Factors That Influence Household Health Care Utilization Patterns In Two Districts Of Zambia: A Rural – Urban Comparative Evaluation.

By

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A Dissertation Submitted To The Health Economics Unit, School Of Public Health and Family Medicine In Partial Fulfillment Of The Requirements For The Award Of A Master Of Public Health (Specializing In Health Economics) By The University Of Cape Town.

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University of Cape Town

Source: *Zambia Demographic & Health Survey (2002)*

DECLARATION

I would like to declare that this dissertation is my own original work, produced with normal supervisory assistance from my supervisor. All the relevant sources of knowledge that I have used during the course of writing this dissertation have been fully credited and acknowledged.

I would also like to declare that this dissertation has not been, and will not be presented to any other university for the purpose of receiving a degree.

Signed by candidate

Moremi Eric Nkosi.

5/05/2005

Date.

This dissertation paper has been submitted for examination with my approval as the University Supervisor for the aforementioned student.

5th May 2005

Okore Okorafor.

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Corrections made and resubmitted 21 Nov 2005

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ABSTRACT

This research project was undertaken with the primary objective of determining whether there are differential household health care utilization patterns between rural and urban areas in Zambia and what factors, if any, are responsible for such spatial variations. The factors considered in this study include: the gender of the household head, age of individual household members, religious affiliation of the household, the marital status of the household head, the size of the household, the educational status of the household head, the household head's employment status, and the socio-economic status of the household.

The data was collected using a household health survey with questionnaires administered to the household head. A total of 660 households (3,150 persons) were sampled, 320 households (1,696 persons) in Chipata District and 340 households (1,454 persons) in Ndola District. The data included information on socio-economic and demographic factors that have been regularly considered in the theoretical literature and empirical evidence as impacting upon household and individual decision-making when it comes to utilization of both formal and informal care.

A multinomial logistic regression model was used to analyse the data quantitatively in Stata® Version 8.0 software. Close to a quarter of the overall sample admitted to suffering an illness or injury in the 4-week period preceding the interview. Self-care at the household level was the most frequently reported type of care chosen for minor and moderate illnesses or injuries (35.80 percent). Bivariate analysis and the multinomial logistic regression results indicate that the variables considered not only produce differential effects on household health care utilization patterns in both districts but also that the effects are different depending on location of the household. The results from our sample analyses show that household religious affiliation (Christianity) is negatively associated with formal health care utilization in the urban area while the age of the individual increases the household's utilization of formal and informal care, and the gender of the household head (female), his/her marital status, educational attainment, and employment status all have a positive impact on formal health care use in the rural area.

ACRONYMS/ABBREVIATIONS

CBoH	Central Board of Health
CSO	Central Statistical Office
DANIDA	Danish International Development Agency
DHMB	District Health Management Board
FAMS	Financial Administration Management System
FAO	Food and Agricultural Organization
GNP	Gross National Product
HMIS	Health Management and Information Systems
IMF	International Monetary Fund
JICA	Japanese International Cooperation Agency
MMD	Movement for Multiparty Democracy
MoH	Ministry of Health
NGOs	Non-Governmental Organizations
NHSP	National Health Strategic Plan
PRSP	Poverty Reduction Strategy Paper
SAPs	Structural Adjustment Programmes
SIDA	Swedish International Development Agency
SIHE	Swedish Institute of Health Economics
SWAP	Sector-Wide Approach
THPAZ	Traditional Health Practitioners Association of Zambia
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
UNZA	University of Zambia
USAID	United States Agency for International Development
WHO	World Health Organization
ZDHS	Zambia Demographic and Health Survey

CHAPTER ONE

INTRODUCTION, STUDY PURPOSE AND SCOPE

1.1 Background Information

Health has been a major area of interest and concern among both developed and developing nations alike. The formations of the United Nations and its specialized agencies in the late 1940s also led to the recognition of the crucial and central role the health of a nation's people can play in achieving sustainable levels of economic growth and development. As a consequence, countries around the world have consistently made purposeful efforts to ensure that their populations have access to the necessary human requirements including decent housing, food, clothing, education and health care (World Bank 1994). In order to attain such objectives, policy makers must have clearly articulated policies which are not only properly documented, but must be based on evidence from sound data bases acquired through relevant research.

In recognition of this, African countries from Cape to Cairo have made deliberate efforts not only to improve the health status of their respective populations, but to also narrow down the differences in health status between developed and disadvantaged nations (UNICEF 1999). To do this, African countries with the help of developed nations and international organizations like the World Bank, IMF, UNICEF, UNDP, USAID and FAO have been developing strategic plans aimed at developing a multisectoral approach to overcoming various problems in the health sector. These strategic plans are implemented on a 5-year cycle basis, which helps to guarantee continuity in objectives, principles and results (MoH 2001).

A great majority of African countries are located in the tropical regions, and are consequent hosts of numerous key disease vectors. This makes their populations susceptible to tropical diseases including malaria, cholera, Lassa and Dengue fevers. A major proportion of the disease burden in Africa is attributable to conditions like diarrhoea, measles, malaria, and other parasitic infectious diseases. These conditions can

be easily prevented through simple measures like improved sanitation, increased access to clean water and basic primary health care services (World Bank 1994).

The prevailing situation in Sub-Saharan Africa is a reflection of the general status of the African continent: low rates of economic and social development; high and rising poverty levels and poor health status for a greater proportion of the population, especially the young (UNICEF 1999; UNDP 2003). Consequently, an increasing number of households in the region are trapped in a cycle of entrenched poverty, shackled to a life of destitution, adversity and pain. The levels of growth in the region have been fairly minimal, with the only positive and stable period of growth in the past decade being a 1.5 percent growth rate in real per capita GDP between 1995 to 1997 (Hernandez-Cata 2000). The only countries that have recorded consistently higher growth rates are Botswana and South Africa (UNDP 2003).

Even before independence, African countries in the Sub-Saharan region have been plagued by a myriad of problems. These include natural disasters, civil strife, wars, political instability and lack of adequate human and financial capital to achieve acceptable levels of development (Hernandez-Cata 2000). Consequently, for any country to be able to achieve its policy goals, solutions to these problems must be sought both internally and externally. Most certainly such solutions would play a very significant role in providing the necessary ground work for a suitable environment for policy formulation, development and implementation. Only then can respective nations achieve positive qualitative and quantitative alterations to the overall welfare of their people.

1.2 Overview on Zambia

1.2.1 Country General Information

Zambia is a landlocked country centrally located in Sub-Saharan Africa. It shares its borders with the Democratic Republic of Congo, Botswana, Namibia, Angola, Tanzania, Mozambique, Malawi and Zimbabwe. The country covers a land area of 752,612 km^2 and

approximately 58 percent of this surface area is classified as having medium to high potential for agricultural production (CSO 2004a). It is divided into nine provinces and has seventy two districts. The capital city of the country is Lusaka, where the headquarters of all government institutions and agencies are located. Zambia has abundant natural resources and until two decades ago was one of the most prosperous nations in the region (PRSP 2002). The economy of the country is mixed, with a dichotomy of an industrial urban sector that is geographically concentrated along the railway line, and a rural agrarian sector. The railway line runs from Livingstone in the Southern Province to the mines on the Copperbelt. It was strategically built by the colonialists to transport mainly copper ore and agricultural produce to ports within the region for export to Europe and the Americas. The country is prone to long spells of drought due to erratic rainfall, and its abundant water resources remain largely untapped (CSO 2004a).

The country's population was first comprehensively enumerated at 5.7 million in 1980 and by the year 2000, the population had increased to approximately 11 million (ibid).Of this, 65 percent reside in rural areas and 35 percent in urban areas. The average household size for Zambia is 5.4 (CSO 2002). Since independence, the population has remained relatively young with close to 50 percent being below the age of 15 years (ibid). Politically, Zambia has faced a one party regime and a multiparty system of governance respectively.

From independence to the early 1990s, the system of government was a one party state. When the Movement for Multiparty Democracy (MMD) took over power by majority vote in 1991, significant macroeconomic changes and policies were introduced. During the latter half of the 1980s the Zambian government adopted Structural Adjustment Programmes (SAPs) aimed at diversifying the economy from overdependence on the copper industry (PRSP 2002). These programmes included the government actively pursuing policies that facilitated enhanced private sector growth; liberalizing the agricultural markets; privatization of state-owned companies and other institutional reforms. However, the programmes failed to achieve their intended objectives and instead

lead to a worsening of the country's poverty levels. From the early 1970s, the rate of per capita Gross National Product (GNP) has steadily declined with infinitesimal sporadic increases in the interim (Seshamani *et al.,* 1999). Accordingly, Zambia is currently rated as one of the Least Developed Nations in the world with the majority of its people suffering from weak purchasing power, homelessness and insufficient access to basic necessities such as education, clothing, clean water, sanitation and health care (PRSP 2002).

The Zambian economy has been among the slowest performers in the region in terms of growth, comparing favourably only with Mozambique and war-ravaged countries like Rwanda and the Democratic Republic of Congo. Between 1990 and 1999, the economy grew at an annual average rate that was 1 percent lower than the reported regional average (UNDP 2000). During the period 1991 – 2002 the country's economic performance steadily declined. The average annual growth rate in GDP for the period 1970 – 1975 was a mere 2.7 percent, and it reduced to – 0.3 percent between 1990 and 1999 (CSO 2004a). Similarly, per capita GNP has not shown any marked improvement over time (ibid).

The distribution and pervasiveness of poverty in the country is much skewed. Of the 11 million people in the country, approximately 83.6 percent are classified as poor, with 78 percent of these living in rural, underprivileged areas and the remaining 22 percent in the urban areas (ZDHS 2002). In recent times, the poverty levels in the country could have been exacerbated by the divestiture of state run companies, retrenchments, the failing of industries and rising unemployment levels.

1.2.2 Health Profile and Health Sector Reforms

It is inevitable that for any development programme objectives to be effectively achieved needs a healthy, educated and active population. Economic issues i.e. poverty, poor health status of the population, macroeconomic instability and lack of resources to finance public programmes are often at the heart of many development problems facing

developing countries. Zambia is not an exception. Inadequate levels of resources devoted to health care, inequitable allocation of healthcare resources and health outcomes among different geographic and socio-economic classes, and a lack of efficiency and cost-effectiveness in the utilization of health care resources has greatly undermined the health profile of the Zambian population (UNZA/SIHE 1996). With the ushering in of a multiparty political dispensation in 1991, the government has been implementing extensive health sector reforms since 1992 under the framework of the Sector Wide Approach (SWAP), which takes a holistic development view of the sector.

The primary aim of such an approach is *"to provide every Zambian with equitable access to quality and cost-effective health care as close to the family as is feasibly possible"* (MoH 1998a). An array of policy changes including decentralization, the creation of the Central Board of Health (CBoH), the introduction of user fees and other alternative healthcare financing mechanisms like community pre-payment schemes have been implemented during the past 14 years. These health sector reforms were based on four overarching objectives, namely:

- To improve upon the existing socio-economic and geographic access to health care services
- To identify priority research areas
- To strengthen multisectoral collaboration in addressing public health priorities
- To strengthen the Health Management and Information Systems (HMIS), improve its quality and subsystems for logistic and human resource development

These health reforms were initially received with great enthusiasm because some positive changes were witnessed in the early years of the Health Sector Reform programmes.

However, in recent years, the health sector has been faced by several threats that have to be taken into consideration at the planning and programming stage. To begin with, there is the double burden of declining resources in real terms and an escalating disease burden caused by preventable illnesses like HIV/AIDS, malaria, cholera and tuberculosis (TB)

(PRSP 2002). Secondly, there are persistent shortages of drugs, especially in rural and underserved areas; and staff morale is very low, providing fertile ground for protracted strikes (Hjortsberg & Mwikisa 2000).

Very few health indicators in the country have shown significant improvement since the advent of multiparty democracy in the early 1990s. Most of the important indicators have actually shown a steady and rapid decline. The average life expectancy at birth for a Zambian child born today is below 40, and the infant mortality rate has increased from 97 per 1,000 population to 109 per 1,000 (ibid). While the official maternal mortality rate is reported at 649 per 100,000 live births, figures even higher than 1,000 are being reported in some surveys (MoH 1998b). According to the *2001 UNICEF Report on the State of the World's Children,* 42 percent of children under-five in Zambia are stunted, indicating the deplorable health situation of children in the country.

In 2001 a mere 14.9 percent of households in Zambia had access to safe toilet facilities, with only 2.1 percent of rural households having access to such facilities as compared with 39.2 percent in urban areas (CSO 2004b). Access to safe water was also higher in urban (86.1 percent) than in rural areas (29.5 percent) while a greater proportion of male-headed households had access to safe water (49.5 percent) than female-headed households (47.3 percent) (ibid). Access to basic health services in the nine (9) provinces of the country has been found to have a spatial variation, with people living along the railway line having better access to sanitation, clean water and health services (PRSP 2002). Provinces along the railway line generally have better available health facilities and enjoy a much higher level of economic activity that is industry-based. Household expenditures on health also vary by location. Poor households spend a higher proportion of their average monthly expenditures on health than richer households (ZDHS 2002).

Underserved groups have generally had problems with access to and utilization of health care facilities. There are various problems that make access to health care facilities difficult for many households. These include dilapidated and poorly maintained hospital infrastructure, the distance to the health facilities, cost of consultation and treatment, poor

transport networks and the lack of community-based health care information (PRSP 2002). For instance, Table 1 shows that household or individual income is one of the major problems reported as barriers to accessing health care services in the country. Almost 21 percent of the people who needed medical attention were denied care from a health facility because they could not manage to pay for the various services offered, while 22.5 percent could not afford the prescribed medication. The highest proportion of individuals who could not afford medicine was in Lusaka Province while the lowest was in North-Western Province (39.8 percent and 11.2 percent respectively). It is also important to note here that the province with the largest proportion of people who were denied care from a health facility was Western Province which is among the least developed and resourced provinces in the country.

Table1: Inability to pay for medical care by location and province, 2002

Residence/Province	Denied Care From Health Facility (%)	Could not Afford Medicine (%)
Total	20.7	22.5
Urban	22.1	32.5
Rural	20.0	17.2
Central	15.2	23.0
Copperbelt	23.5	27.7
Eastern	22.9	19.0
Luapula	17.8	19.8
Lusaka	23.2	39.8
Northern	15.6	12.8
North-Western	17.6	11.2
Southern	19.2	17.9
Western	26.7	21.0

Source: *Zambia Demographic and Health Survey (2002)*

Contrary to theoretical expectations, fewer households in the rural areas could not afford access to medical care compared to urban areas (17.2 percent versus 32.5 percent). The probable reason for this is that for Zambia, most of the private health care providers are

located in the urban areas (CBoH 2002), and because the cost of their services are generally higher than in the public health sector, it is thus plausible that more people in the urban areas will not afford the needed medication.

The health sector decentralization process has not been very successful and the country's health expenditure pattern is still heavily lopsided towards the urban-based hospitals (UNZA-SIHE 1996). Long distances, and a lack of a well developed transport network, together with a sparsely distributed population have an impact on the health-seeking behaviour of the average Zambian household. The costs associated with seeking care as well as the attitude of service providers are all major deterrents for seeking care (PRSP 2002). All these factors combined with a declining health budget, human resource scarcity (especially skilled health professionals) due to the brain drain, poor policy implementation and poverty have made the health situation in Zambia deplorable (MoH 1998b).

The dismal situation prevailing in the health sector is also observable in other equally important social sectors. The education sector, which is extensively dependent on donor funding, lacks much to be desired. The net primary attendance rate has been below 70 percent for the past decade, and the female enrolment rates at both primary education and tertiary institutions have continued to decline (CSO 2004b). The provinces located along the railway line namely Copperbelt, Lusaka and Northern enjoy a relatively favourable distribution of education facilities compared to the other provinces. In fact, children on the Copperbelt, Lusaka and Northern Provinces are more likely to live within a radius of less than 30 minutes from a school than those in any of the other provinces (PRSP 2002). These three provinces also have the highest literacy rates in the country (CSO 2004b; Seshamani *et al.,* 1999).

To overcome the above problems, the government has decided to prioritize specific programmes through a concerted effort in the form of a more general Poverty Reduction Strategy Paper (PRSP) and specifically, the revolving National Health Strategic Plan for the health sector. The approach is to use a multifaceted strategy that deals with the

numerous challenges in the health sector from various angles. This involves developing a basic health care package; improving upon resource allocation mechanisms; improving procurement systems; promoting interventions in nutrition and health support services; and improving access to health care in hard-to-reach and under-served areas as well as to vulnerable groups (ibid; MoH 1998a), accompanied by a deliberate effort to reinforce institutional and organizational capacity within the health system (PRSP 2002).

1.3 Statement of the Problem

From independence to date, the performance of the Zambian health system has arguably been well below par. Despite implementing health reforms during the late 1980s and much of the 1990s few if any of the general health indicators have shown any marked positive change (MoH 1998b). Over the last decade, some of these indicators have actually deteriorated drastically. Life expectancy is low, mortality rates are high compared to nations in a similar economic position and this is compounded further by the HIV/AIDS pandemic (PRSP 2002). The health status of children in the country is also poor. According to the UNICEF (2001) Report on the *State of the World's Children,* 42 percent of the under-five children in Zambia were stunted in 2001.

Access to basic health services in the nine (9) provinces of the country has been found to have a spatial variation, with people living along the railway line having better access to sanitation, clean water and health services (PRSP 2002).Provinces along the railway line generally have better health facilities available and enjoy a much higher level of economic activity that is industry-based. Household expenditures on health also vary with location but most poor households spend the highest proportion of their income on health (ZDHS 2002). Utilization of and access to public facilities is generally poor among disadvantaged groups throughout the nine (9) provinces in the country. The health sector is not invulnerable to such disparities. The pattern of both public and private health care delivery and distribution is heavily lopsided towards the reasonably well-resourced regions in the country to the detriment of the underprivileged regions (UNZA-SIHE 1996). The above problems combined with a declining national health budget, human

resource scarcity, erratic policy implementation and high poverty levels have contributed to making the health condition of the average Zambian pitiable (MoH 1998b; PRSP 2002).

The policy focus of the Ministry of Health has been to try and redirect health policy decision making from principally focussing on the supply of health services or facilities to emphasising the incorporation of factors that determine both demand and use of these services at the point of policy formulation and implementation (MoH 1998a). The results have consequently been the increased demand by policy makers for empirical information on the same. Because to date, scant attention has been paid to understanding the intricacies involved in household health-seeking behaviour and the responses to changes in the supply of health services, the previous tendency was, unfortunately, to base policy decisions on assumed rather than empirically measured health care utilization patterns. Such an approach is likely to generate less than optimal results and may fail to help improve the health-seeking behaviour of the population. Instead it maintains or worsens the status quo, making health policy initiatives seem fruitless when in actual fact it is the foundation upon which the policy decisions are based that is inappropriate.

To counteract this trend it is important that the focus be based on both demand for health care services and their supply, and how socioeconomic status has an impact on utilization of the services that have been supplied. In order to help the health policy makers in achieving the objectives outlined in the National Health Strategic Plan for the period 2001 - 2005 there is evident need to ensure that they have a clear understanding of how Zambian households make decisions about health care utilization and what factors come into play when making such a decision.

In order for us to clearly understand how we can positively influence health care utilization among households, we require information on the intricate relationships that exist among the factors that influence household health care utilization patterns. Only then can we make reasonable and achievable recommendations concerning suitable policy adjustments and health system changes. Simply basing policy decisions on

assumed intricacies of these relations without appropriate empirical evidence is intolerable. This study aims to provide empirical answers to some of these assumed relationships.

1.4 Objectives of the Study

The general objective of this study is to provide a comparative evaluation of the impact that household socio-demographic variables and health care services availability have on the health care utilization patterns in an urban and rural area of Zambia. The aim is to obtain necessary information that will assist health policy makers, planners and decision makers in designing appropriate and relevant policies to improve the health status of the average Zambian.

The specific objectives are:

- To conduct a comparative assessment of the pattern of health care utilization by households in an urban and rural area.

- To evaluate the impact of socio-demographic variables on the health-seeking behaviour of households in an urban and rural area.

- To determine the impact of severity of illness or injury on the choice of health care provider

- To recommend the strategic future health policy directions that should be taken in relation to our findings.

1.5 Justification for the Study

Access to and utilization of health services varies geographically in Zambia. Inequalities in utilization of the health care facilities are quite apparent and are seemingly multidimensional. Multidimensional in the sense that just as utilization is affected by multiple and sometimes interrelated factors, inequalities in utilization of health services are also the result of multiple factors. The proportion of the population that resides along the railway line has better geographic access to health and social services. Rural households utilize health facilities less and this is attributed largely to the type and quality of health services available (ZDHS 2000). However, as alluded to previously, this is too restricted an analysis as it purely focuses on the supply-side factors. Accessibility, availability and affordability of health services are all intertwined with a mix of economic and social factors which help to determine the general population's use of these services.

For there to be better and more equitable access to and utilization of the available health services, deliberate efforts have to be put into place to change the status quo. The current policy directions being promoted in the National Health Strategic Plan for 2001 – 2005 emphasise the use of empirical indicators as the basis of developing health policy (MoH 2001, 2004). This provides an opportune time for studies such as this to contribute to the empirical literature upon which the next set of health policy initiatives, especially the long-term health sector development plans could be based. This is because studies such as this one can provide relevant information on variables that have to be considered when designing and implementing cost-effective and efficient health policy initiatives.

Clearly, there is need to understand how exactly these policy initiatives can be effected in a way that ensures that the different areas in the country have equal opportunity to utilize the available health services. Empirically generated information concerning the factors that impact upon the households' health care utilization patterns in the different regions of the country could prove very useful. This knowledge includes information on how the prevailing distribution of health care facilities between rural and urban areas influences household utilization patterns. Additionally, we need to have information concerning the

impact that socio-demographic characteristics of rural and urban households have on the health service utilization patterns in respective areas.

By conducting an appropriate comparative assessment between rural and urban areas, we hope to achieve a better and in-depth understanding of the health care utilization patterns of households in these areas. This type of information can be used by policy makers to decide upon an optimal distribution of health facilities and whether increasing the number of available facilities or simply improving the quality of existing ones is a more appropriate initiative. For instance, if we reveal that in both areas utilization is primarily a function of quality perception rather than availability of a health centre, then the appropriate decision on the part of the authorities is may be to merely improve the quality of the existing facility instead of increasing the number of the already under-utilized facilities. This study seeks to establish exactly how household socio-demographic variables and health facility availability in a given area influences health care utilization, and how best this information can be incorporated into health policy initiatives.

1.6 Limitations of the Study

During the course of conducting the study, the researcher encountered various limitations but every effort was made to ensure that they did not adversely affect the quality of the study's final results. The limitations included time, financial and natural constraints. As a consequence, the data was only collected from two areas, namely Ndola District on the Copperbelt Province and Chipata District in the Eastern Province. For this reason, the results can only be generalized to these areas and not the rest of the country.

Because of the likelihood of recall bias, data from the principal respondents was only collected for a reference period of one month (4 weeks). This was deemed necessary in order not to jeopardize the quality and accuracy of the data. However, despite this effort, there is still a limited chance that there may be some element of recall bias in the data collected. This may have a negative impact on the overall power of the study's results as it may lead to over/underestimation.

Furthermore, the rainy season which runs from late October to early March in Zambia proved to be a formidable hindrance to the process of data collection from one household and area to another. Nevertheless, sufficient data has been collected.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

In this section we review literature on health care utilization and relevant concepts and models related to the study topic. The review focuses on the following three issues: theoretical aspects of health care utilization patterns; some existing conceptual models for analyzing the use of health care services; and empirical evidence.

2.2 Theoretical Aspects of Health Care Utilization

Utilization is a multifaceted and complex concept. In some cases it has been analyzed in an ambiguous manner and accordingly this has stimulated international debate. This debate has generally been centred on whether access to a health care facility implies utilization of the available services, or alternatively whether to use utilization as a proxy for health care demand. Additionally, this has sometimes been intermingled with the difficult to define, and sometimes vague concepts of need and access (Mooney and Ryan 1993).

In relation to health care, need is usually defined in a normative way. It is often viewed in a mechanistic way that has overtones of social justice, particularly in its association with the dictum *"from each according to ability, to each according to need"* (Mooney and Ryan 1993). This is also echoed by Culyer and Wagstaff (1993) who propose that households with similar health *needs* must have equal access or equal opportunity to use the available health services. This is what Mooney (1983) calls horizontal equity: *the equal treatment of equals*. Implied in Mooney's definition is the concept of vertical equity: the *unequal but equitable treatment of unequals*. In such a case, positively discriminating against the better-off in favour of the worse-off is perfectly acceptable as promoting equity. Normand (1991) proposes that, with respect to health care utilization need should be related to the *capacity to benefit* from such utilization. In this respect, utilization of health care services is not only in terms of ill-health. Instead, the population

can still make use of the existing services to improve or sustain their current health status through consumption of preventive health care. The implication of need in terms of health care utilization is that households with unequal needs will have to be given proportionately unequal access to the existing services. Conversely, those with equal health needs are expected to use health services in an equal manner.

The theoretical literature on individual and household health care utilization patterns is considerable. According to Purola (1972) there are various intertwined factors that influence the healthcare-seeking behaviour of households. Among these are the patients' perception of the illness, the education of household members, knowledge of the health consequences of an illness, the attitudes to health services, the attitudes of health professionals, cultural beliefs and the available coping strategies. Included in this are sociodemographic factors and characteristics of the health care system (distance to nearest health facility; quality of care; financial (user fees) and time costs of the illness).

Access is about opportunity to use health care facilities. The dimensions along which it can be analyzed vary, depending on the researcher's own perspective or research ideology. It could be analyzed in terms of financial, cultural, geographic and/or infrastructural characteristics (Aday and Anderson 1974) or with respect to availability, accessibility, affordability and acceptability of the health services (Penchansky and Thomas 1981). The concept of access also has close connotations with the utilization of health care. Like utilization, access to existing facilities is determined by various factors including income for the household, distance from the facility, resources and services available at the health facility, procedures for treatment, gender and cultural attitudes (ibid).Equal access would, therefore, imply that households or individuals in the population all have equal opportunity to make use of the existing services when need arises. Actual utilization, however, would still have to vary from household to household because need will be differential, partially due to household characteristics and also to the existing health system structure and characteristics. This makes it even more difficult to analyze health care utilization. There is an existing void between access and utilization. While access is merely gaining entry into an existing health facility, utilization is linked

to the access actually materializing into receipt of medical advice or recommendation, or the provision of a health intervention (therapeutic, diagnostic or preventive). Health care utilization in this study will be considered as the *access to and use or receipt of the health services that are offered at a given health care facility.*

According to Antanovsky (1972) and Janz and Becker (1984) previous use of health care services is also a determinant of future health care utilization for a household. This is also interrelated with factors like ethnicity, religion, socioeconomic status at the time of use and the existing social support networks. It is very important to realize that health care utilization is not only determined by population and environmental characteristics, but also by health-affecting behaviour. The World Health Organization (2001) proposes that access and utilization are complimented by determinants like perceived susceptibility, seriousness of the illness, benefits associated with treatment, and barriers to taking action.

Closely related to this is the performance of the provider of these services. Performance is determined by a variety of factors including the personal characteristics of the health professionals (gender, attitude towards work, training), organizational structure and culture and the motivation of the health care providing institution (for-profit or not-for-profit) (Penchansky and Thomas 1981). The external environment within which the given health facility exists will have a bearing on its performance and ultimately this will impact upon the health-seeking behaviour of households. A good example is where a household knows of two facilities, one closely located, poorly maintained, with staff and drug shortages but providing free services and the other a well-staffed and stocked health facility providing services for a fee. In such a scenario, the household members are more likely to bypass the nearer health facility just because of their perception of it and the type of service they anticipate (WHO 2001). Aday and Anderson (1974) echo these same sentiments and postulate that if a facility is rundown and uses obsolete equipment with no proper sanitation, access to clean water, electrification and bad geographic positioning, households will inevitably perceive it differently as compared to a well-equipped and appropriately located facility. They go on to argue that in most instances, households will

utilize the latter facility more consistently, even if access to that facility is constrained by distance.

The general theme from the above reviewed literature is that in attempting to analyze utilization of health care services, one must take into account the complexity and interrelated nature of the variables that are likely to have both direct and indirect effects on the household's health care utilization decision-making processes. Failure to do so will result in findings that are inaccurate, misleading to policy makers and off tangent to the needs and aspirations of the average household.

2.3 Conceptual Models of Health Care Utilization

Various conceptual models have been developed to operationalise the complex and multi-dimensional issue of health care utilization. These models have proven to be invaluable in providing theoretical frameworks for use in research on the utilization of health care facilities. Research on the utilization of health care services is of increasing value not only in academic spheres but also in health policy formulation. This is because information acquired through such research can be used to improve the efficiency, effectiveness, sustainability and equity of the health sector (WHO 2001). Below we provide a brief summary of six models that have had a lasting impact on household health care utilization patterns research.

Antanovsky (1972) developed a conceptual model of utilization that was aimed at analyzing host characteristics, characteristics of health institutions and those of the larger environment that all affect the health care utilization patterns of households. This model takes into account the fact that health care attributes constitute only a small component of the general social system. Accordingly, health care may be used to deal with social and psychological needs when it is available, when its use is socially encouraged, and when it is receptive to people's needs and orientation. What this means is that social structures, culture and organization of the health system are all important stimulants to household health care utilization.

consistently higher percentage of their incomes to health care. The common theme is that the size of household income determines greatly the health care utilization of a household. There is, however, great need to conduct further research in areas that have been found lacking, especially with regards to research-based evidence for policy use. Also of note is that this group of studies, particularly those conducted in developing countries, ignore some of the equally important factors like education levels of women, household wealth, type of facilities available to the household (tertiary, primary) and the payment mechanisms in place.

Closely linked to this is the Health Systems Trust (2003) Report alluded to earlier which contains a section on household health care utilization patterns in South Africa. The focus of this report was to highlight the characteristics of individuals that use the different types of health services available in the country. Despite the report being based on restrictive data sets it provides remarkable insights into the various dimensions from which utilization can be looked at. Through multiple cross relations the report explicitly shows how complex the utilization of health facilities is and depicts that health services may not only be influenced by costs and income levels, but interestingly by the distribution and availability of these facilities.

Similar research has been conducted by Zambian researchers in collaboration with the Ministry of Health, Central Statistical Office and international organizations like DANIDA, JICA and SIDA. According to the Ministry of Health's National Health Strategic Plan *Mid Term Review Report of February 2004,* it is continuously evident that vulnerable groups and those residing in peripheral, hard-to-reach and underserved areas have the most difficulties in accessing health care services. The expected access cost is probably the largest determinant of seeking care (LCMS 1998; PRSP 2002; Seshamani *et al.,* 1999). Access cost is a combination of several factors such as distance to health facilities, waiting time at the facility, out of pocket payments, consultation fees, as well as related time costs (Le Grand 1982; Gertler & van der Gaag 1990; Timyan *et al.,* 1993), which all have a direct or indirect impact on the decision making capacity of the health care seeking household or individual.

According to Zambia's *1999 Economic Report* (MOFED 2000), the socioeconomic patterns of health care demand in the country display a considerable amount of inequity, with nearly 34 percent of the extremely poor who are sick virtually doing nothing about their illness while only about 15 percent of the non-poor doing the same. This shows that poverty is a major obstacle towards access to and utilization of health care facilities for households living at the margin. With over 80 percent of the population classified as poor (PRSP 2002), the task of ensuring that the appropriate and relevant forms of health care are provided and that there is equity in its access and utilization is all the more challenging.

In Zambia, where a large section of the population lives in rural or peri-urban areas, distance to the nearest health care facility plays a decisive role in whether households actually seek care or not. A study by Hjortsberg and Mwikisa (2000) indicated that for the average Zambian household, the level of poverty and access to health care are the two most influential factors determining health seeking behaviour. It is shown that the percentage of extremely poor households not seeking health care is significantly higher than that for the moderately poor and non-poor. They go further on to show that the choice of health care provider consulted varies among those who decided to seek some form of care or another. On average 35 percent of households surveyed chose to seek care at a hospital while 63 percent chose a health centre or clinic, and that there are no evident differences between the sexes nor poverty groups when it comes to choice of source of care in Zambia (Seshamani *et al.,* 1999).

Clearly, as depicted by the literature reviewed here, a number of diverse and not necessarily simple relationships exist between health care facility availability, socioeconomic status and household health-seeking behaviour. A better and improved understanding of these interrelationships will lead to better informed policy makers and more effective policy decisions.

CHAPTER THREE
THE CONCEPTUAL FRAMEWORK

3.1 Introduction

In the previous chapter, we critically reviewed some of the theoretical and empirical evidence concerning health care utilization and factors that have been studied with respect to household and individual health-seeking decision making. The focus of this chapter is to provide a description of the conceptual framework upon which this study is based. We further look at the specific functional form of the equation used in the analysis of utilization that we are going to use with respect to household health-seeking behaviour and factors that influence this process within a household located in a rural and urban area.

3.2 Demand for, Access to and Utilization of Healthcare Facilities

Health seeking behaviour basically aims to explain how individuals or households end up using or getting access to the different types of health services offered. Demand for health and health care are concepts that are usually confused by researchers and analysts alike. However, a clear distinction between the two is necessary, especially for policy design and implementation purposes. While *demand for health* is when health itself is demanded for the utility (satisfaction) value or peace of mind that it gives the individual, *the demand for health care* is a derived demand, implying health care is demanded for its perceived capacity to maintain and/or improve the health status of the individual (an expression of need) (Seshamani *et al.,* 1999). According to Penchansky and Thomas (1981), Wagstaff (1986), and Labelle *et al.,* (1994), the demand for health care is *supplier-induced,* meaning it is influenced by the agency relationship between the physician (supplier) and the patient (consumer). Therefore, policy issues must relate more to the demand for health care than to the demand for health *per se.* Ample consideration must be given to the fact that the patient also has a vital role to play in the production of his/her own health status.

Access to health care facilities basically implies gaining physical entry into a given health facility *but* not necessarily making use of any of the services that are offered at that facility. It is a well-known fact that multiple barriers play a direct and indirect role in determining who actually benefits or makes use of health care services in a given locality or region. These barriers could be socio-demographic, psychosocial (consumer perceptions of nature of services, religious affiliations) or even geographical. In this study, access was conceptualized by collecting data on the time duration that it takes an ill or injured household member to get to the health facility of choice.

Utilization of health care services is more complex than mere demand for or access to existing health facilities. Conceptually, it may be defined in terms of demand for health care or the access to a health care facility. However, in an attempt to avoid the confusion that exists in some of the literature, in this study we defined utilization as the *access to a health care facility and the actual use of the services that are offered at that facility*. Our unit of analysis was the household, which we defined as *that group of individuals—most commonly but not necessarily linked by kinship ties—that live together and share functions of production and consumption as well as reproduction* (Bender 1967, page 493).

As revealed in the literature review chapter, many researchers in the field of health economics have suggested models that can be used to analyse health care utilization. These models draw upon vast paradigms of knowledge. For the purposes of our study we decided to make use of some of the dependent variables of the model suggested by Kroeger (1983, 1988) as depicted in Figure 1.

The framework depicted in Figure 1 is what was used to construct the data collection instrument (questionnaire) and to select the tools for analysing the collected data. The source of care that was chosen by the ill or injured household member was used as a proxy for determining health care utilization at the household level. In our study, this information was obtained by determining the type of health care provider that was visited at the time of need, using a 4-week recall period.

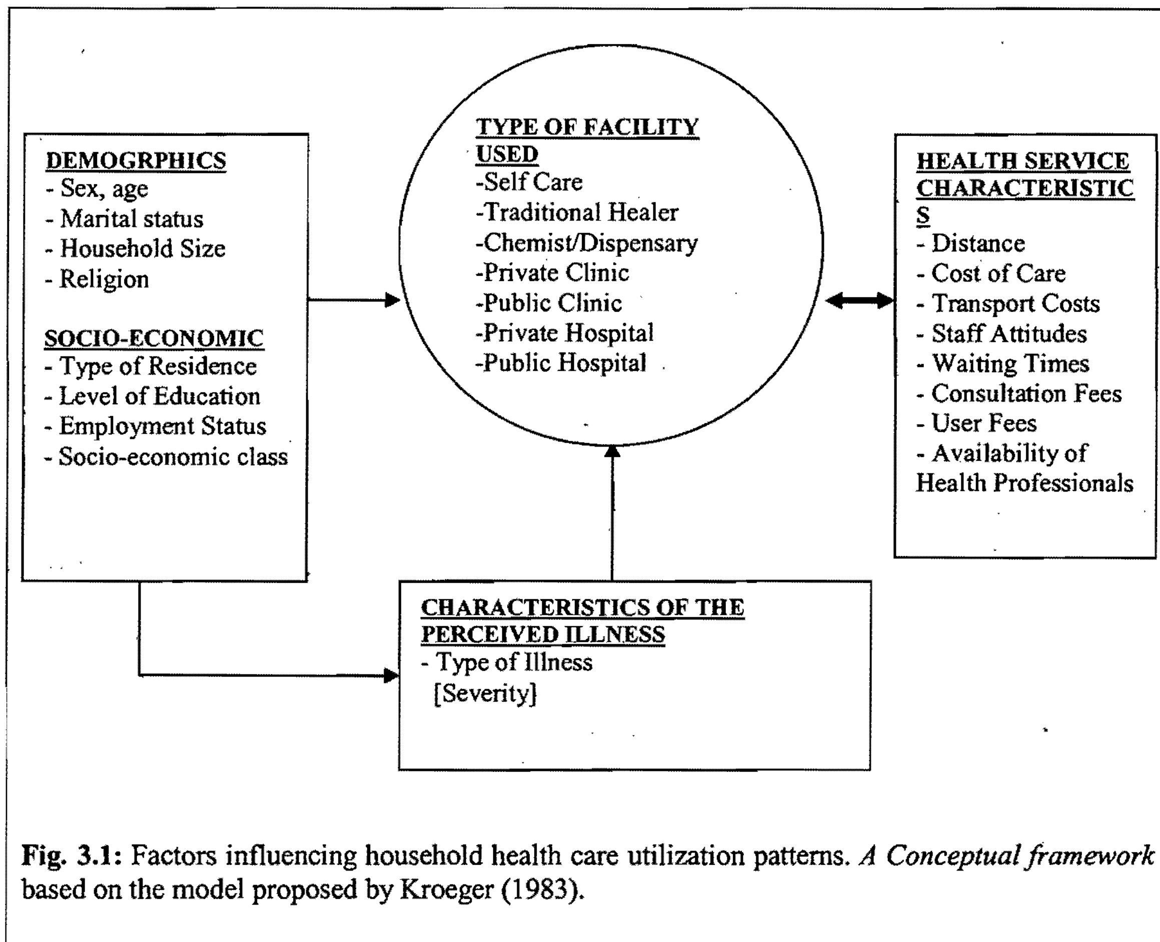

Fig. 3.1: Factors influencing household health care utilization patterns. *A Conceptual framework* based on the model proposed by Kroeger (1983).

To analyze utilization, our focus was on the dichotomous split of the determinants postulated from the existing literature. The *autonomous variables* are the socio-demographic characteristics, household perception of the illness, health services characteristics (quality, staff attitude and availability of drugs) while the *endogenous variable* is choice of care (self care, no care, traditional healer, chemist, hospital) as contained in Develay *et al.*, (1996). Building on this framework two factors—health care facility availability and socioeconomic status—were explored simultaneously to see how they influence household health care utilization patterns in the selected rural and urban areas of Zambia.

There are a variety of methods that have been suggested and used in the literature on how to measure health status. Basically, two approaches feature prominently and these are the objective method and the subjective methods (Visual Analogue Scale and Standard Gamble) (Dolan 2001). The objective method involves the researcher actually reviewing the respondents' health status by referring to his/her medical records and lifestyle. This is a very time-consuming and resource-intensive exercise and it can prove to be ethically taxing.

The subjective method of health status evaluation mainly relies on the respondents providing a self-assessment of their health status. The major weakness of such an approach is that the evaluation is subjectively determined by the respondents, leading to heightened chances of bias in the data. It has been empirically reported that in certain situations, it is likely that a poor and non-poor individual will provide different interpretations of similar health conditions (World Bank 1994; Seshamani *et al.,* 1999; Makinen *et al.,* 2000). This can adversely affect the predictive power of a study's results. Despite such a shortcoming, this method is the most widely used among researchers in both developing and developed countries.

For our current purposes, health status was ascertained by directly asking respondents whether they had an illness or injury in the previous month, and whether that illness was *'minor'*, *'moderate'*, *'severe'* or *'critical'*. All those who responded in the negative to having had an injury or illness were automatically classified as 'healthy'. Because there are multiple sources from which households could seek health care, it is appropriate for us to make use of the ***Multinomial Logit Model.*** This type of regression model is appropriate for our purposes because we have multiple, non-ordered outcomes that are categorical. This type of model is also very appropriate to our study because of the nature of the dependent variable we are dealing with. Our dependent has three outcomes which makes the Multinomial Logit Model an appropriate multivariate analytical model.

3.3 The Multinomial Logit Model

The multinomial logit model has been most frequently used for studies involving nominal outcomes. The basic premise is that the model allows for the effects of the independent variables to differ for each alternative outcome being considered and the characteristics of the outcomes can be used to predict the choice that is most likely to be made. We have chosen to use this type of model because the dependent variable is categorical, more than two outcomes are involved, and these outcomes are not ordered. This model, which uses the Maximum Likelihood Estimation (MLE) method, is appropriate as it enables us to establish the likelihood that an individual will utilize a given type of health care provider if s/he has fallen ill or has been injured given a combination of factors.

We have decided not to make use of an Ordinary Least Squares (OLS) functional form. With categorical dependent variables, OLS estimation is inappropriate because the error term is heteroscedastic and not normally distributed, the coefficient of correlation ($\mathbf{R}^2$) is generally low and there is a possibility of the estimated y to lie outside the range of the dependent variable (Gujarati 2003). The corollary is that the estimated standard errors are biased and the resulting inferences/interpretations are incorrect, leading the researcher to false conclusions.

The multinomial logit model model can be theoretically conceptualized as simultaneously estimating binary logits for all possible comparisons among the outcome categories (Long 1997). The major complication with such an extension of the binary logit model is that there are large numbers of comparisons involved which make the analysis difficult and cumbersome. The notation needed to keep track of all comparisons being made is sometimes very time-intensive and overwhelming (ibid). In most cases, the recommended method of interpretation for the results is to use either the *discrete change in the probabilities* or the *factor change in the odds*. In this study, we make use of the discrete polytomous model so as to determine *the likelihood that an individual or household with a given set of characteristics will choose to use one type of health care provider as opposed to another.*

3.3.1 The Multinomial Logit Model as a Likelihood Model

If we let **y** be a dependent variable with **J** nominal outcomes, we can number the categories from **1 to J**. Since they are nominal outcomes they are not ranked. Now, let **Pr(y = m | x)** be the probability of observing outcome **m** given **x**. According to Long (1997, pages 152 - 153) a probability model for **y** can be constructed as follows:

- Assume that **Pr(y = m | x)** is a function of the linear combination $\mathbf{x}\beta_m$. The vector $\beta_m = (\beta_{0m} \ldots \beta_{km} \ldots \beta_{Km})$ includes the intercept β_{0m} and the coefficients β_{km} for the effect of $\mathbf{x}_k$ on outcome **m**. In contrast to the ordered logit model, β_m differs for each outcome. For instance, the coefficient for the effect of income on the probability of having private health insurance is different from the coefficient for the effect of income on the probability of living in a given area.
- To ensure that the probabilities are *nonnegative*, we have to take the exponential of $\mathbf{x}\beta_m$: exp $(\mathbf{x}\beta_m)$. While the result is nonnegative, the sum $\sum^{J}_{j=1} \exp(\mathbf{x}\beta_j)$ does not equal 1 which it must for probabilities.
- In order to make the probabilities sum to 1, we use the following formula:

$$\Pr(y_i = m \mid x_i) = \frac{\exp(x_i\beta_m)}{\sum^{J}_{j=1} \exp(x_i\beta_j)} \qquad \text{(i)}$$

This normalization provides that $\sum^{J}_{j=1} \Pr(y = m \mid x) = 1$ (proof that the probabilities will sum to 1)

While the probabilities can now sum to 1, they are unidentified since more than one set of parameters generates the same probabilities of the observed outcomes. To demonstrate this, we can multiply equation (i) by exp $(\mathbf{x}\tau)$ / exp $(\mathbf{x}\tau)$. This is the same as multiplying by 1 and so the value of the probability will not change. The result is just equal to:

$$\Pr(y_i = m \mid x_i) = \frac{\exp(x_i[\beta_m + \tau])}{\sum^{J}_{j=1} \exp(x_i[\beta_j + \tau])} \qquad \text{(ii)}$$

In the above expression, the original parameters β_m have been replaced by $\beta_m + \tau$. Therefore, for any nonzero τ there is a different set of parameters that results in the same

predictions. This means the model is not specific. To clearly specify the model, there is need to impose constraints on the parameters such that for any $\tau \neq \mathbf{0}$ the constraints are violated. Two types of constraints are commonly used.

1. We could assume that

$$\sum^{J}_{j=1} \beta_j = 0. \qquad \text{(iii)}$$

This constraint is often used with hierarchical log-linear models. Because we are making use of nominal data this constraint is inappropriate for our current purposes.

2. The more commonly used constraint for MNLM is that one of the parameters is constrained to 0, such as $\beta_1 = \mathbf{0}$. The choice of which parameter to constrain is random. If we assume that this holds, then adding this constraint to the model results in the probability equation:

$$\mathbf{Pr}\ (y_i{=}m \mid x_i) = \frac{\exp(x_i \beta_m)}{\sum^{J}_{j=1} \exp(x_i\, \beta_j)} \qquad \text{(iv)}$$

Because $\exp(x_i \beta_j) = \exp(x_i 0) = 1$, the model is commonly written as

$$\mathbf{Pr}\ (y_i = 1 \mid x_i) = \frac{1}{1 + \sum^{J}_{j=2} \exp(x_i\, \beta_j)}. \qquad \text{(v)}$$

$$\mathbf{Pr}\ (y_i = 1 \mid x_i) = \frac{\exp(x_i \beta_m) \quad 1}{1 + \sum^{J}_{j=2} \exp(x_i\, \beta_j)}, \text{ for } m > 1. \qquad \text{(vi)}$$

3.3.2 Specification of the model

Using the above set of variables, including those specified in the conceptual framework, the basic representation of the models we shall use in the analyses is:

Utilization = ***f*** [AGE, RELIGION, HHHEAD_gen, MARRIAGE, HH_size, EMPLOYED, SES, HHH_educ, Dis_type].

The left hand side of our equation will have health care utilization as the dependent variable and the right hand side has the postulated explanatory variables. In simple relationships between a set of independent variables and a given dependent variable, such a functional specification is accepted without much critique. However, this is not the case for our study, primarily because of the interrelated nature of many of the included factors. It is probable that one or more of these factors i.e. household head's education [HHH_educ] could be interrelated with one or more of the other factors that have been included in the specification (e.g. the impact of household socioeconomic status [SES] on the choice of the health care provider to utilize).

Interrelationships of this nature are undesirable because of the adverse effect they may have on a study's results and their predictive power. If they exist in a data set, they may lead to a problem that is commonly referred to as ***multicollinearity*** in statistics. It is basically a situation that arises when a given dependent variable is linearly related to one or more independent variables simultaneously thus distorting the exact effect that a single independent variable has on the dependent one (Crawshaw and Chambers 1993; Long 1997). However, because we have combined the independent variables that have small categories, we do not expect multicollinearity to be a problem in our model. Furthermore the correlation matrix shows that there is no such relationship between or among the independent variables we have considered and so multicollinearity is not a problem in our study (*see correlation matrix in* Appendix B).

3.3.3 Selection of the Explanatory Variables

As revealed in the literature review chapter of this paper, the health of an individual consists of a complex set of interrelated and not so obvious factors. This makes the analysis of any set of results both cumbersome and confusing in some cases. Most of the variables used in this study were drawn from similar empirical studies conducted in various parts of the world. For instance, in the study undertaken by Develay *et al.*, (1996) in Burkina Faso, socio-demographic characteristics (age, gender, occupation, religion, household size, neighbourhood of residence, socio-economic group, and length of illness) were taken as independent variables. The variables we have chosen are taken from the conceptual model shown on page 27, as recommended by Kroeger (1983, 1988). It assumes that household health care utilization patterns are determined by the variables depicted in Table 3.3.3.

Categorical variables can be incorporated as predictors in a regression model, if we first express their categories as one or more {0, 1} dichotomies called dummy variables (Hamilton 1998). From the reviewed literature, it is clear that there is evidence that socio-economic status and health care facility availability differences between the locations is likely to lead to differential utilization of health care services by respective households. Consequently we have decided to use dummy variables as part of our analysis. Some of the dummy variables and the values attached to each outcome that we shall use for our formal data analyses are shown in Table 3.3.3. There are other dummy variables that we have used in the study with more than two outcomes. These include choice factors, facility rating, waiting time, and type of illness (or severity).

The initial categorisation of the variables (as categorized in the survey instrument) resulted in a very small number of observations within specific categories which reduced the predictive capacity of the models. To overcome this, it was decided that some of these categories be combined in order to increase the predictive and estimative power of the models. Detailed information on these variables is provided in the next chapter on

descriptive statistics and so no data is lost from this measure. Appendix C provides a comprehensive list of all these variables.

Table 3.3.3 Factors influencing choice of care (selected variables)

Postulated Factors	Variables	Variable type	Projected Sign
Gender of the household head [HHHEAD_gen]	Household head's sex	0 = Male 1 = Female	+
Age [AGE]	Household members' age	Continuous	+
Religion [RELIGION]	Household's religious affiliation	0 = Non-Christian 1 = Christian	+
Marriage [MARRIAGE]	Whether the household head married or not married	0 = Not married 1 = Married	+
Education of the Household head [HH_educ]	The highest level of education attained by the household head	0 = No Formal 1 = Formal	+
Employed [EMPLOYED]	Whether the household head is formally employed or not	0 = Unemployed 1 = Employed	+
Household Income level [SES]	Household income used for all consumption needs	0 = Low 1 = High	+
Household size [HH_size]	Number of people living in a sampled household	Discrete	-
District Type [Dis_type]	Whether the district is rural or urban	0 = Rural 1 = Urban	+

The positive sign in this case implies that for any given individual, an increase in the value of a given variable is likely to lead to the individual making a decision in favour of seeking care from a health care provider. For the categorical outcomes in our study, the household member is more likely to utilize a health care provider if the value is 1 compared to 0. For instance, in the case of gender, it means that females [1] are more

likely to utilize the available health services compared to males [0]. Various researchers have been able to show that as women become more empowered, they make use of health care facilities more readily (Timyan *et al.,* 1993; Peabody 1996). Therefore, our postulation is that household members from female-headed households are likely to make use of a formal health care provider, especially if the household head has some form of formal education.

According to Grossman (1972), age is one of the primary determinants of health care demand. He postulates that as an individual becomes older and s/he wishes to increase her/his stock of health from one period to the next s/he must undertake some health investment. This involves making appropriate lifestyle changes and also utilizing health care facilities when need arises. This indicates that age is likely to have a positive effect on the utilization of health care both at the individual and household level. This is why we postulate a positive sign.

Very little has been written on the impact of religion and marital status on the health-seeking behaviour of households. One possible explanation for this is that these variables have not received sufficient attention, particularly the relationship between of household health care utilization and religious denomination. According to Olive (2004) religion and spirituality are two important psychosocial variables that are frequently ignored in clinical research. He established that in actual fact patients do recognize the importance of religion and spirituality in their own lives, and many of them would actually like their physicians to consider these factors in their health care. Further Reindl and Brown (2004) have been able to show that religiously affiliated individuals, especially those men and women who report high levels of religiosity, are significantly more likely to utilize each type of preventive care than non-affiliated individuals. Based on such findings, we postulate that Christian households are more likely to utilize available health services than non-Christians. With respect to marital status, we assume that because households that are lead by a married couple are likely to be more stable in terms of planning, they are likely to be more conscious of the need for health care services and so are more likely to utilize such services when need arises.

There is a very close relationship among the variables "education of the household head", "his/her employment status", and "household income level". These three factors could be considered as essential inputs into a "household health production function". Using Wagstaff's 1986 approach, these variables are inputs that are used to produce the desired output of health. The basic premise is that if the household head is educated, there are higher chances of that individual finding steady employment. This ensures that the household has a steady source of income.

To get an estimate of the household's average monthly income we collected data on the average monthly expenditure in the household. Using the Living Conditions and Monitoring Survey of 2002 – 2003 calculation of K 490,530 as the average monthly household expenditure for Zambia, we divided the households into two categories namely 0 = Low income and 1 = High income. Consequently, all households with a monthly expenditure of K 500,000 or less fall into category zero and all those with expenditures exceeding K 500,000 are classified into 1. Income has been shown as a determinant for both access to and utilization of available health services as well as getting satisfaction from the services consumed (Hall & Dornan 1990). Therefore we expect these three variables to have a positive impact on the capacity of the household to utilize health facilities, irrespective of their ownership.

With respect to household size, the premise is logical. As the number of household members increases and the overall household income remains constant, the per capita expenditure in the household decreases. This is likely to result in a reduction of the consumption of certain commodities, health care being just one. The implication is that as household size increases, the ability of the household to meet both the direct and indirect costs associated with health care utilization decreases. Hence, we postulate a negative impact of household size on health care utilization at the household level.

The variable district type [Dis_type] is expected to have a positive coefficient. This is because in terms of the historical pattern of development in the country, the pattern of health care availability has been such that rural areas have limited facilities and these are

usually of poor quality. Hence, we expect that household members in urban areas are more likely to utilize available health care facilities compared to those in rural areas.

3.3.4 Explanation of the Dependent Variable

Polytomous regression models always have multiple (more than two) outcomes. The dependent variable in our model is the type of health care provider utilized i.e. where the injured or ill household member actually sought care if they were ill during the 4-week reference period. In our survey instrument we included seven (7) categories as possible alternative sources of care when need arises. These are private clinic, public clinic, private hospital, public hospital, chemist/dispensary, traditional healer or self-treatment at home (*see question 2.3 of Appendix A*).

At the point of the interview, each respondent was only allowed to choose one of these categories. Subsequent to the preliminary analyses conducted by the researcher, it was decided that three outcome categories be created, namely: ***'formal care'***, ***'informal care'*** and ***'no care'*** respectively. All those respondents who utilized a public clinic, private clinic, public hospital, private hospital, or chemist/dispensary are collapsed into the category *'formal care'*. The respondents who opted to utilize a traditional healer as a health care provider fall into the category *'informal care'* while all those who chose to self-treat at home are regarded as falling into the *'no care'* response category. This was considered essential as the researcher's interest was to determine what factors at the household level influence the decision to utilize the formal or informal health care providers.

In specifying our regression model, the three new categories representing the various sources of care are the ones that we bring into play as the dependent variable, which in our case is denoted as the *utilization* of a health care provider (formal or informal). The outcome category 'no care' is the one we use as the base [reference] evaluation group. These are the categories that we make use of in the descriptive statistics and results sections of this paper.

3.3.5 Interpretation of the Variable Coefficients

In multinomial logistic regression models, there are multiple outcomes 1, 2... *x*. The Stata® Version 8.0 software chooses a base outcome which is treated as a comparison outcome for all of the other categories for the dependent variables. For purposes of our study, we specify the outcome *'self-treatment at home'* (0 = no care) as our base outcome category.

There are two ways of interpreting the results of polytomous regression models. We can either use *the discrete change in the probabilities approach* or the *factor change in the odds* (Relative Risk Ratio/Conditional Odds Ratio) (Powers & Xie 1999; Hamilton 1998). In interpreting our regression coefficients, we have opted to make use of the discrete changes approach whose interpretations are based on the sign that the significant coefficient takes relative to the base outcome (which in our case is the category *self-care*). Note must be taken here that had we chosen an alternative base group, the coefficients and their interpretations would change but the predictions of the overall model would remain unaffected.

The discrete changes approach of interpreting the regression coefficients in multinomial logistic regression can be in terms of the ratio of the relative risk for a unit increase in **x** (independent variable) to the relative risk when **x** remains unchanged. According to Hamilton and Seyfrit (1994), this is algebraically expressed as:

$$\mathbf{RRR} = \frac{\mathbf{P}\,(y = 1 \mid x + 1)\;/\;\mathbf{P}\,(y = \text{base category} \mid x + 1)}{\mathbf{P}\,(y = 1 \mid x)\;/\;\mathbf{P}\,(y = \text{base category} \mid x)}$$

The implication here is that for each statistically significant coefficient in the regression output, the interpretation must be with reference to the base outcome or comparison group. This is the approach we use for interpreting our study results.

CHAPTER FOUR
METHODOLOGY

4.1 Introduction

In this chapter, we shall provide an overview of the methods and techniques that were applied in the processes of sampling the households from which the data was collected and how the collected data was analyzed. We also provide a detailed description of what type of specific data was collected, from what source and how it was collected. The study's design rested on the model developed by Kroeger (1983) which defines a set of independent variables that might influence health-seeking behaviour. We adapted the model to the local situation in the two districts (Chipata and Ndola) which gives us three overall groups of plausible explanatory variables: socioeconomic variables, demographic variables, and perception of quality of services variables.

4.2 The Survey Sites

The data that we use in this study was collected by means of a household survey conducted by the researcher in Chipata and Ndola Districts of Zambia. The household survey was conducted within the period November 2004 to January 2005. A structured questionnaire was administered to randomly selected households in the study sites. The two areas were selected because of the evident disparities that the researcher had previously observed in terms of availability of health care facilities and socio-economic status and also because of the researcher's familiarity with the areas.

Both districts are the administrative centres of their respective provinces but Ndola District is more urbanized, has a reasonably good number of health facilities (private and public), and is relatively better resourced as compared to Chipata District. Ndola is an industry-based district while a greater proportion of Chipata district's population are either directly involved in agricultural production or the cross-border wholesaling and retailing of agricultural produce, especially tobacco, groundnuts and cotton.

4.2.1 Chipata District

This district is located in the Eastern Province of Zambia, very close to the border shared with Malawi. The main source of income in this district is agricultural production which is undertaken by close to 70 percent of the population with a minor percentage involved in crafts and the remainder in formal employment (CSO 2002). The main crops that are grown and marketed are cotton, groundnuts, maize and tobacco. Compared to other districts, particularly those along the railway line, Chipata is relatively poor and underdeveloped. In this district, approximately 65 percent of the households are categorized as extremely poor (UNDP 2003). According to the 2000 Census of Population and Housing Summary Report, Chipata has a total population of 367,539 individuals with 183,352 males (49.9 %) and 184, 187 females (50.1 %). The average annual growth rate for this population is estimated at 3.5 percent. In the last Presidential and Parliamentary elections, the district was demarcated into four constituencies: Chipangali, Chipata, Kasenengwa, and Luangeni. The population distribution among the constituencies is shown in Table 4.2.1:

Table 4.2.1 Households and population distribution in Chipata District by constituency (2000)

Constituency	Number of Households	Total Population	Percentage Distribution Male : Female
Chipangali	19,310	100,633	50.4 : 49.6
Chipata	21,959	117,342	50.3 : 49.7
Kasenengwa	15,967	81,118	48.9 : 51.1
Luangeni	13,111	68,446	49.5 : 50.5
Total	70,347	367,539	49.9 : 50.1

In terms of health facilities, the district has 31 Rural Health Centres (RHC) with a combined bed capacity of 285; one General Hospital (Chipata General) with a bed capacity of 1,069 (938 for adults and 131 for children under five years); two Health Posts and two Urban Health Centres (UHC) (CBoH 2002). All the health facilities in the

district are government-owned, except for one RHC and a Mission Hospital (both are mission owned). The district has a total of 36 health care facilities.

4.2.2 Ndola District

This district is located on the copper and cobalt-rich Copperbelt Province. It is situated along the railway line that runs from Livingstone in the Southern Province to Chililabombwe on the border of Zambia and the Democratic Republic of Congo. Unlike Chipata, Ndola is predominantly an industrial town, depending on metal fabrication, construction, and cotton spinning as the major sources of income. A limited number of households, primarily those in the rural and peri-urban areas are involved in agricultural production and crafts-making for subsistence living.

According to the Jesuit Centre for Theological Reflection's *Food Insecurity Report of 2002*, about 27 percent of households in the district failed to meet the basic requirements that an average Zambian household needs to survive. Like Chipata District, Ndola is divided into four constituencies namely Bwana Mkubwa, Chifubu, Kabushi, and Ndola Central. The distribution of households and the population is shown in the table below:

Table 4.2.2 Households and population distribution in Ndola District by constituency (2000)

Constituency	Number of Households	Total Population	Percentage Distribution Male : Female
Bwana Mkubwa	19,998	103,195	50.5 : 49.5
Chifubu	13,552	76,642	50.2 : 49.8
Kabushi	14,318	82,791	49.7 : 50.3
Ndola Central	23,185	112,129	50.4 : 49.6
Total	71,053	374,757	50.2 : 49.8

As can be seen from the above information, the total population for the district is 374,757 of which 188,222 are males (50.2 %) and 186,535 are females (49.8 %) (CSO 2000). The average annual growth rate for this population is 1.1 percent, which is just 31 percent of the growth rate of Chipata's population. Ndola District has no RHC. It has a total of 39 Urban Health Centres (UHCs) and of these, 14 (36 %) are privately owned (CBoH 2002). It has one Health Centre in Kavu; one Specialized Hospital (Arthur Davison Children's Hospital) and one Central Hospital (Ndola Central). There are a total number of 42 health facilities in Ndola District, all of them based in urban settings.

4.3 Sample Size

For every study that involves a household survey framework, the number of households sampled will vary depending on the financial and complimentary resources available, purpose of the study and the number of households found in a given area of interest. Deaton (1998) proposes that if it is a national household survey, the sample to population ratio should be 1: 2500. This is for country-wide surveys like the Living Conditions and Monitoring Survey or the Demographic and Health Surveys that are conducted for purposes of informing and influencing polity.

With a combined household total of approximately 140,000 (740,000 population) in both the Chipata and Ndola Districts, the sample to household total ratio was arbitrarily set at 1: 200. This meant that an estimated 700 households had to be sampled. Because it was a comparative study, the researcher decided to split this number between the districts, implying 350 households were sampled in each district. This is also because the districts have similar population sizes.

4.4 The Sampling Strategy

The researcher tried to select a sample of households that accurately represented the populations of the two districts. To achieve this, a two-stage sampling technique was used to randomly select sample households. The first stage involved a simple random

sampling process of selecting residential areas from the four constituencies in each district. The constituencies were treated as natural clusters. The second stage of sampling involved a multiphase cluster and stratified random sampling procedure. This proved to be a complicated process because not all residential areas are clearly demarcated. This made it impossible to have a complete sampling frame for households which could be used as listing for randomly selecting households for the sample. However, to overcome this problem it was decided that the respective district's constituencies be used as clusters from which households would be selected. Fortunately, both districts have five [05] constituencies and so households were sampled from the administrative constituencies as demarcated by the local authorities. The constituencies were treated as *"residential blocks"*.

Consequently, the researcher decided that the starting point would be a randomly selected household in each residential block [constituency] and then a systematic technique would be used. This meant that each research assistant had to go to the randomly selected household and then from there, s/he was expected to select every 5th house from then on. This proved to be a very handy and cost-efficient technique in that it saved the researcher both time and effort. The researcher's prior knowledge of the two districts significantly helped in designing an effective sampling method that strengthened the efficiency and effectiveness of the data collection process from the study sites.

4.5 <u>The Survey Instrument and Data Collection Process</u>

The instrument of data collection was a structured, administered questionnaire. It was randomly administered to selected households in the study sites described above. A copy of this research instrument has been attached in Appendix A. The primary focus was to collect data from household heads or acting household head at the time of the interviewer visit. Where this was not possible, the interviewer was told to obtain information from the next senior member of the household. The researcher recruited two graduate students from the University of Zambia's (UNZA) Department of Economics as research assistants. The training of these assistants was done over a period of one week, during

which time they were familiarized with the questionnaire and how to administer it objectively.

The questionnaire was elaborated over a period of three months. Due to time and financial constraints, the questionnaire was not piloted. Despite this, it was designed to elicit information from eligible households in the following areas:

- The demographic characteristics of each of the members of the household and of the household itself (e.g. average household monthly expenditure , household size)

- The socio-economic characteristics of the household including education, presence of household amenities, and type of residential area in which the household is located

- Information concerning illness or injury of household members during the 4 weeks before interview was also collected. Responses were also requested concerning the type of health care sought as well as factors that determined where the care was sought (distance, cost of drugs, quality of care, nature of illness/injury). A respondent who gave an affirmative answer concerning illness/injury selected one from among seven categories of care givers: *private clinic, public clinic, private hospital, public hospital, chemist/dispensary, traditional healer, or self-treatment at home.*

The first part of the questionnaire involved collecting information on the socio-demographic characteristics of a household i.e. gender, age, religion, marital status, education, and household monthly expenditure. The second section revolved around information on illness/injury, type of illness/injury, type of care giver consulted, costs associated with treatment (if any), as well as factors influencing the choice of care giver visited. The instrument was not translated into any of the local languages. This was for two primary reasons. Firstly, because it is an administered questionnaire, the researcher deemed it necessary to recruit research assistants who were fluent in the local languages

of the study sites. This helped overcome the possible problem of language barrier. The second, more compelling reason was that the Zambian education system uses English as a medium of teaching and English is the official country language, which implies that very few of the sampled households would not be sufficiently conversant to understand the questions.

4.6 Possible Limitations to the Quality of Data Collected

For every study that is conducted, there is a chance that one form of bias or error will creep into the data and this can adversely affect the quality and precision of the results. The most common type of error is bias. This is a situation where the results reveal information that systematically varies from the truth. Usually it occurs due to the use of inappropriate sampling techniques. In this study, the researcher took every possible step to ensure that the collected data depicts a true picture as is feasibly possible. This included using an objective yet simple sampling strategy as described above. To further avoid sampling bias, data was collected on household members who were both ill/injured and those who were not. However, the analyses were only conducted on those who reported an illness or injury. This is likely to cause the problem of selection bias. In our case this was unavoidable as we wanted to generate information on variables that influence household health care utilisation decision-making processes when need arises.

The possible problem is that respondents were required to recall information over a period of 4 weeks. There is a chance that not all respondents will accurately remember all the needed information. This introduces the possibility of *recall bias* which can lead to measurement error. There is very little that can be done to control for such a problem and shortening the recall period may significantly limit the amount of information collected. Added to this problem is that some respondents may entirely refuse to participate in the study or may choose not to respond to certain questions leading to incomplete data sets.

To try and limit this, the researcher made sure that the research assistants were self-confident and that they were able to clearly explain the relevance of the study and to

make the potential respondents sufficiently comfortable to voluntarily participate in the study. While doing this, ample time was devoted towards training the interviewers to try and ensure that they did not to give the respondents a wrong impression about the study. Whereas a total of 700 household questionnaires were collected from the field, only 660 are included in the final analysis. The remaining 40 questionnaires were discarded either because of incompleteness or having inconsistent responses.

4.7 Plan for Data Analysis

The questionnaire was coded prior to the process of data collection. This made the process of data analysis less time consuming. Once all the questionnaires had been collected, the data was captured in Microsoft Excel® spreadsheet and exported to Stata® Version 8.0, a statistical analysis software package. For an analysis of the socioeconomic factors and availability of health facilities and how they impact on household health-seeking behaviour, a process of cross-tabulation was used. This stage of the analysis basically involved obtaining descriptive statistics on socio-economic and demographic characteristics, illness/injury, and choice of health care provider used for treatment. The second part of the analysis involved a more detailed process of polytomous regression procedures. This included modelling and estimation of the postulated parameters for each study site using Stata® Version 8.0 software.

The primary reason for this analysis was to understand what factors influenced the likelihood (probability) of an ill/injured household member consulting a given type of health care giver. We ran one model for the entire sample to determine the overall utilization patterns and the significant factors. We then ran separate models for Ndola and Chipata Districts to determine whether or not the independent variables had differential impact on household health care utilization patterns.

CHAPTER FIVE
DESCRIPTIVE STATISTICS

5.1 Introduction

In this chapter, we provide a detailed description of the overall characteristics of the sample that was collected. Summary statistics on all the relevant variables are presented here as they may help in providing a better understanding of the factors influencing the choice of health care provider. The information in this chapter is also important because it serves as a preamble to the information that will be presented in the next chapter on results. We then move on to provide respective summary statistics for the households sampled in each district.

5.2 The Combined Sample

A sample of 700 households was selected according to the two-stage sampling technique described in the previous chapter. It corresponds well with the data from the recently released results of the Living Conditions and Monitoring Survey Report for the period 2002 – 2003 with regard to the age and sex distribution, and the size of households. Age and sex distribution did not differ significantly between Chipata and Ndola Districts too.

Table 5.2a Population distribution by age and sex, Zambia, 2002 – 2003

Age group	Male (%)	Female (%)	Total (%)	Population
0 – 4	15.2	15.2	15.2	1,636,545
5 – 9	16.2	15.7	16.0	1,716,303
10 – 14	14.9	14.3	14.6	1,567,625
15 – 19	11.8	12.0	11.9	1,279,827
20 – 24	9.2	9.8	9.5	1,022,463
25 – 29	7.2	7.7	7.5	804,830
30 – 34	6.3	6.0	6.1	661,114
35 - 39	5.0	4.5	4.7	509,183
40 – 44	3.6	3.5	3.5	379,479
45 – 49	2.7	3.1	2.9	309,416
50 – 54	2.1	2.2	2.2	233,609
55 – 59	1.4	2.0	1.7	181,987
60 – 64	1.4	1.5	1.4	155,681
65 +	3.0	2.6	2.8	299,130
Total	100	100	100	10,757,192

Table 5.2a shows Zambia's population distribution by age and sex. The youth population which falls in the age group 15 – 24 constitutes 21 percent of the country population. Almost 46 percent of the national population is below the age of 15 years and only 3 percent is above the age of 65 years (CSO 2004a).

Table 5.2b Combined sample distribution by age and sex (%)

Age group	Male (%)	Female (%)	Total (%)	Sample size
0 – 4	7.0	7.7	7.4	232
5 – 9	9.2	11.5	10.3	325
10 – 14	13.7	11.7	12.7	399
15 – 19	12.2	12.5	12.3	389
20 – 24	10.5	12.2	11.4	358
25 – 29	13.1	13.9	13.5	426
30 – 34	9.4	8.4	8.9	280
35 - 39	6.5	6.0	6.2	196
40 – 44	5.9	4.5	5.2	164
45 – 49	3.6	3.7	3.7	115
50 – 54	3.2	2.6	2.9	90
55 – 59	2.8	1.5	2.1	66
60 – 64	1.8	2.7	2.3	71
65 +	1.1	1.5	1.2	39
Total	100	100	100	3,150

Table 5.2b provides similar information to that contained in 5.2a but now with regards to our sample. In our case, about 43 percent of our sample is below the age of 15 years and only 1.2 percent is above the age of 65 years. It is important to note that a smaller percentage of our sample is below the age of 5 years as compared to the national population (7.4 percent compared to 15.2 percent).

5.2.1 Average Household Monthly Expenditure

To collect data on household consumption capacity, the principal respondent who in most cases was the household head was asked to give an estimate of the amount of money the household spends on *all* consumption. According to the latest Living Conditions and Monitoring Survey (2002 – 2003), the average monthly household expenditure for Zambia was K 490,530 with an average per capita expenditure of K 111,444. At the time of our study the **U.S Dollar ($) – Kwacha (K)** exchange rate was at **K 4,830 per $ 1.00.** This means that monthly per capita expenditure was $23.08 for the entire country. Using the average monthly expenditure estimate stated above we divided the households we collected data from into two groups.

The result is that approximately a quarter of the sampled households (23.41 percent) spent an average of K 500,000 or less on consumption with the remainder (76.59 percent) spending more than that amount. This also implies that, approximately, only 25 percent of the households sampled had a monthly expenditure of about $ 104.00 or less. This indicates that income distribution within our sample is highly skewed towards the high income households. In fact, this skewness is due to the large number of households in Ndola District reporting household expenditures exceeding K 900,000 compared to Chipata District i.e. 56.2 percent compared to 6.6 percent. With a mean household size of 5.43, this means the per capita monthly expenditure per average household for our sample was $ 19.15 which is not very far off from the country level.

Using the average monthly household expenditure of K 490,530 from the Living Conditions and Monitoring Survey (2002 – 2003) as a proxy for household income

needed to meet basic household needs, we derive a new variable called household socioeconomic status [SES] which we use for the modelling section of this paper. The impact of household socioeconomic status on the pattern of household health-seeking behaviour is shown in section 5.2.3.

5.2.2 Household Size, Gender and Age Distribution

A total of 660 household questionnaires were fully completed and included in the analysis. This represents a response rate of 94.3 percent. These households comprised a grand total of 3,150 individuals for both districts. Of this total, 1,521 are males and 1,629 females, representing 48.3 percent and 51.7 percent of the sample respectively.

The smallest households consisted of only one individual and the largest had 13 members. The mean household size is 5.43, with standard deviation 1.91 and variance 3.65. Overall sample skewness is 0.83 and kurtosis is 4.21 which show that the sample is very close to being normally distributed. This is also confirmed by the Shapiro-Wilks statistic of $p = 0.97246$ (>0.05). This test is specifically designed to detect departures from normality in a data set. For this test, any p-value greater than the 5 percent level of significance suggests that the data is compatible with a Normal Distribution.

Table 5.2b in section 5.2 above shows that close to 70 percent of our sample includes individuals who are 15 years or older. In fact, the majority of individuals in our sample are between the ages of 5 years and 29 years, with the highest percentage falling in the 25 – 29 years age group (13.5 percent). Only 1.2 percent of the sample is older than 65 years and more of these are females than males (1.5 percent versus 1.1 percent respectively).

5.2.3 Utilization by Socio-economic Status

With regards to health care utilization, a larger number of households in the rural area opted not to seek any care as compared to those in the urban area. In fact, Table 5.2.3 indicates that 40 percent of all those who reported an illness or injury in the rural area and

were from low socioeconomic status households did not utilize any form of care, while approximately 16 percent of those who were sick or injured in the urban area and were from low socioeconomic status households did the same.

Table 5.2.3 Rural – Urban utilization according to household socioeconomic status (%)

Utilization	Socioeconomic Status			
	Rural [Chipata]		**Urban** [Ndola]	
	0	**1**	**0**	**1**
No Care [0]	40	41.6	15.8	29.5
Informal Care [1]	4.7	2.4	10.5	0.80
Formal Care [2]	55.3	55.9	73.7	69.7

Interestingly, more individuals from low socioeconomic status households in the urban area utilized informal care when ill or injured compared to those in the rural area. Consistently larger percentages of both low and high socioeconomic status households in the urban area (73.7 percent and 69.7 percent respectively) utilized one form of formal health care provider compared to those in the rural area (55.3 percent and 55.9 percent respectively). This seems to point to the conclusion that urban households are more likely to consult a formal health care provider when need arises compared to their rural counterparts.

Approximately 32 percent of household heads in the sample are unemployed, while 30 percent are in formal employment and 29 percent are self-employed. A mere 2.3 percent are students and the remainder, 7.2 percent, represents the retired proportion.

About 20 percent of the rural household heads are employed in the formal sector compared to 44 percent of those in the urban area. This proportion is more than twice that of the rural area. Similarly more household heads are unemployed in the rural area compared to the urban area (31.2 percent and 22.2 percent respectively). Self employment is more common in the rural area with close to 40 percent of the rural household heads falling into this category.

A large number of those reporting self-employment were involved in selling at municipal markets, street vending, and [particularly for Chipata District] cross border trading and retailing of agricultural produce. Approximately 78 percent of households in the combined sample are classified as belonging to the high socio-economic status group. This figure appears relatively high, especially considering the fact that about 76 percent of the national population is classified as poor. In national population surveys, the *poverty index* is calculated using a complex set of factors including household assets/wealth, household food consumption, consumption of non-food items (e.g. health care, education, personal services, electricity, clothing, sanitation, etc) and adjusting for differences in cost of living at different times and in different regions (CSO 2004a; PRSP 2002). We are unable to determine such an index for our study principally because of the limited nature of the data we collected.

Conversely, two important cautions must be taken into account when looking at this skewness. Firstly, that the study is not a national survey and so data are not overly expected to represent population characteristics. Secondly, the selection of K500, 000.00 as the cut off point for low socio-economic status is arbitrary and thus affects this classification.

5.2.4 Health Care Utilization according to Gender of the Household Head

Both the theoretical and empirical literature indicates that the gender of the household head usually has an impact on influencing the health-seeking behaviour of the household members. The general conclusion is that individuals coming from female-headed households are more likely to utilize health care services than those coming from male-headed households. Table 5.2.4 provides information on the health-seeking behaviour of a household as determined by the gender of the household head.

Table 5.2.4 Choice of source of care according to gender of household head (%)

Source of Care		Household Head Gender	
		Male [0]	**Female** [1]
No Care	[0]	41.3	22.8
Informal Care	[1]	2.6	2.2
Formal Care	[2]	56.2	75

Of the 823 individuals who reported an illness or injury, 550 individuals (66.8 percent) came from male-headed households and 273 individuals (33.2 percent) from female-headed households. A larger proportion of individuals from female-headed households utilized formal health care service providers compared to those from male-headed households (75 percent compared to 56.2 percent). There were also a smaller number of individuals from female-headed households opting not to seek any care than for those coming from male-headed households (22.8 percent compared to 41.3 percent). A very similar proportion from both male- and female-headed households consulted traditional healers (informal care) as health care providers.

The information in the above table seems to confirm what the health economics literature postulates. Individuals residing in female-headed households are more likely to consult a health care provider when need arises compared to those who reside in male-headed households. In this case, gender of the household head impacts upon the health-seeking patterns that are pursued at the household level when need arises.

5.2.5 Morbidity

With respect to illness/injury, 2,327 individuals (73.9 percent) did not report having either during the 4 weeks reference period while 823 individuals (26.2 percent) reported having an injury/illness during the same period. Of this total, 577 individuals (70 percent) are 18 years or older while 246 individuals (30 percent) are below 18 years of age. A total of 25.7 percent of the male population reported an illness/injury during the reference period compared to 26.3 percent of their female counterparts. The illness/injury variable

has been divided into four categories namely: *'minor', 'moderate', 'severe'* and *'critical'*. It must be noted here that while an injury is strictly not an illness, it is still relevant to collect information related to this because in certain instances, an injury could lead to physical/mental illness and thus may require appropriate medical treatment or therapy. Table 5.2.5 shows the distribution of type of illness or injury within the combined sample.

Table 5.2.5 Age group distribution of morbidity (%)

	Severity of Illness or Injury			
Age group	**Minor**	**Moderate**	**Severe**	**Critical**
0 – 4	37.9	36.4	15.2	10.6
5 – 9	40.4	29.8	20.9	8.9
10 – 14	46.8	25.9	18.2	9.1
15 – 19	38.3	38.3	20	3.3
20 – 24	29.9	44.2	15.6	10.4
25 – 29	36.6	33.0	21.4	8.9
30 – 34	28.4	37.5	26.1	7.9
35 – 39	26.1	39.1	28.9	5.8
40 – 44	33.3	30.3	27.3	9.1
45 – 49	19.4	25	44.4	11.1
50 – 54	32.3	41.9	19.3	6.4
55 – 59	11.1	22.2	44.4	22.2
60 – 64	26.7	33.3	40	0.0
65+	12.2	36.6	34.2	17.1
Total	32.6	34.5	23.9	8.9

NB: Pearson chi2 (39) = 59.2810, Pr = 0.020, n = 823.

The above information shows that the category 55 - 59 years has the highest percentage of individuals reporting a critical illness/injury, 22.2 percent, while the lowest, in absolute terms is reported by the category 60 – 64 years (0.0 percent). Most of the 'minor' and 'moderate' illnesses or injuries are reported by the younger age groups while the older age groups report a larger number of the 'severe' and 'critical' ailments. Close to 68 percent of all reported illnesses/injuries fall into the "minor" and "moderate" categories, 24 percent and 9 percent in the in the "severe" and "critical" categories respectively.

5.2.6 Health Care Utilization in case of Illness/Injury during the previous 4 weeks at time of interview

Modern health care services, i.e. private and public clinics and hospitals, and chemists/dispensaries, were consulted by a total of 61.8 percent of all those who had an illness/injury in the sample during the reference period; the majority of these utilized a public clinic (24.8 percent). In fact, most of the sampled households were found to have utilized public health facilities for various illnesses or injuries compared to private facilities. This is despite the common notion that private facilities are of better quality and offer services that are worth the money paid. Self care (35.8 percent) constituted the kind of care most frequently used in our sample (see Table 5.2.6a).

Respondents who reported visiting a traditional healer numbered only 20, representing 2.4 percent of the combined sample. However, caution must not be thrown to the wind when looking at this proportion. This is because in most instances, respondents are usually reticent in revealing visits to such health care providers (Kroeger 1983; Develay *et al.,* 1996). This could be due to the fear that the household or individual household members might be stigmatized or looked down upon as a result of consulting such providers. Therefore, this figure might be an underestimation of the true population prevalence rather than a depiction of the peripheral and unimportant position that such health care providers occupy in the health delivery system.

Table 5.2.6a First choice of health care by ill or injured household members

Source of Care	Frequency	Percentage (%)
Private Clinic	40	4.9
Public Clinic	204	24.8
Private Hospital	56	6.8
Public Hospital	111	13.5
Chemist/Dispensary	97	11.8
Traditional Healer	20	2.4
Self-treatment	295	35.8
Total	823	100

It must be noted here that respondents were asked what kind of health care provider they consulted when they fell ill or were injured. No information was collected concerning follow up visits, if any. Therefore, we show only responses related to the first choice made because the question was a single response one without any provision for multiple answers.

The pattern of household health care utilization also reveals a significant association with the type of illness or injury suffered by the household member. The information in Table 5.2.6b shows that for both districts, a larger number of households had members reporting a minor or moderate illness or injury and that as the severity of the illness or injury increased the likelihood of utilizing a designated health care giver increased too.

Table 5.2.6b Utilization of health care options according to type of illness or injury in respective districts (%)

		Type of illness or injury (%)			
Utilization		**Minor**	**Moderate**	**Severe**	**Critical**
Chipata	**[0]**				
No Care	0	70.2	26.4	3.4	0.0
Informal Care	1	0.0	13.3	46.7	40
Formal Care	2	8.3	42.9	37.6	11.2
Ndola	**[1]**				
No Care	0	62.5	34.8	1.8	0.9
Informal Care	1	0.0	20	80	0.0
Formal Care	2	19.6	33.6	32.1	14.8

NB: For Dis_type 0 [Chipata]: Pearson chi2 (6) = 225.3972 Pr = 0.000; For Dis_type 1 [Ndola]: Pearson chi2 (3) = 100.0069 Pr = 0.000.

For the above table, the utilization category 0 is self-treatment at home which is taken to be synonymous with no care in this study. The category 1 is for all those household members who decided to utilize traditional healers (informal care) as health care providers while category 2 is for those who utilized private and public facilities (formal

care). A larger number of household members in Chipata (70.2 percent) with a minor illness or injury opted to utilize self-care compared to those in Ndola (62.5 percent). Similarly, a large number of household members in Ndola (19.6 percent) compared to only 8.3 percent for Chipata consulted a formal health care provider for a minor condition. For the categories 'moderate' and 'severe' similar utilization patterns emerge for both districts.

Table 5.2.6b above also shows that as severity of the ailment increases, both rural and urban households are more likely to consult a formal health care provider than not to seek any care. None of those individuals who had a 'critical' condition in the urban area opted to visit a traditional healer and less than 1 percent opted to stay at home and not seek any care while the opposite is true for the rural area. 40 percent of those reporting a 'critical' ailment in the rural area consulted a traditional healer while none opted to stay at home. Interestingly, none of those reporting a critical condition in Chipata opted to self-treat at home while 0.9 percent of those in Ndola did the same.

5.2.6c Overall utilization by location (%)

Source of Care [UTILIZATION]	Location	
	Chipata [RURAL]	Ndola [URBAN]
No Care [0]	40.9	28.9
Informal Care [1]	3.4	1.3
Formal Care [2]	55.6	68.9

Table 5.2.6c shows the overall distribution of source of care utilized in each district among those reporting an illness or injury. Households in Ndola District utilize informal care providers to a significantly lower extent as compared to those in Chipata District (1.3 percent and 3.4 percent respectively). In terms of formal health care utilization in each district, household members who were ill or injured in Chipata utilized formal providers to a lesser extent than those in Ndola (55.6 percent compared to 69.8 percent), and this difference is statistically significant.

5.2.7 Time to facility for those who consulted private or public providers

Utilization of health care services depends on a variety of factors. Time to the facility and the form of and cost of transport needed to get to the facility are among these factors. In terms of the combined data base, 34.7 percent of all those who consulted a private or public provider (clinic or hospital) took about 30 minutes to reach their chosen provider, 48.9 percent took between 30 minutes to an hour, while 16.3 percent took more than an hour. This indicates that most of the sampled households took between 30 minutes to an hour of travelling before they got to their chosen health care provider.

It is difficult to tell if this is reasonable time because various factors can influence travelling time. These include traffic jams, especially in urban areas and the type of transport used (obviously, the person travelling by ox-cart will take longer to arrive at a given destination compared to the one using a standard motor vehicle).

We can obtain better information on the time it takes an ill or injured household member to get to the health care provider by looking at the data using a rural – urban divide approach. Table 5.2.7 provides a summary of this information. Note that only those household members who consulted any of the formal health care providers were asked to provide information about the time it takes them to arrive at the chosen health care provider's facility.

A total of 437 individuals consulted one form of formal care provider or another, and 219 of these (50.1 percent) were from the rural area and 218 from the urban area (49.9 percent).

Table 5.2.7 Distribution of time to facility according to *location of respondents* (%)

Time to Facility	**District** [Location of Respondent]	
	Chipata **[RURAL]**	Ndola **[URBAN]**
Less than 30 min [1]	30.6	38.9
Between 30 min – 1 hour [2]	44.3	53.2
More than 1 hour [3]	25.1	7.3

Analysing the data in the table indicates that the average time to facility within the urban area is relatively shorter compared to that in the rural area. The majority of ill or injured household members (44.3 percent) in Chipata District (rural) spent between 30 minutes to an hour getting to the health care provider of their choice. About 54 percent of all those who consulted formal health care providers spent the same time in Ndola District (urban). A higher percentage of household members in Ndola took less than 30 minutes to get to a health care provider compared to Chipata (38.9 percent and 30.6 percent respectively). The most contrasting of these categories is the third one: 'more than an hour'. A significantly larger number of individuals (25.1 percent) in Chipata stated that it took them more than an hour to get to a health facility compared to a mere 7.3 percent for Ndola District.

This indicates that time constraint is a possible factor in influencing how households in the respective districts will utilize the available health care facilities. Time constraints associated with health care utilization have different consequences depending on the occupation and source of income of respective household heads. Since subsistence agriculture is very common in the rural area, the direct and indirect time costs associated with seeking care might mean that individuals may not be able to work in their fields. In some instances this may lead to household food insecurity due to the time it takes to access and utilize the health care services needed. In most cases, those with minor conditions will as an alternative opt to self-treat at home than to seek care from a formal and/or informal health care provider. As a consequence, the time factor may lead to differences in the observed health care utilization patterns between the rural and urban areas respectively.

5.2.8 Facility Rating by Respondents

All those respondents who decided to utilize a public or private health care provider were asked to provide a subjective rating of the worth of the services they received at the chosen facility. Information was collected on waiting time, distance from the respondent's home, availability of drugs, availability of health professionals, cost of the services received, and lastly staff attitudes. The results are shown in Table 5.2.8a below.

Table 5.2.8a Health facility ratings by respondents (%)

Rated Factor	Rating	Public (%)	Private (%)
Waiting time	1	57.4	32.6
	2	22.8	12.1
	3	19.8	55.2
Distance from home	1	35	48.9
	2	7.7	16.5
	3	57.3	34.5
Availability of drugs	1	52.7	5.5
	2	20.7	16.4
	3	26.6	78.1
Availability of health professionals	1	46.9	21.2
	2	36.9	32.5
	3	20.5	41.9
Cost of services	1	27.5	59.6
	2	22.9	16.7
	3	49.6	23.7
Staff attitudes	1	65.9	16.6
	2	13.2	6.5
	3	20.8	76.8

1 = unsatisfactory; 2 = neutral, 3 = satisfactory. n = 437.

Of the 437 respondents who visited public or private facilities (clinics and/or hospitals), approximately 57 percent of them rated public facilities as unsatisfactory when it comes to waiting time while only 19 percent rated them as satisfactory. The opposite of this is true for private providers. About 55 percent of the entire respondents who utilized private care providers compared to approximately 20 percent of those who utilized public providers rated them as satisfactory with respect to waiting time. This could be due to the

fact that there is less congestion at private facilities and that they have a larger number of both professional and auxiliary staff at their facilities as compared to public ones.

In terms of distance of health facility from home, 57 percent of the sub-sample rated public facilities as satisfactory compared to 34 percent for private facilities. Possibly, this is due to the fact that government tends to locate health centres and clinics in high density residential areas, making it easier for residents to access these facilities. Private providers on the other hand generally locate their facilities in the Central Business Area (CBA), implying that travelling distances are likely to be longer. This is especially true for private clinics.

About 5 percent of those who utilized private sector facilities rated availability of drugs as unsatisfactory. This figure is ten times lower than the number of those who rated public facilities as unsatisfactory. This is not surprising, considering that the problem of availability of essential drugs in government facilities has been widely reported. For instance, drugs supply in public hospitals is not satisfactory, usually only meeting around 30 percent - 40 percent of the public requirements (MoH 1998a). This is compounded by factors like lack of transparency in the drug procurement processes and bureaucratic tender procedures.

The availability of health professionals also follows the same pattern of rating as availability of drugs. 46.9 percent rated private facilities as satisfactorily staffed while only half (21.2 percent) rated public facilities satisfactory on this factor. With respect to cost of services received, 59.6 percent rated private facilities as unsatisfactory while approximately 50 percent rated public facilities as satisfactory. Staff attitudes are rated as unsatisfactory in public facilities and satisfactory in private ones.

Table 5.2.8b Quality of health facility ratings by location (%)

Rated Factor	Rating	Rural	Urban
Waiting time	1	66.9	29.8
	2	19.2	30.3
	3	13.8	39.9
Distance from home	1	58.5	33.1
	2	11.8	20.6
	3	29.7	46.3
Availability of drugs	1	59.2	9.8
	2	9.2	25.6
	3	31.6	35.4
Availability of health professionals	1	49.8	32.6
	2	18.7	12.3
	3	31.6	55.1
Cost of services	1	13.9	46.7
	2	30	18.4
	3	56.1	34.9
Staff attitudes	1	33.8	13.3
	2	33.8	6.5
	3	32.3	80.1

1 = unsatisfactory; 2 = neutral, 3 = satisfactory. n = 420.

Table 5.2.8b provides information that is very similar to Table 5.2.8a, but in this case the figures are relative to type of district. A very similar pattern of information as discerned under the private – public split in the previous table emerges. Consistently, those in the urban area rate the health care facilities that they visited as better equipped or supplied as compared to their counterparts in the rural area. This pattern is most certainly due to the low concentration of private health care providers in the rural study site.

With regards to waiting time, approximately 67 percent of the rural respondents rate the facilities they went to as unsatisfactory while in the urban area only half that percentage (30 percent) rates them as unsatisfactory. Conversely, 40 percent of the urban respondents who utilized formal health care rate the facilities they visited as satisfactory while only 13.8 percent of the rural respondents who did the same rate the facilities satisfactory. This implies that rural dwellers in our sample not only take a longer time to reach their health care provider of choice but that they spend more time waiting to receive care compared to their urban counterparts.

About 60 percent of the rural respondents rate the health facilities in their area as unsatisfactory with respect to distance from home, compared to 33.1 percent of the urban respondents. Urban respondents are more satisfied with the distance of their health facility of choice from their home while the rural respondents are less satisfied (46.3 percent and 29.7 percent respectively). Because health facilities may be located very far from the place of residence of the individuals the resultant health-seeking behaviour in such a situation will be different from that observed in a place where health facilities are closely located to residential dwellings. Therefore, the rural – urban health-seeking behaviour is bound to vary partly due to distance.

A significantly larger percentage of respondents in the rural area classify formal health care providers as unsatisfactory with respect to drugs availability while a much smaller percentage rates such providers as unsatisfactory in the urban area (59.2 percent compared to 9.8 percent). However both rural and urban areas have a similar rating when it comes to drugs availability being satisfactory. More of the urban respondents also rate the facilities they visited as satisfactory with respect to availability of health professionals in comparison to their rural counterparts.

A greater number of rural respondents (56.1 percent) rate the health facilities they visited as satisfactory with regards to cost of services offered as opposed to only 34.9 percent for the urban area. More of the urban respondents are dissatisfied with the cost of services they face, probably because they are more likely to utilize a private health care provider compared to those in the rural area for our sample.

Generally the cost of health services is higher in the private than the public sector. The pattern for staff attitudes remains the same as under the private – public split. Urban respondents are more satisfied with staff attitudes at the health facilities they visit compared to rural respondents.

5.2.9 Education and choice of health care provider

In this study, education is measured as *the highest level of formal schooling that an individual has attained up to the time of the study.* All those without any form of formal education are classified into the zero category. It is well known from previous research that the urban population in the country is more likely to attend school and have access to health care than the rural population. Similarly, poorer households are less likely to send their children to school than non-poor households. In developing countries like Zambia, the government still remains the major provider of education at all levels.

Table 5.2.9a Distribution of educational attainment among sampled households

Educational Level		Frequency	Percentage (%)
No Formal Education	**(0)**	352	11.2
Primary school	**(1)**	816	25.9
Secondary school	**(2)**	1,256	39.9
Tertiary	**(3)**	726	23.1
Total		3,150	100

It is easy for one to conclude that all those with no formal education are illiterate. However, care must be taken here because some of the people in this category are actually infants below the school going age. There is a big difference between illiteracy and not having any formal education, and the main factor that determines such a distinction is age. Therefore we cannot out rightly say that 11.2 percent of our sample is illiterate as this could be an overestimation. In order to avoid this, the regression output we will present in the following chapter will be based on adults only i.e. those who are 18 years and older. Therefore we exclude the 1,200 individuals who are below the age of 18 years and base our analysis on the remaining 1,950 adults in our sample.

Approximately 40 percent of the sample individuals have attained some secondary school education and a lower percent of 23.1 have achieved tertiary education either from a college and/or university.

Table 5.2.9b Household head's education and choice of health care provider (%)

		Providers				
		Private	*Public*	*Chemist*	*Traditional*	*Self-treat (No care)*
HHH_educ	**0**	0.0	36	20	0.0	44
	1	5.9	50	4.8	7.2	32.1
	2	7.3	43.3	9.8	1.7	37.9
	3	18.3	32.9	14.1	2.3	32.6

NB: **HHH_educ** is 0 = no formal education, 1 = primary education, 2 = secondary education, 3 = tertiary education. n = 823.

Table 5.2.9b shows that as the household head's education level increases [HHH_educ], the likelihood of seeking care from modern health care facilities increases. However, this increase is consistent (as educational level increases) only for private providers. With respect to public facilities, there is a decline in utilization of health facilities when household head education increases from secondary education to tertiary level. This is probably because once the household head attains tertiary education s/he has better employment opportunities and so is able to utilize private health care providers more often than previously.

Households headed by those without any formal education are least likely to consult private providers and interestingly enough, traditional healers. In our sample, those households headed by individuals with primary level education are the most likely to utilize traditional healers as a source of care. The rate of self-care among those reporting an illness/injury is highest (44 percent) among the least educated household heads and similar among those with primary and tertiary education (32.1 percent and 32.6 percent). A higher percentage of respondents with primary school education and illnesses/injuries (50 percent) visited public facilities compared to 36 percent of those without any formal education, 43.3 percent for those with secondary school level and 32.9 percent for those with tertiary education.

5.3 Chipata District sub-sample

In Chipata District, a total of 320 household questionnaires were collected, representing 1,696 individuals. A total of 48.7 percent of these are males and 51.3 percent are females. These figures are not very different from those contained in the Central Statistical Office's 2000 Census of Population and Households. Over 85 percent of the individuals in the sub-sample are below the age of 40 and only about 4 percent are over the age of 60. The mean household size for this sub-sample is 5.32, which is not very different from the national averages of 5.5 for urban areas and 5.3 for rural areas in Zambia (CSO 2004a). A total of 435 individuals out of 1,696 individuals reported that they had suffered an illness or injury during the 4-week reference period. This converts to 25.6 percent, meaning 74.3 percent had neither an illness nor injury to report. Of these 435 individuals, 298 (68.5 percent) are adults and the remainder (31.5 percent) are below the age of 18 years. The largest proportion of these individuals used self-treatment at home as a means of care for their ailments (10.3 percent). The next most commonly used source of health care provider was the public clinic with 8.1 percent. A minimal 0.9 percent consulted a traditional healer for care.

Household expenditure is not similar to the overall sample information. While approximately 25 percent of the combined sample spends below K 500,000 as household monthly consumption expenditure, the figure is exactly 40 percent of the Chipata households. This could be due to the fact that a majority of Chipata households are classified as rural and that most of these rural households are engaged in some form of subsistence agriculture. Therefore, their overall consumption expenditure levels are lower as they do not spend as much money on food as those in urban areas. 40 percent of the individuals in this sub-sample have managed to reach secondary school, while only 9.9 percent have been to college and/or university and 17.7 percent have no formal education.

The mean age for the sample is 23.6 years. While 56.8 percent of the household heads are married, 11.3 percent are divorced or separated, 0.3 percent was living together, 17.7 percent is widowed and 13.9 percent are single or have never been married.

Approximately 80 percent of the sample is Christian, 5.8 percent are Muslim and 14.8 percent belong to the category "other".

5.4 Ndola District sub-sample

Compared to the Chipata sub-sample there were 20 more households in the Ndola District. Of these 340 households, there were 1,454 individuals of which 696 were males (47.9 percent) and 758 were females (52.1 percent). The proportion of individuals below the age of 40 is almost the same as that for the Chipata sample (83.2 percent versus 85 percent). However, the number of people over the age of 60 is lower in the Ndola sample compared to that for the Chipata sample i.e. 1.7 percent versus 4.4 percent. While this difference may seem to be minimal in relative terms, it can still lead to significant differences in the pattern and choice of health care provider. The mean household size for Ndola is 4.3, which is lower than the provincial average of 5.4 (ibid).

A total of 26.7 percent (388 individuals out of 1,454) reported an illness/injury during the reference period at the time of the interview, while 73.3 percent (1,066 individuals) did not. Of the 388 individuals reporting an illness or injury, 279 (71.9 percent) are adults while the rest (28.1 percent) are below the age of 18 years. Like in Chipata, most of those people who were ill or injured chose self-treatment as first choice of care. 18.3 percent opted to utilize the formal health care providers. This figure is much higher than the 14.2 percent for Chipata District. A lower proportion of the ill/injured individuals decided to seek care from the public facilities in Ndola compared to Chipata i.e. 8.9 percent versus 10.9 percent. This may be due to the fact that Ndola has a large number of private health care providers compared to Chipata which has none. It may also have something to do with the perception that private providers offer better quality of care that offers value for money. Only 1.3 percent (5 individuals out of a total of 388 ill/injured individuals) consulted a traditional healer at the time of the survey.

Average monthly household expenditure is skewed to the right, with over 90 percent of households spending more than K 500,000 and only 5.4 percent spending less than

K 500,000 for monthly consumption purposes. In fact, close to 50 percent of the households (46.7 percent) spend more than K 900,000 per month. This is significantly higher than the proportion of households spending this much in Chipata (i.e.7.8 %). This is likely to point to the differences not only with respect to population distribution but also to differences in socio-demographic and consumption patterns of the two districts. The sample mean age is 26.2, which shows that the individuals in this sample are slightly older than those in the Chipata sample (with mean age 23.6 years).

Approximately 48 percent of the household heads are married, while 8.2 percent, 5.7 percent, 11 percent, and 27.1 percent are divorced/separated, living together, widowed and single (never married) respectively. 77.3 percent of this sample is Christian and 5.7 percent Muslim, while the remaining 17 percent is for the category *"other"*.

5.5 Summary Comments

In the above sections of this chapter, we have provided a representation of the sample characteristics, for the combined sample and for Ndola and Chipata Districts respectively. The data shows that these characteristics are not very different from information obtained in more comprehensive and nationwide surveys. Therefore, we can be comfortable that we have an approximately accurate depiction of urban and rural household behaviour when it comes to health care demand and consumption.

A larger number of household heads in the rural district, which is Chipata in our case, are unemployed and the households have a lower socio-economic status (using average monthly expenditure as a proxy). Further, these households use less of formal health care compared to their counterparts in the urban district. In fact, a majority of the sick or injured in these households opt to self-treat at home, especially for minor and moderate conditions. This seems to imply that both socio-economic status and district type (rural or urban) are associated with health-seeking behaviour at the household level in each district. Gender and the educational attainment of the household head have also been shown to have a vital bearing on the type of care that an individual will utilize when need arises.

There appears to be an apparent association between the household head's education status and the particular form of care utilized when a household member is ill or injured. Those with higher levels of education appear to more readily utilize formal sources of care, over-the-counter medications and to be the least likely to opt to self-treat at home. However, it is interesting that this group of households still opts to utilize traditional healers as sources of care to a greater extent than some of their less educated counterparts. This finding indicates that even though this type of health care provider is usually given a peripheral position in the health delivery system they are still considered as an alternative, be it a less conventional, source of care at the household level.

The descriptive statistics also reveal that the households' perceptions concerning the quality of the health facilities utilized vary depending on whether the facility being rated is privately or publicly owned. While the rural households have only rated the public facilities because of a lack of private facilities in the study site, it is still apparent that the overall perception of the quality of public facilities is bleak. To the contrary, private health facilities are rated consistently better with respect to the availability of trained health professionals and supplies, staff attitudes, distance from home and duration of time spent before being attended to. However, public facilities are only rated as satisfactory with regards to the cost of services offered as compared to the private providers. It is apparent from this information that the general perception of private facilities is that they are superior to public facilities, despite the costs of their services being unsatisfactory.

It is also evident that the rural households in our sample face greater time constraints than their urban counterparts when it comes to accessing and utilizing the available health services. A likely consequence of this is that the rural households will tend to utilize a lower level of health care than those in the urban area. This is most likely to be accentuated by the fact that rural households perceive the quality of the health facilities that are easily accessible to them as undesirable and of poor quality. This is easily reflected in the household health care utilization patterns that emerge in the respective districts.

Households in the urban area utilize formal health care much more than their rural counterparts, especially with regards to minor and critical illnesses or injuries. The varying socioeconomic status patterns between the two areas appears to be reflected in the health-seeking patterns of households in the study sites, with high socioeconomic status households having greater access and capacity to utilize the available health care services than their low socioeconomic status counterparts. This pattern is apparently consistent both within and across the districts surveyed.

Nevertheless, we cannot arrive at such conclusions this easily. We need to conduct appropriate statistical tests and scrutiny for us to reach such conclusions. This is what we intend to accomplish in the next chapter.

CHAPTER SIX
THE RESULTS - ANALYSIS AND DISCUSSION

6.1 Introduction

In the preceding chapter, information concerning relevant descriptive statistics of the sample (and sub-samples) was presented. In this chapter, the results from the multinomial logit model to investigate the impact that household socio-demographic variables have on household health-seeking behaviour in Chipata and Ndola Districts are presented. We present multinomial logit models for the combined data base, and for the respective districts. In this chapter, we simply provide a summary of the model's results. It is worth mentioning here that the regression analyses we conduct for all three data sets includes only adults above the age of 18 years. This is because the utilization of health care by infants and children in any given household will typically be determined by their parents or guardians. Hence, we exclude the children from the analysis. The full sets of results for the models that we have presented here are provided in Appendix B.

6.2 Results of the Multinomial Logit Model: Combined Sample

Tables 6.2.1 and 6.2.2 provide information on the independent variables and their impact on the household health care utilization patterns in both districts. The base comparison group is "self-treatment at home" which we consider as a substitute for *'no care' (not seeking care from a formal health provider)* in our study. The implication of this is that the interpretation of the coefficients of the variables for any outcome is with reference to the relative odds of that particular outcome occurring against the base outcome 'no care'.

The results in Table 6.2.1 indicate that with respect to utilization of 'informal care' (traditional care), only the variable AGE is statistically significant at the 5 percent level relative to the outcome 'no care'. The coefficient for this variable is positive, implying that for the overall sample, the age of an individual increases the likelihood of that individual utilizing traditional care versus seeking no care at all. As an individual's age

increases, they are more likely to utilize traditional care as a source of treatment than opting not to seek some care at all. This conforms with the information discerned from the empirical literature as well as to the researcher's own expectations.

Table 6.2.1 Combined Sample Results for Outcome "Informal Care"

Variable	Coefficient	z-statistic	P > |z|
HHHEAD_gen	0.0659	0.11	0.915
AGE	0.0433**	2.47	0.014
RELIGION	0.3541	1.03	0.302
MARRIAGE	- 0.4499	- 0.65	0.513
HH_size	- 0.0069	- 0.04	0.971
HHH_educ	0.5686	1.36	0.175
EMPLOYED	- 0.1379	- 0.21	0.837
SES	- 0.9692	- 1.34	0.179
Dis_type	- 1.3716	- 1.52	0.128
Constant	- 4.8266	- 2.84	0.004
Level of Significance: ** = 5 %			

LR chi^2 (18) = 47.42, Pseudo R^2 = 0.0586, Prob > chi^2 = 0.0002, n = 577.

With regards to utilization of informal care in the combined sample, the variables HHHEAD_gen, RELIGION, MARRIAGE, HH_size, HHH_educ, EMPLOYED, SES and Dis_type are all statistically insignificant. They do not have an impact on the health-seeking behaviour that is pursued at the household level with regards to informal care.

Table 6.2.2 shows the regression results for combined sample with respect to the outcome "formal care". This category of outcomes includes information obtained from the household head about individual household members who utilized either a public or private provider (clinic or hospital), or a chemist/dispensary when ill or injured.

Table 6.2.2 Combined Sample Results for Outcome "Formal Care"

Variable	Coefficient	z-statistic	P > |z|
HHHEAD_gen	0.5201**	2.51	0.012
AGE	0.0095	1.32	0.188
RELIGION	- 0.1860	- 1.55	0.122
MARRIAGE	0.3143	1.56	0.119
HH_size	0.0515	0.92	0.358
HHH_educ	0.2695*	1.77	0.076
EMPLOYED	0.4727**	2.29	0.022
SES	- 0.4419	- 1.59	0.113
Dis_type	0.3378	1.45	0.148
Constant	- 0.5281	- 1.03	0.301

Level of significance: ** = 5 %; * = 10 %

LR chi^2 (18) = 47.42, Prob > chi^2 = 0.0002, Pseudo R^2 = 0.0586, n = 577.

With regards to the utilization of formal care, the results of the combined sample show that three variables, namely HHHEAD_gen, HHH_educ and EMPLOYED are statistically significant in influencing the health-seeking behaviour undertaken at the household level.

The variable HHHEAD_gen refers to the gender of the individual who is responsible for making overall decisions that affect and impact upon all household members. The coefficient for HHHEAD_gen is positive and statistically significant. This suggests that the gender of the household head plays a significant role in household health care utilization behaviour. The positive variable coefficient implies that if the gender of the household head is female [1] instead of male [0] the likelihood of an ill or injured household member utilizing formal health care services increases relative to the chances of utilizing no care at all. The probability to utilize formal health care for an ill or injured individual coming from a female-headed household is greater compared to that of a similar individual coming from a male-headed household. Empirical research (Gladwin 1991; Woodward 1992; Peabody 1996) has shown that when a woman is educated, even at primary education level, the household members are more likely to enjoy better health status, and to make use of the available formal health care services more readily. This is

especially the case for those who are directly under her care or supervision. For our study, this expectation holds meaning that for our sample all individuals living in female-headed households are more likely to utilize modern health care facilities. Statistically, the estimated coefficient is significant at the 5 percent level and this indicates that the gender of the household head is a major factor in determining household health care utilization patterns in the study sites.

The educational attainment of the household head [HHH_educ] also has a positive coefficient and shows up as an important factor in influencing the household's health-seeking behaviour in the combined sample. This implies that when an ill or injured individual resides in a household headed by an educated head, their likelihood to consult a formal health care provider is greater than when the case is otherwise. Similar findings have been reported in the study by Ellis and Mwabu (1991) in rural Kenya. They found that individuals residing in households with educated heads are more likely to utilize formal treatment when need arises than not to seek care at all. This finding is also consistent with our apriori expectation: the level of education achieved by the household head does have a direct impact on the type of health-seeking behaviour pursued within that household.

The other variable that is statistically significant with respect to the utilization of formal care is EMPLOYED [i.e. the employment status of the household head]. It has a positive coefficient which conforms to apriori expectation as well. This variable is statistically significant at 5 percent, indicating the importance of the household head's employment status in impacting upon the household members' ability to utilize available health care facilities when need arises. The positive coefficient indicates that if the household head is employed [1] as opposed to unemployed [0] the likelihood that an injured or ill household member will utilize formal care as opposed to self-care increases. This is because having a steady source of household income widens their choice of health care providers and makes it easier for them to access and utilize the available health services. In most cases, low or no income earners have limited capacity and choice with respect to health care provider, and are more likely to utilize informal providers or simply use curative (self)

care that is provided at the household/family level (Young & Young 1982; Van der Geest 1987).

The variables AGE, RELIGION, MARRIAGE, HH_size, SES and Dis_type are all statistically insignificant with regards to formal health care utilization in the combined sample. It is interesting to note that all of the variables that are statistically significant with regards to the utilization of formal health care providers remained statistically insignificant with regards to the utilization of informal health care providers.

The combined data set model is statistically significant. The model's chi-square value is 47.52 and it is statistically significant at the 1 percent level i.e. Prob > $chi^2 = 0.0002$, which allows us to reject the null hypothesis that the predictor variables are not related to health care facility utilization patterns at the household level. To assess the fit of our model we must examine the pseudo coefficient of correlation (R^2). While this value is low (0.0586), analyses based on large samples such as ours tend to deflate this value by an unknown amount (Bishop 1975) which in a way can distort the actual coefficient of correlation. This low value is probably due to huge stochastic sample and data variations arising from measurement errors. It is also important to note here that although the pseudo R^2 statistic provides a quick way to describe the goodness of fit of the different models we have considered for the same dependent variable, the statistic lacks the straightforward explained-variance interpretation of the true R^2 in Ordinary Least Squares (OLS) estimation (Hamilton 1998). Hence, caution must be taken into consideration when making conclusions about how well our models predict the effect that the independent variables have on the health care utilization patterns of households in the study sites.

6.3 Results of the Multinomial Logit Model: Ndola District [Location: URBAN = 1]

In this section, we present the results of the model using data from the urban [1] sub-sample. Like for the combined data, there are three outcomes in this model: "formal care", "informal care", and "no care". The outcome "no care" remains our comparison outcome.

For the urban result output, only one variable is statistically significant. This is the variable RELIGION and this is with respect to the outcome "formal care".

None of the postulated independent variables is statistically significant with regards to informal health care utilization. The main reason for this could be due to the very low number of traditional healers operating within the urban area. However, an alternative reason could be that urban based households were just taciturn in coming forth with information concerning the utilization of such health care providers.

Table 6.3.1 presents the results of the multinomial logit model for the Ndola District sub-sample.

Table 6.3.1 Ndola District Results for Outcome "Informal Care"

Variable	Coefficient	z-statistic	P > |z|
HHHEAD_gen	2.4292	1.00	0.315
AGE	- 0.1477	- 1.00	0.318
RELIGION	0.6186	0.65	0.517
MARRIAGE	1.4257	0.92	0.358
HH_size	- 0.2508	- 0.51	0.611
HHH_educ	19.0193	0.00	0.997
EMPLOYED	- 0.8662	- 0.56	0.573
SES	17.8272	0.00	0.999
Constant	- 74.6604		

Level of Significance: none of the variables is significant.

LR chi^2 (16) = 22.24, Prob > chi^2 = 0.1356, Pseudo R^2 = 0.0644, n = 279.

Table 6.3.2 presents the regression results for the urban area for the outcome "formal care".

Table 6.3.2 Ndola District Results for Outcome "Formal Care"

Variable	Coefficient	z-statistic	P > |z|
HHHEAD_gen	0.2136	0.68	0.496
AGE	- 0.0072	- 0.56	0.572
RELIGION	- 0.5236***	- 3.25	0.001
MARRIAGE	0.2515	0.81	0.421
HH_size	0.0891	1.12	0.261
HHH_educ	0.2855	1.01	0.314
EMPLOYED	0.2361	0.80	0.426
SES	- 0.8620	- 1.07	0.284
Constant	1.3578	1.21	0.225

Level of Significance: *** = 1 %

LR chi^2 (16) = 22.24, Prob > chi^2 = 0.1356, Pseudo R^2 = 0.0644, n = 279.

While evidence supporting a relationship between religion and physical health is limited, it has been shown elsewhere that the religious affiliation of an individual has significance in determining their health-seeking behaviour (Reindl & Brown 2004), and that religious and spiritual variables are associated with lower levels of substance abuse, coping with serious illness, blood pressure control, and *lower levels of health care utilization* (researcher's own emphasis) (Olive 2004). Our finding contradicts this assertion: it indicates that Christian households are less likely to utilize formal health care facilities compared to non-Christians relative to seeking no care when need arises.

The variables HHHEAD_gen, AGE, MARRIAGE, HH_size, EMPLOYED and Dis_type all have statistically insignificant coefficients with regards to formal health care utilization at the household level in the urban area. This indicates that these variables are not important to the household when considering what kind of formal health care provider to consult for various ailments. They do not have any significant impact on the type of formal health care provider consulted when any individual household member is ill or injured.

The Ndola [urban] model is statistically insignificant at 5 percent i.e. Prob > chi2 = 0.1310. Therefore we cannot reject the null hypothesis of no association between the

independent variables and the dependent one. This does not however mean that we cannot consider the results of the multinomial logit model for the urban area. There are still some insights we can derive from the set of results for this model.

6.4 Results of the Multinomial Logit Model: Chipata District [Location: RURAL = 0]

There are three statistically significant variables for the rural sub-sample when it comes to household health care utilization. These are AGE for the outcomes formal and informal care, and HHHEAD_gen, MARRIAGE, HHH_educ and EMPLOYED for informal care only.

Table 6.4.1 Chipata District Results for Outcome "Informal Care"

Variable	Coefficient	z-statistic	P > |z|
HHHEAD_gen	0.2464	0.35	0.725
AGE	0.0551***	2.74	0.006
RELIGION	0.6180	1.47	0.141
MARRIAGE	- 0.5924	- 0.73	0.466
HH_size	0.0628	0.30	0.762
HHH_educ	- 0.5404	1.23	0.217
EMPLOYED	0.0173	0.02	0.982
SES	- 1.0429	- 1.36	0.174
Constant	- 6.0627	- 3.08	0.002

Level of Significance: *** = 1 %

LR chi^2 (16) = 41.28, Prob > chi^2 = 0.0005, Pseudo R^2 = 0.0907, n = 298.

In terms of the outcome "informal care", the results in Table 6.4.1 indicate that only the variable AGE is statistically significant. It is remarkable that for both formal and informal care the variable age is statistically significant at the 1 percent level, indicating that as the individual's age increases, they are more likely to seek care from either an informal or formal source rather than to opt for self-care. All the other variables are statistically insignificant when it comes to household informal health-seeking behaviour in the urban area.

Table 6.4.2 Chipata District Results for Outcome "Formal Care"

Variable	Coefficient	z-statistic	P > |z|
HHHEAD_gen	0.7989***	2.83	0.005
AGE	0.0223**	2.36	0.018
RELIGION	0.2029	0.99	0.320
MARRIAGE	0.5508*	1.87	0.061
HH_size	- 0.0049	- 0.06	0.953
HHH_educ	0.3440*	1.80	0.071
EMPLOYED	0.6026*	1.93	0.054
SES	- 0.4934	- 1.48	0.138
Constant	- 1.6795	- 2.43	0.015
Level of Significance: *** = 1 %; ** = 5 %; * = 10 %.			

LR chi^2 (16) = 41.28, Prob > chi^2 = 0.0005, Pseudo R^2 = 0.0907, n = 298.

HHHEAD_gen has a positive coefficient and it is statistically significant at the 1 percent level. This means that in the rural area, if an ill or injured individual comes from a female-headed household they are more likely to utilize the available formal services. As is the case for entire sample, individuals living in female-headed households have a higher likelihood of utilizing formal health care services than those living in male-headed households.

Parallel to the outcome for "informal care", the variable AGE remains statistically significant for the outcome "formal care". The coefficient for the variable is positive and so the interpretation remains the same as that provided for the combined sample: older household members in the rural area are more likely to seek care from a formal health care provider than not to seek care at all. Hence, the age of an individual household member helps in determining whether the household member will utilize both informal and formal health care providers when ill or injured.

The other variable that is statistically significant with regards to formal health care utilization is the marital status of the household head [MARRIAGE]. This variable has a positive coefficient, implying that if an ill or injured individual comes from a household headed by a married couple s/he is more likely to utilize formal health care than not to

seek any care at all. This is probably because such households are more likely to be stable and able to meet their livelihood needs than otherwise. This especially the case when the married couple are both employed in the formal sector and have a secure and steady source of income.

The regression results also indicate that the household head's education attainment level [HHH_educ] has an impact on the formal health care utilization pattern that emerges within the households in the rural area. The coefficient for this variable is statistically significant at the 10 percent level and it is positive. The interpretation for this finding is exactly the same as that provided for the regression output with regards to the outcome "formal care" for the combined sample: individuals residing in households headed by educated heads are more likely to consult a formal health care provider than to opt not to seek care at all.

The variable EMPLOYED also has a positive coefficient which implies that if a household head is employed the ill or injured household members are more likely to utilize the services of a formal health care provider than not to seek any care when need arises. This finding is in line with the theoretical literature on the health-seeking behaviour for individuals and households. An employed household head has greater ability to meet both direct and indirect costs associated with accessing and utilization of formal health care services at any given time. This is primarily because with a steady source of income, the per capita household expenditure is not only expected to be steady but higher than otherwise as well.

For the outcome "formal care" in the rural area, the variables RELIGION, HH_size, and SES are all statistically insignificant. They do not have any impact on determining the health-seeking behaviour that prevails at the household level within the rural area. The output for the Chipata sample shows that the chi-square value for the regression model is 41.28 and it is highly statistically significant i.e. Prob > chi2 = 0.0000. Consequently our chosen variables do have an impact on the household health care utilization patterns in this district.

6.5 Comparative Review of Results for Ndola and Chipata Districts

The aim of this section is to provide a comparative assessment of the factors that are statistically significant with respect to household health care utilization in the rural and urban area. Table 6.5 provides a summary of the variables that are significant in each district.

Table 6.5 The Significant Independent Variables in each District

NDOLA		CHIPATA	
INFORMAL CARE	**FORMAL CARE**	**INFORMAL CARE**	**FORMAL CARE**
		AGE [+]	AGE [+]
			HHHEAD_gen [+]
	RELIGION [-]		
			MARRIAGE [+]
			HHH_educ [+]
			EMPLOYED [+]

A look at Table 6.5 shows that the various variables influence the household health care utilization patterns in different ways and in different directions as well as depending on whether the household is located in an urban or rural district. As expected from the literature review, the information summarised in the table indicates that the variables have varying significance in each district and that they generate different impacts on the household's health-seeking behaviour for each district.

The variable AGE has positive coefficients and is statistically significant with respect to utilization of both formal and informal care in the case of the rural area. This indicates that the age of the individual household member influences the odds of an individual household member to utilize both forms of care. The coefficients for the Ndola sub-sample data are negative for both informal and formal care and they are statistically

insignificant with respect to both forms of health care utilization. This indicates that in the urban area, the individual's age is not important in determining the pattern of health care utilization that emerges with regards to both forms of health care at the household level.

The variable HHHEAD_gen has positive coefficients for both informal and formal care but it is statistically insignificant with respect to the utilization of informal care in both the rural and urban areas. However, it is statistically significant at the 1 percent level with regards to formal health care utilization patterns that are manifest in the rural area i.e. Chipata District. This indicates that for the rural sub-sample, the gender of the household head is an important factor that influences the utilization of formal health care providers that are available to household. Contrary to this, the gender of the household has no significant impact on this type of utilization in the urban area.

The religious affiliation of the household [RELIGION] has a statistically significant result with respect to formal care in the urban area. It has a negative coefficient and is statistically significant at the 1 percent level. However, RELIGION does not have any significance with regards to household health care utilization in the rural area.

The marital status of the household head [MARRIAGE] is statistically significant only when it comes to the outcome "formal care" in the rural area. In this case it is statistically significant at the 10 percent level. With regards to the outcomes "informal care" and "formal care" in the urban area, the variable remains statistically insignificant. This implies that the marital status of the household head only produces a significant impact on the health care utilization patterns that emerge in the rural area with regards to the outcome "formal care" and that the variable has no influence in the urban setting. A similar pattern emerges when it comes to the educational attainment level of the household head [HHH_educ]. The variable is only statistically significant at the 10 percent with regards to the outcome "formal care" in the rural setting. In the urban set-up, it remains insignificant for both forms of care.

The variable EMPLOYED is only statistically significant in Chipata District, and this is with regards to the utilization of formal care. In this case it is statistically significant at the 10 percent level and the regression coefficient is positive indicating that households that have formally employed heads are more likely to utilize formal health care facilities compared to informal care sources rather than not seek care at all in the rural area. Surprisingly the employment status of the household head does not have any statistical significance on the household health-seeking behaviour for the urban area in our sample.

Not a single independent variable that we included in the final analysis was statistically significant across the board irrespective of form of care or location of household. Instead they had a differential impact on what type of care to utilize at any given time and in some cases, they remained statistically insignificant for both forms of care and in both districts. The variables that remain statistically insignificant both within and across the rural-urban settings are the size of the sampled household [HH_size] and its socioeconomic status [SES]. In terms of "informal care", none of the variables are significant in the urban area while for the rural area only the variable AGE is statistically significant. For the outcome "formal care, the variable RELIGION is the only statistically significant variable in the urban area while in the rural area the variables AGE, HHHEAD_gen, MARRIAGE, HHH_educ and EMPLOYED (for the outcome "formal care") are statistically significant.

It can be easily discerned from this comparative review that the variables we included in the model produced consistently varied impacts on the household health-seeking patterns that exist in the areas from which we collected our data. These differential effects are apparent both within and across the study sites.

6.6 Summary Remarks

The goodness of fit for all our models is satisfactory except for the Ndola District sub-sample output. However, as stated earlier, this does not mean that we cannot consider the results of the model. It simply means that caution must be taken into account when considering these results. We are more obliged in this case to give greater consideration to the results of the other two sets of results.

The finding with respect to the variable RELIGION is important because very few researchers have deliberately taken an effort to incorporate the household's religious affiliation as a factor that affects the household's health-seeking behaviour. It proves, though to a limited extent, that the religious affiliation of a household does have an impact on determining household health care utilization patterns. In most cases, the religious affiliation and spirituality of the household or individuals within the household have been ignored as possible factors that influence health care utilization (Olive 2004) in health policy initiatives.

More variables are statistically significant towards influencing household health care utilization in the rural area as opposed to the urban area. These variables have differential impact depending on whether it is informal or formal care that is being considered. For instance, AGE is statistically significant in influencing the utilization of both formal and informal sources of care within Chipata District (rural) and at the same time it remains statistically insignificant in Ndola District (urban) for both forms of care. The employment status of the household head [EMPLOYED] proves significant for formal care and insignificant for informal care in Chipata District while it remains insignificant for both forms of care in Ndola District.

The gender of the household head was shown to influence what type of health care facility an individual will utilize at the time of need. The coefficient corresponds to the general consensus from the reviewed literature, which states that female-headed households are more likely to utilize available health services than male-headed ones. In

the previous chapter, an apparent association between the education level of the household head and the choice of source of care appeared. For the model outputs, the education status of the household head shows a statistical significance with respect to formal care in the rural area. It is a general fact within the health economics literature that more educated individuals are likely to understand better their health needs and to undertake preventive health care which can have a positive effect on their health status. It is also known that higher education generally has a positive impact on the health status of the person concerned. Our findings indicate that this is the impact that education has on the health care utilization patterns that prevail in the study sites.

It is surprising that the household's socioeconomic status does not produce any statistically significant impact in both areas. This is especially so because an apparent association seemed certain when looking at the link between health care utilization and the variable SES at the preliminary analysis stage.

We have successfully shown that there are socio-demographic variables that impact on the utilization of health care facilities in both the rural and urban areas when considered as one. We have also shown that analysing the same set of variables at the respective district level produces a different set of results. For our study, there is not a single variable that has a significant impact on health care utilization in both areas. This points to the fact that the independent variables we have considered in this study do indeed lead to differential patterns of health care utilization within *and* between the rural and urban areas from which we collected our data. If such differential impacts are completely ignored at the point of policy design and implementation it could spell failure for the policy initiative(s) concerned.

The combined sample regression output indicates that for the rural and urban study sites the variables that have a sway in determining household health care utilization are: the age of the individual (only adults are included in the analyses) which has a positive coefficient for the outcome "informal care"; the gender of the household head; the

educational attainment level of the household head; and the household head's employment status which all have positive coefficients too.

Therefore, it is important for the differences and observations depicted in our results to be taken into consideration when developing health policy initiatives. We shall support our recommendations to the Central Ministry of Health and the respective health authorities in the districts on the findings noted above. This is the thrust of the next and concluding section of this paper.

CHAPTER SEVEN:
POLICY IMPLICATIONS, RECOMMENDATIONS AND CONCLUSION

7.1 Introduction

This is the final chapter of the study. In section 7.2 we provide a general overview of the Zambian government's health sector policy guidelines as contained in the National Health Strategic Plan for 2001 – 2005. Section 7.3 highlights the policy implications and recommendations arising from the results presented in the previous chapter and the final section provides our general conclusions related to the objectives of the study.

7.2 A Brief Review of Zambia's National Health Strategic Plan 2001 – 2005

From the early 1980s through to the 1990s, the Zambian health sector has been plagued by a variety of problems and challenges. The major issues impacting on the health sector involves a set of cross-cutting issues. These include poverty, a deteriorating population health profile, low levels of literacy among adults over the age of 18 years, the influx of refugees from neighbouring countries, and the menacing problem of the 'brain drain' which results in many of the nation's skilled medical and health professionals leaving the country for 'greener pastures' abroad (UNDP 2003). These issues have all had an unfavourable impact on the health profile of the population. Nevertheless, there have been positive developments within the health sector, especially from the early 1990s onwards. A variety of policies have been put in place to try and remedy the status quo. The stable socio-political situations in the country and the sound economic policies that are promoted by the government have made it relatively easy for well-articulated health reforms to be developed and implemented.

For over a decade now the Zambian government, through its Ministry of Health, has pursued a deliberate policy of decentralising the planning, management and decision-making processes within the health sector to District Health Management Boards (DHMBs). The government's vision in the sector has been to provide the entire

population with equitable access to cost-effective quality care as close to the family as is possible. Essentially, this has been realised by allowing district health boards and health management boards to run the district health system and hospitals respectively. This has also been accompanied by increased community involvement and participation at various levels of health care policy formulation, implementation and service delivery.

The National Health Strategic Plan (NHSP) 2001 – 2005 reaffirms the government's health sector vision, principles and overall goals of the Health Sector Reform process that was initiated in the early 1990s (MoH 2004). It provides specific strategic objectives to achieve the overall goals that have the potential to contribute to achieving the government's goals and visions within the health sector. It is a 5-year rolling plan that involves an interactive process between government on one hand and its strategic partners (i.e. civil society, donors, international organisations, NGOs) on the other.

The NHSP 2001 - 2005 *modus operandi* recognises the underlying principles of the Health Sector Reform processes and uses these as a platform for developing an appropriate policy design and implementation framework. These principles include:

- Developing a mechanism for regular review of progress towards objectives
- Integrating private sector strengths and resources into the public health sector
- Strengthening community-based health care initiatives
- Enhancing the responsibilities of consumers
- Providing a minimum set of health services at an affordable cost to the household
- Improved leadership and accountability at each level of the health delivery system

The above principles have been developed from the realisation that demographic patterns and diseases are changing in a manner that adversely affects both the demand and utilization of the available formal and informal health services; that socio-economic trends within the country have created differential access to and utilization of health care

services (many of which are the consequence of historical accident e.g. location of second and third level hospitals); and that increasingly communities are pressurising government to improve the quality and responsiveness of services provided by the public health care providers (MoH 1998a; MoH 2001).

To achieve its underlying objective of equitable and cost-effective care for all, the NHSP 2001 - 2005 agenda is based on a multi-faceted approach to overcoming health challenges in the country. It takes into account a wide spectrum of issues encompassing gender, accessibility of households and individuals to other health related services and amenities, health sector governance and appropriate reform policies, identifying alternative financing sources for the existing health services, infrastructure development and support systems (Health Management and Information System [HMIS] and Financial Administration Management System [FAMS]) (MoH 2001).

The current health delivery system prioritises primary health care as the main source for providing both the preventive and curative services. Using an integrated approach to health care provision, the priority areas for the NHSP 2001 – 2005 are multiple and coordinated. These priorities include: reducing the high levels of infant mortality and morbidity through enhanced child health; promoting family planning, safe motherhood, adolescent health, abortion and post-abortion care and infertility treatment through increased provision of integrated reproductive health care; creating an appropriate framework and mechanisms for strengthening mental and oral health; and improving public health surveillance and control of epidemics through promotion of personal hygiene, proper refuse disposal, access to safe water and other essential social amenities (ibid).

It is within the blanket objectives and principles of the NHSP agenda that we shall consider the policy implications of our study's results. It is important for us to note here that the implications of the study's results and the consequent policy implications are analysed with reference to all the three sets of results that we present in the previous chapter.

7.3 Policy Implications of the Results and Recommendations

The results of this study present some issues which have to be given due consideration at the national level. While the NHSP 2001 – 2005 agenda takes a holistic approach to the health sector in general, the results of the study indicate that the factors that determine household health-seeking behaviour vary primarily by geographical location. The information provided in Chapter Five indicates that both access to and utilization of available health care services is skewed, highly favouring urban households. Further, the results of the regression analysis show that there are more socio-demographic factors influencing the rural households' decision to utilize the health facilities of their choice as compared to their urban counterparts. Therefore, it is important that while a blanket approach is adopted for the whole health sector, specific initiatives must be adopted to cater for these disparities in household health-seeking behaviour between rural and urban settings. The consequent policy implication of this finding is that those in charge of policy implementation at the grass roots must take such variabilities into account if the health policy initiatives are to be effective in meeting the needs of the households in respective locations.

The other finding is that there is a disparity in terms of socio-economic status and health facility availability between rural and urban areas. The fact that those living in urban areas are more likely to have access to and to utilize formal health services shows that the overall distribution and location of such facilities, especially public hospitals, is skewed to the detriment of rural households. While it is easy to blame the historical pattern of development as a major cause of this, effort must be put into place by the Central government to ensure that this process is halted and gradually reversed over time. This can only be reasonably achieved if adequate resources are made available to programmes aimed at promoting equity and efficiency in the distribution and use of public resources. Without such efforts, little or no change will take place and the general health profile of the population will not change for the better. The fact that the NHSP 2001 – 2005 agenda takes a multi-faceted approach to solving the challenges of the health sector is laudable and worthy of encouragement.

A review of the country's health facilities by the Central Board of Health (2002) revealed that private health care providers in the two districts chosen are only available in the urban area [Ndola]. Most of these facilities are concentrated on providing specialised curative and rehabilitative care. There is need for the government to put in place measures and incentives that promote the expansion of such providers to rural areas, with emphasis on increasingly involving them in the provision of promotive and preventive care. This will help expand the choice of health care providers available to rural households and strengthen the health delivery system altogether. Fortunately, this is one of the primary health policy and planning objectives that has been incorporated into the NHSP 2001 – 2005 framework. Results of efforts directed at this objective are yet to be reported in the review process that is currently taking place.

The government must also take deliberate policy steps not only to reduce the lopsided distribution of health facilities between the rural and urban areas, but also dedicate sufficient resources for improving infrastructure availability and quality of services offered to households in rural areas. Simply assuming that the low levels of utilization of modern health services in rural areas can be solved by expanding the number of such facilities in these areas is too limited a solution. More often than not, rural households choose not to utilize such facilities because of poor service quality and lack of essential health staff and supplies. Consequently, provider choice becomes a primary aspect of health seeking behaviour, dependent not only on the financial and geographical access of the available providers but also on the information and perceptions that the rural households and individuals possess about their relative efficacy (Seshamani, Mwikisa and Odegaard 2002).

It is therefore necessary in this regard that the government or relevant district health authorities allocate sufficiently balanced financial and non-financial resources to reinforce the rural health centres and health posts which will help render them more attractive to the rural households. This would relieve the pressure imposed on urban facilities by rural populations seeking unplanned-for curative care.

Another finding that has important policy connotations is that of differential district utilization of formal and informal health services. For our sample rural households have a very limited access to formal public facilities, making them opt not to seek care more often than is necessarily the case. Empirically, it has been shown elsewhere that most households in urban areas have access to basic social services (i.e. water, sanitation, etc) provided by the local municipal councils at a fee (UNDP 2003). This is not the case for rural areas. In our study, the sampled rural households rated the public facilities that they actually managed to utilize as *very* unsatisfactory in terms of location (distance from home), waiting time before receipt of treatment, availability of drugs and health professionals. Therefore, the recommendation here is that government must dedicate a reasonable proportion of the national health budget towards improving the quality of such services and the basic infrastructure in the rural areas. Priority must be given to the least privileged areas, obviously with recourse to the principles of equity and efficiency. Measures must also be put in place to promote the use of primary health care clinics among the urban households. This will help enhance both technical and allocative efficiency in the health sector as a whole.

The fourth policy-related finding is that of time to facility. While a variety of factors (like traffic and nature of transport) may negatively affect the average time it takes a household member to get to a chosen health facility, this is not a factor to be taken lightly. As stated in Chapter Five, a very high number of urban households have easy access to a health care facility while a significantly lower proportion of rural households spend less than half an hour to get to their facility of choice in our sample. In terms of access to and utilization of available health facilities, the rural areas are very disadvantaged. This is likely to lead to a situation where those in the rural areas opt to use self-care as the first choice of treatment and only decide to consult a formal health care provider when the condition becomes severe or critical. This may seem acceptable and desirable at first consideration as it saves the rural poor both time and money which they can put to better use elsewhere. However, it must be noted that the more serious a condition gets, the higher are the costs associated with treatment and cure, and the more likely is the individual to need specialised care from a specialized hospital. Such efficiency losses are

not inevitable. The fact that one of the main NHSP principles is to promote community-based health care and preventive services means there is a better chance that such undesirable health care utilization will be stemmed.

Also because the data show that curative care was most readily provided by the family for *'minor'* and *'moderate'* conditions and that chemists were readily consulted for such ailments, it is plausible that the government could consider promoting these two alternatives as providers of basic curative care for simple and uncomplicated illnesses. The policy implication in this endeavour would be to promote basic health education at the family level to improve the nature and effectiveness of family care. The goals should include providing appropriate information and training to household members and chemists concerning illnesses and symptoms that require the utilization of a modern health care service provider. This should be incorporated into the objective of promoting community-based care. An alternative approach would be to consider the introduction of Community Health Care workers as a strategy for promoting preventive primary health care at the household and community levels.

The results also indicate that households of lower socioeconomic status and those from rural areas rely on public and informal health care givers as their primary sources of care. It is thus inevitable that the central government must give this group of providers more attention than is currently the case. Traditional healers as informal health care providers must also be given adequate attention as medical practitioners, mainly by incorporating associations like the Traditional Health Practitioners Association of Zambia (THPAZ) in the processes of policy development and implementation. The study shows that these providers are still consulted by households of different socioeconomic status, indicating their substance in the overall health care delivery structure. Accordingly the Ministry of Health must try and make them less nonessential in the health delivery system by incorporating them into various policy initiatives being undertaken. Where achievable, resource allocation efforts within the health sector should be directed towards building capacity among these types of health care providers.

The regression results indicate that almost each one of the independent variables may have one form of policy implication or another. This is likely to mean that various policy initiatives may have to be implemented to take account of all such variables. This is in some cases undesirable as the end result might be conflicting policy objectives, a larger number of policy initiatives and a greater amount of resources consumed. The most apt solution here is to have priority (overall) programmes within which the smaller specific but equally important ones are incorporated. This will most probably lead to a situation where both the objectives of the general and incorporated programmes are achieved simultaneously.

In summary, it is clear that a consultative process must be adopted by central government before implementing policy initiatives that have a direct bearing on the health care utilization decision making processes at the household level. A multi-faceted approach, like that contained in the Poverty Reduction Strategy Paper of 2002 – 2004, is essential to tackling the issues that impact on the general welfare of the population and specifically on the health situation in Zambia. A good situational analysis (Green 1998) should be the basis of informing any policy making process in the country. Surely this involves referring to the empirical evidence provided by studies such as ours.

7.4 Conclusions

The main objective of this study was to provide a comparative analysis of the factors that influence household health care utilization patterns in Ndola and Chipata Districts, one urban and the other rural. Associated to this was the specific objective aimed at assessing the impact that household socio-demographic variables have on household health care utilization patterns. A majority of the variables included in the polytomous regression process proved to be statistically significant with respect to household health care utilization patterns. These variables include: gender of the household head; the education attainment of the household head; the employment status of the household head; and the age of the individual. All these variables were differentially significant between and within the districts with regards to the utilization of health services at the household level,

suggesting the importance of considering such variabilities at the district level when it comes to the implementation of health policy initiatives.

While it is not a foregone conclusion that the government will unequivocally include religion and spiritualism in any health policy initiative, it is still imperative in a multicultural country like Zambia that ignoring the potential of these two factors in influencing the emergent rural and/or urban health care utilization patterns could be detrimental to some extent. The fact that the country was declared a Christian nation in 1995 may provide liberal social and political space to openly incorporate such elements into policy, but care must be taken not to exclude other religious affiliations when developing policy. Exactly how this can be done is matter of extensive community consultation at the stage of policy design and implementation. In terms of future research, there is need for a similar study to be undertaken but in this case a greater level of focus must be paid to determining how exactly household religious affiliation impacts upon the household health-seeking behaviour in both rural and urban areas of the country.

The results suggest that because self-care was the most frequently used form of care for minor and moderate ailments in our sample, it is important that the government tries to develop appropriate policy initiatives aimed at promoting improved health education at the household level, especially among women. At the same time, it must be kept in mind that it is always better to promote policy measures that are aimed at increasing the community's utilization of formal sources of care as this can help to improve the general health profile of the community and promote equity in the sector as a whole. For that reason, the desirable approach would be to treat such policy initiatives as correlates rather than autonomous.

Caution must not be thrown to the wind when looking at the results for the category for Traditional Healers as informal health care providers. It is highly probable that this category of provider has less significant variables because of the potential restrained nature of respondents to provide information on the utilization of such providers, not necessarily that they are irrelevant sources of health care *per se*. As expected, not all the

variables had the anticipated effect on household health care utilization behaviour. This is primarily due to variations in the characteristics of interest from one geographical region to another.

These findings suggest that future health policy initiatives should take into account the relevance of the differential impact that household socio-demographic variables have on the health care utilization patterns of respective geographical regions in the country, particularly the rural-urban split. This study has successfully indicated that a household's decision to utilize a given health facility or to seek treatment, either from an informal or formal source of care, is influenced by a variety of independent variables concurrently. These variables will either enhance or diminish the likelihood that the household will indeed seek formal or informal treatment for the ill or injured household member when the need arises.

The health policy implications of the study indicate that to achieve the overall vision of *"providing all Zambians with equitable access to cost-effective, quality health care as close to the household as possible"* (MoH 1998a), the government must realise that successful health sector reform efforts depend on leadership and realistic policy initiatives and that health policy response to various challenges should be multisectoral in character and well-coordinated. These challenges must be given sufficient prominence when developing and adjusting health sector policies.

On a more general level, necessary incentives must be directed towards promoting the role of the private health sector in rural areas to supplement and complement public health care providers. This sector must also be involved in the direct provision of promotive and preventive health care to the communities in which they operate. A deliberate programme of improving both the quantity and quality of health services offered in rural areas is also imperative. There is need to improve data management and financial administration frameworks within the public health sector in order to correctly target the intended beneficiaries of policy initiatives. Commendably the current NHSP

principles recognise the magnitude of all these challenges and they have been integrated as part of its vision and goals for the entire health system.

APPENDIX A

The Survey Instrument

Instrument Number:…………

District:……………………...

SECTION 1

1.1 Gender

Male	0
Female	1

1.2 What is your age (as at last birthday) ………………………

1.3 Year of birth …………../………/……….. (date/month/year)

1.4 Religion

Christian	1
Muslim	2
Other, specify_______________	3

1.5 Marital status

Married	1
Divorced/Separated	2
Living together	3
Widowed	4
Single (Never married)	5

1.6 How many people live in your household?.... ....

1.7 What is your highest level of education?

No formal education	0
Primary school	1
Secondary school	2
Tertiary education	3

1.8 Employment status

Employed in the formal sector	1
Self-employed	2
Retired/Pensioner	3
Student	4
Unemployed	5

1.9 On average, how much is your monthly household expenditure?

Less than ZMK100,000	1
Between ZMK 100,000 and ZMK 200,000	2
Between ZMK 200,000 and ZMK 300,000	3
Between ZMK 300,000 and ZMK 400,000	4
Between ZMK 400,000 and ZMK 500,000	5
Between ZMK 500,000 and ZMK 600,000	6
Between ZMK 600,000 and ZMK 700,000	7
Between ZMK 700,000 and ZMK 800,000	8
Between ZMK 800,000 and ZMK 900,000	9
Above ZMK 900,000	10

1.10 Type of residential area

Low density	1
Medium Density	2
High Density	3

1.11 Do you have any of the following amenities in your household?

Water cistern toilet	1	0
Telephone	1	0
Electricity	1	0

SECTION 2

2.1 Did you or any other member of your household experience any kind of illness during the previous **4 weeks**?

Yes	0
No	1

2.2 How would you rate the illness?

Minor	1
Moderate	2
Severe	3
Critical condition	4

2.3 If **YES** to the above question, where did you seek health care for the sickness or injury?

Private clinic	1
Public clinic	2
Private hospital	3
Public hospital	4
Chemist/Dispensary	5
Traditional healer	6
Self-treatment at home (no care)	7

2.4 How much did you pay for the following during your visit in the past 4 weeks?

Item	**Amount in ZMK**
User fees	
Consultation fees	
Transport costs	
Costs of drugs and medicines	
Other, specify_____________	

2.5 How long does it take you to get to this health care facility?

Less than 30 minutes	1
Between 30 minutes and 1 hour	2
More than 1 hour	3

2.6 How long did you have to wait to receive treatment?

Less than 30 minutes	1
Between 30 minutes and 1 hour	2
More than 1 hour	3

2.7 How would you rate the facility you visited in terms of the following aspects?

Unsatisfactory= 1, Neutral= 2, Satisfactory= 3

Waiting time	1	2	3
Distance from your home	1	2	3
Availability of drugs	1	2	3
Availability of health professionals	1	2	3
Cost of the health services	1	2	3
Staff attitudes	1	2	3

2.8 What factors influenced your choice of where to seek care?

Very important= 1, Neutral=2, Not important= 3

Staff attitudes	1	2	3
Distance from the facility	1	2	3
Perception of the illness	1	2	3
Transport cost	1	2	3
Availability of drugs	1	2	3
Availability of trained staff	1	2	3
Duration of the illness	1	2	3
Level of household income	1	2	3
Previous experience of illness	1	2	3
Waiting time	1	2	3
User fees at health facility	1	2	3
Consultation fees	1	2	3

The next set of questions I will ask you are about **other household members**:

What are the ages Of the other people Living in your Household?	What is their Gender?	What is their Relationship to the household head?	How old is this household Member?	What is their Highest level of education?	In the past 4 weeks, has any of these people been sick or injured?	If **YES**, where did they seek medical care or advice?	What was the nature of this illness or injury?

APPENDIX B

The Results

B1 Correlation Matrix of the Independent Variables

	HHHEAD_gen	age	religion	marriage	HH_size	HHH_educ	employed
HHHEAD_gen	1.0000						
age	0.3369	1.0000					
religion	-0.0041	0.0068	1.0000				
marriage	0.1074	0.0469	0.0098	1.0000			
HH_size	-0.1988	0.0914	0.0706	0.1133	1.0000		
HHH_educ	-0.0273	-0.0132	0.0442	-0.0574	-0.0357	1.0000	
employed	0.0488	-0.0426	0.1001	0.0981	-0.0589	0.1796	1.0000
ses	-0.0496	0.0007	0.0900	-0.0753	0.0373	0.4298	0.2660
dis_type	-0.0447	-0.0553	0.0312	-0.0759	-0.0614	0.4651	0.0925

	ses	dis_type
ses	1.0000	
dis_type	0.3949	1.0000

B2 Multinomial Logit Model A: Combined Sample Results

Multinomial logistic regression

Number of obs = 577
LR chi2(18) = 47.42
Prob > chi2 = 0.0002
Log likelihood = -380.95325
Pseudo R2 = 0.0586

utilise	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
HHHEAD_gen	.0659793	.6163379	0.11	0.915	-1.142021	1.273979
age	.0432599	.0175137	2.47	0.014	.0089337	.0775862
religion	.354144	.342957	1.03	0.302	-.3180393	1.026327
marriage	-.4498598	.6871508	-0.65	0.513	-1.796651	.8969311
HH_size	-.0068658	.1896	-0.04	0.971	-.3784749	.3647434
HHH_educ	.5686376	.4189462	1.36	0.175	-.2524819	1.389757
employed	-.1379997	.6720357	-0.21	0.837	-1.455166	1.179166
ses	-.969156	.7216812	-1.34	0.179	-2.383625	.4453131
dis_type	-1.371561	.9012071	-1.52	0.128	-3.137894	.3947728
_cons	-4.826583	1.698448	-2.84	0.004	-8.15548	-1.497687
2						
HHHEAD_gen	.5200754	.2071511	2.51	0.012	.1140667	.9260841
age	.0094981	.0072158	1.32	0.188	-.0046447	.0236409
religion	-.1860499	.1203429	-1.55	0.122	-.4219176	.0498178
marriage	.3143039	.2014702	1.56	0.119	-.0805705	.7091783
HH_size	.0515384	.0560669	0.92	0.358	-.0583508	.1614275
HHH_educ	.2695054	.151911	1.77	0.076	-.0282347	.5672454
employed	.4726612	.2067873	2.29	0.022	.0673655	.877957
ses	-.4419688	.2787854	-1.59	0.113	-.9883782	.1044405
dis_type	.3378475	.2335098	1.45	0.148	-.1198233	.7955183
_cons	-.5281084	.5105056	-1.03	0.301	-1.528681	.4724643

(Outcome utilise==0 is the comparison group)

B3 Multinomial Logit Model B: Ndola District Results

```
Multinomial logistic regression                   Number of obs   =        279
                                                  LR chi2(16)     =      22.24
                                                  Prob > chi2     =     0.1356
Log likelihood = -161.52074                       Pseudo R2       =     0.0644
```

utilise	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
HHHEAD_gen	2.429244	2.419149	1.00	0.315	-2.312201	7.170688
age	-.1476746	.1478732	-1.00	0.318	-.4375007	.1421515
religion	.6186354	.9538959	0.65	0.517	-1.250966	2.488237
marriage	1.425798	1.55044	0.92	0.358	-1.613008	4.464603
HH_size	-.2508094	.4934615	-0.51	0.611	-1.217976	.7163574
HHH_educ	19.01932	5286.807	0.00	0.997	-10342.93	10380.97
employed	-.8662395	1.538798	-0.56	0.573	-3.882228	2.149749
ses	17.82717	15860.42	0.00	0.999	-31068.03	31103.68
_cons	-74.66042	.	.	.	.	.
2						
HHHEAD_gen	.2135695	.3136109	0.68	0.496	-.4010965	.8282354
age	-.0071931	.01274	-0.56	0.572	-.0321631	.0177769
religion	-.5236585	.1609248	-3.25	0.001	-.8390653	-.2082518
marriage	.2515243	.3122561	0.81	0.421	-.3604863	.863535
HH_size	.089054	.0792326	1.12	0.261	-.066239	.244347
HHH_educ	.2855452	.2834496	1.01	0.314	-.2700058	.8410963
employed	.236061	.2968278	0.80	0.426	-.3457108	.8178328
ses	-.8620453	.8051511	-1.07	0.284	-2.440113	.7160219
_cons	1.357794	1.120154	1.21	0.225	-.8376684	3.553256

(Outcome utilise==0 is the comparison group)

B4 Multinomial Logit Model C: Chipata District Results

```
Multinomial logistic regression                   Number of obs   =        298
                                                  LR chi2(16)     =      41.28
                                                  Prob > chi2     =     0.0005
Log likelihood = -206.99662                       Pseudo R2       =     0.0907

------------------------------------------------------------------------------
     utilise |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
  HHHEAD_gen |   .2463824   .6997085     0.35   0.725    -1.125021    1.617786
         age |   .0550859   .0200966     2.74   0.006     .0156972    .0944746
    religion |    .617953   .4199771     1.47   0.141    -.2051871    1.441093
    marriage |  -.5923634   .8129528    -0.73   0.466    -2.185722    1.000995
     HH_size |   .0628338   .2078679     0.30   0.762    -.3445799    .4702474
    HHH_educ |   .5404384   .4379002     1.23   0.217    -.3178302    1.398707
    employed |   .0173474   .7906242     0.02   0.982    -1.532248    1.566942
         ses |  -1.042924   .7680025    -1.36   0.174    -2.548181    .4623333
       _cons |  -6.062667   1.966241    -3.08   0.002    -9.916428   -2.208905
-------------+----------------------------------------------------------------
2            |
  HHHEAD_gen |   .7989686   .2826284     2.83   0.005     .2450271     1.35291
         age |    .022391   .0094968     2.36   0.018     .0037775    .0410045
    religion |   .2029563   .2040928     0.99   0.320    -.1970583    .6029709
    marriage |   .5507864   .2937714     1.87   0.061    -.0249948    1.126568
     HH_size |  -.0049772   .0844069    -0.06   0.953    -.1704116    .1604572
    HHH_educ |   .3440174   .1907262     1.80   0.071    -.0297991    .7178339
    employed |    .602589   .3124029     1.93   0.054    -.0097094    1.214887
         ses |  -.4934118    .332867    -1.48   0.138    -1.145819    .1589955
       _cons |  -1.679494   .6924402    -2.43   0.015    -3.036652   -.3223359
------------------------------------------------------------------------------
(Outcome utilise==0 is the comparison group)
```

B5 Results of Multinomial Logit Model Showing the Relative Risk Ratios (RRR)

a. Combined Sample

```
Multinomial logistic regression                   Number of obs   =        577
                                                  LR chi2(18)     =      47.42
                                                  Prob > chi2     =     0.0002
Log likelihood = -380.95325                       Pseudo R2       =     0.0586

------------------------------------------------------------------------------
     utilise |        RRR   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
1            |
  HHHEAD_gen |   1.068205    .658375     0.11   0.915     .3191734    3.575051
         age |   1.044209    .018288     2.47   0.014     1.008974    1.080675
    religion |    1.42496   .4887001     1.03   0.302     .7275742    2.790797
    marriage |   .6377176   .4382082    -0.65   0.513     .1658535    2.452066
     HH_size |   .9931578   .1883027    -0.04   0.971     .6849051    1.440144
    HHH_educ |    1.76586   .7398001     1.36   0.175     .7768703    4.013874
    employed |   .8710989   .5854096    -0.21   0.837     .2333617    3.251661
         ses |   .3794031   .2738081    -1.34   0.179     .0922157    1.560979
    dis_type |   .2537107   .2286459    -1.52   0.128      .043374    1.484047
-------------+----------------------------------------------------------------
2            |
  HHHEAD_gen |   1.682154   .3484602     2.51   0.012     1.120827    2.524604
         age |   1.009543   .0072847     1.32   0.188      .995366    1.023923
    religion |   .8302322   .0999125    -1.55   0.122     .6557881     1.05108
    marriage |   1.369306   .2758743     1.56   0.119     .9225899    2.032321
     HH_size |    1.05289   .0590323     0.92   0.358      .943319    1.175187
    HHH_educ |   1.309317   .1988996     1.77   0.076     .9721602    1.763403
    employed |   1.604258   .3317402     2.29   0.022     1.069686    2.405979
         ses |   .6427697   .1791948    -1.59   0.113     .3721798    1.110089
    dis_type |   1.401927   .3273636     1.45   0.148     .8870771    2.215589
------------------------------------------------------------------------------
(Outcome utilise==0 is the comparison group)
```

b. Ndola District

Multinomial logistic regression

Number of obs	=	279
LR chi2 (16)	=	22.24
Prob > chi2	=	0.1356
Pseudo R2	=	0.0644

Log likelihood = -161.52074

utilise	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
HHHEAD_gen	11.35029	27.45805	1.00	0.315	.099043	1300.74
age	.8627118	.1275719	-1.00	0.318	.6456481	1.152751
religion	1.856393	1.770806	0.65	0.517	.2862281	12.04003
marriage	4.161176	6.451652	0.92	0.358	.1992873	86.88656
HH_size	.7781706	.3839973	-0.51	0.611	.2958282	2.046963
HHH_educ	1.82e+08	9.62e+11	0.00	0.997	0	.
employed	.42053	.6471107	-0.56	0.573	.0206049	8.582705
ses	5.52e+07	8.76e+11	0.00	0.999	0	.
2						
HHHEAD_gen	1.238089	.3882783	0.68	0.496	.6695854	2.289276
age	.9928327	.0126487	-0.56	0.572	.9683487	1.017936
religion	.5923495	.0953237	-3.25	0.001	.4321143	.8120026
marriage	1.285984	.4015564	0.81	0.421	.6973371	2.371529
HH_size	1.09314	.0866123	1.12	0.261	.9359071	1.276787
HHH_educ	1.330487	.3771261	1.01	0.314	.763375	2.318908
employed	1.266252	.3758587	0.80	0.426	.7077171	2.265584
ses	.4222975	.3400133	-1.07	0.284	.087151	2.046277

(Outcome utilise==0 is the comparison group)

c. Chipata District

Multinomial logistic regression

Number of obs	=	298
LR chi2 (16)	=	41.28
Prob > chi2	=	0.0005
Pseudo R2	=	0.0907

Log likelihood = -206.99662

utilise	RRR	Std. Err.	z	P>|z|	[95% Conf.	Interval]
1						
HHHEAD_gen	1.279389	.8951993	0.35	0.725	.3246456	5.041915
age	1.056631	.0212347	2.74	0.006	1.015821	1.099081
religion	1.855127	.7791108	1.47	0.141	.8144949	4.225312
marriage	.5530187	.4495781	-0.73	0.466	.1123966	2.720987
HH_size	1.06485	.2213481	0.30	0.762	.7085179	1.60039
HHH_educ	1.716759	.7517693	1.23	0.217	.7277263	4.04996
employed	1.017499	.8044591	0.02	0.982	.2160495	4.791974
ses	.3524227	.2706615	-1.36	0.174	.0782238	1.587774
2						
HHHEAD_gen	2.223247	.6283527	2.83	0.005	1.277656	3.868667
age	1.022644	.0097119	2.36	0.018	1.003785	1.041857
religion	1.225019	.2500176	0.99	0.320	.8211428	1.82754
marriage	1.734617	.5095807	1.87	0.061	.9753149	3.08505
HH_size	.9950352	.0839878	-0.06	0.953	.8433176	1.174048
HHH_educ	1.410603	.269039	1.80	0.071	.9706406	2.049988
employed	1.826842	.5707108	1.93	0.054	.9903376	3.369914
ses	.6105398	.2032285	-1.48	0.138	.3179634	1.172333

(Outcome utilise==0 is the comparison group)

NOTE: THE OUTCOMES ARE 0 = NO CARE, 1 = INFORMAL CARE & 2 = FORMAL CARE.
***(For details, please refer to* Appendix C below)**

APPENDIX C

List of Variables that were collapsed into Dummy Variables

Initial Variable	Initial Categories	New Var.Name & Categories
Religion	1 = Christian	**RELIGION**
	2 = Muslim	0=Non-Christian [cat.2 & 3]
	3 = other, specify	1 = Christian [cat. 1]
Level of Household Education	0 = No formal education	**HHH_educ**
	1 = Primary school	0 = No Education [cat. 0]
	2 = Secondary school	1=Educated [cat. 1,2 & 3]
	3 = Tertiary	
Employment Status of The Household Head	1 = Employed	**EMPLOYED**
	2 = Self-employed	0= Unemployed [cat. 3,4&5]
	3 = Retired/Pensioner	1= Employed [cat. 1 & 2]
	4 = Student	
	5 = Unemployed	
Average Household Monthly Expenditure	1 = <ZMK 100,000	**SES**
	2 = >ZMK 100,000 <ZMK 200,000	0 = Low [cat. 1 to 5]
	3 = >ZMK 200,000 <ZMK 300,000	1 = High [cat. 6 to 10]
	4 = >ZMK 300,000 <ZMK 400,000	
	5 = >ZMK 400,000 <ZMK 500,000	
	6 = >ZMK 500,000 <ZMK 600,000	
	7 = >ZMK 600,000 < ZMK 700,000	
	8 = >ZMK 700,000 <ZMK 800,000	
	9 = >ZMK 800,000 <ZMK 900,000	
	10 = >ZMK 900,000	
Source of Health Care	1 = Private Clinic	**Utilise**
	2 = Public Clinic	0 = No care [cat. 7]
	3 = Private Hospital	1 = Informal Care [cat. 6]
	4 = Public Hospital	2 =Formal Care[cat.1 to 5]
	5 = Chemist/Dispensary	
	6 = Traditional Healer	
	7 = Self-treatment at home	
Marital Status Of Household Head	1 = Married	**MARRIAGE**
	2 = Divorced/Separated	0 = Single [cat. 2 to 5]
	3 = Living Together	1 = Married [cat. 1]
	4 = Widowed	
	5 = Single (Never Married)	

NB: ZMK = Zambian Kwacha; cat. = category

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