CHAPTER ONE

INTRODUCTION

1.1 Background to the study

The size and rapid growth of the healthcare sector and the pressure this places on public sector budgets has created great interest among both academics and policymakers in possible approaches to reducing healthcare spending (Aron – Dine et al. 2012). On the demand side, the standard approach to constraining healthcare spending is through consumer cost sharing in health insurance, such as deductibles and coinsurance (Aron – Dine et al. 2012).

Ghana is one of the few other countries that have National Health Insurance (NHI) law governing their health system (Akum, 2014). Formerly, the country had been providing free healthcare services after independence in 1957 (Akum, 2014). This was perhaps due to the small population size of 8 million at the time and a booming economy (Assensoh & Wahab, 2003). Nevertheless, the sustainability of the free health care services could not be realised. This was because; the country experienced some economic hardships in the 1970s and early 1980s which negatively affected all segments of the economy leading to reduction in social spending including education and health (Agyepong & Adjei, 2008). Thus, less funds was available for the health sector and this resulted to general scarcity of vital medicines, supplies and equipment which had an adverse repercussion on the excellence of care in public health facilities (Agyepong & Adjei, 2008).

To solve these difficulties, cost recovery or user fees generally known as "cash and carry" was initiated in the 1980s in all government health facilities (Dalinjong & Laar, 2012).

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Patients were obliged to pay for the complete cost of medication and care, the user fees argument was to raise funds and to daunt frivolous use of healthcare services (Dalinjong & Laar, 2012). Nevertheless, the cost recovery programme had a negative effect on the utilization of healthcare services by the citizenry (Arhinful, 2003). The less privileged as a result of this, took to self-medication and also reported cases of illness to health facilities late (Arhinful, 2003; Arhin-Tenkorang, 2001).

The introduction of the cost recovery programme paved way for enhancement in the quality of healthcare services (Lagarde & Palmer, 2006). However, studies by James et al., (2006) and Palmer, et al., (2004) show that user fees serves as an obstacle for the less privilege to access and utilize health care services.

This necessitated the drive for other possibilities of health care funding which brought about the introduction of Community-based Health Insurance Schemes (CBHIS) in the early 1990s (Dalinjong & Laar, 2012). As of 2003, CBHIS had a coverage of about 1% of the Ghanaian populace of (19 million), leaving majority of Ghanaians uncovered (Sulzbach, Garshong and Owusu-Banahene, 2005).

Ghana in 2003, progressively introduced the National Health Insurance Scheme (NHIS) with the idea of reducing the negative impact of the user fee, improving low coverage of Community Based Health Insurance (CBHI) and enhancing the essential role of public funding to achieve universal health care (Universal Access to Health care Campaign Coalition, 2013).

The main source of funding for NHIS includes: a National Health Insurance (NHI) levy, which is additional 2.5% value-added tax (VAT); an annual premium contribution from all informal sector workers and those formal sector workers who are not covered by the SSNIT

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pension scheme; interest from investments made by the scheme; a monthly equivalent deduction of 2.5% of the payroll from each formal sector workers contribution to the social security and National Insurance Trust (SSNIT) pension fund and a registration fee paid by all NHIS subscribers to their respective District Mutual Health Insurance Schemes (DMHIS) with which they register (Abiiro and McIntyre, 2012).

A number of groups are exempted from paying the premium of the NHIS for one to become a member of the scheme. For instance, government employers who are SSNIT contributors, SSNIT pensioners, individuals who are 70 years and above or persons under 18 years, as well as pregnant women and or indigents are all not obliged per the NHIS law to pay premium (NHIA, 2012). The NHIA was formed officially to take responsibility to make sure that all citizens of Ghana would have access to basic healthcare (Universal

Access to Health care Campaign Coalition, 2013). Before the new National Health Insurance Act was passed, the responsibility lied solely in the hands of every district scheme to contract accredited health providers and pay them after delivery of services (NHIA, 2012).

The NHIS is Ghana's fundamental policy strategy for attaining universal health coverage where everyone irrespective of income levels can equally access basic health care (Universal Access to Health care Campaign Coalition, 2013). The rationale behind the introduction of NHIS in 2003 was to ensure that within five years of implementation every Ghanaian would be hooked to a health insurance scheme that would ensure unbiased healthcare accessibility and sufficiently take total care of the individual against any unbearable expenditure (Agyepong and Adjei, 2008).

Currently, the scheme is operating in one hundred and fifty-five (155) districts with a membership of 10,145,196 million representing approximately 38% of the total population of Ghana. Also, a total of 3,822 healthcare facilities are accredited to facilitate healthcare delivery under the scheme (NHIA, 2013).

Moral hazard is a market failure most commonly associated with insurance. Specifically, the term" moral hazard" describes the danger that, in the face of insurance, an agent will increase his or her exposure to risk (Hale, 2009). Moral hazard can be classified in terms of behaviour into ex ante and ex post moral hazard (Stanciole, 2008).

Ex ante moral hazard is defined as the condition before the start of ailment. The proposition is that through their precautionary measures, individuals have power on the possibility of the happenings of the loss (Zweifel and Manning, 2000). The existence of insurance coverage (which lessens the cost of healthcare treatment at the point of consumption) might fade the individual's inducement to avoid such cost, since this loss affects the health stock, over which the individual has some influence over the long run.

The life-cycle behaviour is related to ex ante moral hazard (Zweifel and Manning, 2000).

Ex post moral hazard comes to existence as soon as the health loss has already happened. At this level, health insurance lowers the value of healthcare price, while sick leave wage lessens its opportunity cost in terms of time. Such a decline in the market price may result in the increase use of healthcare or sick leave (Zweifel and Manning, 2000). Insurance coverage warrants zero or subsidized price for healthcare services at the point of use, which gives rise

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to greater demand on the part of the insured patient than would be the case if he or she were to bear the true costs (Donaldson and Olsen, 1998).

Since health insurance decreases price at the point of purchase, the healthcare consumer is motivated to substitute other goods for healthcare which is comparatively cheap. Such behaviour is not efficient for the reason that the actual market price of healthcare may not have fallen (Amporfu, 2014).

1.2 Problem Statement

Despite the numerous progress made with the introduction of the scheme, several challenges still persist (NHIA, 2012). The sustainability of the financial scheme continues to remain a big problem as the demand for health insurance rises given its consequential increase in healthcare service utilization (NHIA, 2012).

First of all, higher demand for health care is considered most threatening problem affecting the progress of the National Health Insurance scheme on health care utilization in Ghana (NHIA, 2012). In-patient utilization stepped up from 28,906 in 2005 to 1,451,596 in 2011 and from 1.43 million in 2012 to 1.61 million in 2013. Also, out-patient utilization of healthcare services rose from 0.6 million in 2005 to 27.35 million in 2013 (NHIA, 2013). The disbursement of claims jumped from GH¢616.47 million in 2012 to GH¢785.64 million in 2013 (NHIA, 2013). There could be an incentive for the insured to consume extra healthcare with the use of national health insurance contract because the possible alternatives are not effective enough to ensure improved health care for Ghana's population.

Ayindenaba et al. (2010) study on moral hazard behaviours under the national health insurance scheme shows that moral hazard exists. Yawson et al. (2012) conducted a study using Winneba Municipal Hospital (WHM) as the study area for the period January-March 2010. The study revealed that insured clients had showed up at the health centre three times and more in the previous six months, specifically, 20% insured clients had visited the health centre four or more times in six months while the majority representing 80% of the uninsured consumers visited health centre only once.

Amponsah, (2013) conducted a study to investigate the presence of adverse selection, moral hazard, and income effect using the Ghanaian market as a case study. The study revealed that moral hazard exit.

Malaria is chosen as the proxy for all diseases that affects the total population. This is because malaria is hyper endemic in Ghana and continues to be the leading causal agent of diseases and mortality among both children and adults in the country (Ghana health service, 2007; 2010). About 45% of all out-patient cases are attributed to malaria and it is the highest causal agent of mortality resulting to over 18% of deaths occurrences at health centres (Ghana Health Service, 2007; 2009). Earlier studies on moral hazard did not use malaria as a proxy for all diseases and therefore the need for the study.

Objectives of Study

The overall objective of the study was to investigate whether insured malaria outpatients are engaging in moral hazard or not under the National Health Insurance in Ghana. In more specific terms, the study sought to achieve the following objectives:

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i.   Investigate whether there is the existence of moral hazard among the insured malaria patients in the district.

ii.   Identify the factors that affect the likelihood of insured malaria patients to engage in moral hazard.

1.4 Research Question

To be able to achieve the objectives of this study, the following research questions were asked:

i.   Does moral hazard exist among the insured malaria patients in the district?

ii.   What factors influence the likelihood of insured malaria out-patients to engage in moral hazard?

1.5 Justification of Study

The study on Moral hazard and health care utilization would help to ascertain the demographic and socio economic characteristics of insured malaria out-patients who are likely to engage in moral hazard. The findings would help policy makers to know the target group as far as moral hazard is concerned.

The study would provide vital information on healthcare utilization and may highlight areas that may result in future detailed studies because of potential inequalities in accessing or excellence of care and would be of tremendous value to persons, institutions and help contribute to existing knowledge on healthcare consumption under the National Health Insurance.

It would also serve as a case study for insurance professionals; educational institutions that need information on practical behaviours of consumers of health care and would again benefit Adansi North District Health Management Team, Ghana Health Service and

National Health Insurance Authority.

The present study would be beneficial because most of the success of national health insurance depends on the proper management of the scheme.

1.6 Scope of Study.

As stated in the topic, the sample population of the study was limited to insured malaria out-patients at Adansi North District in Ashanti region. The study was conducted in six health centres out of 12 health facilities at the District. Malaria was chosen as a proxy for all diseases that affects the total population. The overall percentage of 34.1% admissions in health facilities were ascribed to malaria and 19% of overall deaths in health facilities were also ascribed to malaria. The results emanating from these clearly indicate an increasing trend in the admissions and death ascribed to malaria (G.H.S Annual Report, 2010).

2015 annual data on out – patient malaria cases was obtained from the Adansi North Health Directorate. In all, sample size of 500 respondents was used to represent the insured malaria outpatients at the study area. The district was selected because of proximity to the study area, resource constraint and the researcher's familiarity with the district.

1.7 Organisation of the study.

The study was categorised into five chapters. Chapter one looks at the introduction, presents the background information to the research topic, defined the statement of the research

concern and highlights on the significance of the study. Chapter two takes into account the review of relevant theoretical and empirical literature. Chapter three also discusses the methodology used in gathering data for the study. The chapter also provides justification for the approach used in gathering the data. Chapter four analyses and discusses the findings of the study. Finally, chapter five provides summary of findings, conclusions and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Over the years, analyses of health insurance market have acknowledged the fact that insurance induces healthcare consumers to make use of more healthcare than they would if they were uninsured (Frick and Chernew, 2008). Even though advocates for universal coverage and excellent access to care may see this rise in utilization as encouraging, normal economic analysis proposes that this additional consumption could reduce economic welfare (Frick and Chernew, 2008).

Currently, the trend of moral hazard has become one of the important empirical findings in health economics and the argument that goes with changes in healthcare utilization (Frick and Chernew, 2008). Moral hazard is the factor that explains the frequent adjustment of premiums and catastrophic expenditure in the health services under the National health Insurance (Sagi and Pataki, 1990).

This chapter therefore reviews background information on health services in Ghana, background information on National Health insurance Scheme in Ghana and, theoretical and empirical literature on moral hazard and health care utilization.

2.1 Health Services in Ghana

After attaining independence in 1957, Ghana became the world's top producer of cocoa and had one of the highest GDP per capita in the region and was seen as the hope and example for the Africa continent (Xinshen, 2010).

The country provided free healthcare services to its populace through public health facilities after independence. The free healthcare service was solely financed with tax revenue (Abor and Akortsu, 2011). However, due to the rapid increase in the country's population and a massive development in infrastructure and human resource building capacity for the health sector, the government saw the need to find other possible alternatives to finance the scheme (Abor and Akortsu, 2011). The outcome of massive development in infrastructure and human resource training in 1963 increased the country's health centres to 41 with a total of 3,169 health personnel and these comprised 379 medical doctors, 355 pharmacists, 28 dentists, 954 midwives and 1,453 nurses (Twumasi, 1975).

The county's flourishing economy became something of the past due to series of disruptive coups d'états in the early 1970s and 1980s and inflation rate reaching a "sky-rocketing" level of 123 % in 1983(Ghana Health Service, 2007; Gyebi and Boafo, 2013). The severe deteriorating of Health infrastructure with less extension to meet the demand of the rising populace was at the result of the economic decline (Ghana Health Service, 2007). Healthcare

equipment and essential supplies were in scarcity majority of the health professionals travelled abroad for greener pastures (Ghana Health Service, 2007).

The government in 1983 introduced the cost recovery programme also called the "cash and carry" to supplement government funding (Ghana Health Service, 2007). While this led to the rise in revenue for health facilities and in other ways brought improvement in healthcare, it also had its own adverse effect leading to a sharp decline in healthcare utilization of out-patient services especially in the rural health facilities (Waddington and

Enyimayew, 1989). Excellent delivery of healthcare attracted rising attention as healthcare consumers called for value for money they incurred for services (Waddington and Enyimayew, 1989).

Curative services and preventive services are the two main broad categories of services available in Ghana (Ghana Health Service, 2007). The curative services offer diagnosis and treatment to healthcare consumers. In multifaceted facilities like hospitals, these two main services may be spread among several units like, in-patient care, out-patients department

(OPD) laboratory and diagnostic services, pharmacy and other administrative works (Ghana Health Service, 2007). Preventive services provide healthcare consumers and communities at large with services that aim at keeping them healthy. Maternal and reproductive health, health promotion and nutrition, child health, adolescent health, communicable diseases, noncommunicable disease, are sub sections of the Preventive services (Ghana Health Service, 2007).

Differences between socio-economic groupings and geographical areas show extensive variation in accessing healthcare. For example the Ghana Demographic and Health Survey

(GDHS) of 2003 showed a five-fold difference in accessibility of healthcare between the best region, Greater Accra region and the worst region, Upper West region with 62% and

12 % respectively of people who live a stone's throw to a health centre (Ghana Health Service, 2007). It is the responsibilities of the Ministry of Health, the main government body to formulate policies in the area of health sector in totality, control priorities in terms of public spending on health, supervise the activities of health sector agencies alongside official objectives and marshal funds for the health sector. The central agencies under the Ministry of Health are the public sector agencies (Ghana health service, teaching hospitals, regulatory bodies) and private sector agencies (private not-for-profit like Christian Health Association of Ghana). The health sector has a three dimensional structures (national, regional and district). The main aim of the district level is to implement programmes which are further divided into a sub-district and community levels (Ministry of Health, 1996).

Under Act 525 of 1996 as mandated by the 1992 constitution the Ghana Health Service (GHS) was established as an independent body that takes the responsibility of carrying out national policy with the supervision of the Ministry of Health through its regulatory council (Ghana Health Service Council). The Ghana Health Service continuously receive funds from the public and accordingly remain within the public sector (Ghana Health Service, 2010).

The primary aim of Ghana Health Service is to be responsible for and cautiously manage wide-ranging and health service that is available with distinct importance on primary healthcare in all three levels in harmony with the official national policies (Ghana Health Service, 2010). Ghana Health Service is functional under five levels namely: national, regional, district, sub-district and community levels (Ghana Health Service, 2010).

Ghana Health Service has Quality Assurance Department with the sole obligation of developing and implementing quality assurance, infection and control systems and clinical governance in all health centres; and, to improve on standards and procedures to ensure quality, efficiency as well as effectiveness of service delivery (Ghana Health Service, 2010).

The Ministry of Health offers employment to about 39,000 of which 27,000 (54%) are in the Ghana Health Service. All categories of health workers are employed by the Ghana

Health Service.
Estimation of doctor per population ratios by the World Bank give a signal of how poorly the country's health sector is resourced with human capital. They are: one doctor to 350 population for high income economies; 1:550 for middle income countries; 1:2,000 for low income economies; and, 1:10,000 for Sub-Saharan Africa. There has been a significant improvement in doctor per population ratio based on evidence in the government payroll. Northern region showed a significant improvement from a doctor to 50,751 in 2009 to one doctor to 18,257 in 2010 (Ghana Health Service, 2010).

Currently human resource problems in the public sector include: insufficient in terms of strength and types of staff, biased staff distribution , low morale of health workforce, poor supportive monitoring, weak administrative systems and poor alliance that lie between Ministry of Health and the training institutions of the Ministry of Education. Though there have been increases in salaries of public sector health employers currently, morale and attitude of staff still are their lowest ebb. Undeniably the increases have gone along with disturbing strike actions by various trained personnel striving with each other for better

conditions. There are however subjective accounts of a reduced rate of attrition especially among nurses (Ghana Health Service, 2007).

2.2 National Health Insurance Scheme in Ghana

In 2003, the National Health Insurance Scheme (NHIS) was founded under Act 650 by the government of Ghana to offer primary healthcare services to the populaces through mutual and private health Insurance schemes (Boateng and Awunyor-Vitor, 2013). The National Health Insurance Authority (NHIA) is authorized by a decree to see to the implementation and functioning of the National Health Insurance Scheme (NHIA, 2012). Other responsibilities of the NHIA is to supervise the operations and functioning of District Mutual Health Insurance Schemes (DMHIS), giving authorization to healthcare providers and supervising their activities for effective, competent and excellent service delivery (NHIA, 2012).

The National Health Insurance Authority (NHIA), founded as part of NHIS Act, is mandated with the duty of monitoring the insurance schemes, including registration, accreditation and supervision (NHIA, 2012). The national health insurance fund (NHIF) was established under section 39 of Act 852. The main aim of the NHIF is to make funds available to finance and support the cost of healthcare delivery to clients of the National Health Insurance Scheme (NHIA, 2012). As a result of that, section 40(2) of Act 852 identifies specifically how the NHIF monies should be used to sustain the scheme.

- Cover total expenditure of healthcare cost of clients of the National Health Insurance Scheme.

- Cover official expenditure on administrative works in relation to the day to day operation of the National Health Insurance Scheme.

- To improve on provision and promote accessibility to healthcare services by investing in other activities as may be engineered by the Minister of health in collaboration with the Board (NHIA, 2012).

The government recognized that the national health insurance scheme could not be funded solely by payments of premiums made by individual and therefore needed to be subsidized by means of public funds. The NHIF is funded with a health insurance levy (a 2.5% earmarked addition to the VAT), a diversion of 2.5% of the 17.5% workers" contributions to the Social Security and National Insurance Trust Fund (SSNIT Fund) to the NHIF, premium payments from informal sector as well as money allocated to the fund by Parliament and from investments, donations, grants, gifts, and other charitable contributions (NHIA, 2012).

The NHIS has benefits package that covers 95% of the disease that mostly affect Ghanaians which is pre – defined mandatory by the National Health insurance Authority (Universal Access to Health Care campaign Coalition, 2013). The benefits package cover primary healthcare services, comprising out-patient consultations, in-patient care, essential drugs and shared accommodation, normal and assisted maternity care, eye care, diagnostic tests, generic medicines, dental care, and emergency care, family planning and immunization (Universal Access to Health Care campaign Coalition, 2013; Owusu, 2010).

To be part of a DMHIS, a person ought to enrol with the scheme nearest to him. Government employers are in accordance with the law exempted from the payment of the premium as

soon as they are hooked to the scheme, once the 2.5% SSNIT contribution is considered as their premium (NHIA, 2010). Other exempted parties include:

- Persons who are below 18 years and have their parents part of the scheme.

- Individuals found to be underprivileged, centred on a means test, up to 0.5% of the total enrolment of any scheme.

- Persons who have attained 70 years and above and pensioners under the social security pension scheme.

- Pregnant women since 2008.

Minimum health care package under NHIS is divided into six (6) categorised; out-patient services, in-patient services, oral health services, eye care services, maternity care and emergencies. The under listed healthcare services are excluded from the package:

Rehabilitation other than physiotherapy, appliances and prostheses including optical aid, hearing aids, cosmetic surgeries and aesthetic treatment, echocardiography, artificial insemination and gynaecological hormone replacement therapy, HIV retroviral drugs, dialysis for chronic renal failure, photography, heart and brain surgery which do not emanate from accidents, angiography, cancer treatment which does not come as a result of cervical and breast cancer, orthoptics, organ transplanting, medical test meant for visa applications, educational, institutional and driving license, mortuary services, diagnosis and treatment abroad, VIP ward and all drugs that are not shortlisted in the NHIS drug list (NHIA, 2012).

The overall number of active membership of the scheme stepped up from 8,227,823 in 2011 to 8,885,757 in 2012 accounting for a rise of 8% over the preceding year (NHIA, 2012). The overall active membership of the National Health Insurance Scheme increased from 8,885,757 in 2012 to 10,145,196 in 2013. Approximately, 38% of the national population are enrolled on the scheme as at 2013(NHIA, 2013).

Analysis of the active membership as of December, 2013 is provided in Table 2.1 showing with respect to the various regions of Ghana the rate of renewals, new members and overall number of active membership distribution. In summary, Upper West region recorded the least, as a fraction of the total membership with Ashanti region registering the highest number of active members followed by Brong Ahafo region and Greater Accra respectively (NHIA, 2013).

Table 2.1: NHIS Active Membership by region (2013).

REGION	NEW	RENEWALS	ACTIVE MEMBERSHIP	PERCENT OF TOTAL
Ashanti	472,903	1,242,485	1,715,388	17%
Brong Ahafo	405,088	948,752	1,353,840	13%
Central	382,595	484,341	866,936	9%
Eastern	337,097	773,024	1,110,121	11%
Greater Accra	565,281	714,976	1,280,257	13%

Northern	391,728	488,789	880,517	9%
Upper East	166,538	476,740	643,278	6%
Upper West	99,620	322,797	422,417	4%
Volta	326,243	584,326	910,569	9%
Western	297,477	664,396	961,873	9%
NATIONAL	**3,444,570**	**6,700,626**	**10,145,196**	

Source: NHIA Annual Report (2013)

Other three new category of enrolment specifically the military service, police service and other security services are added to the NHIS membership category. From Table 2.2 individuals less than 18 years accounted for the biggest percentage of active NHIS members followed by the Informal sector (premium paying members) which accounted for

33.6% of the active members. The indigents category constitute 12.1% with the least categories namely, the military, police and other security services accounting for 0.2%, 0.1% and 0.003% respectively (NHIA 2013).

Table 2.2 Active NHIS subscribers by category.

Category of Membership	Percent of total registered
Under 18 years	51.2%
Informal sector	35.5%

Indigent	4.4%
70 years and above	4.5%
SSNIT Contributors	4.2%
SSNIT Pensioners	0.3%
Military Service	0.2%
Police Service	0.1%
Security Service	0.003%

Source: NHIA Annual Report (2013).

Estimates propose that membership of the NHIS comes along with benefits comprising a welcome escalation in utilization. Between the period of 2007 and 2008 out-patient turnout in public health centres alone rose by 136% for NHIS members against a marginal rise of only 5.71% for non-members. In 2009, the average out-patient turnout for an insured member was between 1.4 and 1.551 visits as compared to a national average of 0.81 (NHIA, 2010).

The Ghana National Health Insurance scheme has gained recognition for its early success in health insurance among developing countries by many influential international players in the health community, most particularly the World Bank (Amponsah, 2013). Major achievements of the National Health Insurance Scheme in Ghana include, increase in enrolment from 8,885,757 in 2012 to 10,145,196 in 2013, passage of the new law (Act 852), launching of NHIS call centre with the aim of making the scheme accessible to all clients and

stakeholders, commissioning of regional offices and other numerous achievements (NHIA, 2012).

However, achievement and headway that have been chalked for some years now, we can still count some problems influencing adversely the functioning and operation of the scheme and continues to hamper progress towards universal access to health care. The key challenges are:

- Financial constraints associated with the scheme.

- Identification of the less privileged in the informal sector.

- Cumbersome procedures and delays in client's ID cards.

- Slowness and frequent down disruption of internet at the ICT department (NHIA, 2012).

2.3 Theoretical review on moral hazard and health care utilization

The principal – agent model is also known as agency dilemma or theory of agency. It occurs when one person or entity (the agent) is able to make decisions on behalf of, or that impact, another person or entity: the "principal"(www.wiikpedia.org). This dilemma exists in circumstances where the agent is motivated to act in his own best interests, which are contrary to those of the principal (www.wiikpedia.org).

The problem arises where the two parties have different interests and asymmetric information (the agent having more information), such that the principal cannot directly ensure that the agent is always acting in his (the principal's) best interest, particularly when activities that

are useful to the principal are costly to the agent, and where elements of what the agent does are costly for the principal to observe (www.wiikpedia.org).

According to Vera-Hernández in 2003, Moral hazard in the use of medical services has been one of the most recurrent issues in health economics; early references on the topic are Arrow (1963), Pauly (1968), and Zeckhauser (1970). Moral hazard arises because health shocks are not contractible and consequently contracts are not complete. It might then be optimal for insurers to give incentives so the consumer will not seek expensive treatments for minor health shocks (Vera-Hernández, 2003).

Moral hazard is a fundamental concept in health economics that talks about the inducement for individuals that are under an insurance coverage to alter their behaviour in ways that step up the risk of loss for the insured (Stanciole, 2008).

In 1963, Arrow introduced this concept in the economics literature and argued that it led to a market failure as some insurance markets would not emerge due to moral hazard (Laffont and Martimort, 2001). Pauly (1968) rejected this approach, by arguing that it was quite natural for agents to react to zero price like demanding more health consumption if health was free and that the non-insurability of some risks did not imply a market failure as no proof of the superiority of public intervention faced with the same informational problems was given (Laffont and Martimort, 2001).

The existence of imperfect information is the causal agent of moral hazard problem (Arrow, 1963). The asymmetry arises as a result of the insurer has less information d about the health

status and motives for healthcare utilization of the insured than the insured themselves do. The insurance provider cannot detect whether a healthcare provider visit would not have been made devoid of insurance (Wolferen et al. 2013).

Moral hazard (hidden action) refers to the tendencies for the individuals to make purchases that are partially or wholly paid by other (Cutler and Zeckhauser, 2000). Moral hazard refers to the impact of insurance coverage on individual's choices to take on behaviours that may change the probability of incurring losses (Nicholson et al., 1996). Moral hazard is also defined as the possible malfeasance of an individual making purchases that are partially or entirely paid for by others (Arrow, 1965; Pauly, 1968, 1974).

Pauly (1968) observed that health insurance time and again encourages moral hazard, leading to an inefficient allocation of funds, and that such inefficiency becoming a norm through government directive could possibly be welfare-reducing. Pauly's (1968) article assumed a constant marginal cost of production and fixed individual demand curve for healthcare. Together, these assumptions determine an efficient optimal level for a person who does not enjoy any form of insurance; the marginal readiness to pay for healthcare was equivalent to the prime cost of healthcare. If the same individual were under an insurance coverage, the individual would foresee a lesser out-of-pocket price for healthcare and slope down the demand curve; except demand had no price elasticity, the one who enjoys insurance coverage would then consume extra units of healthcare.

The additional cost of healthcare would surpass the consumer's readiness to pay for the additional units, and inefficiency would in that way be introduced. In addition, compelling

such consumers to pay for accessing healthcare by means of taxes might possibly make them poor in condition than not enjoying insurance at all. The diagrams for Pauly's essay are shown in figure 2.1

Figure 2.1 Demand for Healthcare services in relation to Price Elasticity.

(A) Inelastic Demand

Price　　　　　　　　　　　N

P₁　　　　　　　　　　　　A

0　　　　　　　　　　　　Q₁　　　　　　Quantity of health care
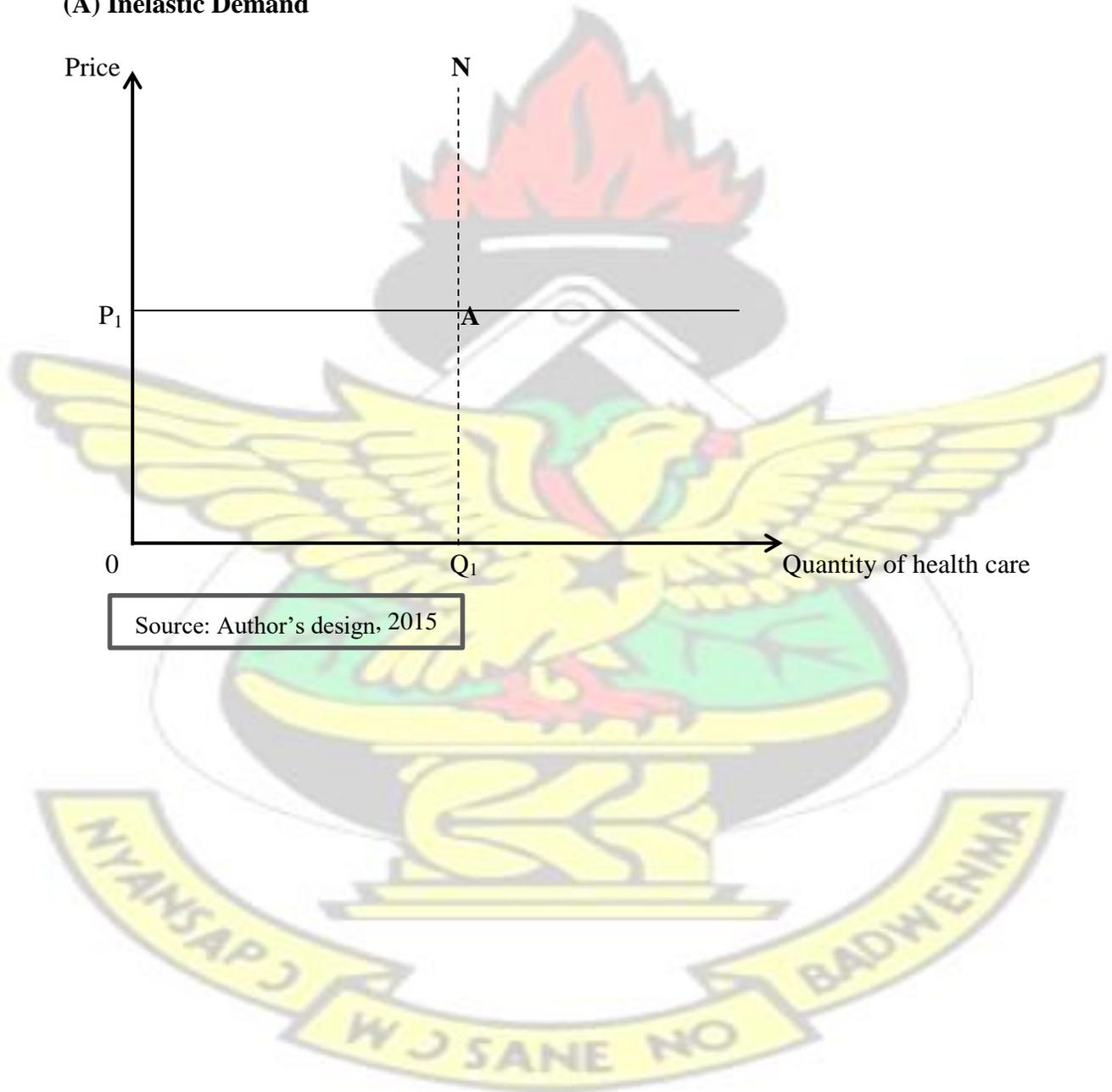
Source: Author's design, 2015

(B) Elastic Demand
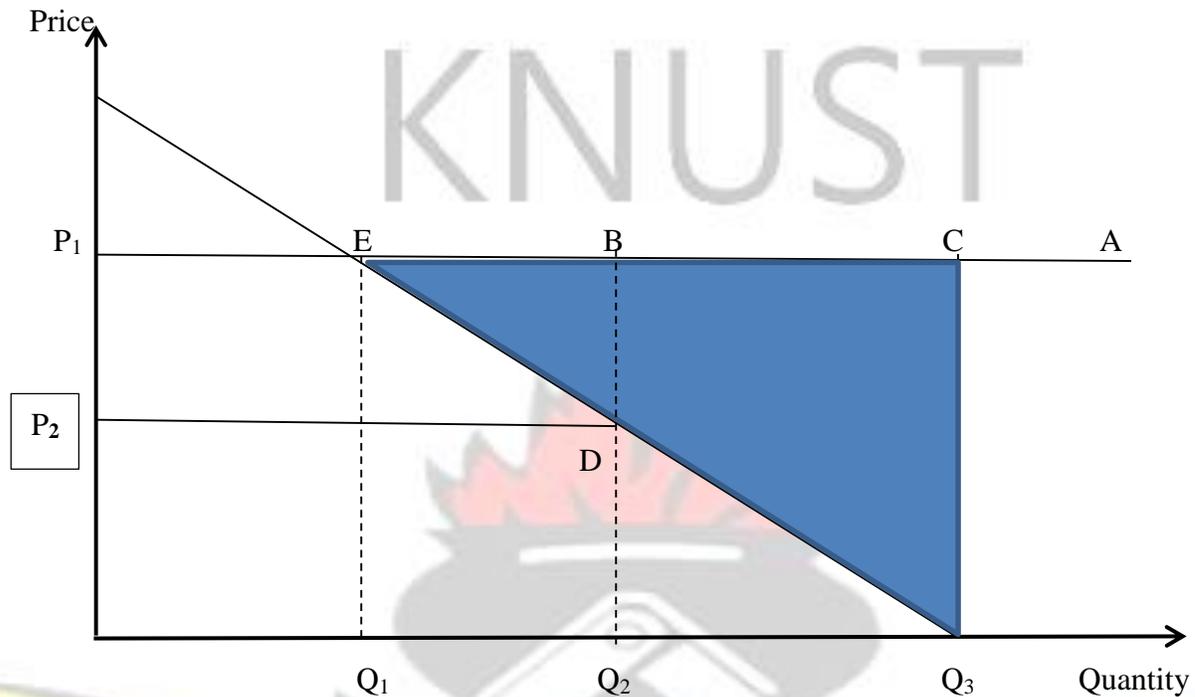
Source: Author's design, 2015

P_1 denotes the market price (that is the price an individual without insurance would need to pay). Through a comprehensive insurance without co-payment, the market price, faced by the insured individual falls to zero because the individual does not pay for the difference directly. In figure 2.1(A), the demand for healthcare, in the circumstance of comprehensive insurance which is equal to zero price remains constant. In figure 2.1(B) on the other hand, the demand for healthcare increases in relation to a price from zero to the saturation point from Q_1 to Q_3, for the reason that the price elasticity is comparatively high. Thus in figure 2.1(B) health services are also demanded whose marginal utility lies lower than the price. The optimal amount of healthcare services would be attained at point E. On attaining this amount, expenditure would amount to $0P_1EQ_1$ however at the amount Q_3, expenditure incurred would be $0P_1CQ_3$. The welfare loss due to moral hazard is evidently shown by the

shaded triangle ECQ$_3$. With the introduction of proportional co-payment of 50%, the market price would increase to P$_2$ with a resultant corresponding decrease to Q$_2$.

After fifteen years, de Meza in 1983 concluded that a sick person's demand curve is comparably not equivalent to when under coverage and when not. Instead, the repayment of medical expenditure provided by insurance moves the demand curve outward similar to a cash transfer. Accordingly, the consumer's readiness to pay surges with insurance coverage. De Mesa concluded that Pauly's (1968) model for that reason exaggerated the inefficiency as a result of moral hazard. In 1983, Pauly recognized that income effects may certainly matter for critically sick patients, but emphasized that, there are inefficiency resulting from moral hazard among healthier consumers.

Moral hazard refers to the extra healthcare that is purchased when individuals become insured (Nyman, 2004). Moral hazard occurs when an insured individual spends additional day in the health centre or purchases some procedures that he or she would not otherwise have purchased (Nyman, 2004). Under health insurance, once the premium is paid by the client he or she face less expensive healthcare services comparable to those in similar clinical conditions without insurance, because healthcare cost is less expensive, they purchase more of it and thus increasing utilization of healthcare (Kelman & Woodward, 2013).

Base on economic theory, the less price faced by insured consumer path way for an increase in the purchase of healthcare. This increase is known as moral hazard and the efficiency of moral hazard hang on whether it is due to substitution or income effect from the reduction in price (Nyman, 2004). In contrast, moral hazard resulting from income effect is efficient, that

from substitution effect is not efficient. Economists reason that demand side cost sharing strategies to reduce moral hazard should only aim the inefficient part of moral hazard (Nyman, 2004).

Nyman (2004) explain the substitution effect using a hypothetical illustration. Suppose a person has no health insurance and has been diagnosed with HIV. The person spends ¢10,000 on the treatment (including medication). Now suppose he/she is now able to buy insurance of ¢1,000, the person has extra ¢9,000 as a result of purchasing the health insurance. Suppose instead the ¢9,000 is transferred to the person and he spends all the ¢9000 on healthcare then this moral hazard (income effect) is welfare gain. On the other hand, if the individual spends less than ¢9,000 say ¢5,000 on health care and the remaining

¢4,000 spent on other goods then the ¢4,000 represents the inefficient moral hazard (substitution effect). This is illustrated by figure 2.2 below.
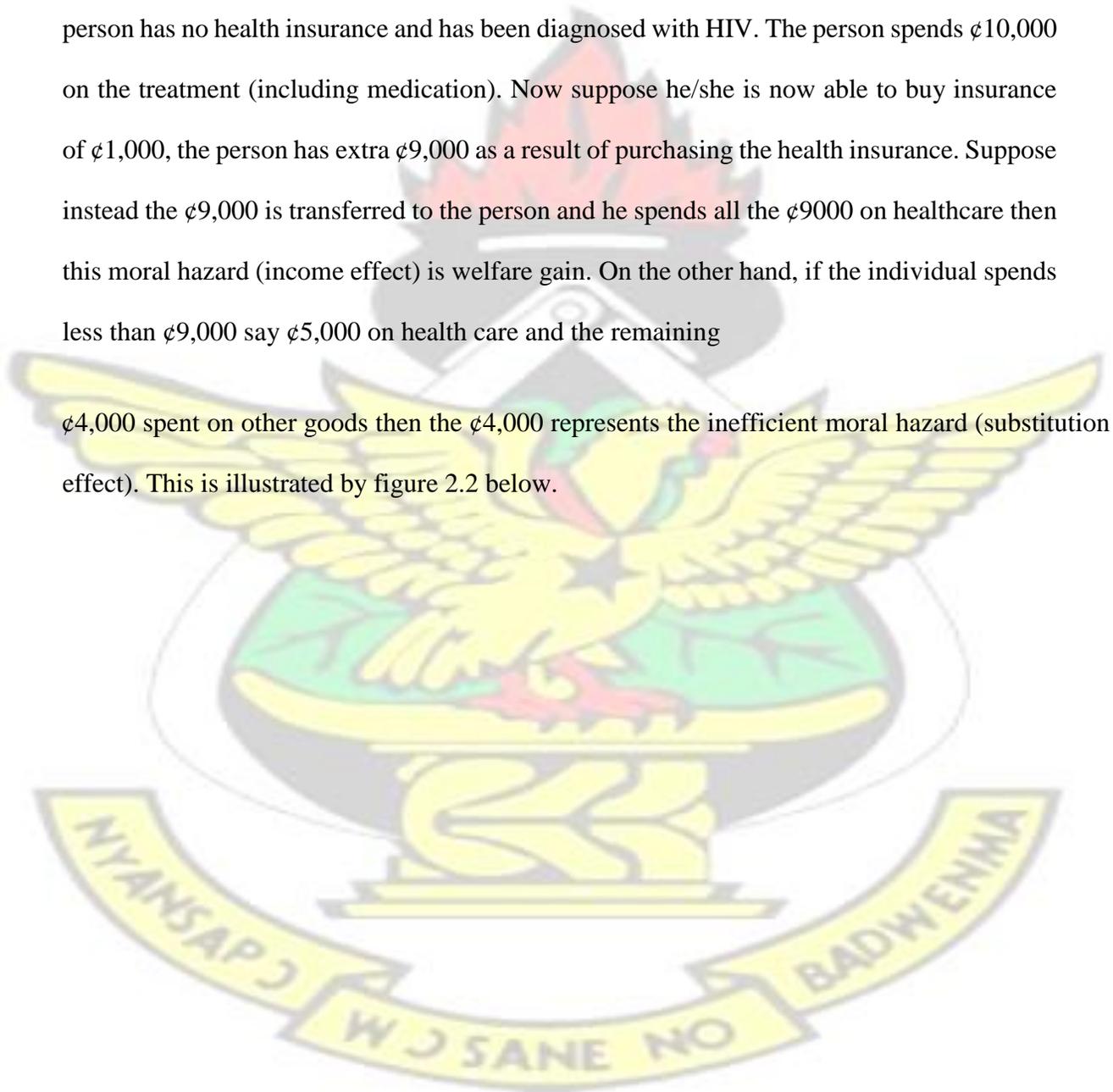
Figure 2.2: Income and Substitution effect of moral hazard

From the fig. 2.2, ¢10,000 is the market price or the marginal cost of producing healthcare at quantity Q_1 (that is the price an individual without insurance would need to pay). Through a comprehensive insurance without co-payment, the market price, faced by the insured individual falls to zero because the individual does not pay for the difference directly. The demand for healthcare increases in relation to the fall in price from Q_1 to Q_3. The total moral hazard is evidently shown by the shaded triangle ECQ_3. According to Nyman, moral hazard is made up of the income transfer effect and a substitution effect, if the ¢9,000 is transferred to the person and he spends all the ¢9000 on healthcare, the person's demand curve will shift from the original demand curve to D_2 and will now consume at Q_3 given the market price then this moral hazard (income effect) is welfare gain. On the other hand, if the individual spends less than ¢9,000 say ¢5,000 on health care and the remaining ¢4,000 spent on other goods, the person's demand curve will shift from the original demand curve to D_1 and will consume at Q_2 given the marginal cost of producing healthcare. The difference between Q_3
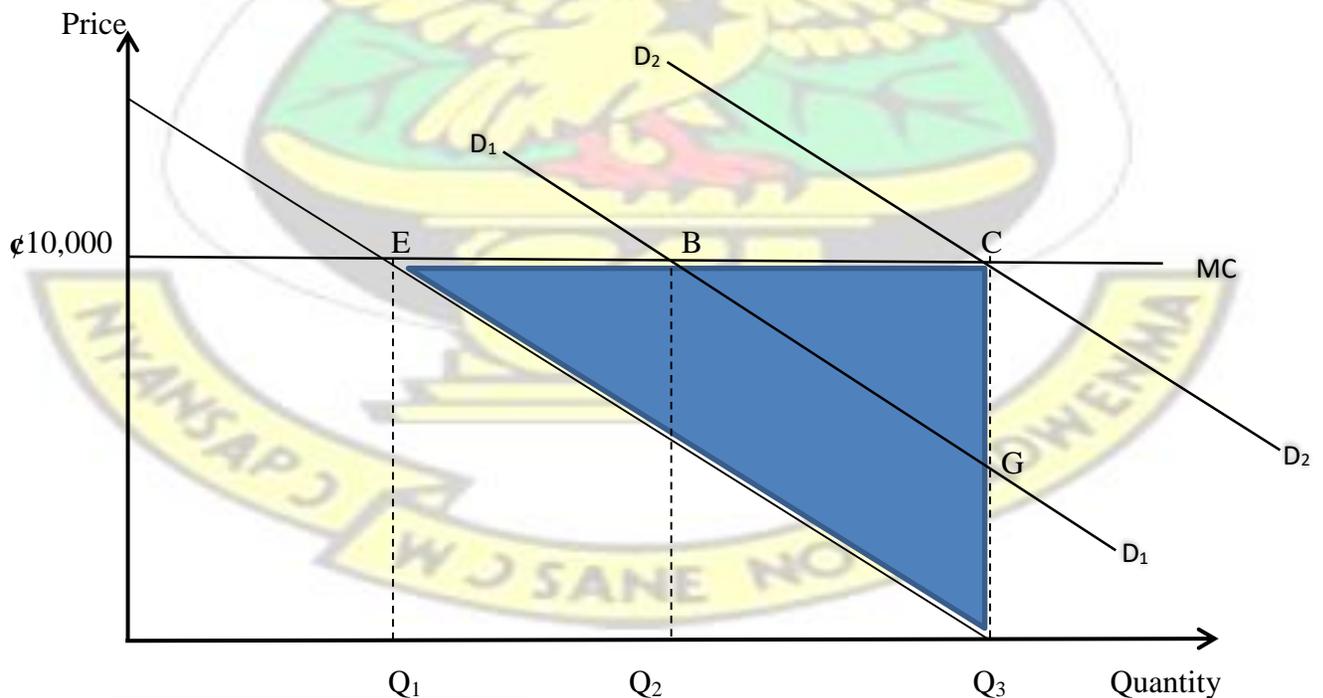
Source: Author's design, 2015

and Q_2 represent the amount of healthcare that would have been consume if the person spends all the ¢9,000 on medical care. The shaded triangle area BCG represents the substitution effect (inefficient moral hazard).

The inefficient part of moral hazard, also defined as hidden action is a change in the behaviour of the insured in a manner that brings waste (Cutler and Zeckhauser, 2000).

In demand theory, moral hazard is the substitution effect of individuals incurring more on healthcare as a result of reduction in price, but not the income effect of individuals spending more on healthcare as a result of insurance, by efficiently relocating funds from the fit state to the sick state, individuals become rich when sick (de Meza, 1983).

Different studies have indicated that Grossman's model has resulted extensive understanding into the determinants of health and into health related activities. Central in Grossman's model is the assumption that health can be viewed as a durable capital stock which decreases with age and can be raised by investment. Following Grossman's model, the demand for healthcare is obtained from the demand for health itself and a person's health state. The investment in health capital is a consideration of the consumer between investment in health capital and investment in other goods (Grossman, 2000). This is referred to as opportunity costs, since money or time spent on investment in health capital cannot be spent in other ways. Furthermore the model suggests that individual's pursuit utility maximization (Grossman 2000).

The trade-off between investment in other goods and investment in health capital is determined by the consumer's preferences and the consumer's budget constraint. With health

insurance the budget constraint will adjust in a manner that will reduce the price for healthcare faced by the consumer. Therefore, the insured can buy more medical care compared to a scenario which he would have no health insurance, this leads to a new equilibrium that provides the insured a higher utility which was not faceable in the situation without insurance.

In contrast, with introduction of cost sharing, the price of medical care faced by insured increases, which is expected to result in a decrease in medical care consumption. Cost sharing policies narrowed to certain services will cause a substitution effect, where the insured client will substitute the services with greater out-of-pocket expenditures to those with lower out-of-pocket expenditures. The demand for medical care is for example expected to differ by coinsurance rate, which is a type of cost sharing.

The classification of moral hazard into income transfer effect and a substitution effect is presented by Nyman (1999). According to his analysis, the substitution effect of insurance is the change in utilization of healthcare that would transpire if a consumer who is presently sick were to buy a contract from an "insurer" to lessen the price of healthcare in exchange for an actuarially fair premium. The welfare loss resulting from health insurance that pays off by decreasing the price of healthcare usually been calculated with the use of Marshallian price elasticities of demand to find the moral hazard effect and readiness to pay.

The loss in welfare must be evaluated alongside with the benefits of insurance to define the net welfare effect. The welfare effects have been estimated by calculating the welfare gain from risk bearing but in general have concluded that the welfare losses overshadow the gains. Rice (1992; 1997; 1998) proposes that economic theory would forecast that as costsharing

rises the price of healthcare near its marginal cost, the amount demanded for low effectiveness procedures ought to reduce more than the amount demanded for high effectiveness procedures.

To prove his point Rice as evidence, cites a study by Lotr et al. (1986) which relates the quantity response to price variations of procedures that vary by the magnitude of effectiveness (and other characteristics). The study revealed that, even though there is a quantity response to price increase, there is no change in this reaction by the effectiveness of procedure. In summary, Rice concluded that analysts cannot use observed demand curves to measure the readiness to pay for procedures and that the welfare loss estimations obtained from observed demand exaggerates the true welfare loss.

Zweifel and Manning (2000) suggest that some quantity of moral hazard may be considered useful for two motives. First, to the point that healthcare providers employ a joint monopoly, the amount of medical care consumed falls below the optimal level. The surge in quantity as a result of moral hazard effect of insurance can be efficiency improving in this state. Secondly, moral hazard may induce the usage of more costeffective medical service at the cost of less cost-effective one within an insurance scheme.

Newhouse (1992) suggests that the larger share of the growth of health expenditures is attributable to improvements in medical technology, not moral hazard. He concluded that overenthusiastic efforts to reduce moral hazard could do more badly than better if policy holders reduce the motive for medical invention (innovation). Health insurance could generate inducements for efficient moral hazard. The reason is that, in Nyman's analysis, welfare improving studies only the substitution effect because only the substitution effect

reveals the effect of distorted relative prices. However, the consumption at the efficient level is not the amount an uninsured individual would consume if they become sick, but instead the amount an insured individual would demand if the insurance transferred the ideal level of income but did not distort prices.

2.4 Empirical review on moral hazard and health care utilization

The empirical evidence reported on ex post moral hazard results from three bases: observational comparisons of individuals, natural experiments, and the RAND Health Insurance Experiments (RHIE). Significant studies on demand elasticity, such as the RAND health insurance experiment, allocate considerable attention in calculating the variations in utilization and expenses associated with wide - range coverage and the results have been used to evaluate variations in welfare (Frick and Chernew, 2008).

Cutler and Zeckhauser (2000) tried in their empirical studies to differentiate among the total moral hazard effect and the residual moral hazard effect. Total moral hazard effect speaks of the differences in health care utilization among those insured and the uninsured while residual moral hazard effect refers to differences in consumption of healthcare across insurance type or policies. However, the residual effect is at times too small and cannot be noticed.

Also, the empirical evidence on the existence of moral hazard in health insurance markets is mixed. For example, research work by Cardon and Hendel (2001) on health insurance markets and treatment seeking behaviour of consumers, finds no evidence of moral hazard. On the other hand, Cutler and Zeckhauser (2000) reviewed an extensive literature that found evidence of moral hazard centred on the coinsurance elasticity of the demand for healthcare using rand health insurance experiment in USA.

2.4.1 Moral Hazard and Health Care Utilization in Developed Nations

In 2007, Stanciole analysed data on health behaviours between 1999 and 2003 using the U.S. Panel Study of Income Dynamics (PSID). The survey of 8,000 families with data on a variety of topics – including whether or not people have healthcare insurance, how healthy they are, and to what degree they engage in a healthy lifestyle The study in summary concluded that insurance induce policyholders to involve in unhealthy behaviours (moral hazard).

Bolhaar et al. (2009) estimated the market for supplementary private health insurance in Ireland, and examine whether moral hazard and or adverse selection were present. They concluded that moral hazard was present. The study found that, medical card holders on the average visit the general practitioners and the specialist more repeatedly and stay additional nights in health centres than persons without a medical card.

Coulson et al., (1995) using the RAND health insurance experiment in Untied State established that the utilization of healthcare among the populace increased as a result of reduction in the level of out-of-pocket expenditures. The study resolved that moral hazard was present because supplementary insurance increases the number of prescription filled among the elderly.

Damien et al. (2010) used 2004 and 2005 Australian National Health survey to calculate the outcome of private hospital insurance on the utilization of healthcare services in Australia. The study employed the two-stage residual inclusion approach (2SRI) to account for the endogeneity of supplementary private hospital insurance purchases. Moral hazard was calculated using a difference of means estimator. The study found solid evidence of moral

hazard when private hospital insurance was treated exogenous. After controlling for the endogeneity of hospital insurance, the study found strong evidence of substitution from private to public hospital care but no indication of moral hazard in the number of nights spent in hospital.

Stabile (2001) examined the impact of state subsidies to employer-provided health insurance on the choice to purchase and on utilization of publicly financed health services. Using exceptional variation in tax subsidies through the provinces of Canada as an instrument, the study estimated the impact of these subsidies on the claim for supplemental health insurance and their long run effects on the choice to use publicly subsidized health services. The results showed that state subsidies through exemptions have substantial effects on treatment seeking behaviour of patients. The conclusion was that inefficient moral hazard was present in the use of publicly subsidized health services.

2.4.2 Moral Hazard and Health Care Utilization in Developing Nations

Wolferen et al. (2013) did a study on moral hazard in the insurance industry. This proof resulted from a study conducted using data from 12,100 individuals over the age of 50 years in the Mexican Health and Aging Study (MHAS) to examine the differences between the insured and uninsured with the degree of usage of preventive services. The study reveals a positive effect of insurance with the used of healthcare service.

Nyman and Barleen (2005) wrote a paper that used a different theory and data from Brazil to calculate the gain in health-related quality of life that is triggered by the extra healthcare that is created by health insurance. The study found that supplemental private health insurance

makes substantial improvement in quality of life and that the price of the quality adjusted life year gains seems to be correspond with cost-utility ratios that are considered welfare enhancing. The finding was contrary to the conventional theory that posits that additional healthcare (moral hazard) is welfare decreasing.

Jowett et al. (2004) analysed the outcome of being insured under the voluntary section of Vietnamese Health Insurance on outlines of treatment seeking behaviour. A multinomial logit model was estimated from three provinces in Vietnam using household survey data. Conclusions concerning both the type of health provider and type of healthcare received were analysed. Insurance status was treated as both exogenous and endogenous to explain the possible selection bias. The overall results indicated that insured consumers were more likely to use out-patient facilities inefficiently, an effect that is predominantly strong in the existence of moral hazard.

2.4.3 Moral Hazard and Health Care Utilization in Africa

Akande et al. (2010) matched the pattern of utilization of the staff clinic two years earlier and afterward the introduction of National Health Insurance Scheme at the University of Ilorin Teaching Hospital. Analysis of cross-sectional study was carried out by means of records of patients at staff clinic. A p-value less than 5% was statistically significant for the study. The conclusion was that, National Health Insurance Scheme resulted to 144% upsurge in the utilization of healthcare services at staff clinic which perhaps is as a result of moral hazard.

Yip and Berman (2001), using observational comparison of individuals in Egypt found that, utilization of healthcare among youngsters insured under the school health insurance

programme are likely to outweigh the uninsured, mainly individuals in the lowest income quintile. The study resolved that moral hazard was present among insured school children.

Kiwara (2005) studied on Mutual Health Insurance Scheme (UMASIDA) designed for informal sector workers in urban areas of Tanzania. UMASIDA insurance scheme provides comprehensive bundle covering maternal and child health services, treatment for communicable diseases, surgical services among others. The study found that there was moral hazard tendency among clients of the scheme. The study discovered that members of the scheme brought in unregistered extended family members, neighbours and friends to benefit from the scheme. Members of the scheme insisted on getting certain kinds of medicine and there was greater than before demand for laboratory services.

2.4.4 Moral Hazard and Health Care Utilization in Ghana

Ayindenaba, Chatio and Akweongo (2010) study on moral hazard behaviours under the national health insurance scheme in northern Ghana: a cross sectional study shows that moral hazard exists. The study was conducted in selected facilities in the Kassena-Nankana District, in all 588 exit interviews were conducted at four health care facilities over a three weeks period. Thematic analysis was performed with the aid of QSR NVivo 8 software. Results of the exit interviews suggest that insured persons attend health facilities more frequently than their uninsured counterparts.

In 2005, a study conducted under the sponsorship of USAID in six districts of Ghana revealed that, insured individuals in the household survey were approximately two times more likely to seek formal out-patient care than were their uninsured colleagues. Insured consumers were also considerably more likely than uninsured to seek healthcare within the first two days of

illness. The results presented in the final report establish few examples of moral hazard (WHO, 2006a).

Amporfu (2014) study on "Does Ghana's National Health Insurance Scheme encourage moral hazard?" The study used maternity data to test for the existence of moral hazard in the demand for caesarean section. The study used propensity score matching approach and the results showed that moral hazard exists.

Sekyi (2009) analysed the impact of the National Health Insurance Scheme (NHIS) on the probability of utilizing out-patients healthcare and expenditure in the Mfantseman municipality of the central region of Ghana. Logit regression was used to analyse the possibility of utilizing out-patient care and the determinants of enrolment in health insurance. The study revealed that insured individuals were more likely to utilize outpatient care and pay a smaller amount than uninsured individual. The conclusion was that moral hazard was present among insured individuals in the municipality.

Yawson, Biritwum and Nimo (2012) analysed the existence of moral hazard at Winneba Municipal Hospital (WHM) between January – March 2010. A logistic regression was used in the analysis. The study showed that insured individuals used out-patient services more frequently and at shorter time intervals than uninsured consumers therefore the study concluded that moral hazard under the NHIS at district/municipal level may be real in Ghana.

2.5 Demographic and socio-economic factors that influence moral hazard

The effects of demographic and economic factors like age, marital status, employment and gender on health insurance and health care utilization have been variously studied.

Extensive works on health insurance demand is empirical and highlight on the socioeconomic features of the insured and non-insured (Nketiah-Amponsah, 2009).

In many European health schemes the demographic problem is becoming progressively more urgent. On the one hand, fewer children are being born. Consequence, the percentage of the total population over 60 years of age is continuously growing, encouraging greater demand for health care (Jonas, 2004).

Temple (2002) studied the factors affecting the insurance choice of older Australians and establishes the fact that economic and demographic elements mostly income and age as substantial covariates of increasing private insurance demand. In Malawi, Makoka et al.

(2007) from their study found income and education as significant factors of private health care in a free public healthcare system. The study concluded that, moral hazard was present in the free public healthcare plan due to increased consumption of health services.

In 2000, Propper came to a conclusion that the demand for private healthcare was strongly affected by political allegiance, income and the approach of government in the delivery of healthcare and previous use of health services. Grossman (1972), Van De Ven and Van Praag (1981) also stated significant positive link between education and income on healthcare demand. As a result increases in both income and education are likely to increase the likelihood of purchasing health insurance and healthcare consumption.

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However, income and education predict negatively about the likelihood of moral hazard. Those unemployed are more likely to undertake insurance coverage and over utilize health care consumption. The unemployed do not earn regular income on any job. (Butler and Wright, 1991).

Nketiah-Amponsah (2009) cross sectional survey of the demand for health insurance among females in Ghana resolved that, females aged between 30 and 34 and over 40 years are more likely to partake in health insurance and consume more health services. The demographic variables (age and household size) in his model were statistically significant at 1% and 5% levels respectively. Females aged over 40 years were identified to visit health facilities for services more than necessary compared to their counterpart in lower age brackets. The study concluded that moral hazard was present among aged women.

The works of the above literature largely concluded on inefficient moral hazard based on observational comparison of individuals, natural experiments and RAND health insurance experiment.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter explores on background of Adansi North a district in Ashanti region of Ghana, the method of data collection and the study design to determine whether insured malaria outpatients are engaging in moral hazard or not. It also seeks to ascertain the demographic and socio-economic characteristics of insured malaria outpatients who are likely to engage in moral hazard. A quantitative method was used for the data analysis.

3.1 Background to the Study Area

Adansi North District is among the 170 districts in Ghana and one of the 30 Administrative districts in Ashanti region. The district was created by Legislative Instrument (LI) No.

1758 on 17th February, 2004. It was sliced out from the former Adansi East and West Districts now, Obuasi Municipal Assemblies and Adansi South respectively.

The District has two (2) constituencies namely; Asokwa and Fomena constituencies with 7 area councils namely Bodwesango, Fomena, Akrokerri, Dompoase, Asokwa, Anhwiaso and Fumso with Fomena as the district capital.

Adansi North represents 4.7% of the total land area of Ashanti region and is located in the southern part of the region with a total land area of about 1,140 square kilometres. The district is bounded in the south-east by Bosome Freho District, south-west by Obuasi municipality, in the west by Amansie Central District in the South by Adansi South

District, and in the in the north-east by Bekwai municipality.
Based on the 2010 population and housing census, the district's population stands at 107,091 people with annual growth rate of 2.6%. The population is predominantly Akans with Adansi forming the greater part. The population density is about 105 individuals per square km. Male – Female ratio is 49.5% to 50.5% with 48% of the populace in the active labour force (16-30) age.

The district has ten (10) Government health facilities and two Missionary health facilities making a total of 12 health centres. The district has either a hospital or clinic in all the

traditional areas with the district hospital (Benito Menni Hospital) located at Dompoase
which is a mission facility.

3.2 Study Design

Figure 3.1: Map of the study Area
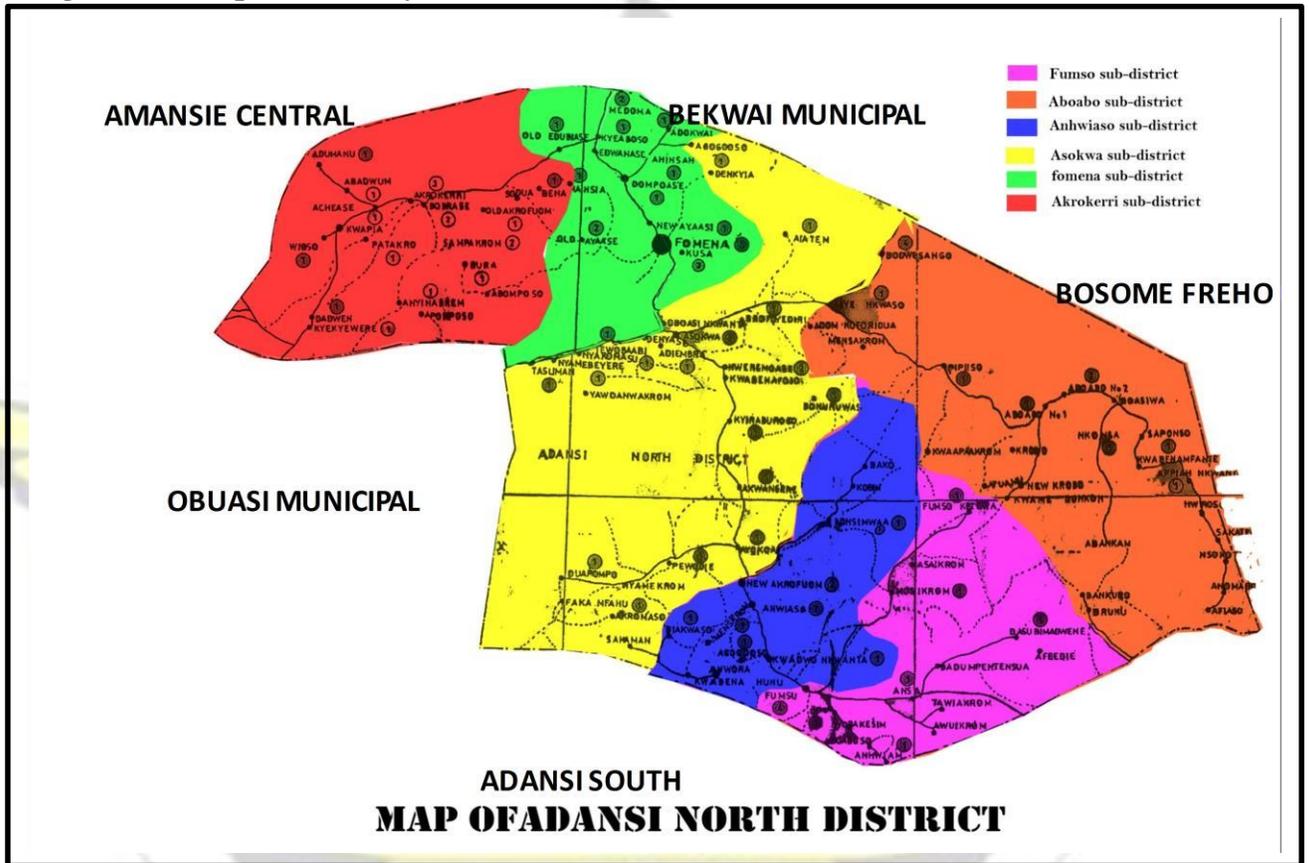
The study employed a non-probability with a structured questionnaire for the collection of

both qualitative and quantitative data relating several variables that were used to determine

the likelihood of demographic and socio – economic variables on Moral hazard and

healthcare utilization.

3.3 Population and Sampling Procedures

The target population of interest for the study was insured healthcare consumers in the Adansi North District with specific emphasis on insured malaria out-patient. The study used 2015 insured out-patient utilization (number of visit) data obtained from the District

Health Directorate. The total number of insured out-patient visits for 2015 was 68,793. Out-patient utilization for old insured patient amounted to 46,168 whilst new insured outpatient amounted to 22,625.

The study used Yamane (1967) method to determine the sample size. This formula is given as $n = \frac{N}{1+N(e^2)}$

Where n is the sample size, N is the population size, and e is the level of precision.

$$n = \frac{68,793}{1 + 68,793(0.05^2)}$$

$n = 397$

The study rounded off the 397 to 500 sample size to cover a wider range of insured out-patient.

3.4 Instrumentation

Formulated research questions and objectives fundamentally informed the development of research items in addition to reference made to several instruments and scales used in other studies. In addition, a comprehensive review of theories and empirical studies that were relevant to the research questions were done in order to identify models that had bearing on moral hazard and healthcare consumption.

Data for the study was obtained through the use of a structured questionnaire to interview respondent to gather information related to the subject matter. According to Kumekpor (2002), questionnaires provide rich information because it is useful and appropriate with all categories of populations, especially, low-level education and rural populations. It is also believed to provide greater sense of security because the collection of data is by faceto-face interaction with respondents.

The response types of the questionnaire items (variables) were mostly pre-coded. The response types were grouped into three; demographic, socio – economic factors and health care utilization of the respondents.

3.4.1 Pre – test of Research Instrument

The study did a pre-test with the instrument constructed to ascertain its validity and effectiveness before the actual collection of data. The pre-test was conducted at St Louis clinic in Bodwesango a traditional area of the district with 33 respondents. The principal main of the pre-test was to aid in resolving any ambiguity and irrelevant items in the research questions.

At the end of the pre-testing of the research instrument, questions such as cost of transportation to health centres and nature of the road were included to examine the opportunity cost of insured patient visiting a health facility apart from the time spent at the health centre. Again, education which was a dummy variable was restructured into a categorical variable which catered for the various level of academic qualification such as basic secondary and tertiary level of education.

3.5 Data Collection

Data was collected between the months of November, 2015 to January, 2016 after a pretest of the research instrument had been conducted. The data collection was conducted in 6 health centres out of the 12 health facilities. Specifically, St. Louis clinic (Bodwesango), Asokwa health centre (Asokwa), St. Bennito Menni Hospital (Dompoase), Akrokerri Government Clinic (Akrokerri), Anhwiaso Clinic (Anhwiaso) and Fumso Health centre (Fumso) were the centre for the data collection.

Four research assistants were recruited and trained to collect data for this study. Specifically, training was centred on the subject matter (moral hazard) understanding and how to interpret the questionnaire to the respondents in cases where the respondent could neither read nor write.

3.6 Data Organization

To make meaning out of the data collected from the survey, the following data management processes were engaged in:

3.6.1 Data Coding

The main aim of this procedure is to simplify the data entry and analysis process. It mainly involved the conversion of words into numbers a process known as coding. The first step in the procedure was to provide a coding system. The system was then used to convert the responses in the questionnaire into numbers. Coding for this study was straight forward since the close ended type of questions with mutually exclusive.

3.6.2 Data Entry and Cleaning

Once the coding stage had been done the subsequent data management procedure was to enter the coded responses into the Statistical Package for the Social Sciences (SPSS) and imported into STATA version 13 for analysis.

It was of importance that the researcher checked systematically for errors or mistakes after data had been inputted into the SPSS program. Since data processing errors are inevitable, double entry technique was used to improve consistency in the data entry process which resulted in no missing values in the data.

3.7 Ethical Issues

Ethical consideration possibly is the most crucial assumption when it comes to conducting a primary research. In order to have access to the respondents, clearance was obtained from the District Health Directorate. The researcher introduced himself as a postgraduate student from KNUST, Department of Economics and vividly explained the relevance of the study to the respondents and assured them that it was purely academic, to be used as a requirement for the award of an MPhil degree in Economics.

In ensuring privacy of the respondents they were asked not to provide any form of personal identification. In order to also ensure the confidentiality of the information retrieved from participants of the study.

3.8 Data Analysis

After the data had been entered and cleaned using the SPSS (version 20) software programme was analysed using STATA version 13.

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3.8.1 Qualitative Analysis

Qualitative data analysis involved the univariate level of statistical analysis. The univariate analysis involved running descriptive statistics (usually, frequency, percentages, maximum and minimum value and means) on the background characteristics of insured malaria outpatient in the survey.

3.8.2 Quantitative Analysis

This section covers specification of theoretical model which explains the theories behind the link between the independent variables and the dependent variable.

Quantitative approaches provide a deeper analysis and allows for a richer and a comprehensive understanding of how individuals make meaning of their circumstances or interpret phenomena (Denzin and Lincoln, 1994; Merriam, 1998). According to Patton (2002) quantitative study is generally based on causal implication and the use of standardized measures to produce qualified information that can be statistically analysed

3.8.2.1 Theoretical Model

Given individual household data on health care usage, the study tested the presence of moral hazard by estimating the following econometric model. A mathematical representation of moral hazard was modelled as;

$$N_{ij} = f(DF, SE) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..\ldots\ldots….1$$

Where N_{ij} = Moral hazard, DF = demographic factors and SE = socio-economic

factors,

3.8.2.2 Determination of Moral Hazard

The determination of moral hazard was based on Nyman (2004) definition of moral hazard

as the extra healthcare that is purchased when individuals become insured. The determination

of moral hazard was based on the example used by Nyman (2004) to explain the substitution

effect which account for the welfare loss due to extra consumption of health care.

The average cost for the treatment of malaria without insurance at the various health centres

in the Adansi North district (case study area) was compared to the premium. To determine

moral hazard (substitution effect), if the study discovers that, a patient is willing to spend all

the difference in amount in the treatment of malaria, there is no tendency to engage in moral

hazard, In other words, there is no substitution effect of consuming medical care with

insurance. On the other hand, if the study discovers that, a patient is not willing to spend all

the difference in amount in the treatment of malaria, there is a tendency to engage in moral

hazard.

3.8.2.3 Empirical Model

Logit regression model was used to determine the tendency of moral hazard among the

sampled respondents. The study used the substitution effect of individuals consuming more

healthcare when its price is reduce but not the income effect of people consuming more health

services because of insurance to determine the tendency to engage in moral hazard among

the sampled respondents.

Let N_i (binary variable) represents the observed response of each insured malaria outpatient (i*th* observation). Therefore, $N_i = 1$ for moral hazard and $N_i = 0$ for no moral hazard. It follows that: $N_i = g(y_i)$. Where g is the functional relationship between observed moral hazard behaviour N_i and the random variable y_i which determines the probability of moral hazard.

The equation to be estimated in the mathematical term is given as:

$$y_i = ln\frac{p}{1-p} = \propto_0 + \sum_{i=1}^{9} \propto_i k_i + v_i$$

Where y_i = Qualitative dependent variable: 1 if moral hazard; 0 if otherwise.

k_1 = Age

$\qquad k_2$ = sex dummy variable ($k_2 = 1$ if female, $k_2 = 0$ if otherwise)

$\quad k_3$ = Education dummy variable ($k_3 = 1$ if completed basic education, $k_3 = 0$ if otherwise)

k_4 = Income

k_5 = Employment

k_6 = Marriage

k_7 = Family head

$\qquad$ status dummy variable ($k_5 = 1$ if employed, $\qquad k_5 = \qquad$ 0if otherwise)

$\qquad$ status dummy variable ($k_6 = 1$ if married, $k_6 = 0$ if otherwise $\quad$)

$\qquad$ dummy variable ($k_7 = 1$ if female, $k_7 = 0$ if otherwise

)

k_8 = Family size

k_9 = Distance to Health facility

v_i = Stochastic term

Table 3.1: Descriptions and Expected signs of Variable

Variables	Description of Variables	Expected sign
Age	Discrete	Positive (+)
Gender	Dummy (1= female; 0 = male)	Positive (+)
Education	Dummy (1 = if educated; 0 = No education)	Negative (-)
Basic	Dummy (1=completed JHS; 0= if otherwise	Negative (-)
Secondary	Dummy (1=completed SHS; 0= if otherwise	Negative (-)
Tertiary	Dummy (1=completed Tertiary; 0= if otherwise	Negative (-)
Income	Continuous (GH¢)	Negative (-)
Employment status	Dummy (1 = if employed; 0 = if otherwise)	Negative (-)
Marital status	Dummy (1 = if married; 0 = if otherwise)	Unknown
Family head	Dummy (1 = if female; 0 = if male)	Negative (-)
Family size	Discrete	Positive (+)
Distance	Continuous (measured in kilometres)	Negative (-)

Source: Author's Field Survey, 2016

3.9 Operational Definition of variables

Variables of the individual and household level were entered as independent variables. At the individual level, age, gender, income and education were included. The dummy was entered to examine the gender differentials in the utilization of health care. At the household level family size and sex of the family head was entered as dummy to examine whether female headed households are better or worse off in health care consumption.

Distance to the nearby health facility expressed in kilometres was also used, this is considered as the opportunity cost for a malaria out-patient individual to visit a health care facility.

From theory, Age has a positive relationship with consumption of healthcare based on Grossman, (2010) Human Capital Model. As an individual advances in age, the rate of

depreciation in the health stock of the individual increases creating room for high tendency for the person to increase his or her utilization in healthcare. The implication is that the young adult's depreciation rate in terms of health stock is low and as such consumes less medical care. On the other hand, the aged consumes more of medical care with insurance as a result of the higher depreciation of health stock as they gets old. Therefore the study expects age to predict positively about the tendency to engage in moral hazard among insured malaria outpatients.

In the family context, men are expected to cater for the home with the support of women. In other words, males are often catered for whenever they are sick by females in the house and thus males (control group) turns to consume less medical care when sick but on the other hand females consume more medical care than males because females don't get the necessary care at the house when sick as compared to the males. The implication is that, females have less attention when sick as compared to males and as a result, females on the average go for extra medical care with insurance. The gender (females) dummy is expected to have a higher tendency to engage in moral hazard than males (control group).

Health care consumers with education have less incentive to engage in moral hazard than those without any education. According to Grossman, (2010) on Human Capital Model, education is the most important factor in his model. There is no incentive to substitute vector of inputs purchased to contribute to the gross investment in health (M_t) for the time input for health (TH_t) as education increases (Grossman, 2010). The reason is that since (M_t) and (TH_t) increase with increase in education, less of both input are required to produce a given level of gross investment in health stock (I_t). The implication is that, people with formal

education on the average have more knowledge about the causes of some diseases and as such leave a life style behaviour that reduces their risk of getting sick and thus consumes less health care. On the other hand, people with no education on the average live a life style which increases their risk of getting sick thereby consuming more health care.

According to Grossman (2000) income and consumption of healthcare has a negative correlation. Wage measures the worker's efficiency, implying a positive correlation between wage and the reduction in the time lost due to illness (Grossman, 2000). When wage increases the individual reduces leisure until the value of marginal benefit from leisure is equal to wage. In general when wages increases, time spent on market and non – market health goods falls (Grossman, 2000). The implication is that, people with high income have high opportunity cost of forgoing working hours for extra medical care and most people with less or low income turns to have low opportunity cost of forgoing working hours for extra medical care. Moral hazard is extremely low with an increase in income of individuals. The study therefore expects income to predict negatively about the tendency to engage in moral hazard among insured malaria outpatients.

Employment has a negative relationship with Health care consumption. People engaged in meaningful job are expected to have less incentive to engage in moral hazard than those without any meaningful job. This is because the employed is occupied by work and in most cases has less leisure time to visit the health facilities and thus consumes less medical care. On the other hand, the unemployed have more time to spend at the health facility, in most cases for malaria treatment and thus consumes more medical care. Therefore employment

which is a dummy variable is expected to predict negatively about the tendency to engage in moral hazard among insured malaria outpatients.

Marital status relationship with respect to healthcare consumption is unknown. Empirically, studies have revealed a mixed relationship between healthcare consumption and marital status. The reason is that, some singles (widowed/divorced) like many married couples have children and are mostly engaged in active labour supply for income to cater for the family. Also, some singles are outside the working population and live on the earnings of their dependents. The implication is that, marital status provides a complex scenario of explaining the tendency to engage in moral hazard.

Sex of family head affect the consumption of healthcare, this is because a household headed by females turns to cater and give appropriate care for their household members when they are sick in the house and as a result, members don't visit health facilities frequently leading to less consumption of medical care. On the other hand, household headed by males turns to consume more medical care because members of the household on average do not get the appropriate care and treatment they deserve when sick and thus visit health facilities more often leading to more consumption of healthcare. As a result, female-headed household have their dependent demanding less of healthcare during ill episode and therefore the study expects family head (female) to predict negatively about the tendency to engage in moral hazard among insured malaria outpatients.

Larger family sizes have positive relationship with healthcare consumption. Family size with large members has a higher probability of its members visiting a health facility and thus consuming more health care as compared to a smaller family size which has a less probability

of its members visiting the health centre. The implication is that, large family size turns to consume more health care than a family with a small membership indicating that Moral hazard is extremely low with small family size in relation to a larger family size. The study expects family size to predict positively about the likelihood to engage in moral hazard.

Finally, based on theory, there is a negative relationship between distance and healthcare consumption. This is because consumers of healthcare living far away from the nearest health facility turns to have a high opportunity cost in terms of the time and transportation cost involve in visiting the health facility and as a result consumes less medical care. On the other hand, consumers of health care who are closer to a nearby health centre have less opportunity cost in terms of transportation cost and as a result, frequently visit health facilities creating room for excess consumption of health care. Research by Frederickx (1998) on "Health in Rural Tanzania: The determinants of Health status, Health care demand and Health care choice" revealed a negative relationship between distance and health consumption.
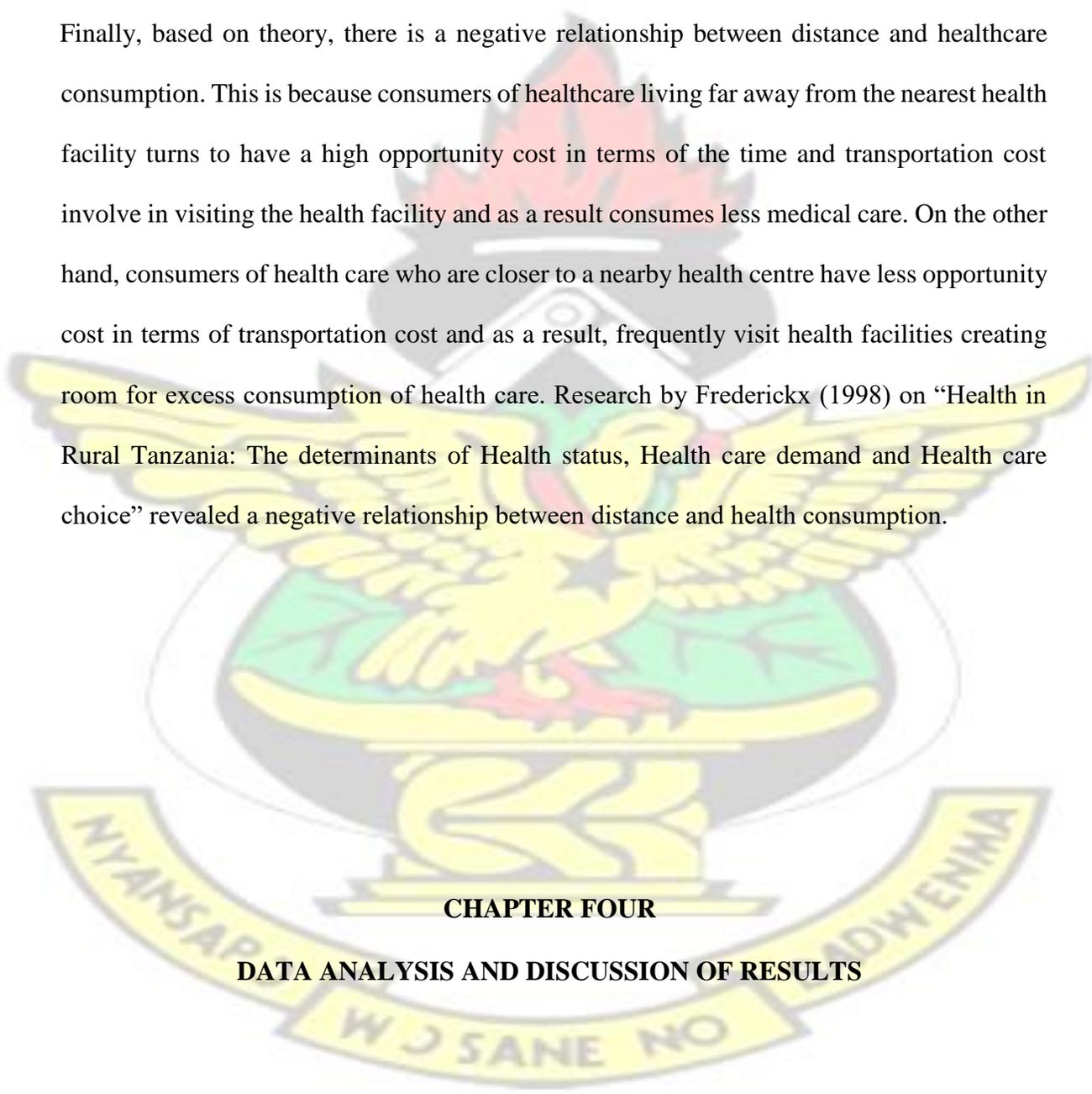
CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.0 Introduction

This chapter describes the data on the sampled respondents and uses Logit regression results in discussing the tendency to engage in moral hazard among the sampled respondents. Also, estimates from the logit regression are used to investigate the existence of moral hazard and the analysis of the demographic and socio-economic characteristics of insured malaria outpatients who engage in moral hazard.

4.1 Demographic and Socio-economic characteristics of insured out-patient

Table 4.1 describes the explanatory variables used in the estimation of the logit model. The choice of these variables such as educational status, income, age, employment status, marital status gender, family size and distance to health facilities are based on literature (Temple, 2002; Makoka et al., 2007; Frederickx, 1998; Amponsah, 2013) as they play key roles in the tendency for insured individual to engage in moral hazard. The distribution of respondents with respect to these characteristics is presented in the Table 4.1.

Table 4.1: Demographic and Socio-economic characteristics of Insured Out-patient

Variable	Frequency	Std. Deviation	Minimum	Maximum
		54		

Variable		Std. Deviation	Minimum	Maximum
Moral hazard	300	0.4904	0	1
Gender	300	0.4904	0	1
Marital status	297	0.9158	0	1
Family head	225	0.4980	0	1
Education	313	0.4993	0	1
Basic	127	0.4357	0	1
Secondary	96	0.3942	0	1
Tertiary	90	0.3846	0	1
Employment status	269	0.9905	0	1
Variable	**Mean**	**Std. Deviation**	**Minimum**	**Maximum**
Age	43.27	18.84	18	102
Income	¢501.28	¢362.7	¢45	¢2100
Family size	4.802	2.638	0	18
Number of visits	3.204	1.673	0	12
Distance	6.448	3.634	0	18
Transportation cost	¢5.252	¢3.804	0	¢19

Source: Author's Field Survey, 2016

US$1 = GH¢3.90
Distance is measured in kilometres (km)

A summary of the demographic and socio-economic characteristics of the sampled respondents in the study area shows that, the actual mean estimates for the continuous and discrete variables in the empirical model did not show much deviation. Moral hazard from the table revealed that 300 out of the 500 sampled respondents representing 60% were not willing to spend all the difference in amount in the treatment of malaria if the money is transferred to them.

For gender, 300 respondents representing 60% were females whilst the remaining 200 were males representing 40%. The table also shows that, 297 respondents representing

59.4% were married while the remaining 40.6% were singles (widow/er, divorce and single). With respect to family head, 225 out of the 500 representing 45% of the household were headed by females while the majority of 275 respondents were headed by the males constituting 55%.

On academic qualification, 313 of the respondents representing 62.4% had formal education while minority of 187 respondents representing 37.4% had no formal education. With respect to formal education, respondents with Basic, Secondary and Tertiary education qualification accounted for 40.6%, 19.2% and 18% respectively. In relation to employment status, 54% representing 269 of the sampled respondents were employed while 46% representing 231were unemployed.

The age structure of the sampled respondents ranged from 18 to 102 years with the mean age of 43 years which falls within the productive age. The minimum and the maximum monthly income of the sample population were GH¢ 45 and GH¢2,100 respectively with the average income of GH¢501.

The minimum and maximum family size of the sample population ranges from 0 to 18 with an average family size of 5 individuals. On the average, insured malaria out – patient visits the health facilities approximately 3 times every three month at the study area.

Finally, the average distance in terms of kilometres between health facilities and the resident of the sample respondents was approximately 6.45 kilometres. 57% of the sampled

respondent indicated that the nature of the road was good. The average transportation cost to a nearby health facility is ¢5.252 with a maximum cost of ¢19.00

4.2 Existence of moral hazard

To achieve the first specific objective or the first research question, the mean of the dependent variable (moral hazard) was used in the logit model equation to find the existence of moral hazard among insured malaria out – patient.

$$logit \ y_i = \ ln \frac{p}{1-p} = \alpha_0 + \sum_{i=1}^{9} \alpha_i \ k_i \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots \ \text{eqn. 2}$$

$$\frac{p}{1-p} = \ e^{\alpha_i k_i}$$

$$p = \frac{e^{\alpha k}}{(1 + e^{\alpha k})}$$

Where P is a probability measures the existence of moral hazard among the sampled respondents and $\alpha \ k$ is the mean of the dependent variable (moral hazard)

$$p = \frac{e^{0.6}}{(1 + e^{0.6})}$$

$$p = 0.6457$$

Since P = 0.6457 is closer to one than zero, there is a greater tendency to engage in moral hazard among the sampled respondents. In other words, approximately about 65% of the sampled respondents engage in moral hazard. The implication is that moral hazard exists among insured malaria outpatients at the study area.

4.3 Demographic and Socio-economic factors that affect Moral hazard

To achieve the second specific objective or the second research question the logit regression was run with Moral hazard as the dependent variable while the demographic and socio-economic factors as the independent variable. Table 4.2 shows the results.

Table 4.2 Logit estimate results in the empirical model

Moral hazard	Coefficients.	Std. Err.	T – Statistic	P – value
Constant	3.618631***	.7725143	4.68	0.000
Demographic Factors				
Age	0 .006845	.0092807	0.74	0.461
Gender [Female]	1.18699***	.3584297	3.31	0.001
Marital status	0.4102219	.3629150	1.13	0.258
Economic Variable				
Monthly Income	-0.001358**	.0006316	-2.15	0.032
Employment status	-0.757797**	.3661885	-2.07	0.039
Education	-1.14691**	.4984029	-2.30	0.021
Basic	-0.283031	.5507959	-0.51	0.607
Secondary	-4.38864***	.5589535	-7.85	0.000
Tertiary	-4.74850***	.7997752	-5.94	0.000
Household Level				
Family head [Female]	0.721851*	.3795822	1.90	0.057
Family size	0.177081**	.0700597	2.53	0.011
Community Level				
Distance	-.266557***	.0536984	-4.96	0.000

Diagnostic test	statistics	P – value
Hosmer-Lemeshow squared	8.51	(0.3857)
Pearson chi squared (485)	483.46	(0.5112)
Likelihood Ratio chi squared	433.26	(0.0000)
Log likelihood Test	-119.8739	

Pseudo	0.6438
Sensitivity test	93.67%
Specificity test	87.00%
Correctly classified	91.00%
Number of Observation	500

Source: Author's Field Survey, 2016

The above logit regression results using STATA version 13 software package shows that most of the coefficients are consistent with hypothesized relations and their test of significance (P - values) help to show their importance in explaining the likelihood to engage in moral hazard among the sampled respondents.

Age (years) as a quantitative variable has a significant positive relationship on the likelihood to engage in moral hazard. The positive sign (0.0068) of the coefficient of age means that an increase in age is more likely to engage in moral hazard among the sample population, holding all other variables constant. The positive sign indicates that as individual advances in age, the rate of depreciation in the health stock of the individual increases creating room for high tendency for the person to increase his or her utilization in healthcare and this confirms the preposition proposed by Grossman (2010) that, as an individual advances in age, the rate of depreciation in the health stock of the individual increases creating room for high tendency for the person to increase his or her consumption in health care. However, the p-value (0.461) indicates that, the coefficient of age is statistically insignificant in the empirical model at 5% significance level. The implication is that, age has no significant impact on the tendency to engage in moral hazard.

Female as a dummy variable in the empirical model showed a positive coefficient sign of 1.187 which means that females are more likely to engage in moral hazard than males (control group), holding all other variables constant. This is true and factual for the reason that in the Ghanaian society the responsibility of house management lies in the bosom of females and a result during any ill episode they (females) don't get the necessary care and attention at the house as compared to their male counterpart and consequently consume more healthcare. The p-value (0.001) indicates that the coefficient of female is statistically significant in the empirical model at 1% significance level. The implication is that, gender has significant impact on the tendency to engage in moral hazard according to the field survey.

The negative estimated coefficient of the overall education as a dummy variable in the empirical model suggest that individuals with education irrespective of the patient level of education are less likely to engage in moral hazard than people without formal education (control group), holding all other variables constant. This is true because individuals with formal education on the average have more information and knowledge about the causes of some diseases and as such leave a life style behaviour that lessens their risk of getting sick and thus consumes less healthcare as compare to individuals with no formal education. The coefficient of the education dummies (basic, secondary and tertiary) are negative and significant at 1% significance level with the exception of basic education which was not significant, as well indicating that having access to education decreases the probability of an insured malaria out-patient to engage in moral hazard relative to being without education. However, the p-value (0.021) of the overall coefficient of education indicates that, education is statistically significant in the model at 5% significance level. The implication is that, having education has significant impact on the tendency to engage in moral hazard according

to the statistical evidence at hand. This is inconsistent with Grossman (1972) and Van De Ven and Van Praag (1981) finding that education predicts positively about the tendency to engage in moral hazard.

Income (monthly) as a quantitative variable has a significant negative relationship on the likelihood to engage in moral hazard. The negative sign (-0.0014) of the coefficient of income indicates that people with higher income are less likely to engage in moral hazard among the sample population, holding all other variables constant. An individual with high income have high opportunity cost of forgoing working hours for extra medical care and as a result consumes less healthcare as compared to an individual with low income who in turn consumes more healthcare due to his/her lower opportunity cost of forgoing working hours. The p-value (0.032) indicates that the coefficient of income is statistically significant at 5% significance level. The implication is that, income has a significant impact on the tendency to engage in moral hazard. This confirms the preposition proposed by Grossman (2010) that in general when wages increases, time spent on market and non – market health goods falls and also consistent with Makoka et al. (2007) finding that income predicts negatively and a significant determinant in a free public health care regime.

Employment status as a dummy variable has a significant negative relationship on the likelihood to engage in moral hazard. The negative sign of the coefficient of employment status means that the employed are less likely to engage in moral hazard than the unemployed (control group), holding all other variables constant. The negative relation confirm the fact that, the employed is more often occupied by work and have less leisure time to visit the health facilities and in most cases during ill episode reschedule or suspend visit to health

facility and thus consumes less medical care as compared to the unemployed who have more time to spend at the health facility, in most cases for malaria treatment and thus consumes more medical care.

This confirms the finding of Butler and Wright (1991) that the unemployed are more likely to undertake insurance coverage and over utilize health care consumption because they have enough time to visit health services. However, the p-value (0.039) indicates that, the coefficient of employment status is statistically significant at 5% significance level. The implication is that, employment status has a significant impact on the tendency to engage in moral hazard at 5% significance level.

Marital status as a dummy variable has a positive sign as against unknown in the empirical model. The positive sign of the coefficient of marital status means that, married people are more likely to engage in moral hazard than singles (control group), holding all other variables constant. The positive relation confirms the fact that marriage persons with children or not have greater responsibility of taking good care of their family and as such consumes more healthcare as compared to a divorce situation with children where responsibilities fades out between the man and the woman resulting in less consumption of healthcare. However the p-value (0.258) indicates that the coefficient of marital status is statistically insignificant in the empirical model at 5% significance level. The implication is that, marital status has no significant impact on the tendency to engage in moral hazard.

Family head as a dummy variable has a positive relation to the likelihood to engage in moral hazard. The positive sign (0.722) of the coefficient of family head (female) indicates that families that are headed by females are more likely to engage in moral hazard than males

who are family heads, when other variables are controlled. This may be due to the fact that females who are household head already are occupied with house chores and as such don't have the necessary time to cater for their members during ill episode and as a result, members visit health facilities frequently leading to high consumption of medical care. However, the p-value (0.057) indicates that the coefficient of female family head is statistically insignificant in the empirical model at 5% but significant at 10% respectively. The implication is that females as family head prefers their household members to visit the health facility during an ill health episode relative to being male family head.

Family size as a quantitative variable has a significant positive relation on the likelihood to engage in moral hazard. The positive sign (0.177) of the coefficient of family size indicates that families with large household members are more likely to engage in moral hazard than families with less household members, when other variables are controlled. Family size with large members has a higher probability of its members visiting a health facility and thus consumes more healthcare as compared to a family size with less members. The pvalue of the coefficient of family size (0.011) indicates that family size is statistically significant in the empirical model at 5% significance level. The implication is that as family size increases there is likelihood for family members to engage in moral hazard.

Distances expressed in kilometres as a variable has a negative relationship with the tendency to engage in moral hazard. The negative sign of the coefficient of distance indicates that as distance increases in terms of kilometres people are less likely to engage in moral hazard holding other variables constants. This is true for the reason that consumers of health care living far away from a nearby health facility turns to have a high opportunity cost in terms of

the time and transportation cost involve in visiting the health facility and as a result consumes less medical care as compared to consumers of health care who are closer to a nearby health centre. However the p-value (0.000) indicates that the coefficient of distance is statistically significant at 1%. This confirms the finding of

Frederickx (1998) that distance and health consumption have a negative relationship. Together, all the socio – economic variables have significant impact on the tendency to engage in moral hazard because the Hosmer and Lemeshow test (8.51) has a P-value

(0.386) which is statistically significant at $P > 5\%$ significance level. The Likelihood ratio (LR) Test $= 433.26$ (P – value: 0.000) indicates that the model has a poor fit with the model containing only the constant indicating that the independent variables or the explanatory variables do have a significant effect in the determination of the dependent variable (moral hazard).

The overall Specification and Sensitivity test statistics from the result indicates 87% and 93.7% respectively indicating a best fit model. The Pseudo $R^2 = 0.644$ indicating a moderate strong relationship of 64.4% between the dependent variable (moral hazard) and the independent variables or about 64.4% of the total variation in moral hazard is explain by the variation in the explanatory variable.

4.3.1 Analysis of Marginal Effect from Empirical results

Marginal effect, or partial effect, generally measures the effect on the conditional mean of dependent variable of a change in one of the independent variable. Marginal effects often provide a good estimation to the amount of change in a dependent variable that will be

produced by a 1-unit change in the independent variable. The empirical result for the marginal

effect of the explanatory variable with respect to moral hazard is showed below.

Table 4.3 Marginal Effects of explanatory variables in the empirical model

Explanatory Variable	Marginal Effect	Std. Error.	T – stat.	P – value
Demographic Variables				
Gender [Female]	0.082296***	.0243791	3.38	0.001
Age	0.000475	.0006428	0.74	0.460
Marital status [Married]	0.028441	.0250908	1.13	0.257
Economic Variables				
Employment status	-0.05254**	.0251522	-2.09	0.037
Income	-0.000094**	.0000435	-2.16	0.030
Educational Level				
Education [over all]	-0.079518**	.0341152	-2.33	0.020
Basic Level	-0.019623	.0381816	-0.51	0.607
Secondary Level	-0.304272***	.0300984	-10.11	0.000
Tertiary Level	-0.329222***	.0496953	-6.62	0.000
Household Level				
Family head [Female]	0.0500471*	.0262335	1.91	0.056
Family size	0.0122774**	.0048027	2.56	0.011
Community Level				
Distance	-0.018481***	.0035411	-5.22	0.000

*** significant at 1%; **significant at 5% ; * significant at 10%*

Female increases the probability of engaging in moral hazard by 8.2% than the control group

(male) holding all other variables at their means. As consumption of healthcare shift from a

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male to a female increase the probability of engaging in moral hazard by 8.2%. The implication is that females are 8.2% more likely to engage in more hazard than males (control group) when other explanatory variables are held at their mean and it is

statistically significant at 1% significance level.

Age increases the likelihood of engaging in moral hazard by 0.05% holding all other variables at their means. The implication is that, a percentage increases in age increases the probability of insured malaria out – patient to engage in moral hazard by 0.05% holding all other variables constant at their averages but statistically insignificant at 5% significance level.

A married insured malaria out – patient increases the likelihood of engaging in moral hazard by 3% holding all other variables constant at their means. The implication is that as single insured malaria patient gets married the probability of engaging in moral hazard increases by 3% even though marital status is not statistically significant at 5%

significance level.

The employed who is insured is less likely to engage in moral hazard by 5% relative to being unemployed (control group) holding all other explanatory variables constant at their averages. The implication is that as unemployed insured consumer gets employed the insured consumer decreases the probability of engaging in moral hazard by 5%. The marginal effect of Employment status ($k = 1$) is statistically significant at 5% significance

level.

Income decreases the likelihood of insured malaria out – patient to engage in moral hazard by 0.009% holding all other explanatory variables constant at their means. Specifically, a percentage (a unit) increase in income reduces the probability of insured malaria outpatient of engaging in moral hazard by 0.009% (0.00009). Income is statistically significant at 5% significance level.

Insured consumers of healthcare with education whether basic, secondary or tertiary reduces their probability of engaging in moral hazard by 8% relative to insured consumers of healthcare with no education. Out – patient with basic education decreases their probability of engaging in moral hazard by 2% holding all other explanatory variables constant at their averages than insured malaria out – patient with no education. Similarly, insured malaria out - patient with secondary education reduces his/her probability of engaging in moral hazard by 30% relative to insured consumers with no education. Further, as insured consumers of healthcare moves from no education to tertiary education reduces their probability of engaging in moral hazard by approximately 33% holding all other explanatory variables constant at their means. The marginal effect of secondary and tertiary education attainment is statistically significant at 1% significance level with the exception of basic education which is not significant at 5%.

Contrary to expectations, the marginal effect of family head (female) was not significant at 5% and thus female as a family head increases the probability of her household members of engaging in moral hazard by 5% holding all other explanatory variables constant than insured malaria out – patients who are headed by males. Female as family head have no spill over effects on their household members probability of engaging in moral hazard.

The marginal effect of family size was significant at 5% and thus increase in family size increases the probability of engaging in moral hazard by 1.2% holding all other explanatory variables constant at their mean. Specifically, a percentage (a unit) increase in family size increases the probability of engaging in moral hazard by1.2% (0.012).

Finally, the marginal effects of the logit model indicate that, a percentage (a unit) increase in distance reduces the insured malaria out – patient's probability of engaging in moral hazard by 2% (0.02) holding all other variables constant at the mean. Distance is

statistically significant at 1% error level.

4.4 Test of Multicollinearity in the empirical model.

There is no collinearity problem with the sample data. The table below gives the collinearity of each variable in the empirical model using SPSS version 20 software package. There is a negative weak correlation between family head and distance which takes the highest value of 0.239 with the least correlation between family head and employment status accounting for -0.002 from the table 4.4

The implication is that, there is no collinearity problem with the sample data of the study. In other words, multicollinearity has no role to play with the statistical evidence of the study

Table 4.4 Test of multicollinearity of explanatory variables in the empirical model

variables	Gender	Age	Marital status	Family head [female]	Employment status	Income	Family size	Distance	Education
Gender	1.000								
Age	.049	1.000							
Marital status	-.022	-.048	1.000						
Family head	-.004	.013	.099	1.000					
Employment status	.014	.054	-.174	-.002	1.000				
Income	-.031	-.213	-.216	-.116	-.135	1.000			
Family size	-.005	-.092	.024	.008	-.081	-.108	1.000		
Distance	-.070	-.120	-.038	-.239	.041	.170	.058	1.000	
Education	.028	.183	-.038	-.023	-.072	-.117	.071	.209	1.000

Source: Author's Field survey (2016)

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CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND POLICY RECOMMENDATION

5.0 Introduction

The study was carried out mainly to find out whether insured malaria outpatients are engaging in moral hazard or not. This chapter consequently reviews the major results from the data analysis and discussion of results. It also comprises the conclusion of the study after which policy recommendations are made.

5.1 Summary of Major Findings

The study shows that, there was greater tendency to engage in moral hazard among the sampled respondents. In other words, 65% of the sampled respondents engage in moral hazard. This means that moral hazard exists among insured malaria out-patients at the study area.

In addition, the study discovered that, all the independent variables in the empirical model were statistically significant at 5% error level apart from age, marital status and family head which were not statistically significant at 5% confidence level. The implication is that, gender, educational level, income, employment status, family size and distance have significant effect on the likelihood to engage in moral hazard. However, all the independent variables have significant impact on the tendency to engage in moral hazard because the Likelihood ratio (LR) test statistic (433.26) has P-value (0.000) which is statistically significant at 1% level and also the Hosmer and Lemeshow test statistic (8.51) has a P-value

(0.386) which is not statistically significant at 5% confidence level.
The study discovered that, the employed are less likely to engage in moral hazard than the unemployed by 5.2%. The implication is that at 5% significance level, as the unemployed

insured malaria outpatient gets employed he or she is less likely to engage in moral hazard by 5.2%.

In addition, income was statistically significant at 5% error level and showed at negative relationship with the tendency to engage in moral hazard. The implication is that a percentage increase in insured out - patient's income levels reduces their probability of engaging in moral hazard by 0.0094% among the sampled respondents.

The study also revealed that females are more likely to engage in moral hazard than the males (control group) by 8.2% at 1% error level which implies that females have significant impact on the tendency to engage in moral hazard and that as consumption of healthcare shift from a male to a female increase the probability of engaging in moral hazard by 8.2%.

In addition, the study showed that, bigger family sizes are more likely to engage in moral hazard than smaller family size at 5% significance level. The implication is that, a percentage increase in family size population of insured malaria out – patient's members increases their probability of engaging in moral hazard by 1.2%.

 The study revealed that, distance measured in kilometres have a negative relationship with the tendency to engage in moral hazard and a significant factor that affect insured malaria out – patient tendency to engage in moral hazard. At 1% significance level, insured malaria out – patients living closer to health facility are more likely to engage in moral hazard by 1.8%. The implication is that, 1% increase in distance (measured in kilometres) reduces the probability of insured malaria out – patient to engage in moral hazard by 1.8%.

Finally, overall education showed an inverse relationship with the likelihood to engage in moral hazard and have a significant impact on the probability to engage in moral hazard at 5% significance level. The implication is that an increase in educational level reduces the tendency to engage in moral hazard by 8% among the sampled respondents. The coefficient of the education dummies (secondary and tertiary) are negative and significant at 1% as well indicating that having access to secondary and tertiary education decreases the probability of engaging in moral hazard by 30% and 33% respectively relative to being without education.

5.2 Conclusions

It can be established from the findings above that, greater percentage of insured malaria outpatients (65%) engages in moral hazard at the study area. The first objective in the study is fully achieved.

The study discovered that in terms of demographic and socio-economic factors, gender, educational level, income, employment status, family size and distance are the major determinants of insured malaria out-patient to engage in moral hazard.

5.3 Recommendations

The customary policies such as co-payment and coinsurance to reduce moral hazard are not practicable in the Ghanaian situation because of likely impoverishing effect on consumers of healthcare.

Findings from the study suggest that moral hazard exist in the study area and support from national level to sustain the National Health Insurance schemes (NHIS) to function effectively

and efficiently may not be appropriate enough to manage in the long run if this trend of moral hazard persists. The study therefore suggests that the National Health Insurance Authority (NHIA) should implement the following incentive and reward mechanisms such as free renewal of membership card for non-frequent visits to health facility to discourage multiple usages of services. For example, the Thailand health insurance scheme has used this mechanism to minimizing moral hazard to sustain their public health insurance scheme.

The study also recommends that, the National Health Insurance Authority (NHIA) should educate the public the consequences and effect of unnecessary frequent visit to accredited health facilities and misuse of healthcare so as to sustain and manage the National Health Insurance Scheme. This is because generally, when people are aware of the concept of social health insurance such as the Ghana NHIS build within key principle of cross-subsidization, moral hazard behaviours may change.

Finally, the scheme has no limit to the number of times an insured person can visit an accredited health facility for care. Hence, the study recommends that the NHIA should set some upper limit on the number of times one can access healthcare within a specified time period to discourage people from unnecessarily attending health facilities to minimize moral hazard.

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APPENDICES

Appendix 1: Questionnaire

Moral Hazard and Health Care Utilization: A case study of insured malaria outpatients at Adansi North District, Ashanti region.

This study is being conducted in partial fulfilment of the requirements for the award of MPhil degree in Economics. All information received would be used for academic purposes only and treated in the strictest of confidence.

Name of Facility: ……………………………………………………….

SECTION: **Demographic & Socio-economic Information**

1	INSTRUCTION: Where answers have been provided, please tick the box where appropriate

1. Gender: Male [   ]   Female [   ]

2. Age: [   ]

3. Marital Status: Married [   ]   Single [   ]   Divorce [   ]   Widow/er [   ]

4. Family head: Male [   ]   Female [   ]

5. Employment Status: Unemployed [   ]   Employed [   ]

Farming [   ]   Food vender [   ]   Trader [   ]   Teaching [   ]   Others [   ]

6. Educational level:

   No formal Education [   ]   Basic [   ]   Senior High [   ]   Tertiary [   ]

7. Daily Expenditure: ………………………………………………….

8. Family Size ……………………………………………………

SECTION: **Accessibility & Utilization of NHIS accredited Health services**	
2	INSTRUCTION: Where answers have been provided, please tick the box where appropriate

9. Have you registered your dependent with the national insurance scheme? Yes [   ]   No [   ]

10. Number of registered dependent: ………………………………..

11. How much did you pay for health insurance (premium)? Premium [   ]   Exempt [   ]

12. How many times do you visit the hospital within three month during an ill health episode?

Once [   ]   twice [   ]   thrice [   ]   more [   ]

13. Suppose the difference in amount between the cost of treating malaria with insurance and the annual

premium is given to you by the National Health Insurance Authority (NHIA), will you spend all the

money on the treatment of malaria?

Yes [   ]

No [   ]

14. How far is the NHIS accredited health facility from your home?

Less than 10 km [   ]   Above 10 km [   ]

15. Transportation cost GH¢…………………………………..

16. What is the nature of the road?   Very Good [   ]   Good [   ]   Bad [   ]   Very Bad [   ]

Appendix 2: Summary statistics of variables in empirical model

Dummy variables	Observation	Frequency	Std. Dev.	Min	Max
Moral hazard	500	300	0.4903886	0	1
Gender	500	300	0.4903886	0	1
Marital status	500	297	0.4915763	0	1
Family head	500	225	0.497992	0	1
Employment status	500	269	0.4990532	0	1
Education	500	313	0.4949889	0	1
Basic	500	127	0.4357336	0	1
Secondary	500	96	0.3942675	0	1
Tertiary	500	90	0.3845722	0	1

Discrete & Cont. variables	Observation	Mean	Std. Dev.	Min	Max
Age	500	43.266	18.8402	18	102
Income	500	501.28	362.6835	45	2100
Family size	500	4.802	2.637557	0	18
Number of visits	500	3.204	1.673315	0	12
Distance	500	6.448	3.633966	0	18
Transportation cost	500	5.252	3.804398	0	19

Appendix 3: Logit Estimates from empirical model using 500 observations

Dependent variable: Moral Hazard

Logistic regression   Number of observation = 500

$$LR\ chi^2\ (12)\ =\ 433.26$$

$$Probability > chi^2\ =\ 0.0000$$

Log likelihood = -119.8739   Pseudo R^2 = 0.6438

Moral hazard	Coefficient	Stand. Error.	Z – stats.	P>|z|	[95% Conf. Interval]	
Gender	1.186989	0.3584297	3.31	0.001	.4844792	1.889498
Age	0.0068453	0.0092807	0.74	0.461	-.0113446	.0250352
Marital status	0.4102219	0.362915	1.13	0.258	-.3010785	1.121522
Family head	0.7218505	0.3795822	1.90	0.057	-.0221171	1.465818
Employ. status	-0.7577973	0.3661885	-2.07	0.039	-1.475514	-.040081
Education	-1.146913	0.4984029	-2.30	0.021	-2.123765	-.170062
Basic	-0.2830308	0.5507959	-0.51	0.607	-1.362571	.7965093
Secondary	-4.388641	0.5589535	-7.85	0.000	-5.48417	-3.293112
Tertiary	-4.748499	0.7997752	-5.94	0.000	-6.31603	-3.180969
Income	-0.0013575	0.0006316	-2.15	0.032	-.0025955	-.0001195
Family size	0.1770814	0.0700597	2.53	0.011	.0397669	.3143958
Distance	-0.2665569	0.0536984	-4.96	0.000	-.3718038	-.16131
Constant	3.618631	0.7725143	4.68	0.000	2.104531	

5.132731 **Appendix 4: Marginal Effect of explanatory variables in empirical model**

Variable	Marginal Effect	Std. Error.	T – stat.	P – value

Gender [Female]	0.082296	.0243791	3.38	0.001
Age	0.000475	.0006428	0.74	0.460
Marital status [Married]	0.028441	.0250908	1.13	0.257
Employment status	-0.05254	.0251522	-2.09	0.037
Income	-0.000094	.0000435	-2.16	0.030
Education	-0.079518	.0341152	-2.33	0.020
Basic Level	-0.019623	.0381816	-0.51	0.607
Secondary Level	-0.304272	.0300984	-10.11	0.000
Tertiary Level	-0.329222	.0496953	-6.62	0.000
Family head [Female]	0.0500471	.0262335	1.91	0.056
Family size	0.0122774	.0048027	2.56	0.011
Distance	-0.018481	.0035411	-5.22	0.000

Appendix 5: Multicollinearity test of variables in empirical model

variables	constant	Gender	Age	Marital status	Family head	Employ. status	Education	Basic	Secondary	Tertiary	Income	Family Size	Distance
Constant	1.000	-.188	-.330	-.121	-.014	-.177	-.293	-.115	-.206	-.023	-.159	-.294	-.587
Gender	-.188	1.000	.049	-.022	-.004	.014	.028	-.015	-.222	-.131	-.031	-.005	-.070
age	-.330	.049	1.000	-.048	.013	.054	.183	-.164	-.226	-.087	-.213	-.092	-.120
Marital status	-.121	-.022	-.048	1.000	.099	-.174	-.038	.102	.021	.065	-.216	.024	-.038
Family head	-.014	-.004	.013	.099	1.000	-.002	-.023	.061	-.132	-.120	-.116	.008	-.239
Employ status	-.177	.014	.054	-.174	-.002	1.000	-.072	.006	.076	-.016	-.135	-.081	.041
education	-.293	.028	.183	-.038	-.023	-.072	1.000	-.620	-.373	-.391	-.117	.071	.209
Basic	-.115	-.015	-.164	.102	.061	.006	-.620	1.000	.598	.523	.055	-.054	-.040
Secondary	-.206	-.222	-.226	.021	-.132	.076	-.373	.598	1.000	.501	.116	-.107	.253
Tertiary	-.023	-.131	-.087	.065	-.120	-.016	-.391	.523	.501	1.000	-.226	-.116	.133
Income	-.159	-.031	-.213	-.216	-.116	-.135	-.117	.055	.116	-.226	1.000	-.108	.170
Family size	-.294	-.005	-.092	.024	.008	-.081	.071	-.054	-.107	-.116	-.108	1.000	.058
Distance	-.587	-.070	-.120	-.038	-.239	.041	.209	-.040	.253	.133	.170	.058	1.000