FACTORS INFLUENCING HEALTH INSURANCE UPTAKE AMONG PEOPLE LIVING WITH DISABILITIES IN KENYA

BY

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DECLARATION

This research project is my original work and has not been submitted for a degree at any other university for examination reasons.

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This research project has been submitted for examination with our approval as the university supervisors.

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DEDICATION

This work is dedicated to my mother, Mrs. Evan Tonkei, my children, Myra and Mali, my siblings, family and friends for their emotional and financial support during my time in school.

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ABBREVIATIONS

CBHI   Community-Based Health Insurance

HBM   Health Belief Model

HISP   Health Insurance Subsidy Program

KIPPRA   Kenya Institute for Public Policy Research and Analysis

KHIBS   Kenya Integrated Household Budget Survey

KNBS   Kenya National Bureau of Statistics

LMICs   Low- and middle-income countries

MHIs   Micro-Health Insurance Schemes

NHIF   National Health Insurance Fund

OOP   Out Pocket Payment

PWD   People With Disability

SDGs   Sustainable Development Goals

UHC   Universal Health Coverage

UNDESA   United Nations Department of Economic and Social Affairs

UNPRPD   United Nations Convention on the Rights of Persons with Disabilities

USA   United States of America

WHO   World Health Organization

ABSTRACT

This study examined the factors affecting health insurance uptake among people living with disability in Kenya. Using the KHIBS 2015/2016 dataset a binary probit model is estimated. The findings show that being a female-headed household, employed (formal & self), education attainment, distance to nearest health facility, significantly influenced the uptake health insurance among PWDs in Kenya. Based on these findings, to increase the uptake of health insurance among households with PWDs in Kenya, national and county governments should increase support to encourage households with PWDs to pursue education, such as offer scholarships, provide personal equipment's like wheelchairs, hearing aids and special reading materials. The government can also ensure access to UHC through strengthening devolution of health care services and subscription to National health insurance fund to every household. Larger household size is linked to a lower uptake of health insurance among PWDs, the government should the encourage and educate households with PWDs on the benefits of family planning through the use of contraception.

<center>**CHAPTER ONE**</center>

<center>**INTRODUCTION**</center>

1.1 Background of Study

Access to healthcare services is a fundamental human right which has been reinforced by the call to Universal Health Coverage by both WHO and other key international bodies associated with health care issues. For instance, occasioned by the negative consequences of direct out-of-pocket expenditures, WHO is encouraging countries to move toward UHC. Entrenched inside the SDGs, UHC is a healthcare system aimed at ensuring that by 2030, all communities and individuals in a country will access the necessary medical treatment without having to worry about the cost of such care (WHO, 2021). Inspired by model countries with UHC, governments are increasingly interested in implementing sustainable policies for health insurance to shield poor families from catastrophic healthcare expenditures and increase access to care (Behera & Dash, 2020). Research from a variety of LMICs supports this, showing that reforms to the health sector, such as proper insurance or prepayment systems, provide financial protection, especially for disadvantaged households (Kuper et al., 2018) however, LMICs have legislated UHC finance options that cover their whole populations. These LMICs have 84% of the world's population and 90% of its disease burden (WHO, 2021). In the majority of these LMICs, direct OOP constitute exclusive financing source of healthcare expenditures (Behera & Dash, 2020). However, OOP is inadequate and unsustainable financing mechanism, as it usually results in catastrophic financial burdens particularly on poor households, compared to richer households, leading to impoverishment (Pozo-Rubio *et al.,* 2019). As such, many LMIC households lack proper financial security, as they risk financial ruin and impoverishment because of OOP health care costs (Kabia et al., 2018).

At a global level, around one hundred and fifty million people worldwide are reportedly in monetary distress every year as due to spending upwards of 40 percent of their earnings on health care costs. Up to 10% of the family income is generally spent on medical expenses by low-income families, which has an impact on other household expenses. Over 90% of these occur in LMICs (WHO, 2021). Further, in comparison to households without members that are disabled, households with persons living with disabilities face higher catastrophic health care expenses and

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burdens and are reported to spend 1.2 to 1.4 times more out-of-pocket medical expenses (Guets & Behera, 2022). A plurality of households with disabled individuals (44.3 percent) is also reported to expend over 10% of their monthly income on healthcare.

Poverty is also found to be particularly high in families with a disabled adult, at approximately 33%, and 40% if a family has at least one child who has a disability, which is double the rate of poverty in families without a disability (UNPRPD, 2021). Disabled people are also more likely to experience hurdles to a paid job than non-disabled people. Coupled with discriminatory health insurance policies based on pre-existing conditions, this increases their likelihood of catastrophic OOP payment for medical care and subsequent impoverishment relative to households without people with disabilities (WHO, 2021).

As a demonstration of its dedication to achieving UHC, Kenya's government has, since 2013, implemented a number of health policy reforms to increase financial protection vulnerable households. These include the formulation of a free maternity policy (Kabia *et al.,* 2019); abolishing fees at public primary healthcare centers as well as establishment of HISP for the impoverished, in which Kenya's vulnerable households get help with their NHIF premiums from the government. This gives them access to public and low-cost private outpatient and inpatient treatment (Nguru, 2018). In addition to the government-subsidized national health insurance scheme, several other insurance schemes are available in the Kenyan health insurance context including MHIs, CBHI, and employer-based medical schemes (Kabia *et al.,* 2018). Even though several medical insurance plans are extant in Kenya, evidence indicates that uptake of health insurance is typically low at only 20% with a majority of the uncovered population being the poor (Barasa *et al.,* 2021). With an approximated 67% of people with disabilities in Kenya being impoverished (Kabare, 2018); coupled with informational and policy barriers likely to impede their uptake access to health insurance among the disabled (Kabia *et al.,* 2018), this study's objective was to examine the factors that influence uptake of health insurance among persons with disabilities in Kenya.

1.1.1 Concept of Health Insurance Uptake

One is protected from having to pay for medical expenses out of pocket by obtaining health insurance (Guets & Behera, 2022). The availability of low-cost and subsidized health insurance is critical for achieving UHC, a key goal outlined in the Sustainable Development Goals (Fenny et al., 2018). Health insurance is a way of putting money aside to cover the costs of healthcare in the case of an illness. Health shocks make it harder for a family to make money when the main people who bring in money can't work because they're sick and can't pay for their care (Guets & Behera, 2022) Health insurance lowers the cost of healthcare by mobilizing finances and spreading the risks of unforeseen medical events. Its appeal stems from risk-sharing between the healthy and the sick, as well as lower out-of-pocket costs (Kuper *et al.,* 2018).

Defined as using a health insurance policy and paying the charges levied by the insurance company, health insurance uptake is varied globally, with developed economic contexts reporting high levels compared LMDCs (McIntyre *et al.,* 2018). For instance, in the USA in 2019, 89.6% of disabled persons between 18 and 64 years had health insurance (Paul et al., 2020). Additionally in 2019, 10.4% of community members with disabilities aged 18 to 64 had no medical insurance in the United States, compared to 55.0% who had government health insurance and 46.1% who had private health insurance (Guets & Behera, 2022). In the United Kingdom, an average of 6% of the disabled have in addition to obligatory social security, a disability income insurance (Kunst, 2019).

In contrast, only 7% of people with significant disabilities in Sub-Saharan Africa access related disability benefits including insurance (Guets & Behera, 2022). Social security coverage in Sub-Saharan Africa is extremely restricted, mostly affecting formal economy workers and their dependents. In Senegal, Burkina Faso, Botswana, Lesotho, Swaziland, and Ghana, OPPs make about 45% of total medical costs (UNPRPD, 2021). Preliminary statistics show that slightly more than 10% of the workforce in Zambia and Ghana, and considerably more than 5% Senegal, pay into a pension system that provides disability, old age, and survivor payments (Alesane & Anang, 2018

It should be noted that 38% of Kenya's wealthiest have access to health insurance, compared to only 3% of the country's poor (Barasa et al., 2021). This means that, even though just 19 percent

of Kenyans have health insurance, only one in every twelve of these persons will come from the lowest quarter of the population. The majority of the growth in the number of persons with insurance between 2009 and 2014 happened in the formal economy, which is characterized by individuals and households who have a greater chance of succeeding in life (UNPRPD, 2021).

1.1.2 Concept of Disability

WHO (2018) defines disability as an umbrella term that encompasses participation constraints, activity limits, and impairments. Individuals with a health condition (for example, depression, down syndrome, and cerebral palsy) interact with personal and environmental circumstances to create disability (for example limited social support, negative attitudes, public buildings, and inaccessible transportation). 15% of the world's population (over 1 billion) has a disability. This category has 110-190 million adults with functional limitations. One in every 20 children under the age of 15 is estimated to have a severe or moderate handicap, totaling 93 million children. As populations age, the prevalence of disability will keep rising due to the worldwide rise in chronic medical problems (WHO, 2021).

Disability is a development priority, human rights issue, and worldwide public health challenge (UNDESA, 2021). Individuals with disabilities face several hurdles to health and associated services like rehabilitation during the course of their life, resulting in lower health outcomes compared to people without disabilities and making disability a worldwide public health concern (UNPRPD, 2021). As a human rights issue, children, adolescents, and adults with disabilities face stigmatization, inequities, and discrimination, as well as many violations of their rights, including their dignity, as a result of acts of aggression, prejudice, and abuse (WHO, 2018). Because of its increased prevalence in low-income countries and owing to disability and poverty perpetuating and reinforcing each another, disability is considered a development priority. Hazardous living, poor health care, Malnutrition, and travel and working situations all contribute to impairments in poverty (WHO, 2021).

Access to health care (including assistive technologies, therapy, and medical treatment), social services, employment, and education (including transportation and housing) is difficult for people with disabilities (UNPRPD, 2021). Poor plans, policies, and laws such as; lack of accessibility,

lack of service provision, prejudice and unfavorable attitudes, service delivery issues, insufficient funding, and absence of participation in making choices that affect their life are all impediments. These impediments contribute to the difficulties that people with disabilities face (UNDESA, 2021). Individuals with disabilities have poorer health than people without disabilities, as well as greater poverty rates, lower educational performance rates, employment, less independence, and restricted engagement, particularly in developing nations. In Kenya, there is a strong correlation between poverty and disability (KIPPRA, 2020), as approximately 67% of people with disabilities are impoverished. (Kabare, 2019).

1.1.3 Health Insurance Schemes in Kenya

Majority of Kenya's people with health insurance (88%) are covered by the NHIF (Munge et al., 2019). The remaining 9% have private medical insurance, which includes CBHIs (less than 1%), employer-based medical schemes (about 3%), and MHIs (9%). (Barasa et al., 2021). In the country, there are numerous types of microinsurance schemes: direct agent, partner-agent, and mutual model (community-based) (Kimball *et al.,* 2018). In the direct agent model, the insurer owns the full chain and sells directly to clients; but in the partner-agent model, the insurer hires another company to sell its products (Wang & Pielemeier, 2019). Through participatory processes, scheme members own and run the communal model (Munge et al., 2019).

CBHIs function within a small geographic area in the country (Mulupi et al., 2019), whereas MHIs operate nationally (Smith et al., 2018). CBHI members' access to services is typically limited to faith-based facilities and low-cost public within a given geographic area, whereas MHIs have a network all of the country (Tsofa et al., 2019). Unlike MHIs, which give risk-based premiums to members, CBHI schemes rely on members' decisions, which are based on minimal financial analysis if any. (Munge et al., 2019).

The government contributes 31% to the overall health budget, OOP contributions are 32% and donors fund 25% of health spending (MoH, 2015). About 29% of Kenyans have insurance, while the most current available statistics from 2016 indicate that only 20% of the population has medical coverage. This means that the rest and the majority of the citizens are completely dependent on the government for their health coverage. (Barasa et al., 2021) Furthermore, people who rely on

the government to fund their healthcare (i.e., the majority of Kenyans) have little to no ability to meet their medical costs. The majority of Kenyans are concerned about the cost of medical treatment; consequently, improving UHC is vital (Kabia et al., 2018).

1.1.4 A brief on People Living with Disabilities in Kenya

According to the 2019 census, 2.2 percent of Kenyans (0.9 million persons) have a disability (Development Initiatives, 2020). Further, the census reveals that of this 2.2% who are disabled, 1.9 percent are male while 2.5 percent are female. According to a breakdown of prevalence rates by domicile, people with disabilities account for 2.6 percent (0.7 million) in rural areas and 1.4 percent (0.2 million) in urban areas (Kenya National Bureau of Statistics (KNBS), 2019). Among these group of persons, mobility is the most commonly reported challenge, affecting 0.4 million Kenyans and accounting for 42 percent of people with impairments, according to an analysis of disability by domain. The remaining dimensions of disability — vision, hearing, cognition, self-care, and communication – are experienced by 36 percent to 12 percent of disabled people. Albinism is a disease that affects 0.02 percent of Kenya's population (KNBS, 2019).

Disability prevalence rates differ across counties, according to a subnational examination of the national disability rate of 2.2 percent. Central, eastern, and western Kenya exhibited the highest prevalence of impairment. Embu county has the greatest prevalence (4.4%), followed by Kisumu County (4%), Makueni county (4.1%), Homa Bay county (4.3%), and Siaya county (4.1%). (Development Initiatives, 2020). The counties in Kenya's northeastern region and Nairobi have the lowest disability prevalence rates. With 0.6 percent, Wajir has the lowest. According to (WHO, 2011) 15% of people worldwide are disabled. The prevalence rate reported in the 2019 Kenyan census, at 2.2 percent, was significantly lower than the global figure (KNBS, 2019).

1.2 Statement of the Problem

According to global data, OOP cost of medical care is extremely high in LMICs, a circumstance that not only impedes access to care but also frequently places a majority of poor households in catastrophic financial burdens that result in poverty (WHO, 2021). The situation is worse among persons living with disability in Kenya, whose poverty rates are at an average of 67%, have greater health needs, and are more susceptible to secondary health conditions compared to the general

population (Kabare, 2018). To curb the out-of-pocket healthcare spending and its impending financial impacts on poor households, the Kenyan government subsidized NHIF programs to provide proper healthcare to the poor in the country keeping up with the UHC obligation (Nguru, 2018). Despite several health insurance programs in the nation, just 20% of the population has health coverage with a majority of the uncovered population being the poor (Barasa et al., 2021). The studies of Cheruiyot (2020), Nguru (2018), Muiya (2017), and Ndung'u (2015) were county-specific (Narok, Embu, Nairobi, and Machakos, Muranga, respectively) and focused on people in the informal sector; similarly, the majority of these studies have concentrated on demographic and socioeconomic variables in the general population, leaving uptake among people with disabilities largely unexplored. The study included participants from all 47 counties in Kenya, as well as individuals from all sectors, with a particular emphasis on those with disabilities.

1.3 Objectives of the Study

1.3.1 General Objective

To examine the factors influencing health insurance uptake among people with disabilities in Kenya

1.3.2 Specific Objectives

i. To analyze determinants of health insurance uptake among people living with disability in Kenya.
ii. To outline the policy implication of the results.

1.4 Hypotheses of the Study

i. Age of household head does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya
ii. Gender of the household head does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya
iii. The level of education of the household head does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya

iv.   Marital status does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya

v.   Employment status of the household head does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya

vi.   Household size does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya

vii.   Distance to the nearest health facility does not have a significant effect on the uptake of health insurance among people living with disabilities in Kenya

1.5 Contribution of the Study

The findings of the research will be useful to policymakers, such as MoH and the insurance regulating body, health insurance providers, individuals with disabilities, and academics. The study's findings might assist policymakers in formulating health care policies tailored to specific needs of PWDs. Understanding obstacles to health insurance adoption might help policymakers design more successful health insurance schemes to attain UHC. Key health finance policymakers, such as the MoH, NHIF, and other health insurance providers, might utilize the data to establish the rates, collection methods, and healthcare benefits for both the existing fund and the newly proposed UHC program.

It is also expected that the study findings will be helpful to persons living with disabilities. By uncovering what factors deter health insurance uptake among people living with disabilities, the established barriers will be addressed through policy and practice recommendations for improved uptake and avoidance of catastrophic financial burdens. The study findings will fill an empirical gap in understanding the factors influencing uptake of health insurance among people with disabilities in Kenya. Health policy experts and researchers will also benefit from the study findings as a reference.

1.6 Scope of the Study

The study examined factors influencing health insurance uptake among people living with disabilities in Kenya. To narrow the scope, the study examined the effect of age, gender, level of education, marital status, household size, distance to the nearest health facility, and employment status on health insurance uptake among Kenyans with disabilities.

1.7 Organizational structure

Chapters two and three will follow this introductory chapter. In chapter two, both theory and empirical review supporting the investigation is presented. In chapter three, the methodology of the study, including the estimating model, data to be used, and estimation approach, is covered in detail.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This section presents the theories underpinnings, empirical review, and the conceptual model. The section identifies and investigates major hypotheses within the theoretical framework that are relevant to the variables influencing health insurance uptake among Kenyans with disabilities. The academic evidence evaluates earlier relevant research and the gaps that need the current inquiry, the conceptual model, on the other hand, shows in a diagram how the factors and the dependent variables are thought to be related.

2.2 Theoretical Review

The study is based on a variety of concepts applicable to the relationship between the determining factors and their effect on health insurance enrollment. It narrows down to three hypotheses about health insurance uptake among individuals with impairments in Kenya. The Rational Choice Theory, HBM, and the Theory of Adverse Selection are among them.

2.2.1 Rational Choice Theory

(Abel, 1991) analyzes and models social behavior. Individual decisions result in aggregate social behavior, according to the theory (Abel, 1991). Social behavior originates from individual decisions, according to rational choice theory. According to (Sen, 2004), this allows for the prediction of actual behavior. According to the concept, individuals choose the appropriate action based on their specific choices and the constrictions they experience (Abel, 1991). Most individuals accept societal standards even when they don't benefit from them, which contradicts rational choice theory (Lawrence & David, 2008). According to (McKinnon, 2013), rational choice theory doesn't explain context-dependent decisions. Jonge (2011) contends that uncertainty, imprecise knowledge, and time limits affect human rationality and decision-making. Green and Shapiro (1994) provide more empirical criticism, stating that findings this theory are insufficient. (Green and Shapiro, 1994) believe most of the relevant literature especially in political science was written using inadequate analytical tools and if these methods are improved many empirical

conclusions no longer hold. Despite its criticisms, the rational choice theory serves as the foundation of this study. The theory will be particularly used to demonstrate how the decision to take up health insurance among people living with disabilities is influenced by individual factors including their respective ages, highest levels of education, marital status, and employment status. It is expected that these factors influence health insurance uptake among people with disabilities in the country, either through interaction with each other or in isolation.

2.2.2 Health Belief Model

This study relied on HBM, which is a psychosocial approach used to predict preventive health behaviors and develop interventions. Rosenstock (1966) presented it first, and Becker (1974) and Taylor et al. (2006) expanded it. Dimensions of this theory are Perceived advantages, perceived susceptibility, perceived barriers, and perceived severity (1974, Becker). Individuals' feelings of personal vulnerabilities to a health problem differ greatly in the first dimension, perceived susceptibility. Another factor is perceived severity, which incorporates assessments of both medical and possibly societal implications (examples include disability, death, and pain) (examples include, the influence of the social relations, work conditions, and family life).

The third component, perceived advantages, states that a person who is sufficiently threatened is likely to embrace the advised health activity if it is deemed practical and effective (Glanz et al., 2008). The decision to pursue a certain course of action is thought to be influenced by one's thoughts about the efficacy of the various options for minimizing the illness danger (Rosenstock, 1974). In this study, the fourth dimension, perceived barriers, is relevant. The potential negative consequences of a health action can be a deterrent to engaging in the suggested behavior. An individual is supposed to perform a cost-benefit analysis in which they assess the action's efficacy against beliefs that it will be costly, harmful, time-consuming, inconvenient, and unpleasant (Janz & Becker, 1974).

HBM is mostly criticized for being "narrow in scope" which means that it ignores social and cultural issues, as well as empathy (Taylor *et al.,* 2006). Despite its criticism, HBM is relevant in this study as it will be used to determine how individual factors among people with disabilities determine their perceived susceptibility to health complications based on their disabilities, judgement of the degree of their disability and the corresponding advantages of acquiring health

insurance in case of an emergency and the perceived barriers hindering their uptake of health insurance, which may range from policy and information to individual demographic factors. This will in turn reveal how individual factors among people with disabilities influence their uptake of health insurance, based on their varied perceptions.

2.2.3 The Theory of Adverse Selection

Introduced by (Akerlof, 1978) it depicts buyer-seller knowledge imbalance. In insurance, a party with greater material information exploits this disparity (Pauly, 2006). People who have pre-existing diseases or are at high risk are inclined towards purchasing a medical insurance in order to avoid OOP medical expenses (Wagstaff, 2010). In these situations, the buyer is the one with better knowledge (concerning their health). Insurers, on the other hand, are more likely to provide incentives and prefer low-risk individuals. The insurer may also fight adverse selection by reducing exposure to large claims by persons with disability by limiting coverage or raising premiums (Courbage & De Coulon, 2004).

The main criticism of this theory is four-fold. First, according to (Finkelstein and Poterba, 2004) As difficulty in the market process of coordination, the alleged unbalanced knowledge between seller and buyer. Cutler and Zeckhauser (1998) add that the conflation of various ideas of probability, such as class or case probabilities, pure subjective opinions about the occurrence of an event, or relative betting market pricing. Viscusi and Hersch (2001) further observe the presumption that players (sellers and purchasers) are unable to solve their problems on their own. Lastly, Braido *et al.* (2011) aver that economists' pretense that compulsory insurance will be able to rectify these so-called market failures without introducing new adverse selection problems that are worse than the ones they are trying to solve.

The theory of Adverse Selection is relevant in the present study as it will be utilized to demonstrate how people with disabilities leverage their knowledge of their susceptibility to health complications based on their disabilities, to take up health insurance. The theory will also be utilized to examine how insurers formulate policies aimed at people with disabilities based on their pre-existing conditions, and how these acts as a hindrance for people with disabilities to accessing and taking up health insurance.

2.3 Empirical Review

Recent empirical works on health insurance uptake have focused on household and individual characteristics as well as social-capital–related factors. For instance, in the study to determine the impact of socio-demographic characteristics of the health insurance uptake among residents of Anambra State in Nigeria, (Iyalomhe *et al.*, 2021) used a cross sectional data and simple descriptive statistics to show that the insurance uptake was highest (approximately 74%) among the beneficiaries aged between 18 and 50 years. Above 50 years old, the insurance uptake declined spontaneously. This study was silent on persons with disability which the current study will focus on. Alesane and Anang (2018) conducted a similar study in Ghana using a binary logit model to analyze the impact of age and gender on uptake of health insurance among rural poor populations. They found that younger potential beneficiaries had a greater adoption rate than older beneficiaries. However, it was shown that younger women had a lower adoption rate than their male counterparts, and elderly women have a greater adoption rate than older males. Despite the fact that this study focused solely on demographic variables, it runs the risk of endogeneity due to the absence of key variables in the model that have been demonstrated to have influence on the adoption of a medical insurance. This research will address the problem by including more variables that have been found to be significant in the general patients and add to the frontier of knowledge extending them to persons living with disability.

Chuma and Maina (2012), on the uptake of health cover in Kenya study, used a multilevel logistic regression analysis method which indicated employment has a well-founded signal of socioeconomic levels. The data showed that occupation positively affected the attainment of health insurance. There was a notable increase in inclusion across individuals with average financial status and were of great chance to get cover through the social health cover in comparison to the informal sector. Employment also distributes as an origin of entitlement, especially if it puts persons in control of revenue. Occupation is a crucial reason for the rate of healthcare insurance uptake and utilization for family unit members. Just like the study by Alesane and Anang (2018 this study was narrowed to fewer relevant variable leaving out key demographic, socio-economic and community factors influencing health insurance uptake, which the current study seeks to address.

(Ndung'u, 2015) found that increasing age positively correlated with purchase of insurance coverage; participants who were above age 46 had insurance cover, followed by those aged between 26 and 35 years, with a minority of the insured aged between 18 and 25 years in Muranga county. Although this study extensively investigated the demographic factors influencing health insurance uptake, its narrow scope of assuming homogenous population across counties in Kenya renders the study's generalization of result impossible. The current study addresses this gap by utilizing a national representative data.

Similarly, (Khalid and Serieux, 2018) found that older individuals are purchase medical insurance than younger persons as a result of their investigation into the factors of informal members' health insurance uptake and impact of voluntary medical insurance adoption on the frequency with which medical care resources are utilized among Ghana residents. Similar to a study conducted on two Ghanaian areas on discrepancies in the health insurance determinants and enrollment among those of working age, (Duku, 2018) discovered that as individuals age, their health insurance coverage grows. In Kenya, however, (Muiya, 2017) discovered a significant but modest relationship between age and medical cover enrollment among those employed in the informal economy in Machakos and Nairobi. These studies were focused on informal sector workers, and findings may not apply to people living with disabilities in Kenya. To address this gap the present study will include all sectors and focus on people living with disabilities.

Kiplagat, Muriithi and Kioko (2013) studied urban centers within Nairobi and, using the multinomial logit model, discovered that cooperation in general medical coverage among the inhabitants was that formal sector is an outstanding reason of investment into a social insurance cover. The poor were additionally seen as more opposed to taking an interest in medical coverage to subsidize the program. This indicated that the informal sector negatively affects the uptake of social health coverage and the distinctions between the informal and formal sectors of the population in health insurance uptake. There was differential cooperation between the traditional and casual segments, which positively increased the formal sector's enrollment into the social, medical coverage in Kenya. Just like the previous studies that assumed homogeneity by generalizing findings from one urban center, this study risk biasness as health insurance uptake

may differ significantly from one urban center to another and urban from rural. To address this gap, our study utilizes a national representative data from the KIHBS.

Perry and Rosen (2001) used the OLS model to compare insurance coverage of the jobless and wage workers in the U.S. They found that the unemployed were far less likely to have insurance than wage employees. Only a tiny fraction of jobless were covered, compared to 74.1% of salaried workers, demonstrating that work enhanced health insurance registration possibilities. Another study using probit regression model also in the United State found out low registration of self-employed individual in comparison to the employed in a health insurance. Minority of the group covered by insurance cover where self-employed in comparison to 74.1 percent who were earning wages. The children of those in self-employment were also not likely to have health insurance cover.

Karigia et al. (2005) on factors key to health cover uptake amongst the females of South Africa used a logistic regression model, which showed that marriage had positively increased the probability of health insurance enrollment. It had been discovered that married persons had a more significant possibility of getting social insurance cover compared to their unmarried equivalents Jackson Maina et al; (2016), using multivariate analysis on study to determine the uptake as well as awareness of the health cover for motherly caregiving in the remote parts of rural Kenya found out an important relation between marital status and insurance uptake, being married could struggle towards providing a universal care. This study was silent on persons with disability which the current study will focus on.

In Turkey, Rifat et al. (2013) applied a multiple logistic regression model and found health changes program and education levels quickly increased health insurance coverage and entry to medical 33 services for the population, particularly the poverty-stricken population teams towards their goal to realize UHC.

Doris S. Phillip (2018) used qualitative and quantitative analysis to study health insurance uptake in Kenya. She found that education had a statistical impact. A postsecondary education increased the probability of having a health cover by 4.7% when compared to only having a primary education. These findings further established that level of education was a vital aspect in the ownership of health insurance. Taking up health insurance goes up as the education level goes up.

Education creates awareness and enlightens people on serious matters comparable to health. This prompt the learned people to take health cover as they are well versed on the significance of good health.

Jackson Michuki Maina1, &, Peter Kithuke, Samuel Tororei (2016), using multivariable analysis on uptake and perception of health cover for motherly caregiving in remote parts of the rural Kenya found that knowledge positively effects on insurance uptake with majority of the respondents 36 affirmed that health cover is of benefit. These conclusions agree with other past research work amongst the Kenyan societies affirm that it is vital to have some kind of health cover to help meet the medical costs mostly in cases of crises to lower the heavy costs on health. This may be because most respondents in the research had at least a secondary education, which increased their knowledge of modern issues like medical coverage. This region lacks insurance knowledge.

2.4 Overview of literature

We can summarize the key influencers of health insurance uptake from the preceding review as follows: employment status of the individual (Barasa, 2007; Chuma et al., 2012; Muriithi, Kioko, 2013), Marital status of the individual Karigia et al.; (2005), educational status (Rifat et al., 2013 Mulenga et al., 2016) and Gender (Ndungú 2015). However the uptake among persons with disabilities was not examined in this studies, which were mostly focused on people from the informal sector, conducted on specific counties, demographic and socioeconomic characteristics among the general population. The current study will involve participants from all sectors and all 47 counties in Kenya, with a focus on people with disabilities.
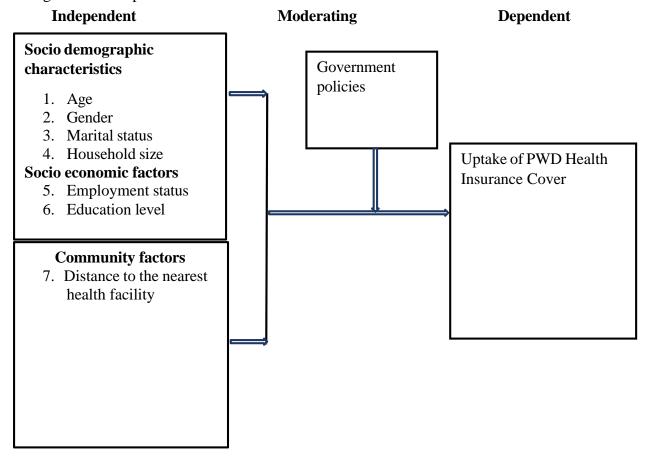
CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

These comprises conceptual model, theoretical framework, model specification, the definition and the study variables measurement, relevant diagnostical tests relating the model utilized in the research and the data sources.

3.2 Conceptual Framework

The study utilized a conceptual model from the literature review, as indicated in Figure 1. Independent variables include the household head's demographics, socio-economic factors and communal characteristics. Health Insurance enrollment is the dependent variable (NHIF and Private)

Figure 1: Conceptual framework

Independent	Moderating	Dependent

Socio demographic characteristics

1. Age
2. Gender
3. Marital status
4. Household size

Socio economic factors
5. Employment status
6. Education level

Government policies

Uptake of PWD Health Insurance Cover

Community factors
7. Distance to the nearest health facility

3.3 Theoretical Framework

According to rational choice theory, social behavior develops from the actions which individuals take. Moreover, the theory asserts that, what influences individuals' decision making is their behavior. Based on this notion, factors that influences decision making can be thought of as their preferences, the utility they derive and the constraints they face. To derive the link between the study variables and the theory, let assume that the obtained utility after consuming a health cover, is the main drive for subscribing in health insurance cover for people living with disability. Predictably, rational individuals are never expected to show tangency with health risk and therefore are considered to be risk averse. For this reason, one is probably expected to subscribe to a health insurance cover at least to generate invulnerability counter to any financial risk which is related to the unseen future medical costs.Following the rational decision theory, Individuals choose the proper action based on their desires and the restrictions they confront. According to this idea, it can be thought of that individual who subscribes in a health insurance, are maximizing the utility they derive after using a medical cover, subject to some social and demographical constraints which can be modeled as follows:

Maximize $U = F(x_1, x_2)$

   Subject to

$y = p_1 x_1 + p_2 x_2$

Where, P_1, P_2, X_1 and X_2 represents the cost that one incurs in subscribing to an insurance cover, the price of any other good, the factors that necessitates the payment of insurance cover and any other goods respectively. Forming the Langragian to solve the above problem, we have:

$L = F(x_1, x_2) - \lambda (p_1 x_1 + p_2 x_2 - y)$ .... (3.1)

Taking F.O.C with respect to x_1, x_2 and λ we shall have the following equations

$\frac{dF(x_1,x_2)}{dx_1} = \text{MU}x_1 - \lambda P_1 = 0$ …………. (3.1.1)

$\frac{dF(x_1,x_2)}{dx_2} = \text{MU}x_2 - \lambda P_2 = 0$ …………... (3.1.2)

$\frac{dF(x_1,x_2)}{d\lambda} = p_1 x_1 + p_2 x_2 - y = 0$ …………. (3.1.3)

divide equation 3.1.1 by equation 3.1.2 and substitution the values of x_1 into equation 3.1.3, we lead to the optimal values for X_1(factors that necessitates the payment of an insurance cover) and

X_2 (any other good) which are the Marshallian demand functions for health insurance uptake among the disabled people in a multiplicative form as follows:

$$x_1 = kp^{\beta_1}y^{\beta_2}e^{\varepsilon} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.2)}$$

Where k, p, β_1, β_2 and e represents the constant term, price, price elasticity of medical insurance uptake, income elasticity of medical insurance uptake and other factors respectively. Substituting e in equation (3.2) with a vector v containing the factors thought to influence health insurance uptake, we obtain a linear form of Equation (3.2) as follows:

$$lnx_1 = k + \beta_1 \ln p + \beta_2 \ln y + \beta_3 \ln v \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.3)}$$

Coefficient β_3 is paramount in the study as it contains the predicted effect of the factors assumed to influence health insurance uptake among PWDs in Kenya.

3.4 Model Specification

The parameters of interest listed in Equation (3.3) were estimated using a binary probit model. The premise behind this binary model is that the study's dependent variable is a dummy that assumes 1 if the individual has insurance and 0 otherwise. The study will use the following probit model:
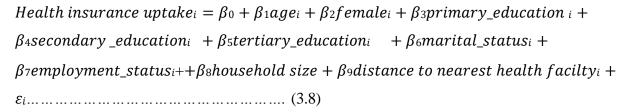
$$Y = X_i\beta + \varepsilon \text{ and } y_i = 1 \text{ if } Y > Z, y_i = 0 \text{ IF } Y \leq z \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.4)}$$

Y represents the dependent variable which is unobserved, X_i is represents a combination of predictor variables, β is estimated coefficients, ε is an error term.

The model is presented by translating $X\beta$ into a probability function under the premise that the error terms follow the standard normal distribution. The cumulative distribution function seen below depicts the probit model.

$$Pr\left(y = 1\right) = \emptyset\left(X\beta\right) \int_{-\infty}^{X\beta} \frac{1}{\sqrt{2\pi}}e^{(-z^2/2)dz} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.5)}$$

And the log likelihood function is:

$$Ln = (\frac{Y}{X},\beta) \prod_{t=1}^{N} Y \log \log\{\phi(X\beta)\} + (1-Y)\{1-\phi(X\beta)\}^i \ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.6)}$$

In order to better explain the model, we computed marginal effects to reveal changes in the likelihood of seeing an event, in this case the likelihood of Health care uptake. Estimating marginal effect as the mean of particular marginal effects. The form of the Multiple Regression Model is:

$$y_i = \alpha + \beta_iX_i + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3.7)}$$

Consequently, we specify the probit regression model putting into considerations the constituents of V in Equation (3.8) as follows:

$Health\ insurance\ uptake_i = \beta_0 + \beta_1 age_i + \beta_2 female_i + \beta_3 primary\_education_i +$

$\beta_4 secondary\_education_i + \beta_5 tertiary\_education_i + \beta_6 marital\_status_i +$

$\beta_7 employment\_status_i + + \beta_8 household\ size + \beta_9 distance\ to\ nearest\ health\ facilty_i +$

$\varepsilon_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots$ (3.8)

Where, $\beta_0, \beta_1, \beta_2, \beta_3, \beta_4 \dots\dots \beta_7$ Represent influence of the associated independent factors on health insurance uptake among individuals with disabilities in Kenya. These are the parameters of interest which are estimated in this study using the multiple regression model, therefore achieving the aims of the study.

3.5 Variable Definition and Measurements

Table 1: Variable Measurements

Variables	Definition and Measurements	Expected Sign
Dependent		
Dummy Variable for household with PWD Health Insurance Uptake	Takes value 1 if household is subscribed to health insurance, 0 otherwise	
Independent		
Gender dummy variable	dummy variable taking value 1 if household head is female, 0 otherwise	Positive or Negative
Age	Age of the household head in years.	Positive
Marital status dummy variable	dummy variable taking value 1 if household head is married, 0 otherwise	Positive
Primary Education dummy variable	dummy variable taking value 1 if household head has attained primary education, 0 otherwise	Positive or Negative
Secondary education dummy variable	dummy variable taking value 1 if household head has attained secondary education, 0 otherwise	Positive
Tertiary education dummy variable	dummy variable taking value 1 if household head has attained tertiary education, 0 otherwise	Positive
Formal Employment dummy variable	dummy variable taking value 1 if household head is formally employed, 0 otherwise	Positive
Self-employment dummy variable	dummy variable taking value 1 if household head is 1 self-employed, 0 otherwise	Positive or Negative
Household size	Number of members in a household	Positive or Negative
Distance to the nearest health facility	Distance to nearest health facility measured in kilometers	Positive or Negative

Source: Author computations (2022)

3.6 Diagnostic Tests

The analysis in this study was carried out using Stata version 14.0 at a significance level of 5%. Relevant statistical tests in terms of the binary probit regression model were done to avoid biased results. The study used The Variance Inflation Factor to determine whether the study variables were multicollinear, and Breusch Pagan test to determine whether the residuals had a constant variance.

3.7 Data Sources

The study utilized the KHIBS data for the period 2015/2016 by KNBS. This was a nationally representative sample covering households in all 47 counties in Kenya. KHIBS has data points for 21,733 households. Regarding people living with disabilities, the data set includes information on whether the household had at least one PWD, and it also includes information on whether the household had health insurance or not. Of the 21,733 households interviewed, 672 households had at least one member who was disabled, and 4560 households had health insurance. Further details regarding household demographics, including age, marital status, and gender, as well as socioeconomic data, including the household head's education level and employment status, are provided in the KHIBS data set.

CHAPTER FOUR:

DATA ANALYSIS, FINDINGS AND DISCUSSION

4.0 Introduction

The findings of the study are presented in this section. It begins with descriptive statistics, regression analysis followed by the results.

4.1 Descriptive statistics

The descriptive analysis of the variables is presented.

Table 2: descriptive statistics

Variable	Observations	Mean	Std dev	Min	Max
Dummy variable for household with PWD Health insurance uptake	665	.80693	.39455	0	1
Age (years)	665	25.4630	6.8649	18	60
Female dummy	665	.54581	.51807	0	1
Primary education dummy	665	.52055	.50043	0	1
Secondary education dummy	665	.14041	.34801	0	1
Tertiary education dummy	665	.10274	.30414	0	1
Married dummy	665	.66818	.47122	0	1
Formal employment dummy	665	.23630	.42553	0	1
Self-employed dummy	665	.25339	.43528	0	1
Distance to the nearest Health center (Km)	596	12.0872	33.8150	0	300
Household size	475	2.64	2.83418	1	10

From Table 2, it can be inferred that insurance uptake among households with PWD in Kenya was roughly 80.75 percent with a large standard deviation of 39.45 percent, indicating that insurance uptake is heterogeneous among households with PWD in Kenya. This finding implies that health insurance uptake amongst households with PWDs is still far from full coverage since about 20% of the PWD are not subscribed to any insurance cover.

The respondents' average age was approximately 25 years, with an SD of 6.86 years. The youngest and oldest respondent was 18 and 60 years respectively. Further, approximately 54.58% of the household head were female while 49.82% were male. This finding suggests that, there are more female headed households among households with disabled individuals in Kenya relative to male ones.

Further, the result reveals that about 10.3% of PWD in the survey had attained a tertiary level education while about 52% had completed primary level. 14% had attained a secondary level of education. About 6 out of every ten (or 67%) of the household heads were married while 33% were not married with a high standard deviation of 47.1 Similarly, about 23.6% of the survey's household heads were formally employed in either the public or private sectors, and 25.3% were self-employed.

The findings also revealed that the average household size was 2.64 (or 3 individuals), with an SD of 2.83. The smallest house hold size was found to have 1 person while the largest household size had 10 people. The research showed that the average distance to the closest healthcare center was around 12.1 kilometers, with a standard deviation of 33.8 kilometers. This suggests that some healthcare facilities were located far from the homes of individuals with disabilities. Similarly, the closest health care facility was found to be 0 km away, and the farthest one was 300 km away.

4.2 Diagnostic tests

4.2.1 Multicollinearity test

VIF was calculated to determine multicollinearity of variables in the data set. This is important because the VIF reveals if an explanatory variable has a strong linear association with the model's other regressors. According to (Hair, Black, Babin, & Anderson, 2019), if VIF is less than 10, collinearity is insignificant and does not pose a problem in linear regression model. Table 4 illustrates that multicollinearity was not a major issue in our data set because all of the VIF was less than 10.

Table 3: The VIF Test

variable	VIF	1/VIF
Employment status	1.39	0.721624
Educational Level	1.36	0.736483
Marital status	1.20	0.831933
Gender	1.16	0.861424
Household size	1.12	0.895408
Distance to nearest health facility	1.08	0.925869
Household age	1.02	0.979414

4.2.2 Heteroskedasticity test

(Breusch & Pagan, 1979) state that heteroscedasticity is an assumption in linear regression analysis (such as the binary probit used in this work) in which the residuals at each level of the explanatory variables exhibit a systematic variation in the range of measured values. Its existence renders the predicted coefficients biased and thus unreliable. To test for heteroskedasticity, the study employed the Breusch-Pagan test. Figure 2 demonstrates that heteroskedasticity was a great concern in our data set; hence, robust standard errors were utilized in the regression.

Figure 2: The Breusch-Pagan test

Breusch-Pagan test

        Ho: Constant variance

        Variables: fitted values of H_I_uptake

        $chi2(1)$ = 442.65

        Prob > chi2 = 0.0000

4.3 Regression analysis

Table 4: Probit Model estimation results

Variables	Probit model	
	Coefficients	Marginal effects
Female dummy	0.507***	0.10170***
	(0.108)	(0.02223)
Self-employed dummy	0.719***	0.13822***
	(0.227)	(0.04415)
Formal employment dummy	0.248**	0.04769**
	(0.120)	(0.02323)
Tertiary education dummy	0.444**	0.08525 **
	(0.213)	(0.04019)
Secondary Education dummy	0.767***	0.14739 ***
	(0.170)	(0.03243)
Primary education Dummy	0.781***	0.150***
	(0.141)	(0.02551)
Married dummy	-0.186	-0.03673
	(0.116)	(0.02332)
Household head's age	0.060	0.01155
	(0.088)	(0.0170)
Age squared	-0.0003	-0.00005
	(0.0017)	(0.00032)
Household size	-0.0572***	-0.01100***
	(0.0175)	(0.00323)
Distance to the nearest health facility (KM)	0.0328***	0.00630***
	(0.0106)	(0.00202)
Distance squared	-8.61e-05**	-0.00002**
	(3.84e-05)	(7.28e-06)
Constant	-2.067*	
	(1.209)	
Observations	665	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Likelihood ratio of 351.25, p-value less than 0.05 (Prob > chi2 = 0.000) demonstrates that the study's variables are jointly statistically significant, and thus the study's model is appropriate. Additionally, a Pseudo R^2 of 0.1624 suggest that the model's explanatory variables explain about 16.22% variation of the health insurance uptake among households with PWD in Kenya.

The coefficients and marginal effects of independent variables in the probit model are shown in table 4. Interpreting the marginal effects, gender of the household head was observed to be significant in influencing uptake of health insurance among households with PWD in Kenya. This, means if all other factors in the model are held constant, a female headed household increased the

likelihood of health insurance uptake among households with PWD in Kenya by 10.2%, compared to a male-headed household. According to this finding, a disabled female is more likely than disabled male to sign up for medical coverage.

This result is in line with Jutting (2001) who observed that female headed households are more likely to enroll in a health insurance plan.

Similar to this, being formally employed or self-employed increased the chances of households with PWD in Kenya purchasing health insurance by 4.77% and 13.82% respectively, when all other characteristics are held constant. This conclusion is based on the affordability of medical coverage. The disabled who are in households whose head is employed are more likely to have access to medical insurance than those who are jobless. This result are in line those of Sanhueza and Ruiz-Tagle (2002) and Jutting (2001), who observed that income has a favorable impact on purchasing health insurance.

The education level of the household head also has a substantial impact on the uptake of health insurance among Kenyan households with PWDs. Ceteris paribus having completed primary, secondary or tertiary education, increased the chance of health insurance uptake among households with PWDs by approximately 14.1%, 14.7%, and 8.5% respectively when compared to those with no education. This result is primarily explained by the assumption that people who have attained higher levels of education tend to understand the significance of health insurance more than people with no education. This finding is in line with that of (Bourne and Kerr-Campbell, 2010) which found that an individual with a higher level of education is more likely to purchase a medical cover than the one with no education, and it contradicts a study by (Jutting, 2001) which concluded that education level has no effect on adoption of medical insurance.

Similarly, the findings showed that household size has a significant impact on health insurance uptake among households with PWDs. Ceteris paribus increase in a household size reduced likelihood of enrolling to a medical cover by 1.1%. This implies that as the number of people in a household increase insurance amount become more costly compared to smaller households thus reducing health insurance uptake among households with PWDs in Kenya. This finding is not in

line with that of Kiplagat (2011) who found out that a household with many people increased the likelihood of enrolling to a medical insurance.

The results showed a non-linear relationship between PWD health insurance uptake in Kenya and distance to nearest health facility. This means that health insurance uptake among households with PWD in Kenya increased with increasing distance to the nearest health facility until about 0.6 km, when it began to decline. Table 4 shows that if all other variables remain constant, distance to nearest health facility increased the likelihood of health insurance uptake among households with PWDs by 0.63%. This implies that the nearer the health facility the higher the likelihood of households with PWDs to enroll to a medical cover. Furthermore, the study revealed that households with PWDs are more likely to purchase health insurance if a health facility is within 0.6km.

CHAPTER 5

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS

5.0 Summary and conclusions

Access to healthcare services is a fundamental human right which has been reinforced by the call to UHC by WHO and other key international bodies. Subscriptions to medical cover schemes to cater for unforeseen medical costs, is therefore a top priority of every state as health insurance is generally considered a form of social protection against medical risks for all individuals. The objective of this research was to examine the factors influencing health insurance uptake among persons living with disabilities in Kenya. Using data from KHIBS 2015/16 survey, a binary probit model was estimated to analyze the determinants of insurance uptake by households with PWD

The findings showed that a household heads' employment status (formal or self-employment), education attainment (primary, secondary or tertiary) positively influenced health insurance uptake among households with PWDs. A female headed household with PWD as well as Distance to the nearest healthcare facility also has a positive influence on health insurance subscription among households with PWD. Whereas a large household size has a negative impact on health insurance enrollment among household with PWDs. The study also showed that age and marital status have no impact on insurance enrollment of a household with PWD.

5.1 Policy implications

According to the findings, to increase the uptake of health insurance among households with PWDs in Kenya, national and county governments should increase support to encourage households with PWDs to pursue education, such as offer scholarships, provide personal equipment's like wheelchairs, hearing aids and special reading materials. The government can also ensure access to UHC through strengthening devolution of health care services and subscription to National health insurance fund to every household. Larger household size is linked to a lower uptake of health insurance among PWDs, the government should the encourage and educate households with PWDs on the benefits of family planning through the use of contraception.

5.2 Suggestion for Further Research

While increasing universal health care through subscriptions to medical cover schemes to cater for unforeseen medical costs is a top priority for every state, its reach in terms of discovering what

influences adoption and choice of medical cover type remains largely unexplored. This study looked at the factor influencing health insurance uptake among households with PWDs in Kenya. As a result, the study was limited in evaluating what determines the type of insurance cover chosen by individual persons with disabilities in Kenya and around the world. As a result, this study advises that a future study be undertaken to demonstrate the same, either in Kenya or in several countries.

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APPENDIX

Descriptive statistic output

```
. tabstat H_I_uptake GENDER Employ_status EDU_leve MARITAL_Stat hh_age hh_size distance_neare
> n max skewness kurtosis )

    stats |   H_I_up~e     GENDER    Employ~s   EDU_leve   MARITA~t      hh_age     hh_size   distan~c
----------+------------------------------------------------------------------------------------------
     mean |   .8075188   1.545865   1.938346   1.825564   1.330827    25.42105        2.64    12.0693
       sd |   .3945457   .4982668   .9635466   .4282308   .4708651    6.864886     2.83418   33.76008
      min |          0          1          1          1          1          11           0          0
      max |          1          2          3          3          2          60          10        300
 skewness |  -1.560024  -.1842354   .1232915  -.9356106   .7191031    1.830384    1.414634   6.281066
 kurtosis |   3.433674   1.033943   1.090102   3.818591   1.517109    7.982958    4.261428   49.00034
----------+------------------------------------------------------------------------------------------
```

Diagnostic tests

B.2) Multicollinearity test using VIF

```
. vif

    Variable |       VIF       1/VIF
-------------+----------------------
 Employ_sta~s |      1.39    0.721624
    EDU_leve |      1.36    0.736483
 MARITAL_Stat |     1.20    0.831933
      GENDER |      1.16    0.861424
     hh_size |      1.12    0.895408
 distance_n~c |     1.08    0.925869
      hh_age |      1.02    0.979414
-------------+----------------------
    Mean VIF |      1.19
```

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Heteroskedasticity test

```
. hettest

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity
        Ho: Constant variance
        Variables: fitted values of H_I_uptake


        chi2(1)      =     442.65
        Prob > chi2  =      0.0000
```

Regression analysis result (probit model)

Probit regression				Number of obs	=	1,012
				Wald chi2(13)	=	353.94
				Prob > chi2	=	0.0000
Log pseudolikelihood = -351.2543				Pseudo R2	=	0.1624

H_I_uptake	Coef.	Robust Std. Err.	z	P>|z|	[95% Conf. Interval]	
GENDER						
Female	.5067144	.1075639	4.71	0.000	.2958931	.7175357
Formal_EMPLOy	.2482707	.119566	2.08	0.038	.0139258	.4826157
Self_employ	.719484	.227128	3.17	0.002	.2743213	1.164647
not_formal_edu	-.0908405	.2000711	-0.45	0.650	-.4829726	.3012915
primary_level	.7807969	.1405423	5.56	0.000	.5053391	1.056255
secondary	.7672187	.1695111	4.53	0.000	.434983	1.099454
Tertiary	.4437643	.2126642	2.09	0.037	.0269502	.8605784
MARITAL_Stat						
Married	.186484	.1157511	1.61	0.107	-.0403839	.413352
hh_age	.0601099	.088327	0.68	0.496	-.1130079	.2332276
Age_squared	-.0002533	.0016544	-0.15	0.878	-.0034958	.0029893
hh_size	-.0572204	.0175258	-3.26	0.001	-.0915703	-.0228706
distance_nearest_hc	.0327998	.0106454	3.08	0.002	.0119352	.0536644
Dist_squired	-.0000861	.0000384	-2.24	0.025	-.0001614	-.0000108
_cons	-2.253563	1.238951	-1.82	0.069	-4.681862	.1747359

Marginal effects

```
Expression    : Pr(H_I_uptake), predict()
dy/dx w.r.t.  : 1.GENDER Formal_EMPLOy Self_employ not_formal_edu primary_level seconda
                Age_squared hh_size distance_nearest_hc Dist_squired
```

	Delta-method dy/dx	Std. Err.	z	P>|z|	[95% Conf.	Interval]
GENDER						
Female	.1017047	.022229	4.58	0.000	.0581367	.1452727
Formal_EMPLOy	.0476939	.0232283	2.05	0.040	.0021673	.0932205
Self_employ	.138216	.0441457	3.13	0.002	.0516919	.22474
not_formal_edu	-.0174509	.0384705	-0.45	0.650	-.0928516	.0579499
primary_level	.1499945	.0255101	5.88	0.000	.0999955	.1999934
secondary	.147386	.0324269	4.55	0.000	.0838306	.2109415
Tertiary	.085249	.0401869	2.12	0.034	.0064842	.1640139
MARITAL_Stat						
Married	.0367347	.0233165	1.58	0.115	-.0089648	.0824341
hh_age	.0115474	.0169844	0.68	0.497	-.0217415	.0448362
Age_squared	-.0000487	.0003179	-0.15	0.878	-.0006717	.0005744
hh_size	-.0109923	.0032327	-3.40	0.001	-.0173282	-.0046564
distance_nearest_hc	.006301	.0020179	3.12	0.002	.002346	.010256
Dist_squired	-.0000165	7.28e-06	-2.27	0.023	-.0000308	-2.27e-06

Note: dy/dx for factor levels is the discrete change from the base level.