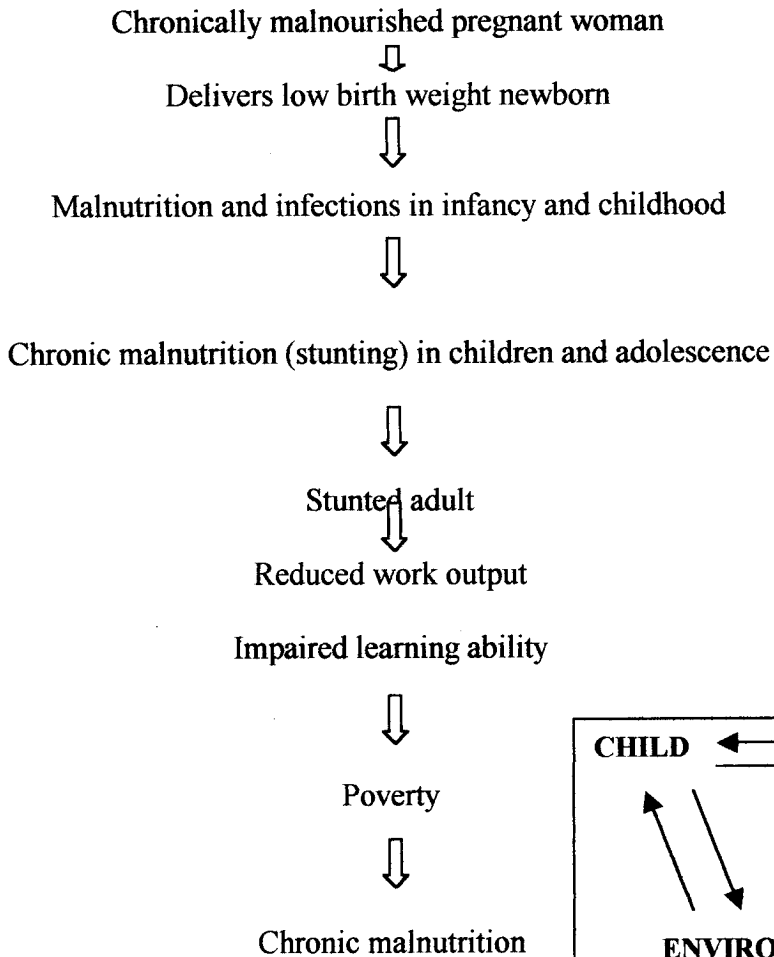


Figure 3

Mother, Child and environments: Interrelationship

Example



WHO 93585

(Perla et al, 1994)

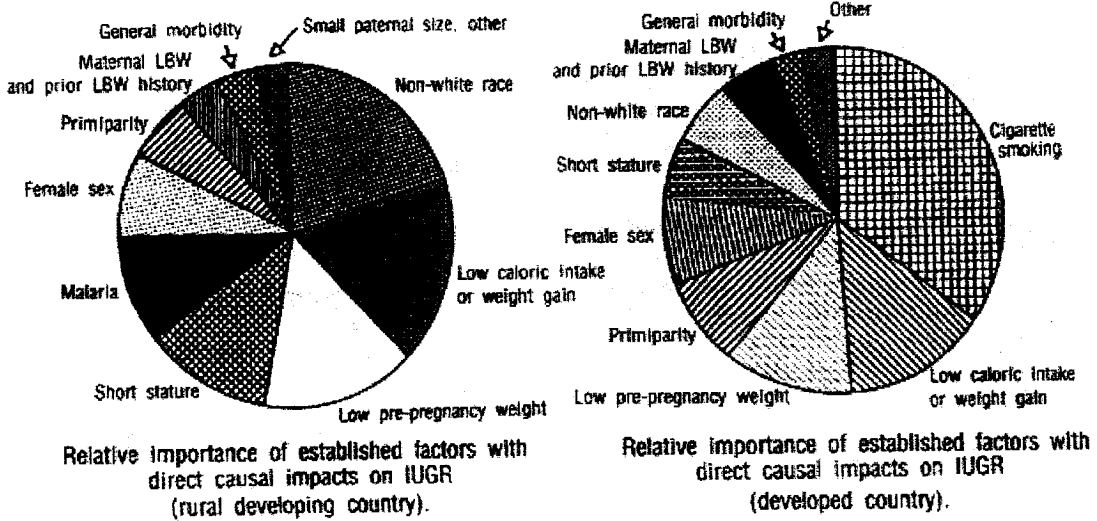


Figure 4

Low birth weight rates are higher in developing countries where the majority of the women fall in the low social economic status category and most cases are due to under nutrition (Ebrahim, 1993). Several studies have emphasized the importance of maternal nutrition in ensuring adequate foetal growth. In a prospective study done in a rural community in India, it was found that, among the many environmental factors taken into consideration, maternal nutrition had a significant relationship to birth weight. The birth weights of infants whose mothers weighed 38 kilograms or less before pregnancy were significantly lower than those of newborns whose mothers weighed over 41 kilograms. It was concluded that the major contributing factor to the low birth weight of infants was the mothers' chronic malnutrition, probably since childhood (Perla et al, 1994).

In developing countries infections during pregnancy receive too little attention. With the exception of concern over the perinatal transmission of HIV infection, little attention has been given in recent years to the immediate and long-term effects of sexually transmitted infections on the foetus and newborn. Some studies suggest that maternal gonococcal or chlamydial infection doubles the risk of premature rupture of amniotic membranes, resulting in a preterm birth (Mark, 1993). Clinical trials demonstrated important reductions in many of these adverse outcomes of pregnancy with appropriate screening and antimicrobial treatment protocols. Therefore maternal and child health services, and family planning services should seriously consider becoming a major focus for the control of sexually transmitted diseases, including HIV/AIDS, in some countries. Pregnant women suffer frequently from upper respiratory infections, malaria, dysentery, parasitic infestations and hepatitis. The adverse effects of some of these infections on pregnancy are not known and need to be investigated (Shah, 1993). It has been reported that pregnant women suffering from malaria deliver a higher number of low birth weight infants than those who do not have malaria (Ebrahim, 1993).

In Brazil the risk factors identified for low birth weight infants were related to family income, maternal education, maternal age, maternal height, pre pregnancy weight, parity, birth interval and smoking during pregnancy

(Fernando et al, 1991). It was further stated that these infants experienced higher risks of hospitalisations during the first two years of life.

Stress and anxiety may provoke preterm labour in some susceptible women as well as lifestyle factors such as smoking and drinking alcohol (Kramer, 1987). Psychological stressors and level of education appeared to influence preterm delivery where as smoking habits influenced much of intra uterine growth retardation. The status of women in a society influences the health of newborns, their growth and development. Violence against women increases the risk of miscarriage by two-fold, and the chances of having a baby below average weight is four times greater (Shah, 1994).

Most studies done on the effect of hours worked and job activity on foetal growth, concluded that fatigue rather than job activity per se was a risk factor for pregnant workers. It has been concluded that reductions in hours worked and modification of working conditions resulted in improved pregnancy outcomes. In a short study done in 50 factories in France, a significant reduction in the prematurity rate from 8.1% to 3.1% was observed as a result of sick leave and extended antenatal maternity leave. These investigations also reported improvements in prematurity rates with a change in workstations to a job that required less physical effort (from 6.2% to 3.4%) and with a reduction in weekly hours of work (from 7.7% to 5.1%). Evidence from developed countries consistently suggests that long work hours, heavy lifting and other

physically arduous work and prolonged standing are associated with increased risk of low birth weight and preterm delivery (Hatch et al, 1997)

A review of aetiological factors mediating the disparities in intrauterine growth and preterm birth revealed that cigarette smoking during pregnancy appears to be the most important mediating factor for intrauterine growth retardation, with low gestational weight gain and short stature. For preterm birth, socio-economic gradients in bacterial vaginosis and cigarette smoking appear to explain some of the socio-economic disparities (Kramer et al, 2000).

In a study done in Kuala Lumpur, Malaysia, on low birth weight deliveries it was found that 13.5% of all births were of low birth weight and contributed to 74.8% of all perinatal deaths. The four outstanding associations with both low birth weight and perinatal deaths were maternal hypertension, Antepartum Haemorrhage, multiple pregnancy and unexplained intrauterine deaths (Tahir et al, 1991).

In a study done on causes of low birth weight births in public and private patients revealed significant differences in the reasons for low birth weight births in the two groups. Low birth weight at term (26.7%) and premature rupture of foetal membranes (33.7%) were more common in public low birth weight births than in private births (13.8% and 23%, respectively). Medical problems were related to 16.1% of private and 14.9% of public low birth weight births. The author concludes that preventive measures of preterm

births are likely to be successful if such programmes in reducing the rate of low birth weight births are dependant on the characteristics of the patient population to which the programmes are directed (Meis PJ et al, 1997).

2.2 REGIONAL PERSPECTIVE

In Africa, the incidence of low birth weight infants is on the increase. Most of the countries in the sub-Saharan region have the highest rates (Table 2)

TABLE 2 PREVALENCE OF LOW BIRTH WEIGHT AMONGST SOME SUB-SAHARAN COUNTRIES.

Country	Average births per woman	Maternal deaths per 100,000 births	Low birth weights as %age of all births	Pregnant woman with anaemia
Zambia	6.5	151	13	47
Mali	7.1	1,750	17	65
Ghana	6.0	1000	14	64
Zimbabwe	5.0	77	14	47
Ethiopia	6.9	900	16	47

Source (Fishman and Hansch, 1995)

Low birth weight data in forty sub-Saharan African countries show that more than 10% of babies are born with low birth weight (Fishman and Hansch, 1995). He further states that this high proportion of low birth weight infants in many sub-Saharan African countries is substantially attributed to maternal malnutrition prior to and during pregnancy.

Interventions, which attempt to improve nutritional status during pregnancy, ignore the impact of years of nutritional neglect before the pregnant state

(Tinker et al, 1994). Many cultural beliefs and customs exacerbate the nutritional stresses already existing in women. For example food taboos during pregnancy deprive women of necessary nutrients there by placing women and their newborns at greater risks of complications and death. Studies done in Africa have shown that around 20% of African women are underweight and enter into pregnancy with a low body mass index.

Early marriages often lead to early pregnancy. In a study of selected African countries three quarters of all first births among married women occurred within the first two years of marriage union (Tinker et al, 1994). Adolescent pregnancy threatens the health and nutritional status of mother and foetus, with both competing to meet growth needs. This increases the rate of low birth weight infants born to adolescent mothers. In addition to the health and nutritional risks, adolescent pregnancy often jeopardizes women's opportunities for education. Many African schools expel teenager girls when they become pregnant, depriving them of future educational opportunities.

The other factor that contributes to a high prevalence of low birth weight deliveries is inaccessibility to health services by the majority of women in the childbearing age (Jacobson, 1993). He describes the problem as follows – from one pregnancy to another, a woman may never receive medical care. Pre natal care offers an opportunity to inform women of their nutritional requirements, distribute iron tablets, and identify risk factors such as malaria

and anaemia. Many African women either lack access to health services or do not seek prenatal care.

In Malawi low birth weight was observed more in adolescent mothers. Sixty percent of the low status women did not have adequate food intake. Heavy physical work overload, laborious jobs, negative food taboos were cited as factors contributing to low birth weight in Malawi (Nyirenda et al, 1991).

In a descriptive study on low birth weight deliveries in Nyanza Hospital, Kenya, the incidence rate was found to be 15%. Premature labour accounted for 55.3%, while small for gestational age contributed 44.7%. The most common antenatal complications associated with low birth weight delivery were pyrexia, premature rupture of membranes in preterm labour and multiple pregnancy (Were, 1994).

In Dacca, Senegal it was observed that heavy workload during pregnancy contributed to low birth weight (Briend, 1980). He reported that with the rising cost of living, more women from poor social economic classes are joining the labour force, thus subjecting their own health as well as that of their yet unborn children to further risks.

A study done in Ethiopia showed that prematurity, low birth weight and intra uterine foetal deaths are high in seropositive women than in seronegative

women. The author revealed that there is a trend towards a higher incidence of premature rupture of membranes among seropositive women due to a change in the vaginal flora that has been linked to premature rupture of membranes before term (Chamiso B, 1996).

2.3 LOCAL PERSPECTIVE

The incidence of low birth weight in Zambia is on the increase and an increase of 2.1% was observed between 1991 (11.1%) and 1995 (13%) (Ministry of Health, 1998). Review of records in D Block, which is a neonatal intensive care unit, revealed that out of 3, 348 infants admitted in the unit at the University Teaching Hospital in Zambia, 2, 536 (75%) were babies with low birth weight (less than 2, 500 grams). The incidence rate is at 10% from the health centres in Lusaka for the year 1999 (CBoH-HIA 2000). It is therefore important that causes of low birth weight are identified in an attempt to reduce the incidence.

An understanding of the socio economic and demographic factors of women in the childbearing age in Zambia is of critical importance for further reduction of low birth weight deliveries. Currently 51% of the Zambian population is made up of women. In 1996 women in the childbearing age with primary education were 48.1% and the total literacy rate amongst these women was 66.5%. Births with medical antenatal care were 95.6% but only

11.4% booked in the first trimester period. Mothers with low body mass index were 9.1% (Central Statistical Office, 1996).

On the copperbelt the cause of low birth weight labour was unknown in 48.2% of cases studied. The major known associations with low birth weight labour and delivery were twin birth, Antepartum haemorrhage, premature rupture of membranes, and toxemia of pregnancy (Davies, 1977).

The literature review has shown that low birth weight was more prevalent and a serious problem in developing countries. The literature review has revealed factors such as maternal malnutrition, pre eclampsia, low socio economic status, marital status and smoking were identified as contributory factors to increased low birth weight rate. This study is therefore; aimed at finding out if some of these findings in the literature review apply to Zambia as well.

CHAPTER THREE

3.0 METHODOLOGY

3.1 PILOT STUDY

A pilot study was conducted before the actual study in order to test whether the questions in the instruments were clear. Necessary adjustments on the questionnaire were made on questions that were not clear to respondents and those found to be unnecessary were omitted. The pilot study provided the researcher with the opportunity to collect data and to test the validity and reliability of the tool to be used in the actual study. During the month of August 2000 five mothers were selected during Children's Clinic at Kalingalinga Health Centre. The criterion for selection was based on all mothers who have had delivered to a low birth weight infant. Low birth weight was taken as any infant with a birth weight of less than 2 500 grams. The respondents for the pilot study were chosen using the convenient sampling method. The sample size taken was one tenth of the total sample size (50) in the main study. The respondents were interviewed using an interview guide. The data that was collected during pilot study was analysed manually the same month of August 2000. The reason for choosing Kalingalinga Health Centre for pilot study was because the health centre catchment's area serves both clients from the high and low density residential areas. The other reason for choosing kalingalinga health centre was its proximity to the researcher's school.

3.2 RESEARCH DESIGN

The researcher used a descriptive survey. A research survey is defined as a study in which a body of data is collected, recorded and analysed (Treece and Treece, 1986). A survey method using an interview schedule was used. The investigator feels that this method was useful because of the ease with which the investigator got respondents and information. This study was qualitative and quantitative in its approach because it endeavoured to identify and explore factors contributing to low birth weight deliveries in the University Teaching Hospital.

3.3 RESEARCH SETTING

The study was conducted at the University Teaching Hospital (UTH), in Lusaka the capital city of Zambia. The University Teaching Hospital is the largest hospital in Zambia. It is a referral hospital for the whole country. The city of Lusaka is found in Lusaka province of Zambia and it has a population of one million, six hundred and thirty nine thousand people (CSO, 1996). It is served by one public hospital and 23 health centres under the Ministry of health and several others privately owned health institutions, which are evenly distributed over the area.

The University Teaching Hospital is the largest referral hospital in Zambia and it offers all specialist services and provides training for Nurses, Doctors and Paramedical. The hospital is situated five kilometres east of Lusaka City.

UTH has a bed capacity of about 3,000 (three thousand) beds. It has various departments namely Out patient Department, Medical, Surgical, Paediatrics, Obstetric and Gynaecology wards. This study was conducted in the department of Obstetrics and Gynaecology. The obstetrics and gynaecology services are performed by Nurse midwives, Doctors and paramedical. Facilities include Labour ward, Antenatal and Postnatal wards, Antenatal and Postnatal clinics, and operation theatres. Full gynaecologic and Family planning services are also provided. There is a regular antenatal clinic, which attends to approximately 25 new cases and 65 re attendants daily. There are about 28 deliveries per day in the Labour ward, made up of clinic attendants and referrals. The partogram is used in monitoring Labour. Mothers with normal deliveries are allowed to go home after twenty-four hours. Mothers with low birth weight infants and whose infants are detained in the neonatal intensive care unit are discharged via mothers' shelter until the infant is discharged from the neonatal intensive care unit.

Four postnatal wards in UTH in the department of obstetric were chosen as a study site because being a referral hospital most pregnant women in premature Labour are referred for management. Postnatal records of all the mothers who had premature babies are easily traceable and accessible. The mothers too are kept on the wards for a much longer period of time while they wait for their babies to gain weight. As such this enabled the researcher to get more

information by interviewing the relevant mothers after each record review to verify or get additional information.

3.4 STUDY POPULATION.

This comprised of mothers with low birth weight babies admitted in postnatal wards in the department of obstetrics. This seemed to be ideal because of the high turn over of mothers referred with antenatal complications from the peri urban clinics in Lusaka. All mothers interviewed were Zambians and would have delivered to a singleton baby.

3.5 SAMPLE SELECTION

Pregnant women who came or were referred to UTH Labour ward and had delivered to a low birth weight live infant were enrolled after being informed about the study and requested to participate. A convenient sampling method was used. The respondents were those available when the researcher was conducting the research. A convenience sample is used when participants are easily accessible to the researcher and meet the criteria of the study. The advantages of carrying out a convenient sample are the ease in carrying out the research and the saving of time and money. The disadvantages are the potential for bias, the use of the sample that may not represent the population and the limited generalization of the results. However restricting the

respondents to only those mothers delivered in UTH Labour ward with low birth weight delivery will control the disadvantages.

3.6 SAMPLE SIZE

The sample size comprised of fifty mothers with low birth weight deliveries conducted in UTH Labour ward.

3.7 DATA COLLECTION TECHNIQUE

Reviewing of patient's records was used to collect data. Additional information was obtained using a semi-structured interview guide consisting of closed and open-ended questions. The advantage of this method is that it saves on time, as there is no need to go back to respondents to collect the questionnaires. The disadvantages are that the presence of the interviewer may lead to the interviewee not giving precise and accurate answers especially in closed ended questions. It is also time consuming especially in terms of dealing with large populations because the interviewer does not need to be in a hurry if adequate information is to be collected. These problems were addressed by ensuring that the interviewer created good rapport with the respondents, and explained the purpose of the study and how the subjects were selected.

The interviewer introduced herself to each and every respondent and assured all subjects that all information collected was going to be treated with high

degree of confidentiality. The following questions were asked, background information of the respondent, socio economic status in relation to place of residence and husbands occupation, mother's health both general and obstetric, past obstetric history, family planning practices amongst the mothers and the last two questions were for letting mothers air their views and beliefs on low birth weight deliveries.

3.8 PROCEDURE FOR DATA COLLECTION

The researcher started interviewing subjects in the month of September 2000 and finished in the last week of September 2000. The researcher told the respondents that the purpose of the study was to seek information on different factors contributing to low birth weight deliveries. A good rapport with the respondents was established by self-introduction. The respondents were also assured of confidentiality. Consent was sought from each individual subject verbally and all the subjects showed willingness to participate in the study. Mothers were interviewed one at a time to ensure privacy and confidentiality. There was an average of about three interviews per day. At the end of each interview session, the researcher checked through the answers to clarify any information written in a hurry.

3.9 ETHICAL CONSIDERATION

The researcher obtained permission from the UTH Managing Director and the District Management Team to conduct the study in UTH. The subjects under study were asked for their consent to participate in the study. Before interview commenced, the clients were informed of the purpose of the study. The subjects were also informed that the information would be kept in confidence and no names would be recorded on the questionnaire to ensure anonymity.

CHAPTER FOUR

4.0 DATA ANALYSIS AND PRESENTATION OF FINDINGS

Introduction

The purpose of the study was to determine the factors associated with low birth weight deliveries in the University Teaching Hospital (UTH), Lusaka. The data presented was analysed into frequency tables, cross tabulations and numerical description of each table. The data was analysed manually using a Data Master Sheet and a pocket Scientific Calculator.

The results presented were obtained from fifty respondents who are women in the childbearing age (15 – 45 years old). Collected data was checked for completeness before it was entered on the master sheet for analysis. Response from the interview schedule were categorized, coded and later entered on the master sheet. Frequency tables have been done by simple tallying of all questions in the interview schedule questionnaire followed by cross tabulation of key variables. Bar charts were used with numerical description of tables and figures.

DEMOGRAPHIC DATA OF RESPONDENTS

TABLE 3 RESPONDENTS' AGE n=50

AGE GROUP	NUMBER	PERCENTAGE (%)
15 - 25	31	62
26 - 35	16	32
36 - 45	3	6
Total	50	100

Table 3 shows that the majority of the respondents were aged between 15 – 25 years (62 %), followed by respondents aged between 26 – 35 years (32 %) and only 6% were aged between 36 – 45 years.

TABLE 4 RESPONDENTS' MARITAL STATUS n=50

MARITAL STATUS	NUMBER	PERCENTAGE (%)
Married	46	92
Unmarried	4	8
Total	50	100

Table 4 shows that most of the respondents were married women (92%), and only 8% Of the respondents were not married.

TABLE 5 EDUCATIONAL BACKGROUND OF THE RESPONDENTS'

n=50

EDUCATION LEVEL	NUMBER	PERCENTAGE (%)
No education	5	10
Primary	25	50
Secondary	17	34
College	3	6
Total	50	100

Table 5 illustrates that 50% of the respondents attained Primary education, 34% attained Secondary education, only 6% of the respondents had college education and 10% of the respondents had no formal education.

TABLE 6 RESPONDENTS' EMPLOYMENT STATUS n=50

EMPLOYMENT	NUMBER	PERCENTAGE (%)
Not employed	24	48
Informal employment	22	44
Formal employment	4	8
Total	50	100

Table 6 indicates that most of the respondents were not employed (48%), followed by those in the informal employment (44%) and only 8% were in formal employment.

TABLE 7 RESPONDENTS' PLACE OF RESIDENCE n=50

RESIDENCE	NUMBER	PERCENTAGE (%)
Low density	5	9
High density	35	76
Total	50	100

Table 7 illustrates that the majority of respondents were residing in the heavily populated areas (90%) and only 10% were from the low-density areas.

TABLE 8 OCCUPATION OF RESPONDENT'S HUSBAND n=46

EMPLOYMENT STATUS	NUMBER	PERCENTAGE (%)
Not employed	4	9
Informal employment	35	76
Formal employment	7	15
Total	46	100

Table 8 indicates that most of the husbands to the respondents were in the informal sector of employment (76%), followed by 15% in the formal sector of employment and 9% were unemployed.

TABLE 9 RESPONDENTS' NUMBER OF CHILDREN n=50

PARITY	NUMBER	PERCENTAGE (%)
1	22	44
2	7	14
3	6	12
4	5	10
5 and above	10	20
Total	50	100

Table 9 shows that the majority of low birth weight infants were born to primiparae (44%), followed by those born to multiparae mothers (36%) and 20% grandmultiparae mothers with 5 and more children.

TABLE 10 RESPONDENTS' NUMBER OF PREGNANCIES n=50

PREVIOUS PREGNANCIES	NUMBER	PERCENTAGE (%)
1 – 2	32	64
3 - 4	6	12
5 and above	12	24
Total	50	100

Table 10 illustrates that low birth weight deliveries are most in women who have had 1-2 pregnancies (64%), followed by women who has 5 and more pregnancies (24%) and the least in women who has had 3-4 pregnancies (12%)

TABLE 11 RESPONDENTS' PREVIOUS OBSTETRIC HISTORY n=50

OBSTETRIC HISTORY	NUMBER	PERCENTAGE (%)
Abortion	5	10
Still birth	0	0
Previous Low birth weight	11	22
No History of bad obstetric	34	68
Total	50	100

Table 11 reveals that majority of the women (68%) had no history of either abortion, stillbirth or previous low birth weight infant, followed by 22% with a history of previous low birth weight deliveries and only 10% with a history of an abortion.

TABLE 12 RESPONDENTS' ANTENATAL ATTENDANCE n=50

ANTENATAL	NUMBER	PERCENTAGE (%)
Yes	43	86
No	7	14
Total	50	100

Table 12 illustrates that 86% of the respondents had booked for antenatal care, while 14% did not.

FIGURE 5 RESPONDENTS' GESTATIONAL AGE ON FIRST ANTENATAL VISIT n=43

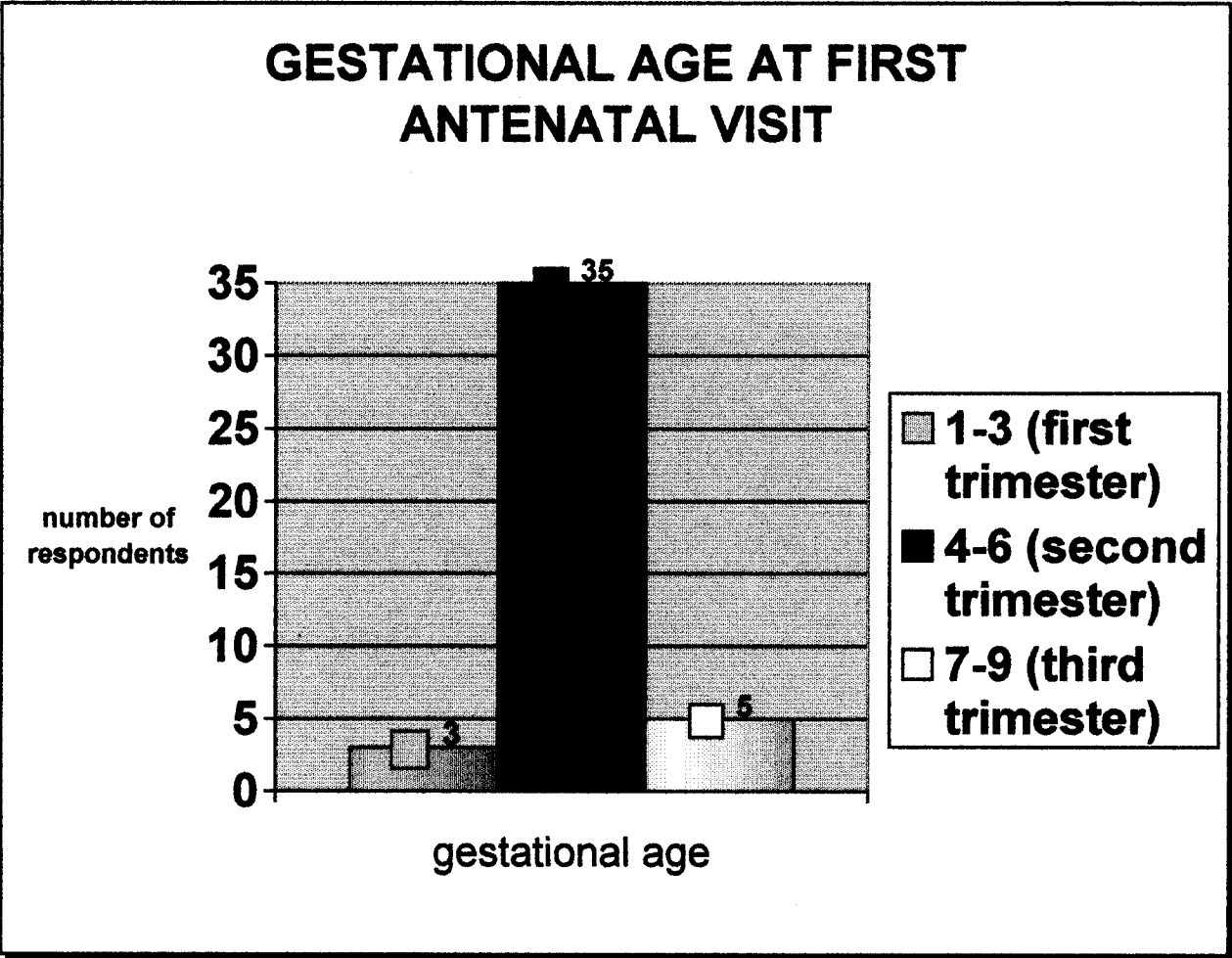


Figure 5 illustrates that majority of respondents (81.4%) had their first antenatal visit in the second trimester, followed by 11.6% in the third trimester and only 7% went during their first trimester.

TABLE 13 RESPONDENTS’ WHO HAD INVESTIGATIONS DONE
N=43

INVESTIGATIONS	NUMBER	PERCENTAGE (%)
VDRL and Hb done	38	88.4
VDRL and Hb not done	5	11.6
Total	43	100

Table 13 illustrates that 88.4% of the respondents had their haemoglobin levels and VDRL investigations done. Only 11.6% did not.

TABLE 14 RESPONDENTS’ HISTORY OF ADMISSION TO THE
HOSPITAL DURING ANTENATAL PERIOD
N=50

ADMISSION	NUMBER	PERCENTAGE (%)
Yes	6	12
No	44	88
Total	50	100

Table 14 illustrates that most of the respondents (88%) had no history of being admitted to hospital during the antenatal period, whilst 12% had the history.

TABLE 15 RESPONDENTS’ NUTRITIONAL INTAKE IN THE LAST PREGNANCY n=50

NUTRITION	NUMBER	PERCENTAGE (%)
Adequate	22	44
Inadequate	28	56
Total	50	100

Table 15 illustrates that majority of respondents (56%) had inadequate nutrition as compared to 44% with adequate nutrition.

TABLE 16 RESPONDENTS’ REASON FOR INADEQUATE NUTRITIONAL INTAKE n=28

REASON FOR INADEQUATE NUTRITION	NUMBER	PERCENTAGE (%)
Unwell	11	39.3
No appetite	9	31.1
Not enough food	8	28.6
Total	28	100

Table 16 illustrates that 39.3% attributed inadequate nutrition to being unwell, 31.1% attributed it to having no appetite for food and the remaining 28.6% attributed it to not having enough food to eat.

TABLE 17 RESPONDENTS’ MEANS OF ACCESSING ANTENATAL CARE n=43

ACCESSING ANTENATAL CARE	NUMBER	PERCENTAGE (%)
Walking	32	74.4
Public transport	11	25.6
Own private transport	0	0
Total	43	100

Table 17 reveals that the majority of respondents (74.4%) accessed antenatal care services by walking to the health centre, whilst 25.6% accessed the services by using public transport and no one went for antenatal using her own private transport.

TABLE 18 RESPONDENTS’ BOOKED FOR ANTENATAL AND HAD RECEIVED HEALTH EDUCATION n=43

HEALTH EDUCATION	NUMBER	PERCENTAGE (%)
Yes	37	86
No	6	14
Total	43	100

Table 18 indicates that the majority of respondents (86%) received advice during antenatal care services whilst 14% did not.

TABLE 19 RESPONDENTS’ PRACTICING MODERN FAMILY
PLANNING METHODS n=50

FAMILY PLANNING	NUMBER	PERCENTAGE (%)
Yes	8	16
No	42	84
Total	50	100

Table 19 reveals that the majority of respondents (84%) did not practice modern family planning methods and only 16% did.

FIGURE 6 RESPONDENTS' ANTENATAL COMPLICATION n=50

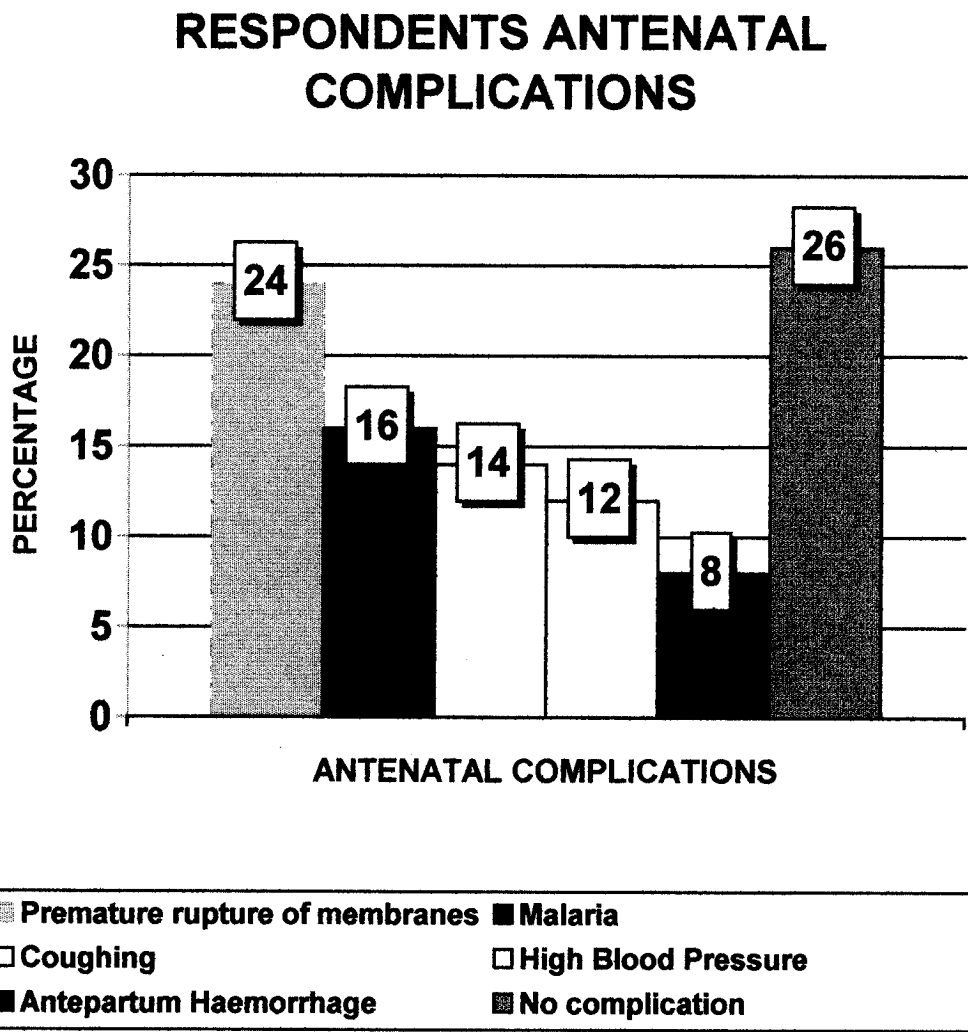


Figure 6 reveals that 26% of respondents had no antenatal complications, 24% of respondents had premature rupture of membranes, followed by Malaria (16%), Coughing (14%), Hypertension disease (12%) and Antepartum Haemorrhage (8%).

Figure 7 Respondents' family monthly income n=50

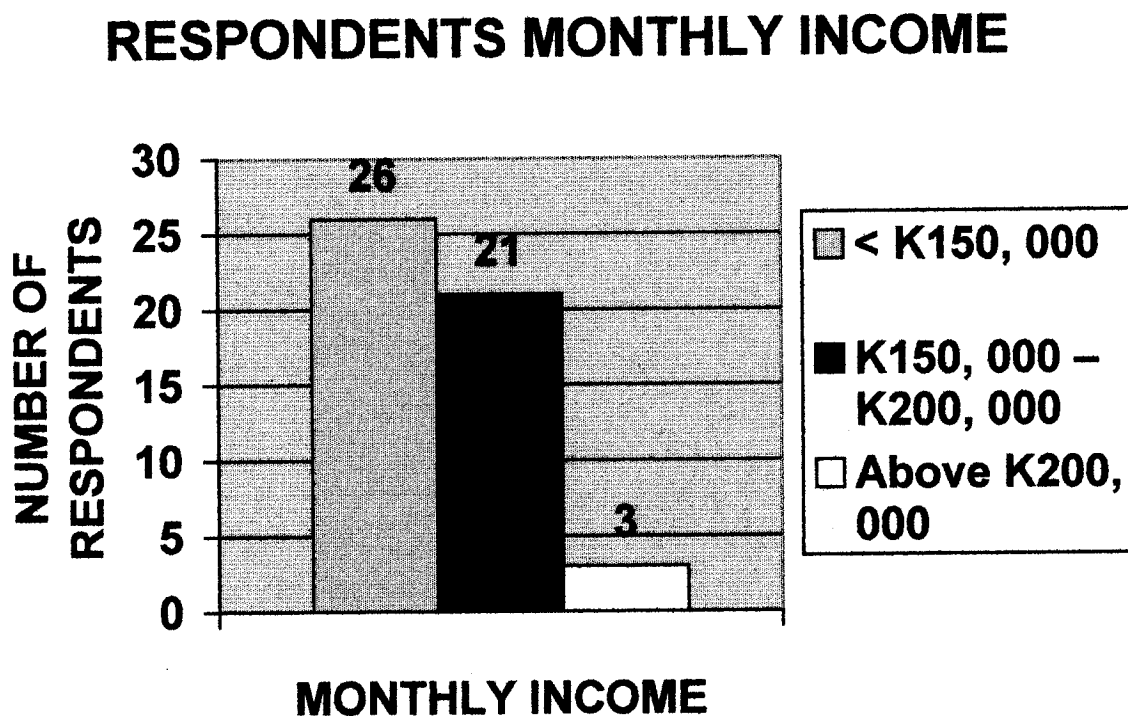


Figure 7 illustrates that the majority of respondents 26 (52%) were from low family income, 21(42%) from medium family income and only 6% from high family income.

TABLE 20 RESPONDENTS’ NUMBER OF PREGNANCIES IN
RELATION TO PLACE OF RESIDENCE n=50

NUMBER OF PREGNANCIES

RESIDENCE	1 - 2	3 - 4	5 and above	ROW TOTAL
Low	2(4%)	2(4%)	1(2%)	5(10%)
High	30(60%)	4(8%)	11(22%)	45(90%)
COLUMN TOTAL	32(64%)	6(12%)	12(24%)	50(100%)

Table 20 reveals that the majority of women (22%) with more than five pregnancies were from high density residential area as compared to only 2% from low density residential area, and that the least number of pregnancies (10%) were found in the low density residential area as compared to 90% from the high density residential area.

TABLE 21 RESPONDENTS’ NUTRITIONAL INTAKE IN RELATION TO
PLACE OF RESIDENCE n=50

PLACE OF RESIDENCE			
NUTRITION	HIGH	LOW	ROW TOTAL
Adequate	19(38%)	3(6%)	22(44%)
Inadequate	26(52%)	2(4%)	28(56%)
COLUMN TOTAL	45(90%)	5(10%)	50(100%)

Table 21 illustrates that 55% of respondents with inadequate nutrition were from high-density area as compared to only 4% from low-density area.

TABLE 22 RESPONDENTS’ GESTATIONAL AGE AT DELIVERY

GESTATION	NUMBER	PERCENTAGE (%)
28 – 37 Weeks	49	98
37 – 42 Weeks	1	2
Total	50	100

Table 21 reveals that preterm births accounted for 98% and only 2% were due to small for gestational age at term.

TABLE 23 SEX OF THE RESPONDENT’S INFANT n=50

SEX	NUMBER	PERCENTAGE (%)
Male	18	36
Female	32	64
Total	50	100

Table 23 reveals that there were more of female low birth weight infants (64%) than male low birth weight infants (36%).

TABLE 24 BIRTH WEIGHTS OF RESPONDENT’S INFANTS
n=50

BIRTH WEIGHT	NUMBER	PERCENTAGE (%)
Less than 1,500gms	27	54
1, 500gms – 2, 000gms	15	30
2, 000gms – 2, 500gms	8	16
Total	50	100

Table 24 indicates that 54% of infants weighed less than 1,500gms, 30% weighed between 1,500gms and 2,000gms and 16% weighed between 2,000gms and 2, 500gms.

4.1 DISCUSSION OF FINDINGS

This study aimed at determining factors responsible for the high incidence of low birth weight deliveries seen in UTH. The sample consisted of fifty respondents who were conveniently sampled in the UTH postnatal wards during the month of September 2000. The findings were discussed in October 2000 and relevant implications to the health care delivery services have been made.

A total of 830 deliveries were recorded during the month of September 2000. The incidence rate of low birth weight deliveries was 20.2%. This incidence rate of low birth weight is higher than 15% reported in the study done in UTH in 1988 (Banage, 1988). Both studies were however done in an urban area where health services are better taking into consideration the introduction of the new health reforms since 1991. The vision of the new health reforms emphasizes on equity of access to quality and cost effective health care as close to the people as possible.

The obstetric population in this study was found to be young, 62% being below 25 years old. This incidence is in the same range of 66.7% reported in previous Zambian studies (Himoonga, 1984). This suggests that young mothers have a higher risk of producing low birth weight infants than the older mothers. In table 3, it was found that the number of respondents with

low birth weight deliveries was higher among younger mothers than any other group. This was due to the fact that these adolescent mothers lack food and good care during pregnancy because they are mostly in the low social economic status. They also suffer from lack of experience and other social problems. In Malawi, Low birth weight deliveries were observed more in adolescent mothers (Nyirenda et al, 1991). One of the highlights of this study was the limiting biological factor of early marriages of the 50 mothers studied. These young adolescent mothers constituted over 42% who delivered low birth weight infants. Thus communities with such biosocial factors are likely to have the persisting trend of low birth weight deliveries compared to others, which lack such factors. Table 3 shows that there is some relationship between low birth weight deliveries and age of the mother.

Low birth weight, preterm delivery and small for gestational age have all been associated with some parental characteristics. Socio economic development that particularly benefits women is associated with a reduction in the incidence of low birth weight (Shah, 1994). 90% of respondents were from the high-density areas as compared to only 10% from the low-density residential areas. These women suffer from some of the social inequalities like low standards of housing, poor and unhygienic sanitary conditions, which are other contributory factors to low birth weight deliveries (Ebrahim, 1991). The study revealed that the majority of the respondents (48%) were not in employment, 44% were engaged in the informal sector of employment and

only 8% were in the formal sector of employment (Table 6). These mothers are being forced to go into informal employment due to the rising cost of living brought about by the new government policies recently introduced like the structural adjustment Programme. This has seen a lot of retrenchments amongst their spouses and women from the low social classes joining the Labour force, thus subjecting their health as well as that of their unborn children to further risks. The majority of the respondents (50%) were found to be of primary educational attainment (Table 5). This contributed to them being found in the informal employment mainly as petty traders. As they do petty trading, they are involved in long work hours, heavy lifting, prolonged standing, and other physically arduous work right up into their mid pregnant state. The above stated factors have been associated with increased risk of low birth weight and preterm delivery. When controlling for socio economic status the number of low birth weight infants was higher among the low educated (50%) than the high educated mothers (40%) and 10% were found to have had no formal education at all. Similarly the number of low birth weight deliveries was more (94%) among the low-income group than with the high-income group 6% (Figure 7). Education and social economic status therefore seem to have an effect on low birth weight deliveries. Educated women tend to make greater use of prenatal care and trained assistance. Well educated mothers often manage to reduce the damage to health caused by poverty (Shah, 1994). It has been reported that poverty leads to less access to health care and lower utility of health services. In Lusaka, despite remarkable overall progress in

health as measured by several health centres in the district, there are still wide variations in utilisation between groups of people that are strongly related to income. The influence of socio economic status and level of education found here confirms previous reports in which the majority of mothers (75%) who delivered to low birth weight infants were from the low social economic status as compared to 25% from the high socio-economic status (Himoonga, 1984). Poor status of women compromises maternal health in many ways: girls often get less education, less food, less health care, marry and bear children at an early age.

Table 21 illustrates that the majority of mothers (52%) with inadequate nutrition were from the high-density areas as compared to 4% from Low-density areas. This is not surprising in that since the introduction of the structural adjustment Programme in Zambia the economic situation in the country has been very poor. Lack of money to buy food could have contributed to delivering of low birth weight infants. Various ways in which these mothers could improve on their earning powers should be stressed during the regular antenatal clinics. Encouraging the mothers to take active part in income generating activities aimed at improving the economic and nutritional status can do this. Reasons given by these mothers for inadequate nutrition in last pregnancy were as follows. Majority of the mothers (39.3%) attributed it to being unwell, 32.1% attributed it to loss of appetite and 28.6% said they didn't have enough food to eat. Infections are known to cause loss of

appetite due to the release of cytokine cachexin and under nutrition per se may also affect the outcome of some infections. Poorly nourished women are susceptible to infections and their infections are more severe and prolonged. Poor sanitation, lack of safe drinking water and inadequate housing with over crowding are typical of these poor populations and provide a basis for frequent infections. The low status of women, reflected in their low levels of education contributes to the persistence of female malnutrition. The low rates of low birth weight deliveries among the mothers from low density residential areas could be attributed to improved living conditions and monthly income.

Table 4 illustrates the relationship between low birth weight deliveries and marital status. A significant difference between the married (92%) and unmarried (8%) was found. This was so because most of the husbands to the respondents (76%) were in the informal sector of employment (Table 8). In this category the majority were unskilled and earned their living as casual workers and labourers. The minority (15%) was in the formal sector ranging from semi skilled for example drivers, clerical officers to senior staffs in government or private institutions.

A clear pattern was found in the relationship between low birth weight and parity. The majority of mothers (44%) were primiparae, 36% were having between their second to fourth child whilst the rest 20% were having their

fifth to ninth child (Table 9). This confirms the fact that pregnancy outcomes are more favourable for multiparae than primiparae.

The study revealed that 86% of mothers had made at least one visit and only 14% did not (Table 12). The role of antenatal care in reducing low birth weight delivery is well known. It is also emphasized that the quality of antenatal care is probably more important than its frequency. The quality of antenatal care in Zambia has been studied before and an average of 5 antenatal visits was found (Randjo-Arvidson et al, 1989). It would appear that little improvement has been realized particularly in the health centres where no routine laboratory investigations were performed. In a low socio-economic population, health providers must focus their attention on early detection and efficient treatment, along with improving antenatal care attendance. The success of antenatal programmes depends to a greater or lesser degree on the cooperation of the women. One of the aims of increased satisfaction with antenatal care is to achieve better compliance with the antenatal advice given. Satisfaction with the services rather than the mere improvement of pregnancy outcome is also now considered a goal in its own right. In this study it was found that of the booked mothers, 11.6% had no routine investigations done.

In accordance with this study, only 7% of the women came to antenatal clinic within 8 to 12 weeks (first trimester) of gestation. The majority of the mothers (81.4%) attended antenatal care for the first time within 13 to 27

weeks (second trimester) while 11.6% attended antenatal care for the first time within 28 to 36 weeks of gestation (third trimester) as illustrated in figure 5. It would appear that women in Lusaka urban come for their antenatal care in the second and third trimester. They are thus late for early interventions such as recording blood pressure and initiation of iron, folic acid and malarial prophylaxis. Many factors may influence the timing for the first visit to the antenatal clinic in Zambia. In some tribes, early pregnancy is kept a secret least they do not loose the pregnancy. In this study the mothers gave no concrete reasons as to why they came to the antenatal clinic at that particular time of gestational age. The other reported reasons given for visiting at that particular time varied from advice from husband or traditional female sources and previous experiences of the pregnant women. It is therefore imperative that pregnant women know about the common basic risk factors and problems associated with low birth weight delivery so that they are reported early. Similar findings were reported in Harare in which the median booking gestation was 29 weeks and preliminary survey done to prepare for a clinical trial in antenatal care had indicated that dissatisfaction with the services was one of the reasons for this late booking (Nylander and Adekunle , 1990).

The most common antenatal complications associated with low birth weight delivery were premature rupture of membranes before term (24%) and Malaria (16%). Previous studies have confirmed associations between Bacterial vaginosis and increased risk for premature rupture of membranes

before term (Howard et al, 2000). The information from these studies supports the idea that screening and standard oral antimicrobial treatments for bacterial vaginosis in pregnant women are beneficial in preventing potentially large proportions of preterm births. Therefore it would be of great help to consider introducing new low cost point of care screening tools for rapid identification of patients in our antenatal clinics in Zambia. This will afford the physician the opportunity to make a clinical and cost effective impact in preventing preterm births and the costly sequelae of prematurity. Malaria was found to be the most frequent cause of admission to hospital during the antenatal period (52%). The problem of malaria has been compounded by the increasing trend in resistance of the parasite to Chloroquine, increase in disease virulence and loss of herd immunity in populations. The Tropical Diseases Research Centre (TDRC) developed guidelines in 1996 emphasizing on case management and chemoprophylaxis. In Zambia there is some documented evidence showing that the major risks of malaria in pregnancy especially in primgravidae include anaemia, prematurity, low birth weight, abortion and stillbirths (Ministry of health, 1997). Similar findings on antenatal complications have been reported in Kenya as being premature rupture of membranes before term (16.7%) and 20.2% due to pyrexia due to malaria (Were, 1994).

The study revealed that 84% of mothers did not practice family planning and only 16% practiced family planning (Table19). This reveals that very little is known about contraceptive use. This could mean that there is lack of

awareness on matters of reproductive health and the unmet need of family planning information services. In this study prolonged breast-feeding for birth spacing and abstention from sex were used in the non-contraceptive users. The extremely low contraceptive use at 16% may be indicative of unmet family planning needs in this area. Some mothers are reluctant to use contraceptive methods even when they are available and accessible to them. This may also be attributed to the inconvenience of clinic operation hours, fear of unknown, misinformation about birth spacing methods and social taboos. In this study the last pregnancy ended up producing a low birth weight infant probably because the uterus was either not ready for the pregnancy or it was poorly planned pregnancy thereby causing a lot of social problems and emotional feelings.

The study revealed the two foetal causes associated with low birth weight as sex of the infant and gestational age at delivery. It was found that the majority of low birth weight infants (64%) were females as compared to 36% male (Table 23). The other major determinant of birth weight in this study was gestational age. 98% of infants were born before 37 weeks of gestation and 2% were born between 37 and 42 weeks of gestation (Table 22). Gestational age was found to be a strong, independent predictor of birth weight. The majority of infants (54%) weighed less than 1,500grams, 30% weighed between 1,500 grams and 2,000 grams and only 16% weighed between 2,000 grams and 2,500grams (Table 24). Similar findings were reported in Kenya, in which

premature Labour accounted for 55.3%, while term small for gestational age contributed 44.7% of all low birth weight deliveries (Were, 1994).

From the results of the present study, it could be stated that a relationship between low birth weight delivery and socio-economic status, age of mother, gestation, pregnancy spacing, antenatal booking age and educational attainment of the mother does exist. However, these results do agree with similar studies reported previously.

4.2 NURSING IMPLICATIONS

This study revealed that the quality of antenatal services in Lusaka is poor especially in the Public Health institutions. Antenatal clinics are generally characterized by lack of equipment which both the government and the District Health Management Team could be able to address. Lack of equipment makes it difficult for the staff to deliver quality services. The government should look into shortage of staff too. The District Health Management Team should make plans to equip peripheral urban health centres with laboratory facilities for routine diagnostic investigations. It also appears that by the existing antenatal services, women do not grasp much at the end of the clinic. A comprehensive antenatal intervention Programme should be introduced in Zambia to educate pregnant women on the importance of early antenatal care as soon as they are pregnant. Antenatal care providers

should be trained in this comprehensive care to be offered to antenatal mothers. The health providers should increase awareness of the common risk factors in pregnancy and this should be conducted through client problem oriented approach. I think that when advice is given to a client on her individual antenatal problems or individual risks, she is more likely to grasp and adhere to.

4.3 CONCLUSIONS

The findings of the study suggest that low birth weight deliveries are a public health problem. The question which must be considered have very little to do with the functioning of antenatal care system. They are mostly related to the situations specific to the most underprivileged women. Some of the issues which need to be examined are: free medical care, appropriate behaviour of health care providers at antenatal clinics, education about the importance of preventive medical care and, prevention of unwanted pregnancies through encouraging family planning. It is evident that a relationship between low birth weight deliveries and, maternal age, educational attainment, socio economic status, quality of antenatal care and gestation does exist. Similar findings have been found with previously reported findings. While these issues are complex and can only be solved in the long term, other purely

medical factors were identified that could be improved on immediately. These include offering integrated management approach in the management of antenatal services. The findings that 98% of low birth weight deliveries comprised of preterm births highlights the need to not only reorganize the formal health sector but to develop a multisectorial approach to maternal and child health services. Efforts to reduce low birth weight deliveries should be directed to both the community and health service providers. This could enhance both community participation and improve the quality of services provided. Continuing education for health providers and public education is one approach, accompanied by sustained efforts at improving facilities and supplies in peripheral health centres. Achievement of the above will require a lot more commitment, planning and cooperation between government, health workers and communities than is currently demonstrated.

4.4 RECOMMENDATIONS

Based on the study findings the researcher would like to make the following recommendations:

4.4.1 TO GOVERNMENT AND NON-GOVERNMENTAL ORGANIZATIONS

- 1) Promotion of girl child education and literacy training for women in general.
- 2) Free basic primary education for all Zambian children by scraping off examination fees and other school fees.
- 3) Teaching girls and women more and more effectively about sanitation, care of themselves and the children, health care, nutrition and family planning.
- 4) Legislation to increase the minimum age at first marriage.
- 5) Lighter work for pregnant women at the same pay.
- 6) Involvement and support from women organizations and groups.
- 7) Provision of improved, more accessible and available health services for women.

4.4.2 TO LUSAKA DISTRICT HEALTH MANAGEMENT TEAM

- 1) There is need to intensify information, communication and interpersonal relationship between health providers and clients in matters about sanitation, personal hygiene and family planning.
- 2) DHMT should make available laboratory facilities at all peri-urban health centres conducting antenatal care services to improve on its quality and easy detection of some infections in pregnant women.
- 3) DHMT should prioritise family planning and encourage all centres to make effective plans in addressing family planning services.
- 4) DHMT to ensure availability of all logistics in terms of adequate staff levels, contraceptives and medical-surgical supplies.
- 5) Extensive studies are suggested to be undertaken to
 - Assess further the quality of antenatal care services.
 - Identify contributing factors to low birth weight deliveries at community level.

The results of these studies should assist in improving the quality of antenatal care services and minimize on the adverse impact of environmental factors on the health of mothers and children.

4.5 LIMITATIONS OF THE STUDY

- 1) The study population was limited to clients delivering in UTH Labour ward and the sampling method used was non-probability method, therefore the results of the study cannot be generalized.
- 2) The study was not an extensive study due to inadequate time and funding.

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APPENDIX 1

Letters seeking permission from various authorities.



THE UNIVERSITY OF ZAMBIA
SCHOOL OF MEDICINE
DEPARTMENT OF POST BASIC NURSING

Telephone: 252453
Telegrams: UNZA, LUSAKA
Telex: UNZALU ZA 44370
Fax: +260-1-250753
E-mail: pbnur@zamnet.zm

P.O. Box 50110
Lusaka, Zambia

11-05-2000.



Your ref.:


Our ref.:

TO WHOM IT MAY CONCERN

This serves to confirm that Mr./Mrs./Ms. CHANDA NIKOLE is a fourth year B.Sc. Student at the University of Zambia School of Medicine – Department of Post Basic Nursing (PBN). In partial fulfillment of their degree program students are required to undertake research projects and present their final reports at the end of the semester.

In this regard, we would be very appreciative for any support rendered to them as they seek information relevant to their individual research topics.

Thanking you in anticipation.


E. LAMBWE (MS)
HOD-UNZA-PBN

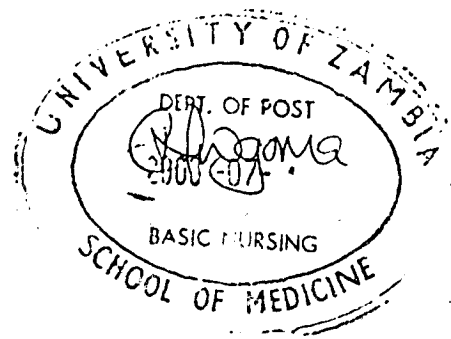
185

in charge

The District Director of Health,
Lusaka District Health Management Board,
Makishi Road,
P. O. Box 50827
Lusaka,
Zambia.

u f s.

The Head of Department
School of Medicine
Post Basic Nursing
P.O. Box 50110
Lusaka.



Dear Madam

Re: PERMISSION TO CONDUCT A PILOT STUDY AT KALINGALINGA HEALTH CENTER.

I am a fourth year student in the department of post basic nursing at the University of Zambia, school of Medicine.

In partial fulfillment of the requirement of the programme I am required to carry out a research project. My topic of study is "Factors contributing to high incidence of low birth weight in the University Teaching Hospital, Lusaka."

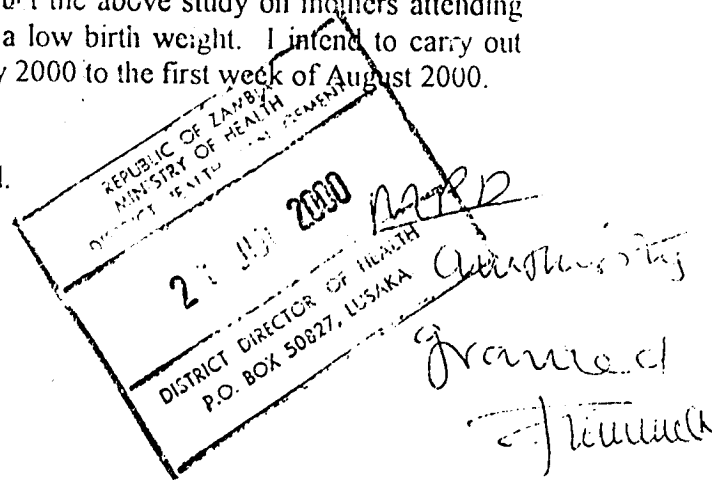
My research will involve questionnaire interviews from mothers after getting explicit permission from them. I will not be involved in treatment manipulation or any invasive procedures. The information will be collected on anonymous basis and purely for research purposes.

I therefore request for your permission to conduct the above study on mothers attending children's clinic whose babies were born with a low birth weight. I intend to carry out my data collection during the fourth week of July 2000 to the first week of August 2000.

Your kind permission will greatly be appreciated.

Yours Sincerely,

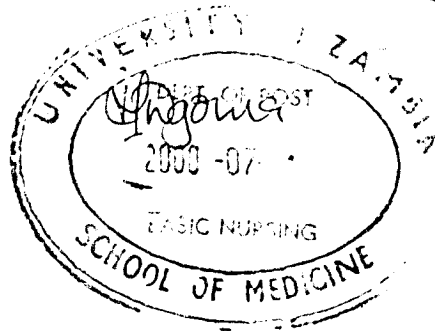
Nkole Chanda
Nkole Chanda RN/RM.



The Managing Director
University Teaching Hospital
UTH Board of Management
P/B RW 1
Lusaka.

u. f. s.

The Head of Department
School of Medicine
Post Basic Nursing
P.O. Box 50110
Lusaka.



Dear Madam

Re: PERMISSION TO CONDUCT A RESEARCH STUDY ON MOTHERS IN D BLOCK B

I am a fourth year student in the department of post basic nursing at the University of Zambia, school of Medicine.

In partial fulfillment of the requirement of the programme I am required to carry out a research project. My topic of study is "Factors contributing to high incidence of low birth weight in the University Teaching Hospital, Lusaka."

My research will involve questionnaire interviews from mothers after getting explicit permission from them. I will not be involved in treatment manipulation or any invasive procedures. The information will be collected on an anonymous basis and purely for research purposes.

I therefore request for your permission to conduct the above study on mothers who have babies admitted to D Block between the month of August 2000 to September 2000.

Your kind permission will greatly be appreciated.

Yours Sincerely,

Nkole Chanda

Nkole Chanda RN/RM.

APPENDIX 2

Interview schedule.

QUESTIONNAIRE TO FIND OUT FACTORS CONTRIBUTING TO

LOW BIRTH WEIGHT DELIVERIES IN U.T.H.

INSTRUCTIONS;

1. Do not write respondents name on questionnaire.
2. Interview must be done individually and in privacy.
3. Please tick the most appropriate response in the space provided.
4. For the questions that require explanation, write in the space provided.
5. All information provided should be treated as confidential.

**QUESTIONNAIRE TO FIND OUT FACTORS CONTRIBUTING TO
LOW BIRTH WEIGHT DELIVERIES IN U.T.H.**

SECTION A:

IDENTIFICATION NO _____

DATE OF INTERVIEW _____

SECTION B: DEMOGRAPHIC DATA

OFFICIAL USE

- | | | |
|---|---|--------------------------|
| 1 | How old are you? | |
| | a Less than 15 years | <input type="checkbox"/> |
| | b 15-20 years | <input type="checkbox"/> |
| | c 21-25 years | <input type="checkbox"/> |
| | d 26-30 years | <input type="checkbox"/> |
| | e 31-35 years | <input type="checkbox"/> |
| | f 36-40 years | <input type="checkbox"/> |
| | g Above 40 years | <input type="checkbox"/> |
| | | |
| 2 | Have you ever been to school? | |
| | a Yes | <input type="checkbox"/> |
| | b No | <input type="checkbox"/> |
| | | |
| 3 | If yes what is your highest level of education? | |
| | a Grade 7 and below | <input type="checkbox"/> |
| | b Grade 8-9. | <input type="checkbox"/> |
| | c Grade 10-12. | <input type="checkbox"/> |
| | d Post secondary education | <input type="checkbox"/> |
| | | |
| 4 | What is your occupation? | |
| | _____ | |
| | | |
| 5 | Where do you live? | |
| | _____ | |
| | | |
| 6 | What is your marital status? | |
| | a Married | <input type="checkbox"/> |
| | b Single | <input type="checkbox"/> |
| | c Separated | <input type="checkbox"/> |
| | d Divorced | <input type="checkbox"/> |
| | e Widowed | <input type="checkbox"/> |

7 What does your husband do for a living?

8 How many children do you have?

- a One
- b Two
- c Three
- d Four
- e Above four

OBSTETRIC HISTORY

9 How many pregnancies have you had?

- a One
- b Two
- c Three
- d Four
- e Five
- f Above five

10 How many of these reached term?

11 Have you had any abortions?

- a No
- b Yes

12 If yes how many?

13 Did you attend antenatal clinic during your last pregnancy?

- a Yes
- b No

14 If yes how many times did you go there?

15 At how many months of pregnancy did you start your antenatal?

16 What investigations were done on you?
(tick more than one box if applicable)

- a Hb
- b VDRL
- c Urinalysis
- d None

17 Have you ever been admitted to hospital during your last pregnancy?

- a Yes
- b No

18 If yes why were you admitted to hospital?

19 At what gestational age did you deliver?

20 What was the weight of the baby?

21 What was the sex of the baby?

- a Male
- b Female

NUTRITION

22 Did you have adequate nutrition during the last pregnancy?

- a Yes
- b No

23 If no kindly give details.

SERVICE FACTORS

24 How did you access antenatal clinic?

- a By walking
- b Public transport (*minibus*)
- c Private transport (*own car*)

- 25 Did you receive any health education during antenatal?
a Yes
b No
- 26 Do you practice family planning?
a Yes
b No
- 27 If yes what methods do you use?
a Oral pill
b Injectab le
c Other (Specify)
- 28 Why do you think you had a low birth weight child?

- 29 What is your total family income per month?
a Less than K150.000.
b K150.000-K200.000
c Above K200.000

THANK YOU FOR PARTICIPATING