BINDURA UNIVERSITY OF SCIENCE EDUCATION

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DEPARTMENT OF ECONOMICS

DEMAND FOR HEALTH CARE SERVICES BY RURAL HOUSHOLDS IN MT DARWIN DISTRICT DURING AND BEFORE COVID-19 PANDEMIC PEROD (2008-2020)

SUBMITTED BY

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The undersigned certify that they read and recommend to the Bindura University of Science Education for acceptance a research project entitled: **Demand for healthcare services by rural households during and before COVID-19 pandemic period in Mt Darwin District (2008-2020).** Submitted by **Tinotenda Kachiko** in partial fulfilment of the requirements for the **Bachelor of Science Honours Degree in Economics**.

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DECLARATION

I, **Tinotenda Kachiko,** declare this research project herein is my own work and has not been copied or lifted from any source without the acknowledgement of the source.

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DEDICATION

This wonderful work is dedicated to the Lord almighty who gave me spiritual guidance, to my parents: Mrs Dorothy Kachiko and Mr Davie Kachiko, and the rest of the family who gave me words of strength and assisted me financially. Lastly to all my friends and Bindura University of Science Education students who were there to assist me in this research for it to be successful.

ABSTRACT

The study analysed the demand for healthcare services by rural households during and before COVID-19 pandemic period in Mt Darwin District. Precisely the study analysed the influence of factors such as gender, age, distance to nearest health centre, religion, income and COVID-19 restrictions on the probability of seeking or utilising healthcare from health facilities. From the selected 10 wards for the survey, 148 household respondents were randomly selected and interviewed.

The study used self-administered questionnaire which was used to collect data on the demand for healthcare services by rural households in Mt Darwin District. The study used a binary probit regression model to analyse, the factors influencing the demand for healthcare by rural households during and before COVID-19 pandemic period (2008-2020). It was based on 148 rural household respondents that had reported ill member within the last 3 months before they survey.

The study revealed on whether income level of rural households, religion, distance to nearest healthcare facility, age, gender and COVID-19 restrictions are statistically significant to as factors of demand for healthcare services. Distance to nearest healthcare facility, COVID-19 restrictions, gender and age were found to negatively affects the demand for healthcare services, whereas households income and religion was found to have positive influence on demand for healthcare services.

In effort to increase the demand for healthcare services, the study recommends policies that aims at reducing distance travelled by rural households to healthcare facilities such as the introduction of mobile clinics for the communities and constructions of new hospitals that are proximity to rural households. Other major recommendations include increasing government on healthcare services so as to ensure availability of drugs and also to ensure that health workers in rural areas are paid enough, and the introduction of community projects so as to increase income of rural households.

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LIST OF ACRONYMS

ZHSA -Zimbabwe Health System Assessment

HSF- Health Service Fund

LPM- Linear Probability Model

MoHCW -Ministry of Health and Child Welfare

MTP -Medium Term Plan

NHS -National Health Strategy

WHO - World Health Organization

ZDHS- Zimbabwe Demographic Health Survey

ZIMSTAT- Zimbabwe Statistical Office

WB -World Bank

COVID-19- Coronavirus pandemic 2019

CHAPTER I

INTRODUCTION

1.0 Introduction

Health is an essential element of human welfare and it is an objective for all health care service delivery systems to ensure the well-being of citizens. It is a right for every individual to access quality health facility, which is obtained when all relevant and required resources are allocated where they are needed in time, thereby achieving sustainable development goals. Rural areas in Zimbabwe are not an exception to health care service delivery as their demand for health care services has been reported to be very low (NHS, 2009-2013). Most rural areas have been affected by diseases such as bilharzia, Malaria, HIV and AIDS and there is high child pregnancy rate. The health seeking behaviour in a rural setting usually happens within health sector constraints, which are imposed by demand side barriers (Muhofah, 2010).

In the late 2019, the coronavirus disease 2019 (COVID-19) pandemic began to wreak havoc across the globe and threatened to profoundly affect Zimbabwe, causing health crisis mostly to the vulnerable people such as people living with disabilities, the elderly people and those living with chronic conditions. Previous, Zimbabwe was affected by diseases such as Cholera, Diarrhoea, HIV and AIDS, Malaria, Bilharzia and also disasters such as Cyclone Idai, these deteriorated health care of individuals. One of the objectives of Zimbabwe's health system is to achieve higher utilisation of health care services especially to the vulnerable (MTP, 2010).

This study seeks to analyse the demand for healthcare services by rural households during and before COVID-19 pandemic period, using data collection from Mt Darwin District in Mashonaland Central Province. The chapter I encompasses different sub-topics such as the background of the study, statement of the problem, objectives of the

study, research questions, statement of hypothesis, significance of the study, assumptions, delimitation of the study, limitations of the study, definition of terms and the chapter summary.

1.1 Background of Study

Mt Darwin has been recognised as hotspot for HIV and AIDS, with medium to high factors for transmission (HIV Hotspot Analysis of Zimbabwe 2014). It was also affected by Malaria, malnutrition problems in the past years. Since March 2020, Coronavirus has affected most parts of Zimbabwe and Mt Darwin was also not spared. Government of Zimbabwe has put in place measures to slowdown the rate of Coronavirus transmission, these include national lockdown measures, wearing of masks, maintaining social distance and sanitisation. These measures were imposed to ensure health system preparedness and conformity. However, these regulatory measures presented severe challenges socially, politically and economically.

Due to over-strained national budget, weakened infrastructure, Zimbabwe failed to provide sufficient health facilities using its own funds, thereby relying on donor funding from International Monetary Fund (IMF), World Bank (WB) and other organisations. In the COVID-19 pandemic period, there have been strikes of health workers across Zimbabwe, protesting against under-resourcing of health system and lower earnings, this threatened people's access to quality healthcare services in most places. The unfolding crisis has affected demand for healthcare services by rural households such as HIV and AIDS treatment, Diabetes treatment and other medical check-ups especially in Mt Darwin. There has been concern over poor healthcare service delivery in Mt Darwin, this was indicated by high maternal and child mortality rate, drug shortages and limited health human resources.

The dominance of diseases such as malaria and HIV/AIDS has worsened health problems in Mt Darwin, patients being delayed on seeking and accessing healthcare services as a result of inaccessibility to health centre, some were affected by their religion and limited income. Some of the factors militating against efficiency health service delivery includes unavailability of medicines and shortage of competent health

workers. There has been persistent problems in maintaining health care utilisation in rural areas, particularly in during the coronavirus pandemic where rural hospital have been operating below the expected standards.

Over the past years in Zimbabwe, cost of health care services such as consultation fee and medical check-up fee have been spiralling out of control causing medical expense to upsurge hence affecting the demand for health care service by individuals especially in rural areas, where most people are underprivileged. The COVID -19 pandemic has impacted more on the capabilities of health systems to continue the distribution of essential health service. Attention on COVID-19 pandemic has diverted attention from other social activities to ensure that the pandemic has been addressed. It has been critical in maintaining precautionary and therapeutic services, especially to the most susceptible populations such as disabled people and people living with chronic health conditions. Poor people are vulnerable when it comes to healthcare services utilisation they, they struggle to access valuable healthcare services. Zimbabwe has to achieve optimum balance between combating coronavirus and maintaining essential health services.

World Health Organisation has made an effort to support countries like Zimbabwe, in implementing actions on maintaining access to safe and quality health service. Provision of health care service is a basic requirement for all individuals, and it is an effective way of achieving goals for reducing poverty. Health system needs to ensure good health status of the people by facilitating utilisation of both preventive and curative health services (WHO, 2001).Rural households encounter serious health problems as compared to urban. This is revealed by low life expectancy, and high infant and maternal mortality rate and also limited access to proper sanitation. Therefore, there is need of involving these households when designing policies or programs on healthcare through identification of factors that determine demand for health care services by households, thus helping in rational strategy.

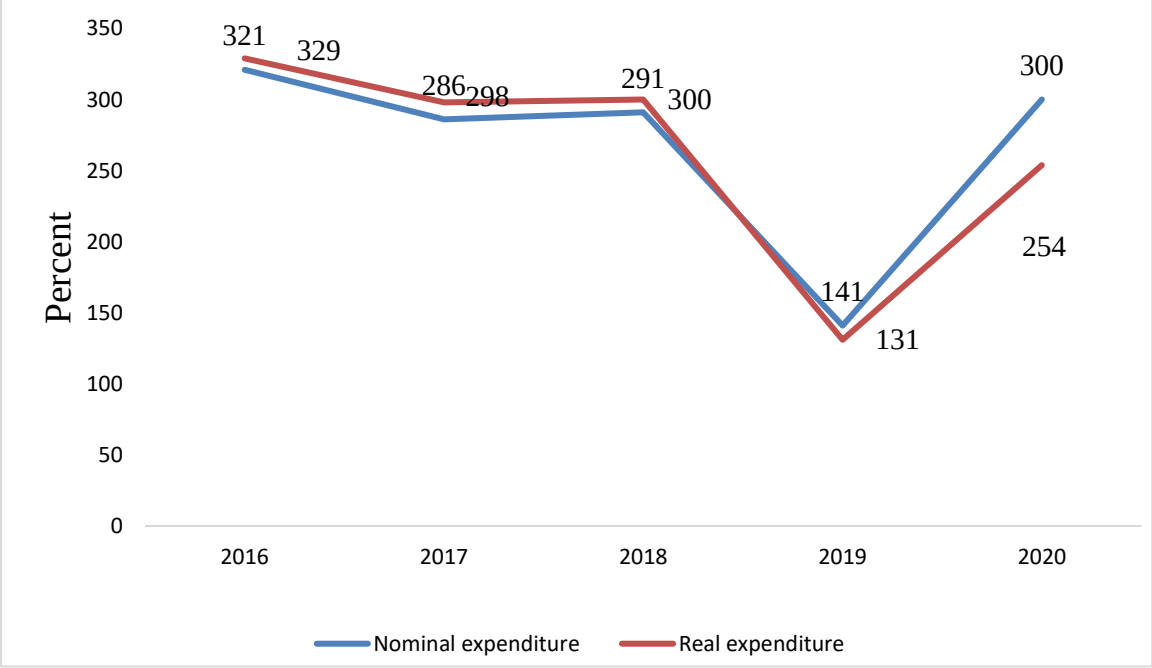
The provision of health services in Zimbabwe remains low due to lack of sufficient funds, in effort to overcome this problem, fees for provision of health services were introduced as a way of recovering cost of health care services. COVID-19 has put pressure on weak public health systems such as immunisation of children and maternal

healthcare, this has intensifies health situation across Zimbabwe. There is need for poor countries to adopt structural adjustment program and cost recovery in the provision of public health services. (I.Gupta & P. Dasgupta, 2002).

1.1.1 Health Spending Trends in Zimbabwe

Government spending on rural health centres has to be boost to avoid dependence on donor financing so as to cater 70 % of Zimbabwe's population living in rural areas. There is a weak budget implementation, this is indicated by huge abnormalities of actual expenditure from the approved budget. The 2019 budget has underperformed by 6 % as compared to an expenditure of 20 % in 2018. The capital budget has also worsened, its performance to about 86 %. The diagram below is a graphical illustration of health care spending showing relationship between nominal and real expenditure trends.

Fig 1: Nominal and Real Expenditure Trends



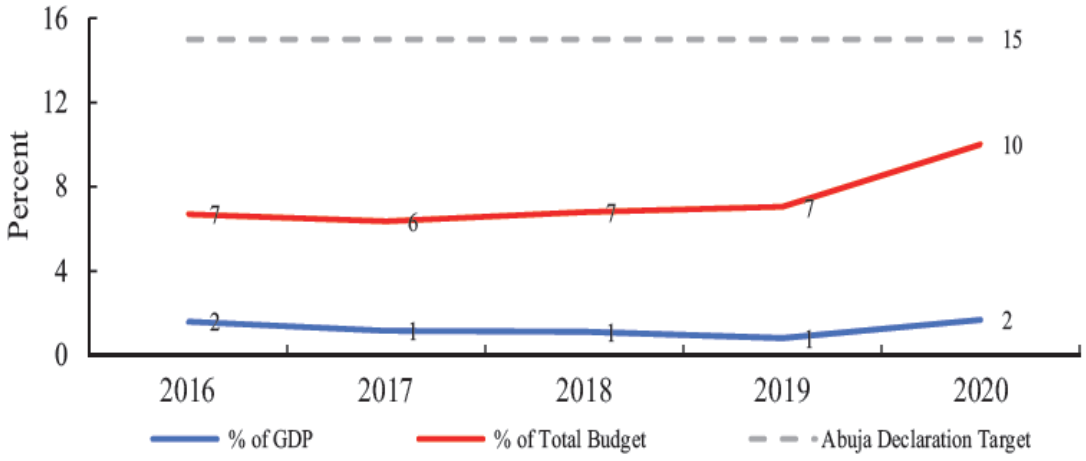
SOURCE: Zimbabwe Health Budget Brief UNICEF | June 2020

As shown in Fig 1 nominal health budget amount to US$300 million compared to 141 million in 2019, whilst for real health budget it was US$ 254 million compared to

US$131 million in 2019. Government health spending has been declining this indicates mounting pressure on economy. The government of Zimbabwe has allocated funds to the health sector that is an amount of US$300 million in 2019, which was 13 % increase as compared to a 5 year average of US$264 million recorded in the period of 2015 - 2019 (Zimbabwe Health Budget Brief UNICEF |2020). There has been an increase in health budget by 139 % compared to the 2019 health budget. This increment has however, brought the health budget only to the pre-2019 levels as budget has dropped significantly in 2019 to US$126 million. Rural Health Centres have been allocated US$16 million, which is around 6 % of Primary Health Care and Hospitals Care budget or 5 % of the total health budget (Zimbabwe Health Budget Brief UNICEF | June 2020).

In 2020 there has been a rebound in health budget which was in Zimbabwean dollars (ZWL$), due to continued exchange rate depreciation and an increase in inflation the real health budget was affected negatively. Since late 2018, real health budget was being worn out by the effects of inflation and exchange rate depreciation. Health care spending of Zimbabwe is below World Health Organisation's recommended threshold. However, there is need for government of Zimbabwe to increase level of financing health care sector as a way of increasing health outcomes.

Fig 2: Health sector expenditure trends against international targets



Source: WHO Global Health Expenditure database/ Various Budget Statements

As shown in fig 2, the allocation on heath budget is 10 % of the national budget in 2020. It has been 7 % in the past years and this shows that there an improvement in the health

budget allocation. Total health budget in 2020 is 10% as compared to 2018 and 2019 which has a budget of 7% as shown above in (Fig 2). Zimbabwean government's health expenditure on aggregate fallen below a recommended Abuja Declaration Target of 15 %. Zimbabwe is making effort to meet international commitment, even though health budget is below Abuja Declaration Target of 15%. As a share of Gross Domestic Product, there has been a slight increase in healthcare expenditure from 1% in 2019 to 2% in 2020. Improvement in budget allocation enhances health outcomes and at same time allowing countries to increase health expenditure budget, thereby attaining recommended international thresholds. Munyuki and Shorai, (2009) suggested that a reduction in public health expenditure is caused by poor economic performance.

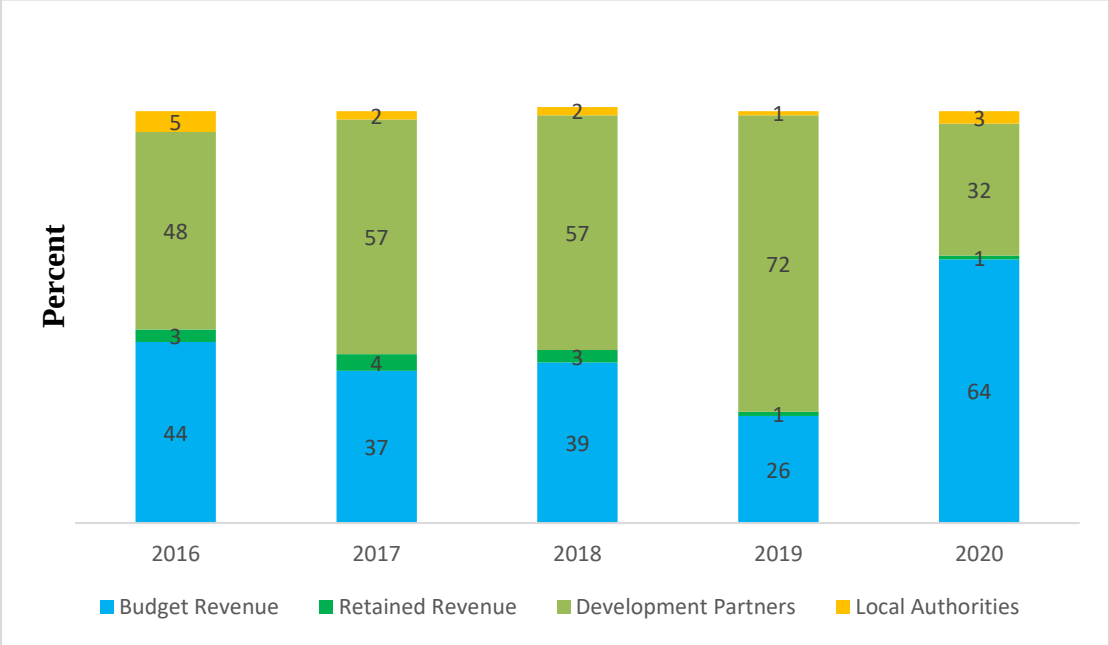
1.1.2 Financing Of Health Sector

Developing countries face problems when financing and providing healthcare services. The main provider of health care services is in Zimbabwe is the government, which has an objective of ensuring equity in health service provision. Provision of health care services in Zimbabwe remained low due to insufficient funds. Health financing in Zimbabwe is divided into private health financing and public health financing. Private health financing is obtained from private health insurance funds, donors and from households out of pocket spending on health care services, whilst public health financing is allocated as according to the national budget under the Ministry of Health and Child Welfare.

Zimbabwe is experiencing a decline in public health financing as a result of economic crisis or poor economic conditions. The provision of sufficient drugs in Zimbabwe has been affected by inadequate funding of health sector. MoHCW, (2010) suggested inadequate supply of basic drugs cause rural clinics to be less operational. In rural areas households depend upon the public healthcare services. Therefore inadequate public health care services at health centres affect their health demand for health care services. Health facilities depends more on user fee revenues for supporting their budgets because of insufficient resources from government budget (NHS, 2009-2013).

There has been a decrease in health sector financing over a period of 2016-2018, this could be because of the impact of depreciating local currency and an increase in inflation which has eroded domestic financing (Zimbabwe Health Budget Brief, UNICEF June 2020). Unsustainably a huge proportion of health sector financing is contributed by external financing. Figure 3 below shows trends in main sources of health financing.

Figure 3: Trends in the Main Sources of Health Sector Financing (%), 2016-20



Source: **Various Budget Statements, MoHCC and CHAI 2019 Report**

In 2019, the local currency has been depreciating, causing the budget revenue to contribute only 26% in health sector financing compared to 72 % by development partners. The 2020 budget has set aside 64 % of total health financing and retained revenue which is from fees and revenue contributed 1 % of health sector financing. The development partners contributed 32 % and the local authorities has contributed 3 % of healthcare financing. In the COVID-19 pandemic period, external financing was expected to be reduced as all traditional external financiers are coping with measures to contain the outbreak of the disease, which has strained resources globally. Advanced financing is required in order to fast track health care progress and achieve fairness in health system. The 2020 budget has set aside 3 % of the total health sector financing, for transfers to subnational governments, so as to target interventions in health sector.

1.2 Statement of the Problem

The healthcare status reflects the level of economic development for a country and it influence the way economy progress. The provision of health care service is an important aspect of socio-economic development since health and economic development interdepend on each other. The health Ministry in Zimbabwe has made effort in increasing the provision of health care services since 2009 (ZHSA, 2010). Rural areas benefit more from the provision of healthcare service as it ensures productivity of rural workers and their income thus eradicating poverty.

The lockdown regulations that were imposed during coronavirus pandemic period has disrupted travelling of people using public transport thus adversely affecting the access of health care services by rural households especially those who are critically ill. Most sections in rural hospitals have been closed down as a way of preventing the spread of COVID-19 pandemic. Expecting women in rural areas failed to access pregnant check-ups, other medical check-ups and also people with chronic illness were not accessing enough health care facilities. In some parts of Mt Darwin rural health care services have been provided by Village Health Workers who had no access to Personal Protective Equipment (PPEs), thereby exposing communities to COVID-19.

Rural households were failing to attend health institutions because fear of COVID-19 infections, they also lacked finance as a result of unemployment, some lost job opportunities. This has put rural lives at risk especially to the elderly people, infants and those with chronic illness, those who lived far away from rural health centres or provincial health centres. Health workers were reported not attending any patient with flu like symptoms fearing they could be COVID-19 carriers. This therefore, indicates the need for assessing consumer behaviours as it affects the demand for health care service. In most parts of Mt Darwin, communities have no access to running water, some share boreholes hence being vulnerable to disease such as coronavirus. Long queues are also observed at communal boreholes and social distancing was not being observed. It is necessary to analyse the demand for health care services by identifying factors that affect individual decisions to seek health care services and their choice among different health care providers (N, Asteraye, 2002).

Enforcing social distancing in rural areas has been challenging because of cultural practices and the need to assist the elderly and those living with disabilities. Growing literatures on health care demand have pointed that individuals are not passive recipients, they make active choices on whether to or not make use of provided health care services (M. Lindelow, 2003).

1.3 Objective of Study

1.3.1 General Objective

To analyse the demand for healthcare services by rural households using data from Mt Darwin in Mashonaland Central Province, during and before COVID-19 pandemic period.

1.3.2 Specific Objectives

- To examine the effects of COVID-19 restrictions on the demand for healthcare services by rural households.
- To analyse how income of rural households affect the demand for healthcare services.
- To determine the impact of distance travelled to health institutions on likelihood of seeking healthcare services.
- To examine how religion affect the demand for medical care in rural communities.

1.4 Research Questions

1. How does COVID-19 restrictions affect the demand for healthcare services by rural households?
2. Does income level affect the demand for health care services by rural households?
3. How does distance travelled to nearest health institutions affect the likelihood of seeking health care services?
4. Does religion affect the demand for medical care in rural communities?

1.5 Statement of Hypothesis

$\boldsymbol{H_0}$: There is positive relationship between COVID-19 restrictions and the demand for healthcare services by rural households.
$\boldsymbol{H_1}$: There is no relationship between COVID-19 restrictions on movements and the demand for healthcare services by rural households.

$\boldsymbol{H_0}$: There is positive relationship between income and the demand for healthcare services by rural households.
$\boldsymbol{H_1}$**:** There is no relationship between income and the demand for health care services by rural households.

$\boldsymbol{H_0}$: There is positive relationship between distance travelled to health institution and the likelihood of seeking health care services.
$\boldsymbol{H_1}$**:** There is no relationship between distance travelled to health institution and the likelihood of seeking health care services.

$\boldsymbol{H_0}$**:** There is positive relationship between religion and the demand for medical care in rural communities.
$\boldsymbol{H_1}$**:** There is no relationship between religion and the demand for medical care in rural communities.

1.6 Significance of Study

Although there are health sector reforms in Zimbabwe such as devolution of healthcare services, infrastructure development of health institution, there is a consistence increase in demand for health care services especially during Coronavirus pandemic period. This therefore, made it necessary to study factors that influence demand for health care services mostly by rural households. It is of more significance to understand the determinants of the demand for health care in rural areas during and before COVID-19 pandemic period put more focus to vulnerable population of rural areas.

Policy makers in Zimbabwe are required to implement policies which aim at increasing health care services utilisation in rural areas that has remained low (NHS, 2009-2013). Even though the study is more specific to Mt Darwin District, the findings of give an insight of proper policies to be implement to deal with demand for healthcare in rural areas. The findings from study will provide relevant data to policy makers on supplementary policies for instance, building of health facilities to ensure health care utilisation. Limited evidence suggest that, there is an increased demand for healthcare service in rural areas during and before COVID-19 pandemic period particularly by the pregnant mothers, elderly and those with chronic illness.

The study will advance knowledge on factors affecting the demand for healthcare services in rural setting, during and before coronavirus pandemic period. In addition, the study is significant in giving direction to those who want to embark on further research on this issue of the demand for health care service. In general, the study will add information to the existing literature and growing literature in sub-Saharan Africa by establishing factors influencing the demand for health care services during and before COVID-19 era. The empirical findings of study will expose health challenges in Zimbabwe's rural areas and developing countries at large thus paving way for donor funding.

The study helps Zimbabwe's health sector in the process of financing and restructuring of health care in regards to dispersion of resources and infrastructure development to the vulnerable segments. The study will also be significance to Bindura University of Science Education and other universities as it provides literatures to their libraries, thereby helping students and staff members who want to carry out study on similar matter. It is also of more importance to the research as he will have a platform to link theories learnt and practice as well as improving skills. The research will expose researcher to job opportunities through gathering information from various sources such as government institutions. Some households do not seek healthcare services because they perceive the infection as ordinary, this made the study to analyse the attention given to an infection.

1.7 Assumptions of Study

The researcher assumed that rural households will be available for the study so as to acquire enough and required information. He also made assumption that information collected from respondents is accurate, unbiased and more relevant in such that one can rely on. The researcher also assumes that, respondents are from Mt Darwin and these respondents cooperate in answering questions in questionnaires.

He also assumed that the limitations encountered in study do not affect the validity of research, the researcher also assumes a sample population used in the study represent the entire population. Since the research managed to analyse the demand for healthcare services, during and before COVID-19 pandemic period, the researcher will identify gaps in polices and provide policy makers will some recommendations. The researcher also assumed that rural communities and other researchers will benefit from the findings of the study.

1.8 Delimitation of Study

Study focused on analysing the factors associated with decision of seeking medical treatment and the choice of health institutions in time of illness during and before the COVID-19 era in Mt Darwin. Therefore, the research was limited to respondents in Mt Darwin District when gathering data related to the study. Mt Darwin is in Mashonaland Central province, it is located 160 kilometres away in north-eastern part of Harare and has a population of 218 724 as according to ZIMSTAT, (2013). The study was also limited to a sample of 148 rural household respondents.

1.9 Limitations of Study

The findings from research cannot be comprehensive to the whole population, given that only a small sample of population was targeted in research due to resource constraints and limited time. The researcher lacked finance for travelling around Mt Darwin when gathering data. He was also limited by national lockdown restrictions on movements when collecting data and most people refused to assist the researcher

fearing COVID-19 infections. Some rural households refused to provide information as they fear being quoted out.

1.9.1 Chapter Summary

The chapter has covered introduction, background of study, statement of problem, purpose of study, research questions and research hypothesis. It also covered significance of study, assumptions, delimitations and limitations of study and definition of terms. Chapter 2 will look at conceptual framework, and evaluation of relevant literature review.

CHAPTER II

LITERATURE REVIEW

2.0 Introduction

This chapter reviews both the theoretical and empirical findings on the demand for health care services before and during COVID-19 period. In the first section of the chapter the research will present the theoretical models on demand for healthcare services or the health seeking behaviours. The second section will review empirical findings on the influences of the demand for healthcare services as according to previous studies. Literature review is advantageous as it identifies variables and methodology to be used in the modelling of demand for health care services. Chapter II is divided into section following section: 2.1 the theoretical part of literature review, section 2.2 empirical findings. Section 2.3 summarises discussion.

2.1 Theoretical Literature Review

In the early 1960s, economist became interested in analysing the demand for health care services. In this time health care demand was usually estimated with the number of healthcare facilities and the demand models were derived from the assumption of utility maximisation. Demand for healthcare services for individuals was imagined to be dependent income, price of health facility and taste and preference of households. One of the important studies on demand for health care services was cited by Grossman (1972). Grossman's model was based on the interaction of health production function and the demand function for health.

In his studies Grossman has appreciated health as a durable capital good which was different from other form of human capital and it was inherited then it depreciated over time. Grossman has put more concern on individual's allocation of resources to produce health. According to Grossman (1972), people do not value health as other consumption goods, this was indicated by their addictive behaviours to alcohol, over-speeding when driving and there was limited income to finance health and other activities.

Grossman's model was centred on certain assumptions, one of them was that individuals are the producers of health. The other was that individual's health which has been inherited, depreciated with time at an increasing rate after some stages in life cycle. Grossman (1972) argued that people demanded health for two reasons: (1) demanded it as an investment good. Stock of health care increases with time through acts of investment, when health stock deteriorates with time that is when death occurs.

Health regulates the amount of time for doing businesses, there should be positive correlation between the individual's wage rate and his demand for health care services. The other reason of individual demand for health was: (2) demanded it as a consumption commodity as it is part of individual's utility function, disutility occurs due sickness that is the more the days of sickness the greater the disutility to an individual. Grossman (1972) suggested that endurance and illness free days in a given time period defines health, which is produced and demanded by consumers.

The other literature was by Christianson (1976), he assumed that, individuals' decision on demand for health care services are done in phase, after acknowledging distinctive nature of individuals' decision on demand for health care. He argued that an individual follow three phases on decision making in the period of illness. The first decision phase that an individual made was on whether or not to seek medical care or health care after realising he has got a medical problem. The second stage was on choosing particular health care service provider that is whether to choose private health provider or public health provider, he could even decide seek health care from traditional healers. The last phase of decision was on number of visit to pay to a particular health facility that is after looking at the nature of disease and distance to travel to a health facility.

However, the gravity model have theorised that the likelihood of selecting health facility and size of health facility were positively related and negatively related to distance from patient's home to health facility. The larger the health facility is the more the quality of health care being provided so patients are more concerned with quality of health care services.

Anderson (1995) established a model of health behaviour that has put clarity on aspects which determine utilisation of health care services. According to Anderson there were three dynamic forces which individual's health care service utilisation depended upon and these were predisposing factors, enabling factors and the need factors. The predisposing factors included things like demographic characteristics sex and age, social factors such as education, ethnicity occupation and social relationships and mental factors such as attitude, value, belief and knowledge in relation to health care and health care providers. The theory assumed that the ones who hold a belief that healthcare service provide an effective solution to disease are more likely to seek attention from healthcare providers.

As according to Anderson (1995), the enabling factors on healthcare utilisation included characteristics such as family support, access to health insurance. The need factors represented the perceived and actual need for health care services. In the enabling factors more concern was on financing that is income or insurance to pay health care services and organisational factors that is regular source of health care, these factors condition health care utilisation. Enabling factors was also encompassed of transportation, travel time and waiting time when seeking health care services.

On the need factors, Anderson (1995), has differentiated individuals' perceived need for health care services that is how they view healthcare services and experience own general health, functional state, illness symptoms and evaluated need that is professional assessment and objective measurements of patients' health status and need for medical care. Anderson has made a distinction between environmental need characteristics and population indices, the environmental need reflected the health related conditions of environment such as crime related injury and death, occupational injury. Population indices were a measure of community health including epidemiological indicators of mortality, morbidity and disabilities.

Yong (1981) has conducted a study on the use of healthcare services in Mexico in this he developed a choice making model which encompassed four aspects and these includes: perception of gravity described as individual's sensitivity and his social network's perception of the extent of illness, knowledge of domestic remedy that is one's perception of domestic remedy, access of treatment in relation to one's assessment of the availability of health institutions and the price of health care service they require.

Acton (1975) has established a utility maximisation model of demand for health care, were utility depended upon health and consumption of other commodities apart from medical care. In his model, demand for health care depended upon consumption of medical services and other consumption commodities subject budget constraint. Acton assumed that individual made choices among different treatment alternatives when ill, so as to maximise utility subject to the budget constraint. He came up with comparative statistics for money cost and time, this showed how sensitive were the users of free health services to time required in waiting ad travelling to medical facility than those who pay for health services.

Acton (1975) assumed distance to be crucial when demanding medical care for three reasons: (1) the longer the distance the more transport cost increased, (2) the longer the distance the higher is the time cost and (3) the longer the distance from health facility the higher is the information cost on the quality of health care, it will be difficult to find the quality and suitability of a close by health care service provider than in finding out a distant one.

Acton has also distinguished between non-earned and earned income when explaining the impact of income on demand for health care services. He assumed earned income to be a portion of income which depended upon hours individual spend working that is on income earning activities. Non earned income was that which one gets without working, an increase in non-earned income will in turn increase demand for health care services. When earning per hour increased the demand for health care services also increased due of income effect at the same time decreasing the demand for time intensive activities as opportunity cost of time will increase.

2.2 Empirical Literature Review

In this section the empirical findings of selected studies have been outlined irrespective of the methodologies that have used and these studies attempted to analyse demand for health care services and what affects it.

A related study on the demand for health care services was done in Zimbabwe, by Kevany et al., (2011). They did a study on the relationship between socio economic status and choice of health care service provider in Zimbabwe using 2005- 2006 using household survey data from Mutoko District. Basically the study has put more focus on assessing the impact of socio economic status on choice and acceptance of healthcare providers. The study has come up with a total number of 5116 household respondents on where they most utilise health care service in the event that someone in family is sick or injured.

In the choices of health care service provider in the study, households were assumed to make choices between pharmacies, government clinics, public and private hospitals and traditional healers. Basing on Chi-square statistics the study has found out that socio-economic status which is measured by household assets had a strong relationship with both overall utilisation of health care services and utilisation of specific health care service providers.

Another study was done in Senegal by Lepine and Nestour (2011), the study used binary logit regression when analysing healthcare utilisation in rural context. The study made an analysis on the determinants of use of medical care from individuals in rural of Senegal. The study used a two stratified sampling procedure in coming up with the data from households being interviewed. Households' economic status, education, price and quality of medical care were among the independent variable in the study.

Lepine and Nestour (2011) have used a binary dependent variable which was measured on whether a visit to a health workers who are qualified was done during an individual's last illness. The reasons for not demand health care services from a qualified health personnel was that most people in rural context prefer using self-health care, some

regard health care services from qualified personnel to be expensive and other assumed disease to be not severe and distance to health services provider was regard as long. From the results of the study health insurance ownership, education, price and quality of medical care, household economic status and age were found to be substantial determinants of demand for health care services.

Another study was done in Uganda by Muhofah (2010), the study analysed the determinants or factors on the use of formal health service in Butalejah rural district. In this study the relationship that socio-demographic characteristics, institutional factors and economic factors has with the use of formal health care facilities has been analysed. Low utilisation of formal health facilities in rural areas has inspired the study despite developments in the Uganda. The factors were analysed using both the Chi- square statistics and logistic regression.

When using Chi-square statistics results, education background, household size, income, religion, age, sex and occupation of respondents are correlated to use of formal health care services at 5% significant level. Under logit results, factors affecting demand for health care service except marital status, distance and quality of health care were at 5% significant level. According to the study, education negatively affect demand for health care services in rural areas even though primary education is primary education primary education is highly correlated to use of health care. Highly educated people may irregularly utilise health care services, since there are more producers of health as compared to those without education (Grossman, 1972). However, the study was not based on curative health care but preventative health care.

Lawson (2004) has studied the demand for health care services in rural area of Uganda, he used secondary data from Demographic Health Surveys and a 1999- 2000 Uganda National Households Survey (UNHS). Lawson has used a discrete choice model to examine the variables such as religion, households size, income, education, age and sex, these variable where used as explanatory variables in his study. He analysed the factors of demand for health care services for all range of ages, including preschool children, school aged children and the adults, and he also considered gender in his study. Lawson (2004) was driven by user fees which were introduced for most health

care services in Uganda, it justified the impact of income and user fee on health care demand in Uganda.

Another study on demand for health care services was done by Sahn et al. (2002) in rural areas of Tanzania. In their study, quality was assumed to be the most crucial determinant of demand for health care services. When individuals have options to seek competent doctor or nurse, getting access to pharmaceuticals and attend health care centres, demand for health care services will increase. However, in the study indicators of quality were qualitative and subjective. In the study households were being asked to provide an ordinary assessment on quality of health care service along several dimensions. In their study consumers in rural areas of Tanzania were very responsive to price of health care

Frederickx (1998) has carried out a study on demand for health care services and health care choice in rural area of Tanzania using logistic regression model. His main aim was to investigate factors influencing health care utilisation by rural households in Tanzania. He came up with the determinants of demand for health care services which were classified into dependent and independent variable. The dependent variables assessing demand for health service was dichotomous with one case of incidence of treatment and zero for no treatment sought. Independent variables were classified into community, individual and household variables. The variable in the study include education, distance to nearest health facility, households size and income, education of household head, age and sex. The study used rural household data on certain districts from Tanzania Human Resources Development Survey of 1993 and 1994.

2.3 Research Gap Analysis

Studies concerning demand for healthcare services during and before COVID-19 era were done mostly in developed countries and some outside Zimbabwe, few researches were done in Zimbabwe concerning demand for health care hence the researcher has decided to fill the gap. There is a greater need for the study to be done in the rural areas

of Zimbabwe especially in rural areas of Mount Darwin where there are disparities in utilisation of health care services. There are policy differentiations, differences in places and methodologies, when the previous researches where done and these have been developed with time, hence influencing the findings.

A research gap is created due to this therefore, there is need for this study to be undertaken. Most rural areas are being neglected when it comes to socio-economic development, main focus will be on urban areas. Therefore, challenges affecting rural households are neglected and not being exposed especially during COVID-19 period leading to poor healthcare service in rural areas. This study seeks to fill the void in knowledge by focusing on the demand for healthcare services in rural households during and before the COVID-19 pandemic period.

2.4 Chapter Summary

Demand for health care services has been an intense issue among households in rural areas of Zimbabwe and around the world. Chapter II of the study has reviewed literature on demand for health care services, it has covered the theoretical or conceptual framework. The chapter has reviewed various journals, authors that contributed to the research, factors influencing demand for healthcare services obtained by various theorist were outlined in this chapter and also, empirical evidenced on were other studies pertaining demand for health care services were defined.

The theoretical and empirical literatures discussed in the chapter have produced mixed outcomes, thereby paving way for further studies to be undertaken on the demand for health care services particularly in rural areas. The chapter reviewed various past studies done before by different academics in Zimbabwe, in Africa and around the World on the demand for healthcare service. The research gap analysis was also part of the chapter. The gap left by past studies and that between those studies and this current study was highlighted. There is need for more studies on demand for healthcare services by rural households in Zimbabwe and world at large. The next chapter is going to look at the research methodology used in conducting this study.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

This chapter gives a clear summary description on how the study on demand for healthcare services by rural households, during and before COVID-19 pandemic period was carried out. All activities and procedures undertaken during the course of research are outlined in this section. This chapter clearly outlines sections such as introduction, research design, research instruments, data collection procedures and chapter summary.

3.1 Research Design

Research design is the overall plan for connecting the conceptual research problems to the relevant and attainable empirical research (Van Wyk (2017). It is the overall strategy that households choose to integrate the different components of the study in a coherent and logical way, thereby ensuring effective addressing of the research problem as it constitutes the blueprint for the collection, measurement and analysis of data. The researcher has used the binary probit regression model in analysing the demand for healthcare services by rural households during and before COVID-19 pandemic period. Both the combination of descriptive designs, cross-section data and correlation designs are used in this study and are expected to give relevance to the empirical study.

3.2 Theoretical Model Justification and Specification

The main aim of the study is to model the demand for healthcare services during and before COVID-19 pandemic period. The demand for healthcare services is determined by the extent to which individuals' utilities are satisfied or their preferences satisfied. Grossman (1972) has derived demand for healthcare services from an optimal control model in which health capital is both investment and consumer goods. Individuals chooses level of healthcare, there will be endowed with an assured health capital at initial which then depreciates over time but replenished by investment such as medical care, fitness exercises etc. as according to Grossman. Individuals derive utility from consumption of health and non-health goods, therefore utility is expressed as a function of quantity for health care.

According to Grossman (2000), social-demographic variables such as education, age, social, attitude and behaviours impact healthcare utilisation or healthcare demand in a negative or positive way. In the time of sickness individuals make decisions on healthcare facilities they need for treatment, basing on these socio-demographic variables and other variables. They also consider distance travelled to health facility and time required to wait before being attend. Grossman (1972), provides an appropriate theoretical framework for explaining demand for healthcare service. However, empirical findings have been failing to take into account the vibrant nature of Grossman's model. Demand for healthcare services can be summarised inform of an equation as follows:

$$\boldsymbol{H_D = f(\ C_{VD}, Y, D, E, R, A, G)} \ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{3.1}$$

Where:

$\boldsymbol{H_D}$ = Demand for healthcare services.

$\boldsymbol{C_{VD}}$ = Effects of Covid-19 restrictions on demand for healthcare services.

$\boldsymbol{Y}$ = Household income (level and income distribution of rural households).

$\boldsymbol{E}$ = Education level of household member.

$\boldsymbol{D}$ = Distance to nearest health facility

$\boldsymbol{R}$ = Religion and cultural beliefs

$\boldsymbol{A}$ = Age structure of rural households in a sampled population

$\boldsymbol{G}$ = Gender of household member

To determine relationship between the demand healthcare services and the variables that affect demand for healthcare the study employed an econometric model as outlined in section by the equations below. Demand for healthcare service by rural households in Mt Darwin during and before COVID-19 period, basing on the theoretical context was explored using binary probit regression model that lies between an interval of 0 and 1. It is probabilistic distribution on whether rural households seek healthcare services in the event of illness (utilises) or not. The researcher has made an assumption that the error term takes a standard normal distribution, since dormant variable ($\boldsymbol{y}^*$) cannot be observed. Nevertheless, there is a linear relationship between unobservable dependent variable represented by ($\boldsymbol{y}^*$) and the explanatory variables which are represented by($\boldsymbol{X_i}$). This is shown by the equation below:

$$\boldsymbol{y^* = X_i\,\beta + \mu} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \boldsymbol{3.2}$$

Where dependent variable $\boldsymbol{y}^*$ represents the probability of seeking healthcare from hospitals. The explanatory variable $\boldsymbol{X_i\beta}$ represent a pool of independents that affect demand for health care services by rural households. The error term $\boldsymbol{\mu}$ is representing all variable that affect the demand for health services but not included in the model. The unobservable variable $\boldsymbol{y}^*$can be linked to observed binary variable $\boldsymbol{y}$ as expressed below:

$$\boldsymbol{y = \begin{cases} 1\ if\ Y^* > k \\ 0\ if\ Y^* \leq k \end{cases}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \boldsymbol{3.3}$$

Where y is the probability of seeking or demanding health care services, 1 if one utilises healthcare services from public health facilities and 0 if otherwise, k represents the threshold beyond which one is said to have sought care from public health facility. Due to the fact that the binary probit regression model assumes probabilistic distribution to be normally distributed, with a mean of zero (0) and a variance of one (1), the study will estimate the marginal effects so as to interpret the results of the model. This study will seek on reflecting changes in probability of seeking healthcare services in Mt

Darwin during and before COVID-19 pandemic period, when given a unit of change in any explanatory variable. A general multiple model can be represented as shown in equation below to specify the model;

$$\boldsymbol{Y = \beta_s X_s + \varepsilon_i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{3.4}$$

Where $\boldsymbol{Y}$ is dependent variable which the demand for healthcare services, $\boldsymbol{X_s}$ represents explanatory variables that affect demand for healthcare services. $\boldsymbol{\beta_s}$ is representing the coefficients of independent variables and $\boldsymbol{\varepsilon_i}$ is the error term.

3.3 Empirical Model Specification

The empirical model of the study was borrowed from earlier researches or findings by Fredickx (1998) and by Lepine and Nestour (2011). Though, there are more variables for the model to be suitable in context of Mt Darwin rural in Zimbabwe. The empirical model is specified as shown below:

$$\boldsymbol{H_D = \beta_0 + \beta_1 C_{VD} + \beta_2 Y + \beta_3 D + \beta_4 R + \beta_5 A + \beta_6 G + \varepsilon_i} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{3.5}$$

$\boldsymbol{H_D}$ = Demand for healthcare services.

$\boldsymbol{C_{VD}}$ = Effects of Covid-19 restrictions on demand for healthcare services.

$\boldsymbol{Y}$ = Household income (both the level and distribution between rural households).

$\boldsymbol{D}$ = Distance to nearest health facility

$\boldsymbol{R}$ = Religion and cultural beliefs

$\boldsymbol{A}$ = Age structure of rural households in a sampled population

G = Gender (Sex)

$\boldsymbol{\varepsilon_i}$ = Error term.

3.4 Definition and Justification of Variables

This study included variables associated to individuals, households and provider of specific characteristics in identifying and estimating factors or determinants of demand for healthcare.

Demand for healthcare service

It is binary dependent variable which takes value of one when one utilised healthcare service from healthcare facilities from healthcare centres and zero is assigned for those who did not utilise.

Gender (Sex) of the household head

Gender is defined as a dummy variable, value of zero will be assigned for male and 1 for female. This variable establish relationship with demand for healthcare services. Several studies looked for relationship between demand for healthcare services and gender. From previous studies, females when regarded as risk averse since they preferred to be attend by qualified health personnel when ill. Nevertheless, the influence of gender on healthcare demand remained indecisive in the empirical literature as the variable gender is uncertain. Female have a higher probability on seeking healthcare than male.

Age of household member

Age is a continuous variable, the study expects higher healthcare utilization to be for the rural households who are old, followed by those who are young. This is a continuous variable which captures the age of the household head in years. Since at old age most of rural households experience illness, their probability of seeking healthcare are high. Their probability on seeking healthcare are expected to increase as chance of seeking healthcare will be high. Hence the study has uses age as variable to capture its effect on healthcare demand.

Household Income

Income level of households has a positive relationship with demand for healthcare services as people invest more in health as their income increase. According to Lawson 2004, Fredrickx 1998, income increases the likelihood of seeking health treatment. There is positive relationship between income and demand for healthcare services, income will continuous variable in this study.

Distance to the nearest health facility

Distance influence demand for healthcare services, demand for health care tends to decline with distance as households demand healthcare services where it is physically available at a nearest area. According to Muhofa (2010), demand for healthcare services tends to decline with distance. So the is a negative relationship between distance and demand for healthcare services. When health facility is near there is higher probability of people seeking treatment on healthcare centres.

Religion and traditional beliefs

Religion and traditional beliefs are crucial on demand for healthcare services. There is lower probability of seeking healthcare to those who believe in tradition that is traditional healers and higher to the Christians. Rather, they tend to prefer self-treatment as an alternative to treatment from hospitals when a household member has fallen ill.

COVID-19 Restrictions

COVID-19 restrictions such restrictions on movement have negative influence on demand for healthcare services as it reduced the probability of seeking healthcare services. Rural households resorted to self- treatment in the COVID-19 pandemic period as there did not have permit or pass to move during this pandemic period.

Table 3.0 Variable Definition and Measurement and expected sign

VARIABLES	EXPLANATION	EXPECTED SIGN
Dependent Variable		
Demand for healthcare services	Respondents visit a hospitals or clinic are recorded. The study has code 1 for who utilised healthcare 0 those who did not utilise healthcare	
Explanatory Variables		
Religion	Christian, Traditional and Other religion	Negative
Distance to health facility	Distance travel to health facility	Negative
Age	Age of households	Positive
Effects of COVID-19 restrictions on health demand	0 if not affected by covid-19 restrictions and 1 if affected	Negative
Income level	Income level of households.	Positive
Gender	0 if male and 1 if female	Positive

3.5 Sample size and sampling procedure

The study has used cluster sampling, were villages or wards were taken as clusters. Due to constraints such as resource constraints and time constraints, the study has used a one stage cluster sampling to 10 wards or villages for survey. Out of 10 wards 148 households were randomly selected and interviewed. Even though the study was based on illness that was experienced, data for those who experienced illness will be used for regression analysis. 10 households were at list interviewed per each ward. Cluster

sampling is advantageous since costs of data collection are low and it offers generalisability of population (Sekeran and Bougie, 2004).

3.6 Data Source and Type

This study has used cross-sectional data to contain general information on expenditures and utilisation of healthcare services. The study has analysed different behaviours of individuals when seeking healthcare services. The study has asked questions on where individuals try to find healthcare services. Other information or data include age, level of education of individuals demanding healthcare services and also distance they travel from home to health facility.

3.7 Diagnostics test

The study will carry out following test

3.7.1 Multicollinearity test

This explores the perfect collinearity of the study variables. In the study correlation matrix are examined to establish relationship between demand for healthcare services and the independent variables of the study. The positive and negative signs in the analysis are revealing the direction of association between variables. Multicollinearity was deemed present when correlation is more than half in absolute terms. To confirm the existence of Multicollinearity the study made use of Variance of Inflation Factors (VIF) and if present the researcher has unconstrained one of the collinearity variables.

3.8 Summary

Chapter three has presented research methodology which will be use to examine empirically factors affecting demand for healthcare service by rural households in Mt Darwin. The next chapter which is chapter four will show the estimation and presentation of results.

CHAPTER IV

Data Analysis and Results Presentation and Discussion

4.0 Introduction

The study has analysed the demand for healthcare services by rural households in Mt Darwin District. This chapter focuses on estimation of the model, data presentation and discussion of results. This study will start by presenting descriptive characteristics of households and then econometric model results. In the estimation of the model the researcher has used SPSS.

4.1 Descriptive statistics

For a sample of 148 rural households, 120 rural respondents reported to have at least one member who was sick within the last 3 month, which was 81 % of the interview rural households. On the other hand, out of 148 interviewed population, 108 rural household respondents reported to have utilised healthcare services from hospitals and clinics and it was 73 % of the interviewed population. The below table 4.1 shows descriptive characteristics of rural households.

Table 4.0 Demographic characteristics of respondents

Variable	**Mean**	**Standard Deviation**
Age	3.53	1.332
Households' Income	3.63	1.263
Distance to nearest heath facility	2.35	1.324
	Frequencies	**Percentage**
Gender		
Male	46	31.08 %
Female	102	68.91 %

Religion	**Frequencies**	**Percentage**
Traditional	51	34.46 %
Christian	71	47.97 %
Other religion	26	17.57 %
COVID-19 restrictions	**Frequencies**	**Percentage**
Not Affected by COVID-19 restrictions	64	43.24 %
Affected by COVID-19 Restrictions	84	57.76 %

Source: SPSS

The table 4.1 above shows demographic characteristics of rural household respondents. Demographic characteristics are grouped into two that is continuous and categorical demographic characteristics. The continuous demographic characteristics are described using mean and standard deviation. For categorical demographic characteristics frequencies and percentages are used for description. As shown by the table 4.1, age is a continuous variable and it had a mean or average of 3.53 and a standard deviation of 1.332. Another continuous variable was the income level of rural households, and it had a mean of 3.63 and the standard deviation was 1.263. Distance to the nearest healthcare facility was also a continuous variable, it had a mean of 2.35 and a standard deviation of 1.324.

In the study demographic characteristics such as gender, religion and COVID-19 restrictions were the categorical variables and were describe using frequencies and percentages. Gender as a categorical variable was grouped into males and females. Males had a frequency of 46 and had percentage of 31.08 %. Then females had a frequency 102 and a percentage of 68.92 %. Religion as a categorical variable was categorised into Traditional, Christian and Other religions. Traditional had a frequency of 51 and a percentage of 34.46 %. Under Christians the frequency was 71 and had a percentage of 47.97 %. Lastly for other religions, the frequency was 26 and there was percentage of 17.57 %.

4.2 Frequency Distribution of households by demand for healthcare

Table 4.1 Relationship between characteristics and demand for healthcare

Variable	Utilise healthcare (Totals)	Did not utilise (Totals)
Age		
0-15 years	13	2
16-25 years	16	5
26-35 years	22	7
36-45 years	24	13
46 and above	33	13
Gender		
Male	38	8
Female	70	32
Income		
$12500- $25000	10	1
$25001- $37500	12	9
$37501- $65000	18	8
$65001- $75000	34	10
Above $75000	34	12
Religion		
Traditional	35	16
Christian	51	22
Other Religion	22	4
COVID-19 restrictions		
Not Affected by restriction	47	17
Affected by restrictions	61	23
Distance		
Less than a km	34	14

1-20 km	26	10
21-40 km	21	5
41-60 km	12	8
Above 60 km	10	3

Source: SPSS

The table 4.1 above illustrates the relationship between socio-demographic characteristics and demand for healthcare services. Under the variable age which is a socio-demographic characteristics for an age of 0-15 years, there were 13 rural household respondents who reported to have utilised healthcare services from clinics or hospitals. It was 9% of 148 interviewed rural households whilst only 2 individuals under the age of 0-15 years did not utilise any healthcare service from the hospitals and clinics.

For an age of 46 years and above, there were more rural household respondents who said to have utilised healthcare services from healthcare centres. There were 33 rural household respondents and it was 22% of interviewed population. Under the age of 46 years and above, 13 rural household respondents reported that they did not utilise healthcare services from the hospitals and clinics. There is a positive relationship between the age of households and the demand for healthcare services as shown by the table 4.1. When people grow older they tend to demand and utilise healthcare services more, as shown by the table 4.1 above. The elderly people are more prone to disease as compared to the young ones.

Under the variable gender, male respondents had a lowest number people who said to have utilised healthcare services from the healthcare centres. There were 38 male respondents who said to have utilised healthcare services and it was 26% of interviewed rural households. On the contrary, 8 male respondents reported that they did not utilise any healthcare services from the hospitals and clinics in Mt Darwin. Under female respondents, 70 of them said to have utilised healthcare services from hospitals and clinics, which was 47% of interviewed population. On the other hand, 32 female respondents reported to not have utilised healthcare from hospitals and clinics. There is a positive relationship between gender and demand for healthcare services.

On the income level of rural households in Mt Darwin, the lowest income level was ranging from $12500 up to $25000 as shown by table 4.1. Those with such income were regarded as low income earners. On the low income earners, 10 rural household respondents reported to have utilised healthcare services from hospitals and clinics which was 7% of the interviewed rural respondents. As income increase people tend to demand more of healthcare services. For a higher income level of above $75000, there were 34 rural household respondents who said to have utilised healthcare services from hospital or clinics and these were 23 % of the interviewed population. However, 12 rural household respondents reported that they did not utilise healthcare services from hospitals and clinics, they opted for self-treatment. There is a positive relationship between the demand for healthcare services and the income level of rural households.

There is a negative relationship between the demand for healthcare services and religion. Individuals are influenced by religion when they demand healthcare services from hospitals and clinics in Mt Darwin, this is indicated by the table 4.1 above. Some religions discourage hospital treatment since they believe in self-treatment. Under Christians there is a higher percentage of people who demand healthcare services. In the table 4.1, Christians had 51 respondents who reported to have utilised healthcare services from hospitals and clinics and these were 34% of the interviewed rural population. However, 22 Christian respondents reported to not have utilised healthcare services. Under the traditional category, there were 35 rural household respondents who reported to have utilised healthcare services and were 24% of interviewed rural respondents. However, 16 rural household respondents reported that they did not utilise healthcare services. For the category of other religions, there were 22 respondents who said to have utilised healthcare services from hospitals and clinics and were 15% of interviewed population. However, 4 respondents did not utilise healthcare services.

There is a negative relationship between the demand for healthcare services and the distance to nearest health facility. When distance increases, the demand for healthcare service also decreases, this is shown by the table 4.1. There is higher utilisation of healthcare services by those who live near a healthcare centre as compared to those who live far away from healthcare centre. People living in areas such as Muzarabani and Mucumbura utilise less healthcare services from Mt Darwin hospital as compared those

who live near Mt Darwin Hospital. For a higher distance of above 60 km, 10 individuals reported to have utilised healthcare service from hospitals and clinics, which was 7% of interviewed population. For a lower distance of less than a kilometre 39 rural households responded to have utilised healthcare services from a nearer healthcare centre, which was 26 % of interviewed population.

Covid-19 pandemic restrictions have a negative effects on demand for healthcare services by rural households. Rural household were affected by COVID-19 restrictions when they utilising healthcare services, those who live far away from the hospitals were the most affected. The table 4.1 illustrates the relationship between the demand for healthcare services and COVID-19 restrictions. There were 47 respondents who said to have utilised healthcare services from those who were not affected by COVID-19 pandemic restrictions. However 17 respondents did not utilise healthcare services from hospital and clinics. Then for those that have been affected by COVID-19 restrictions on the demand for healthcare services, there were 61 respondents who said to have been utilising healthcare services and 23 responded that they did not utilise healthcare services.

4.3 Distribution of household's illness by gender, age and income

Table 4.2 Relationship between households' illness and gender, income, age

Variable	**Not ill**	**Reported ill**
Gender		
Male	5	41
Female	23	79
Age		
0-15 years	2	13
16-25 years	4	17
26-35 years	4	25
36-45 years	6	31
46 years and above	12	34

Income level	1	14
$12500-$25000	6	15
$25001-$37500	8	18
$65001- $75000	5	36
Above $75000	8	37

Source: SPSS

The descriptive results in table 4.2 shows that out of 120 member who reported illness in last three months, 41 where male, which is 34 % of total households who were ill and 79 were female which 66 % of those households who were ill. Male who were ill amount to 28 % of total interviewed population and Women were 53 % of total interviewed population. As illustrated by the 4.1 women are at high risk of getting ill than men. In the descriptive results of table 4.2, out of 148 interviewed rural household respondents, 13 individuals under the age of 0-15 years reported ill during the last three months which is 9 % of the interviewed population and 1% reported not ill.

For an age of 16-25 years 17 reported ill which is 11% of the interviewed population. There was a total of 25 rural households who reported ill and these were under the age of 26-35 years which is 17% of the interviewed rural households and 4 respondents reported not ill. For rural respondent in Mt Darwin that were between the age 36-45 years 31 reported ill which 21 % of interviewed population. For an age of 46 years and above, 34 reported ill in the last 3 months which is 23% of interviewed population. Illness tend to increase with an increase in age of individuals in rural households of Mt Darwin. The more people grows the higher the risk of getting ill.

Table 4.2 shows distribution of rural households' illness by income level. As shown by the table, 14 households who were among low income earners that is those with an income of $12500 up to $25000 reported to be ill, which is 9% of interviewed population. For those with high income level that is above $75000, 37 individuals reported ill which is 25% of interviewed population of 148. Illness increase with income as shown above, this is because people tend to consume more and foods which are

hazard to health with an increase in income. As income increase there will be high risk of diseases such as cancer and diabetes problem.

4.4 Multicollinearity test

Correlation matrix was used to establish a relationship between the demand for healthcare services by rural households in Mt Darwin and independent variable of the study. The positive and negative signs are showing direction of association between variables. From the table below demand for healthcare services was found to be negatively correlated to distance to nearest healthcare facility. It is also negatively correlated to Age, Gender and COVID-19 restrictions. On the other hand, demand for healthcare services is positively correlated to income and religion. When considering the degree of association most correlation coefficients are not highly correlated as shown in by the table below. High correlation contributes to multicollinearity there by providing wrong estimates.

Table 4.3 Correlations matrix

		Demand for healthcare services	Gender	Age	Income level	Religion	Effect of COVID-19	Distance to nearest health facility (km)
Pearson Correlation	Demand for healthcare services	1.000	-.146	-.102	.026	.114	-.009	-.022
	Gender(Sex)	-.146	1.000	.014	.068	-.037	-.026	-.120
	Age	-.102	.014	1.000	-.008	.001	-.054	.006
	Income level	.026	.068	-.008	1.000	.074	.013	.030
	Religion	.114	-.037	.001	.074	1.000	-.016	.042
	COVID-19 restrictions	-.009	-.026	-.054	.013	-.016	1.000	-.129
	Distance to near health	-.022	-.120	.006	.030	.042	-.129	1.000

Source: SPSS **Significant correlation at 5% level**

To confirm existence of multicollinearity, the study has consider using Variance of Inflation Factors (VIF). The recommended threshold of VIF is of 10 with a value of not less than 0.1 The VIF results are in 5.1 below.

Table 4.4 Variance Inflation Factor

Variables		Unstandardized Coefficients		**Collinearity Statistics**	
		B	Std. Error	Tolerance	**VIF**
1	(Constant)	.835	.199		
	Gender(Sex)	-.143	.080	.977	**1.024**
	Age	-.034	.028	.997	**1.003**
	Income level	.010	.029	.988	**1.013**
	Religion	.068	.052	.991	**1.009**
	Effect of COVID-19	-.021	.075	.978	**1.022**
	Distance to nearest health facility (km)	-.016	.028	.965	**1.036**

Source: SPSS

4.5 Presentation of econometric Results (Binary Probit Model)

The results of estimated binary probit model showed that age, gender, religion, COVID-19 restrictions were insignificant at 0.05 significant level or at 95 % confidence interval. Income level is significant in determining demand for healthcare services by rural households in Mt Darwin. The test was at 95% confidence interval and with -81,390 suggesting the factors considered to the model well hence variable used in the model are jointly significant in explaining demand health care by rural households in Mt Darwin.

Table 4.5 Omnibus Test[a]

Likelihood Ratio Chi-Square	Df	Sig.
7.173	6	.305

Source: SPSS

The omnibus test is a likelihood-ratio chi-square test of current model versus the null that is the intercept model. The significance of less than 0.05 indicates that the current model outperforms the null model. In this case the null model has outperforms the current model because the significance level is 0.305, which is more than 0.05. Therefore, chi-square is not significant.

Table 4.6 Goodness of Fit[a]

	Value	Df	Value/df
Deviance	160.006	133	1.203
Scaled Deviance	160.006	133	
Pearson Chi-Square	143.089	133	1.076
Scaled Pearson Chi-Square	143.089	133	
Log Likelihood[b]	-81.390		
Akaike's Information Criterion (AIC)	176.779		
Finite Sample Corrected AIC (AICC)	177.579		
Bayesian Information Criterion (BIC)	197.760		
Consistent AIC (CAIC)	204.760		

Source: SPSS

As shown above the log likelihood is -81.390, Pearson Chi-square is 143.089 at 1.076 degrees of freedom. The Akaike Information Criterion was 176.779 and the Bayesian Information Criterion is 197.760

As shown below, in parameter estimates, income level which is at 0.028 is more significant to demand for healthcare services. If we set significant level at 0.05 then we would reject the null hypothesis and conclude that regression coefficients for income level and distances to nearest health facility are significant at different level in determining demand for healthcare service by rural households. The other variable are insignificance as their coefficient are more than a threshold of 0.05 significance level and some are associated with negative signs.

Table 4.7 Results from binary probit regression analysis

Parameter Estimates

Variable	Coefficient	Standard Error	Confidence Interval	Wald Chi-square	Sig level
Gender	-0.472	0.2605	0.39	3.277	0.70
Age	-0.102	0.0847	0.60	1.552	0.213
Income level	0.028	0.0871	0.199	0.104	0.747
Religion	0.223	0.1626	0.541	1.878	0.171
COVID-19 restrictions	-0.69	0.2262	0.374	0.93	0.760
Distance	-0.47	0.0856	0.121	0.302	0.583

Source: SPSS

4.6 Discussion of Results

Table 4.7 discusses results from the probit regression analysis. From the findings, the variable for age was statistically insignificant at 0.05 significant level or 95% confidence interval. The study revealed that an additional year decreases the probability of utilising healthcare service by -0.102 holding other factors constant. This means that as one grows older, the likelihood of seeking healthcare services decrease. The aged are unable to walk to longer distance when seeking healthcare service. Therefore, they opt for self-treatment, their perceptions on healthcare facilities are reduced as they grow old. The findings of the study on the variable age are similar to that of Mawuli G 2011 in Ghana, who used a multinomial logit model in estimation of demand for healthcare services. Lawson, (2004) also believed that when household head is very old, chances of seeking healthcare will be low hence negatively affecting demand for healthcare service.

The other variable is gender, it has a coefficient of -0.472. The study has found that the differences in gender is not statistically significant to the demand for healthcare services by rural households. The differences in gender are said to have no effect on the

probability of seeking healthcare services, as men can consume or seek healthcare equal to women holding other things constant. The findings from the study were similar to that of Anderson (1995) who assumed gender to affect the demand for healthcare services in his predisposing factors.

The other variable is the income level of rural households, it has a coefficient of 0.028 which is below the threshold of 0.05 significant level. Income level is more statistically significant to the demand for healthcare services. When one's income increases, his demand for healthcare services will also increase. Despite longer distances to healthcare facilities rural households increase their demand for healthcare services with an increase in their income level. The findings agree with that of Lawson (2004) and Fredrickx (1998), who postulated that income increases the likelihood of seeking healthcare treatment, and that there was a positive relationship between income and demand for healthcare services. The findings were also similar to theoretical literature review of Grossman, (1972) who observed the amount of healthcare demanded by individuals to rise proportionately to income. Studies by Acton, (1975) has also found demand to be positively related to income, whilst the studies by Gupta and Dasgupta, (2002) observed low income elasticities.

The study has revealed that the religion does not increase the demand for healthcare services. It is not one's religion that cause the probability for him to seek healthcare increases. In econometric estimation religion was found with coefficient of 0.223 which is above 0.05 significant level. Church have more belief in self-treatment and be cured by prayers from their prophets, hence religion does not cause one to demand more of healthcare services. The findings were similar to that by the MoHCW, (2010), which has seen a negative relationship between religion and demand for healthcare services. Anderson (1995), also postulated that religion has an effect on the demand for healthcare services.

The study has also revealed that coefficient for distance has a negative to demand for healthcare services, it is negatively associated to demand for healthcare services. Distance is insignificant in determining the demand for healthcare services. When distance increase people tend to demand healthcare too because there will be using their income for transportation to healthcare facility. However, a small number of people

attending health facility are far away from hospitals. Distance has a coefficient of -0.47. The findings were similar to the empirical findings of Mwabu el at (1993) were distance reduced the demand for healthcare services though it was insignificant. Christianson, (1976) suggested that distance from patient's home was negatively related to probability of seeking healthcare services in his gravity model, his results were similar to results obtained in the study. According to Acton (1975), distance matters to individuals when seeking healthcare services. He argued that the higher the distance from health facility the higher the time cost, information cost and transport cost thus making distance negatively related to demand for healthcare services this was similar to the results from the researcher's findings.

The other coefficient is COVID-19 restrictions, it is said to statistically insignificant to demand for healthcare service, even when COVID-19 restriction are there people still demand healthcare services and also for those who opt for self- treatment will not demand healthcare services even when there are COVID-19 restrictions. COVID-19 does not cause change in demand for healthcare services, there is no association between COVID-19 and demand for healthcare services. COVID-19 has a coefficient of -0.69 as shown by table 5.1

4.7 Conclusion

The econometric model has found income to be only factor which is significant to demand for healthcare service and other factors or variables such as distance, age, gender, COVID-19 restrictions and religion were observed as insignificant to demand for healthcare. There is positive effect and statistical significance of the household income on the probability of seeking health care services, Positive sign on the probability of seeking healthcare indicates that, people face direct and indirect cost when accessing healthcare services. However, the econometric estimation by probit regression, did not take into account the marginal effect of changes in explanatory variables on the dependent variable. This made other variables such as distance, religion, gender, age to be statistically insignificant to demand for healthcare services.

CHAPTER V

Summary, Conclusion and Policy Recommendations

5.0 Introduction

This chapter has presented summary, conclusions and policy implications and recommendations derived from the findings. The limitations of the study an area for further research will be discussed in the last section of the chapter.

5.1 Summary of main findings

The study has analysed demand for health care services by rural households during and before COVID-19 pandemic period using data from Mt Darwin rural in rural Zimbabwe. The study was stimulated by the desire to establish on what influence demand for healthcare services by rural households taking into account socio-economic factors and institutional factors. Despite efforts by government such as hospitals rehabilitation programs, utilisation of health care services by rural households has remained low. The study has used cross-sectional data which was collected from households taking into account their illness. A self-administered questionnaire was used in the process of collecting data.

A binary dependent variable was used in the study, the values of one was assigned to household member if he or she utilises healthcare services from hospitals or clinics and zero if he or she resort does not utilises healthcare services from hospitals and clinics when ill. The study has used a set of social, demographic, economic and institutional variables as independent variables. Such as age, gender, distance to nearest healthcare facility, income, religion and COVID-19 restrictions. A binary probit model was then used to analyse the demand for health care services by rural households. The regression results revealed that household income was statistically significant to demand for healthcare services.

5.2 Conclusion

Provision of healthcare services is a major component on improving health status of rural households and it also improves the level of economic development in rural areas. During the research, primary data was collected from rural households in Mt Darwin. It tried to analyse the medical treatment seeking behaviour or demand for healthcare services at times of illness through descriptive and empirical analyses. The descriptive statistics showed that from a sample of 148 rural households addressed in the study 73% reported to have utilised healthcare services and 27 % did not utilise healthcare services from hospitals or clinics.

Long distance to nearest health facility and low income were found to be the main reason for not seeking treatment or utilising healthcare services. Income of households was found to have a positive effect on demand for healthcare services by rural households. Females were found to experience illness more as compared to males and those with high income per household had a higher tendency of utilising healthcare services whenever they are ill. However, some factors do not have direct effect on decisions patients take when seeking medical treatment. It can thus be concluded that income has significant role in medical treatment decisions or demand for healthcare services.

Those with low income are unlikely to seek or utilise medical service when ill. Distance, COVID-19 restrictions and religion were found to have negative effect on demand for healthcare services or utilisation of healthcare service. The conclusion that can be drawn from the study is that, the longer the distance to healthcare centre, the higher the opportunity cost to family members in transporting the patient to healthcare centre, so the lesser it would on likelihood of seeking or utilising.

5.3 Policy Implications and Recommendations

Several policy perceptions came up from the empirical findings of this study. From the results of the study, distance was one of the factors that reduced the probability of seeking health care services. Therefore, the policy implication that came up from this findings, was to enforce or implement policies that aim at reducing impact of distance to the nearest health care facility, these policies are likely to increase the probability of seeking health care services. Policy makers should implement policy interventions which aims at shortening distance to healthcare facility that rural people travel when accessing health care services. These policy interventions include increasing the number of health care facilities in the rural areas through infrastructure development

Introduction of community base health centres must also be taken into account when implementing infrastructure development policies. Policies that aims at increasing income must also be taken into consideration such as employment policies, so as to increase income of households hence causing rural households to demand more of healthcare service. Also income generating projects must also be taken into account such as rearing of chickens, pfumbvudza concept in agriculture and command agriculture have to be undertaken so as to raise income of rural households. Policies that aims at helping the aged and the disabled people must also be implement such as free medical care to them. On the COVID-19 restrictions government has to allow rural households to travel using permits that will be given by Chiefs or Village headman.

5.4 Areas for further Research

The study has considered the factors that determines the demand for healthcare services by rural households in Mt Darwin. Using cross-sectional data most socio-demographic characteristics were considered in the study. However, other factors such as marital status, employment or occupation of household head, were not considered among others. Therefore there is need for including these factors in future studies. There is also need for considering comparative study on what affect the demand for healthcare services by rural households in Mt Darwin using the datasets overtime relating with several independent factors as well as doing the studies across all towns and rural areas in Zimbabwe.

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Appendix

Appendix (a) Descriptive Statistics

Demographic characteristics of respondents

Variable	Mean	Standard Deviation
Age	3.53	1.332
Households' Income	3.63	1.263
Distance to nearest heath facility	2.35	1.324
	Frequencies	**Percentage**
Gender		
Male	46	31.08 %
Female	102	68.91 %
Religion	**Frequencies**	**Percentage**
Traditional	51	34.46 %
Christian	71	47.97 %
Other religion	26	17.57 %
COVID-19 restrictions	**Frequencies**	**Percentage**
Not Affected by COVID-19 restrictions	64	43.24 %
Affected by COVID-19 Restrictions	84	57.76 %

Appendix (b) Correlation matrix

Table 4.3 Correlations matrix

		Demand for healthcare services	Gender	Age	Income level	Religion	Effect of COVID-19	Distance to nearest health facility (km)
Pearson Correlation	Demand for healthcare services	1.000	-.146	-.102	.026	.114	-.009	-.022
	Gender(Sex)	-.146	1.000	.014	.068	-.037	-.026	-.120
	Age	-.102	.014	1.000	-.008	.001	-.054	.006
	Income level	.026	.068	-.008	1.000	.074	.013	.030
	Religion	.114	-.037	.001	.074	1.000	-.016	.042

	COVID-19 restrictions	**-.009**	**-.026**	**-.054**	**.013**	**-.016**	**1.000**	**-.129**
	Distance to near health	**-.022**	**-.120**	**.006**	**.030**	**.042**	**-.129**	**1.000**

Appendix (c) Multicollinearity Test

Variance Inflation Factor

Model		Unstandardized Coefficients		**Collinearity Statistics**	
		B	Std. Error	Tolerance	**VIF**
1	(Constant)	.835	.199		
	Gender(Sex)	-.143	.080	.977	**1.024**
	Age	-.034	.028	.997	**1.003**
	Income level	.010	.029	.988	**1.013**
	Religion	.068	.052	.991	**1.009**
	Effect of COVID-19	-.021	.075	.978	**1.022**
	Distance to nearest health facility (km)	-.016	.028	.965	**1.036**

Appendix (d) Results from binary probit regression analysis

Parameter Estimates

Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test		
			Lower	Upper	Wald Chi-Square	Df	Sig.
(Intercept)	.979	.5937	-.185	2.143	2.719	1	.099
GenderSex	-.472	.2605	-.982	.039	3.277	1	.070
Age	-.105	.0847	-.271	.060	1.552	1	.213
Incomelevel	.028	.0871	-.143	.199	.104	1	.747
Religion	.223	.1626	-.096	.541	1.878	1	.171
COVID19 restrictions	-.069	.2262	-.513	.374	.093	1	.760
Distancetonearesthealthfacilitykm	-.047	.0856	-.215	.121	.302	1	.583
(Scale)	1[a]						

Household Questionnaire

BINDURA UNIVERSITY OF SCIENCE EDUCATION

DEPARTMENT OF ECONOMICS

My name is Tinotenda Kachiko, student number B1749668. I am a final year Bachelor of Science Honours Degree in student at Bindura University of Science Education. I am carrying out a research on the topic entitled **"Demand for healthcare services by rural households during and before COVID-19 pandemic period in Mt Darwin District".** The purpose of this study is therefore to collect data concerning the utilisation of healthcare services. This research is for academic purposes and your responses will be kept strictly confidential. Your cooperation will be highly appreciated.

Questionnaire No _____
Name of the interviewer_____ Date of interview_____
Ward _____Household number _____ village _____

Respondent:

SECTION A: HOUSEHOLDS CHARACTERISTICS

1. Sex of household head (Gender) [1] Female [0] Male
2. Age of household head _____ Years
3. How many household members are currently staying here? _____
4. What is the highest level of education attained by the head of the household?
[1] Primary education or no education at all [0] Secondary education or higher education
5. What is the household's monthly income _____ US $
6. What is religion of the household head? [1] Christians _____ [0] Other Specify_____

SECTION B: ILLNESS AND SEEKING OF HEALTH CARE SERVICES

7. Has any member of the household reported ill within the last three months? [1]YES [0] NO
8. If YES to Question 7, was treatment required from a health care facility? [1] YES [0] NO
9. If YES to Question 7, was the member bedridden before being attended to? [1]YES [0] NO
10. If YES to Question 7, does the member have an insurance cover? [1] YES [0] NO
11. Has any household member been affected by COVID-19 restrictions or measures when seeking healthcare services [1] YES [0] NO.

SECTION C: INSTITUTIONAL FACTORS

12. Approximately, what is the distance to your nearest health facility? _____ Km
13. What is the price of healthcare services paid at your nearest health facility? _____US$
14. Do you have access to village health workers in your community? [1] YES [0] NO
15. From previous visits, were drugs available at the nearest health care facility? 1 = YES, 0 = NO

Thank you very much for taking your time to respond to the questions