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Effects of co-payments on utilization of healthcare services at a private out-patient facility: a case study of AAR healthcare Kisumu Out-patient Centre

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EFFECTS OF CO-PAYMENTS ON UTILISATION OF HEALTHCARE SERVICES AT A PRIVATE OUT-PATIENT FACILITY – A CASE STUDY OF AAR HEALTHCARE KISUMU OUT-PATIENT CENTRE

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the study contains no material previously published or written by another person except where due reference is made in the thesis itself.

Michael Gone

March 2018

Approval

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ABSTRACT

Rising cost of healthcare is a concern worldwide. In Kenya, this has seen insurance companies report losses despite increase in premiums. In order to control the rising costs, insurance companies have introduced co-payments on healthcare services with an aim of controlling utilization by limiting visits, costs, drugs and diagnostics. However, the effectiveness of co-payments in reducing utilization is still unclear, with some studies arguing that it has little or no effect. A retrospective cross-sectional study was carried out at AAR Healthcare Kisumu Outpatient Centre amongst AAR insurance patients seeking healthcare services at the facility. The study sought to determine if presence of a co-payment affects utilization and cost of various healthcare services. Data of approximately 3238 AAR insurance patient visits over a period of 6 months was obtained from the facility CIMS and ERPS systems. Descriptive analysis was done presenting counts (percentages), means (standard deviations) and medians (interquartile ranges (IQR)). Bivariate analysis tests for differences in the demographic and clinic costs among the co-pay groups was done using Chi square tests for categorical variables and one-way analysis of variance (ANOVA) and median tests for the continuous variables, presenting the p values. Utilisation of health services was analyzed in terms of average cost per visit, number of laboratory tests done and number of drugs issued to clients with no co-payments, those paying Ksh. 50, those paying Ksh. 200 and those paying Ksh. 500 as co-payment. The study revealed no significant effect of a co-payment on the utilisation of healthcare services. There was no significant difference in the cost of a visit based on the co-payments status. The number of medication prescribed did not depend on the co-payment status. There was no significant difference in the laboratory tests ordered between those who had co-payment and those who did not have a co-payment; however there was a significant difference in the utilisation of laboratory tests based on the amount of co-payment paid, with the patient visits with a co-payment of Ksh. 50 having significantly less laboratory tests done. The results from the study can be used to inform policy on healthcare financing.

TABLE OF CONTENTS

List of Abbreviations and Acronyms

AAR	African Air Rescue
AKI	Association of Kenya Insurers
CIMS	Customer Information Management System
ERPS	Enterprise Resource Management System
HMO	Health Maintenance Organisation
SDGs	Sustainable Development Goals
SPSS	Statistical Package for Social Sciences
WHO	World Health Organisation

Operational Definitions

Allocative Efficiency: This is an output level where the price equals the marginal cost of production. The price the consumers are willing to pay for a healthcare service equivalent to the marginal utility they get from consuming the service or product.

Catastrophic Expenditure: This occurs when out of pocket expenditure in healthcare constitutes a large portion of a household or individual's income, thus driving them into poverty.

Chronic Condition: A human health condition that is long lasting in nature.

Co-payment: A payment made by a patient in addition to that made by a third party including an insurer in order to access healthcare services.

Cost Sharing: The share of costs covered by an insurance company that a patient pays out of his pocket. The term covers forms of payments such as deductibles, coinsurance and copayments.

Gate Keeping: A way of controlling access to healthcare services to patients who may be in need of it.

Moral Hazard: The additional healthcare services that are sought by individuals by virtue of the fact that that they are insured or the payments for services consumed are made by a third party.

Physician: A medical practitioner, including a doctor, who practices medicine that involves promoting, preserving and maintaining health.

Prescriber: Anyone in the medical profession who is legally allowed to order medicines for patients.

Premiums: The amount paid by an individual or an organization in order to be insured against certain risks, including ill health.

Price Inelastic: This is an economic situation where the quantity of a service or good that is supplied or demanded is not affected by changes in the pricing of that good or service.

Rational Use: A state where people use healthcare commodities and services in a way that meets their needs but is not wasteful in any way.

Third Party Payers: An organization, including insurers and employers that pay for healthcare on behalf of the beneficiaries. The beneficiaries in most cases pay a premium in advance before the payer takes over that responsibility.

User Charges: A cost levied by a healthcare provider or a payer to an individual in order to have access to healthcare services.

Utilisation: The act of using healthcare services.

List of Tables

List of Figures

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CHAPTER ONE: INTRODUCTION

1.1 Background

Rising healthcare cost is a growing concern world-wide. In order to curtail the rising costs, healthcare insurance companies and other third party payers have introduced co-payments and other forms of cost sharing (Chernew, Gibson, & Fendrick, 2010). Co-payments serve to achieve two aims in a healthcare setting; that is, raising revenue in order to subsidize third party payers in cases where their contributions are not adequate to cover total health care expenses (Drummond & Towse, 2012) and to reduce moral hazard hence making patients consumption of health services rational (Gemmill, Thomson, & Mossialos, 2008)

Use of user charges including co-payments is an on-going debate amongst health economics. Arguments in economics that favour user charges are based on the concept of allocative efficiency. Resources are perceived to be efficiently allocated when people are willing to pay for a commodity at a price that reflects the marginal cost of producing the commodity (Reinhardt, 1992). This ensures that only those who are willing to pay for a particular commodity should have access to it. In addition, it is efficient to provide a harmful or ineffective commodity to those willing to pay for it while provision of an effective and beneficial commodity to those unable to pay for it is considered inefficient. User charges aid in correcting this by reinstating price, therefore availing healthcare to only those who are able and willing to pay. Regardless of the health consequences of introduction of user charges, from an economic perspective, the subsequent reduction in health use contributes to allocative efficiency (Gemmill et al., 2008).

Various studies have sought to understand the effect of user charges, co-payments included, on the utilisation of healthcare services by patients. Utilisation may relate to total cost of services received, number of visits, number of drugs issued and number of services received. These studies carried out in the United States came up with varied conclusions. A study carried out in the department of veteran affairs illustrated that an increase in co-payments resulted in a reduction in the number of medication obtained by veterans, especially those on a higher number of medication (Stroupe et al., 2007). A study on the Medicaid program found that implementation of a co-payment on prescription drugs resulted in an immediate decrease in the

utilisation of prescription drugs, with no overall change in the trend of utilisation (Hartung et al., 2008). Another study on Medicaid patients with cancer concluded that when faced with even moderate co-payments, the patients changed their health seeking behaviour. The co-payments did not also result in an overall decrease in the cost of healthcare but resulted in more negative consequences. The patients who had co-payment imposed on them ended up having more emergency room visits than those without co-pays (Subramanian, 2011).

Therefore, the impact of co-payments on the utilisation of health services is not predictable. The focus on patient use of services may seem misplaced since it is the doctors that make the decision to prescribe drugs and offer services and selective application may actually increase costs. Third party payers may also be levying co-payments in order to shift the burden of payments to the patients (Gemmill et al., 2008). This may happen in resource limited settings, like Kenya, and so brings into question the actual effect of user charges on the utilisation of healthcare services.

The health insurance industry has been growing steadily in Kenya in the recent past. This has seen the premiums grow by 30.4% in 2016. Despite this, the sector registered a total loss of Ksh. 0.78 billion in 2016 up from Ksh. 0.31 billion in 2015. (Association of Kenya Insurers, 2016) This overall loss in the industry may be due to moral hazard. In order to correct this, most healthcare insurance companies, have introduced co-payments on certain groups of patients. The co-payments are mainly fixed and are therefore not dependent on the socio-economic status of the individuals. Thus, the payments display a regressive pattern when expressed as a percentage of consumption (Chuma & Maina, 2012). This may therefore affect utilisation of healthcare services, especially amongst those with low incomes despite having an insurance cover. A study done in the general population revealed that most Kenyans prefer a healthcare model that does not have any co-payments (Mulupi, Kirigia, & Chuma, 2013), and so levying of the same may reduce utilisation. However, there is inadequate data on how such fees affect utilisation of health services amongst those insured by private insurance companies. This study therefore seeks to establish the effects of co-payments on utilisation of healthcare services in this population.

The study was carried out at AAR Healthcare Kisumu Outpatient Centre. This is one of the 18 Outpatient Centres run by AAR Healthcare Limited in Kenya. The organisation also runs other outpatient centres in Uganda and Tanzania, with an inpatient facility in Kampala, Uganda. The facility is a typical private out-patient facility that caters mostly for the insured urban population in Kisumu. It is located on the first floor of Al Imran Plaza along Oginga Odinga Street in Kisumu. AAR Healthcare and AAR Insurance, though initially were run as one organisation when AAR was a Health Maintenance Organisation (HMO), have since separated with each being run independently hence AAR Insurance allows its patients to visit other healthcare facilities.

The Kisumu Outpatient Centre sees an average of 54 outpatient clients in a day, with 95% of them being insured patients. Clients insured by AAR Insurance account for about 35% of the total clients seen in the outpatient centre. The facility employs 11 staff permanent and contract basis, namely 2 medical doctors, 2 nursing officers, 1 laboratory technologist, 2 pharmacy technologists, 1 accountant, 1 receptionist, 1 marketing executive and 1 office assistant. The facility has a paediatrician, Obstetrician and gynaecologist, physiotherapist, nutritionist and sonographer employed on a temporary basis. The facility enlists the services of locum staff in all departments on a need basis depending on the workload. Services offered at the facility include doctors' and specialists consultation, pharmacy, laboratory services, nutritional counselling, physiotherapy, antenatal and postnatal clinics, vaccinations and ultrasound imaging services.

1.2 Problem Statement

High cost of healthcare is a concern worldwide. In Kenya, this has seen health insurance companies reporting losses despite an increase in the premium contributions in the last 5 years. This has led to health insurance companies and other third party payers introduce gate keeping measures such as co-payments whose main purpose is to control utilisation of health services by patients and reduce moral hazard (Chernew et al., 2010; Gemmill et al., 2008).

In certain settings, co-payments have been shown to reduce utilisation of healthcare services in terms of number of visits, cost per visit, laboratory tests ordered and drugs issued. However, the effectiveness of co-payments in reducing utilisation of

healthcare services and healthcare costs is not certain, with some studies showing an increase in both utilisation and costs in certain situations where co-payments have been levied (Subramanian, 2011). This may be due to reduced access to essential medication, hence more emergency department visits and this in the long run led to more adverse effects which increased the overall cost of healthcare in such individuals. It may also be due to patients demanding more services or more costly interventions due to having made a co-payment (Tamblyn et al., 2001). In addition, the co-payment is usually levied on a group of patients without considering their ability to pay, thus shifting the burden of payments from the third party payers to the patients, which promotes inequity in healthcare. This has led some authors to recommend use of co-payments selectively in order not to limit access to essential services but still cater for personal preferences of those willing to pay. Therefore the study seeks to establish the effect of co-payments on utilisation of healthcare services at AAR Kisumu Outpatient Centre amongst patients insured by AAR Insurance. This will aid in steering the country towards achievement of Universal Healthcare and financial risk protection for vulnerable populations.

1.3 Study Objectives

1.3.1 Broad Objective

To determine the effect of co-payments on utilisation of healthcare services by patients seeking care at AAR Healthcare Kisumu Outpatient Centre

1.3.2 Specific Objectives

I. To assess the association between co-payments and the average cost of healthcare services for AAR Insurance patients seeking healthcare services at AAR Healthcare Kisumu Outpatient Centre.

II. To assess the association between co-payments and the average number of drugs issued to AAR Insurance patients seeking healthcare services at AAR Healthcare Kisumu Outpatient Centre.

III. To assess the association between co-payments and the average number of laboratory tests ordered for AAR Insurance patients seeking healthcare services at AAR Healthcare Kisumu Outpatient Centre.

1.4 Research Questions

I. Does the presence of a co-payment affect the average cost of healthcare services for AAR Insurance clients seeking health services at AAR Healthcare Kisumu Outpatient Centre?

II. Does the presence of a co-payment affect the average number of drugs issued to AAR Insurance clients seeking health services at AAR Healthcare Kisumu Outpatient Centre?

III. Does the presence of a co-payment affect the average number of laboratory tests ordered for AAR Insurance clients seeking health services at AAR Healthcare Kisumu Outpatient Centre?

1.5 Justification of the Study

There is need to control the rising healthcare costs that have resulted into catastrophic expenditures leading to impoverishment in Kenya (Xu, James, Carrin, & Muchiri, 2005). The high costs have also resulted in losses for the health insurance industry in Kenya in successive years, with only few insurance companies reporting profits (Association of Kenya Insurers, 2016), hence bringing into question the long term future of the industry, and in extension healthcare financing especially for employers and those with private insurance covers. The role of co-payments has been questioned, with various authors arguing that it does not serve to curtail healthcare costs but merely transfers the burden of healthcare financing to the patients (Drummond & Towse, 2012; Gemmill et al., 2008).

Therefore the study seeks to establish the effect of co-payments in utilisation of healthcare services. This will help third party payers and insurance companies to come up with a better model of controlling moral hazard and the overall costs of healthcare services. This, if properly implemented may lead to an improvement in financial performance of the private healthcare insurance sector, and this may lead to reduced premiums with will benefit both employers and individuals paying for their health insurance. The study will aid healthcare providers like AAR Healthcare to develop strategies of sustaining their businesses by retaining various categories of patients and encouraging utilisation of services in light of attempts by insurance companies to curtail utilisation through levying of co-payments. The study will also contribute to the WHO policy on sustainable healthcare financing and universal

coverage, and its building block on Financing in its Health Systems Framework. The study will also contribute to the Sustainable Development Goals (SDGs) number 1, 3 and 10 that address poverty, good health and well being, and inequalities respectively. Lastly, the study will also help achieve Kenya's vision 2030 Social Pillar that tries to address the issue of affordable and universal healthcare for all Kenyans.

CHAPTER TWO: LITERATURE REVIEW

2.1 Overview of Co-payments

Co-payments are one of the gate-keeping measures designed by third party payers in a bid to reduce utilisation of healthcare services. When co-payments are absent, patients have no financial disincentive to forgo care, and are likely to only utilize care that is useful to them. Hence co-payments serve to reduce moral hazard. However, very high co-payments undermine the primary reason why individuals insure themselves, that is protection from catastrophic expenditure when they fall ill. Co-payments also place unnecessary burdens on the lower income groups and sicker members of the society (Gruber, 2006)

Co-payments are usually implemented in a healthcare system in order to reduce moral hazard and encourage patients to use healthcare services rationally (Gemmill et al., 2008), hence they serve to reduce utilisation of these services. This is especially true for out-patient care which is usually more sensitive to co-payments, and so it might be more effective in such a setting (Kupor, Liu, Lee, & Yoshikawa, 1995). When setting co-payments, the payers need to look at the patients' willingness to pay. If the payments are set too low, then the desired effect is highly unlikely to be achieved and so co-payments may not result in reduced utilisation (Drummond & Towse, 2012). The same author also argues that if set too high, then co-payments may price out those who need the services but cannot afford what has been set.

Co-payments tend to reduce utilisation of healthcare services. This achieves the goal of reducing moral hazard and enhancing allocative efficiency (Gemmill et al., 2008). This is because patients tend to misuse services when third parties are paying for the services. However, in certain cases, co-payments by reducing utilisation tend to pose bigger challenges. In services that are a marker of quality, co-payments may in the process of reducing utilisation result in long term negative consequences to the health of the patients and the healthcare sector at large (Chernew et al., 2010). Co-payments in the long run may also be in-effective and hinder universal access to healthcare as in the case of a mandatory co-payment introduced in Australia (Laba et al., 2015). This may be as a result increased financial burden to families and individuals due to increase in out of pocket payments.

In certain cases, co-payments have been shown not to affect the overall utilisation of healthcare services. A study done on the Medicaid Program showed that co-payments did not have an effect on the overall utilisation of healthcare services (Hartung et al., 2008). Co-payments, by virtue of their effect on utilisation of certain services resulted in an increase in emergency department visits due to more adverse effects due to failure to access essential services (Subramanian, 2011). Therefore, the effects of co-payments on utilisation of healthcare services are not obvious.

2.2 Effect of co-payments on average cost of healthcare

When levying co-payments in a healthcare system, the goal is usually to discourage utilisation of services by exploiting the patients' unwillingness to pay, hence the expected result is usually lower healthcare expenditures (Baum et al., 2016). Various studies have shown that this goal is usually achieved both in the short and long run. Co-payments usually steer patients into therapies that are more cost effective and offer value for money, and therefore resulting in lower costs of healthcare (Drummond & Towse, 2012). This leaves other more expensive services for those willing to pay. Since medication form a significant portion of healthcare costs, it has been shown that when payers put co-payments on medication not preferred by them, patients tend to shift to those preferred by the payer, which in most cases tend to be cheaper but offer the same therapeutic benefits (Rector, Finch, Danzon, Pauly, & Manda, 2003). This might end up reducing the average cost per visit to a physician. Other authors have also argued that co-payments may help control healthcare costs by limiting access to new services such as medication that offer very little additional advantages to existing therapies (Garattini & van de Vooren, 2013). This in essence helps in reducing the cost of healthcare by limiting access to such products and services. Therefore in the above cases, co-payments tend to achieve their objectives.

However, co-payments may not always reduce the cost per visit for patients. This is true in cases where patients with chronic conditions require regular follow-ups and so levying of co-payments may reduce these visits, and this may result in long increase in cost of healthcare in subsequent visits and also result in detrimental health effects (Del Mar, 2014). This is because subsequent visits may become more expensive since patients may expect that all their conditions will be catered for in these visits. A study carried out on Medicaid patients on cancer treatment showed

that the overall cost of treatment increased in 6 months in the intervention group where co-payments were introduced as opposed to the control group (Subramanian, 2011). This may indicate that though utilisation of healthcare services reduced due to levying of co-payments, the subsequent visits became more expensive, hence co-payments did not actually result in reduced healthcare costs. In addition, certain authors have argued that reduced expenditure on healthcare when co-payments are introduced may only be short term, but in the long run may increase the overall costs of care, especially if no cheaper substitutes for the for-gone services are available (Stroupe et al., 2007). This may be due to adverse health effects which are more costly to treat.

Co-payments if levied selectively on certain components of healthcare may result in a reduction in their utilisation, but increase the utilisation of other services. For example, when co-payments were levied on medication, utilisation of other healthcare services increased. Therefore the savings made on medication may end up being lost in other areas, hence the overall costs ended up increasing instead of decreasing (Tamblyn et al., 2001).

2.3 Effect of co-payments on drug prescriptions

Cost of pharmaceuticals, to a great extent specialist medication is a major contributor to increasing healthcare costs (Schumock et al., 2016). Therefore control of utilisation of drugs and pharmaceuticals can reduce overall healthcare costs. Indeed, some studies support the view that levying of co-payments will reduce utilisation of pharmaceutical services. A study carried out in the Department of Veteran Affairs showed a decrease in the number of medications obtained after increasing co-payments, with a larger impact on those with higher medication use, low cost drugs and over the counter medication (Stroupe et al., 2007). Another study on cancer patients on the Medicaid Program showed a decrease in the number of days of supply of prescription drugs (Subramanian, 2011). These two studies indicate that co-payments reduce utilisation of pharmaceutical services especially for patients with chronic conditions who utilise these services on a consistent basis. Amongst the lower income groups, increases in co-payments result in reduced use of healthcare services and medication which in the long run may cause adverse effects on their health thus leading to increased use of emergency services (Lu, 2003). Therefore co-

payments levied on drugs, especially the essential medication may in fact increase healthcare costs in the long run due to repeat visits. Therefore integrated measures should be adopted to reduce healthcare costs in such populations.

A study done on Medicaid Population showed no increase in utilisation of medication for certain chronic conditions in the short run when co-payments were introduced, but also showed a significant decrease in the other patient groups (Hartung et al., 2008). This shows that use of co-payments may not achieve its intended purpose in some classes of patients, depending on their medical conditions. This is also corroborated in a study done by Goldman et al which showed that when co-payments are introduced for patients which chronic conditions, it might reduce the utilisations of drugs not related to the condition but not reduce utilisation of drugs related to the chronic condition (Goldman, Joyce, & Zheng, 2007). These studies are contradicted by another one that indicates co-payments, especially when tiered may lead to shift from non-preferred to preferred brand medications (Rector et al., 2003). These are drugs preferred by the payers, thus co-payments achieve their aim.

Therefore, the role of co-payments in pharmaceuticals is still a debate. In other cases, it has been argued that most of the pharmaceutical products issued have no therapeutic uses and are therefore a waste of resources. Majority of them are not even opened and used by the recipients (Winkelmann, 2004). Therefore co-payments are likely to be effective in such a setting. On the other hand, people with life threatening conditions are more price inelastic and will tolerate more co-payments in order to obtain their medication. Therefore their demand for the services are not driven by moral hazard but by more complex decision making that tends to ignore the financial implications (Hirsch, Balu, & Schulman, 2014). Therefore in such a population, co-payments may result in catastrophic expenditures which may lead to impoverishments especially in low income settings. Other studies have also indicate that the number of medication given is usually determined by the physician and has little relation to patient preference, hence presence of a co-payment may not necessarily affect the number of medications issued (Holloway, Gautam, Harpham, & Taket, 2002). This is because patients normally rely on the prescriber's advice. Hence more understanding of the effects of co-payment is necessary to fully understand its effects on demand on medication across all classes of patients.

2.4 Effect of co-payments on utilisation of laboratory services

Utilisation of laboratory services is one of the major concerns relating to the increase in the overall cost of healthcare. This is because there are many unnecessary tests that are routinely performed (Vegting et al., 2011) hence need to control use of diagnostic services. In most cases it is the physician that decides the number of laboratory tests to be carried out on a patient, but studies have indicated that inappropriate and unnecessary laboratory tests may in fact lead to more consultations and false positive results which may increase the overall cost of healthcare in the long run. This is rampant in cases where physicians carry out defensive medicine for fear of litigation (DeKay & Asch, 1998) , and therefore use of co-payments together with physician education on costs may help control such unnecessary visits, hence reduction in utilisation of healthcare services. A study carried out in a Cyprus Emergency Department revealed the contrary that introduction of a co-payment did not result in a decrease in the number of laboratory tests ordered, most likely because laboratory test ordering is supplier induced, but resulted in an overall reduction in the number of visits to the facility (Petrou, 2016). Therefore the use of co-payments to reduce laboratory tests ordered must be integrated with other measures including use of guidelines.

In certain cases, presence of a co-payment has shown no significant changes in utilisation of laboratory services, like in a study amongst income Adult Medicaid Beneficiaries in Oregon. In this case, there was an overall shift in treatment patterns which eventually did not result in any cost reductions (Wallace, McConnell, Gallia, & Smith, 2008). Therefore use of co-payments alone may not necessarily reduce utilisation of laboratory services. In addition, in cases where laboratory tests are primarily for preventive purposes or in acute cases of illnesses, introduction of co-payments did not result in a decrease in the utilisation of these laboratory services. However, in cases where the laboratory cases were for chronic conditions, introduction of co-payments resulted in a decrease in utilisation of such tests. The absence of a reduction in the preventive and acute laboratory tests may have been due to the patients' awareness of the potential benefits of the tests, while the reduction in utilisation in the case of chronic conditions may be due to patients understanding the chronic nature of their conditions and therefore deferring these tests (Reddy, Ross-Degnan, Zaslavsky, Soumerai, & Wharam, 2014). Therefore the

effect of co-payments on utilisation of laboratory services is unpredictable, and depends on the patients, physician and the condition under management.

2.5 Conceptual Framework

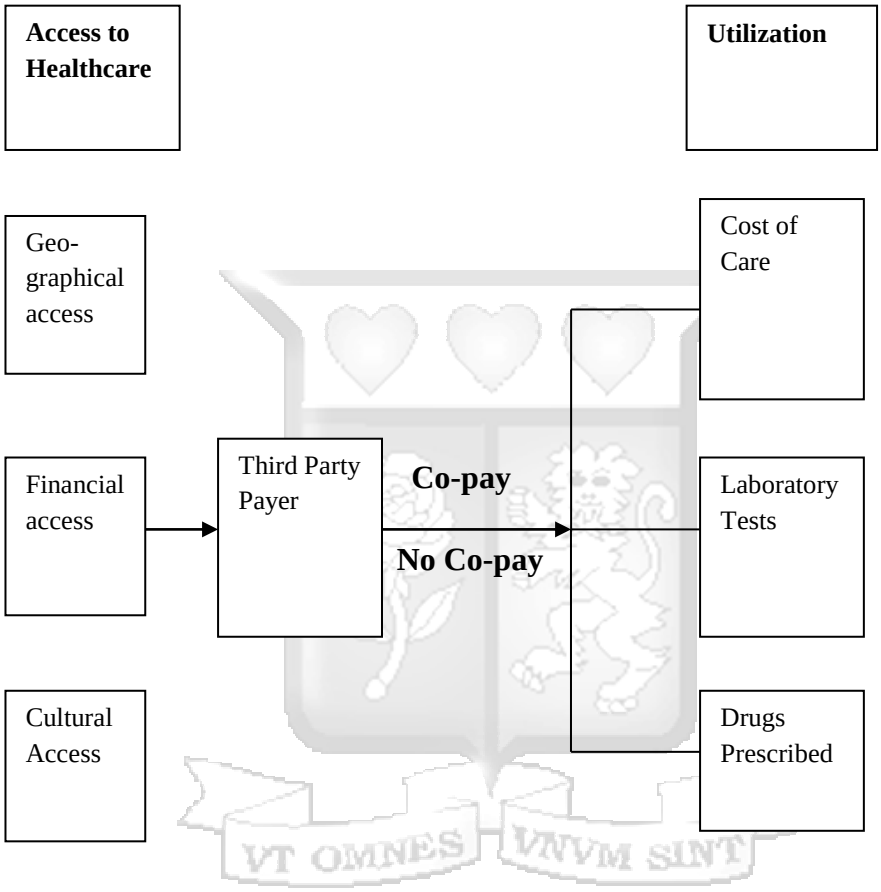

Figure 2.1: Conceptual Framework of Effect of Co-Payments on Utilisation of Healthcare Services

The conceptual Framework shows the link between access to care in light of a third party payer and presence or absence of a co-payment. The framework focuses on financial access which is affected by the presence of a co-payment. Therefore, where there is a third party payer, the framework looks at how the presence or absence of a co-payment will affect the three measures of utilisation, that is, cost of care, number of drugs issued and number of laboratory tests done.

CHAPTER THREE: METHODOLOGY

3.1 Study Design

The study was retrospective, cross-sectional in nature. Patient visit data from one insurer, that is AAR insurance, was collected from a 6 month period. Quantitative data on average cost per visit, number of laboratory test and dugs issued per patient was collected from the facility Customer Information Management System (CIMS) and Enterprise Resource Management System (ERPS) was collected and analysed based on the different categories of patients.

3.2 Study Population and Sampling

The study population is patients insured by AAR Insurance seeking services at AAR Healthcare Kisumu Out-Patient Centre. These patients were classified into two categories, that is those whose insurance premiums are paid by corporates or employers and those who pay for their own premiums. The co-payments are levied with most of the individual clients having a co-pay of sh. 500. Corporate patients have a co-payment of either Sh. 50, 200, or 500 depending on the corporate.

Data for AAR Insurance patients who received services at AAR Kisumu Out-Patient Centre for a period of 6 months, that is, from April 2017 to September 2017 was collected. The initial data included 4769 patient visits of which 1531 visits were excluded since the patients in this case did not pay a consultation fee, therefore did not meet the inclusion criteria of the study. Therefore, the study population totalled to 3238 visits from facility Customer Information Management System (CIMS) and Enterprise Resource Management System (ERPS). These were collected and analysed based on the different categories of patients.

Only patients insured by AAR insurance were considered for the study. Patients insured by other insurance companies or organisations and private patients paying cash for services rendered were not considered for the study. Only AAR insurance patients who consulted a doctor during the visit were considered. Patients insured by AAR insurance who only visited the facility for only laboratory and pharmacy services were not considered since co-payments are not levied on such visits.

3.3 Data Collection

Quantitative data for a period of 6 months (April 2017 to September 2017) was collected from the facility CIMS and ERPS systems. The system is developed by Srishti Software Applications Limited. Data on the average cost per visit, number of laboratory tests carried out per and number of drugs issued, together will the corresponding number of patients based on the 4 patient groups was collected. The data was then entered in the spreadsheet (Appendix 2), cleaned and prepared for analysis.

3.4 Data Analysis

Data was cleaned and analysed. Descriptive analysis was done presenting counts (percentages), means (standard deviations) and medians (interquartile ranges (IQR)). Bivariate analysis tests for differences in the demographic and clinic costs among the co-pay groups was done using Chi square tests for categorical variables and one-way analysis of variance (ANOVA) and median tests for the continuous variables, presenting the p values. This was done to analyze the data in order to determine variations in utilisation of health services in terms of average cost per visit, number of laboratory tests done and number of drugs issued to clients with no co-payments, those paying Ksh. 50, those paying Ksh. 200 and those paying Ksh. 500 as co-payment. Statistical significance was at determined at the 5% level of significance. STATA software version 15.1 was used for all the descriptive and bivariate analysis. The results are presented in pie charts, tables and graphs.

3.5 Measures of Reliability and Validity

The data to be used from the study was obtained from the health facility CIMS and ERPS system. The system segregated the various groups of clients and so the data obtained is reliable. The spreadsheet in which data will be entered was piloted at the AAR Eldoret Outpatient Centre to test its effectiveness. Data was then retrieved from the system on two different occasions by different people to ensure observer reliability and test-retest reliability. Some of the patient visits were sampled and confirmed from the system to ensure accuracy.

External validity was guaranteed by ensuring that all data within the particular 6 month period was considered. Though purposive sampling was used, the expected

number of 3238 visits and the fact that the patient group is heterogeneous ensured external validity. Content validity was guaranteed as the spreadsheet will be structured in a way that it captured all the relevant data relating to utilisation of healthcare services and the corresponding presence or absence of a co-payment.

3.6 Ethical Considerations

Approval to carry out the study was sought from the Senior Management of AAR Healthcare Limited (Appendix 1) before accessing the data from CIMS and ERPS (Appendix 5). Confidentiality of respondents and source of information was assured.

CHAPTER FOUR: PRESENTATION OF RESEARCH FINDINGS

4.1 Descriptive Statistics

The analysis data collected over a period of 6 months (from 1st April 2017 to 30th September 2017 from AAR healthcare Out-patient Centre in Kisumu. The initial data included 4769 patient visits of which 1531 visits were excluded since the patients in this case did not pay a consultation fee, therefore did not meet the inclusion criteria of the study. Therefore, 3238 patient visits were analysed. Majority of the visits were made by males (2153, 66.5%). Patients under the age of 18 years accounted for 876 (27.05%) of the visits. The mean age of patients was 31.6 years, with a median age of 33.5 years (IQR: 15-45). The mean age of adult patients (18 years and above) was 40.67 years. Almost all, 3122 (96.4%) were on a corporate cover, with only 116 (3.6%) being on individual covers. Of all the patient visits, only 275 (8.5%) were on co-payment, with the rest having no co-payment. More than half of the patient visits with a co-pay (147 out of 275) paid an amount of Ksh. 500. None of the patients on an individual cover had a co-payment. Majority of the patients (90.4%) were seen by a General Practitioner. The mean of Consultation (Insurance portion) fee was Ksh. 1243 (SD= 243.58) and mean of Total Consultation fee was Ksh. 1272 (SD= 221.03). The mean cost of the lab tests done for the patient visits was Ksh. 835 and mean cost of medication was Ksh. 2903. The mean cost of each visit was Ksh. 5149 (SD= 2717.55). Majority of the patients received two, three or four drugs, that is, 19.1%, 23.9% and 20.3% respectively. With regards to lab tests, more than half of the patient visits (57.4%) did not have a laboratory test done while 22.4% had two tests done.

Table 4.1: Descriptive Statistics

Variable	Categories	Mean (SD)/ Count (%)	Median (IQR)
Age (Years)		32 (18.31)	33.5(15-45)
	<18 Years (876)	7.12 (27.05%)	
	18 Years and Above (2362)	40.67 (72.95%)	
Gender.	**Female**	1085 (33.5%)	
	Male	2153 (66.5%)	
Payee Type	**CORPORATE**	3122 (96.4%)	
	INDIVIDUAL	116 (3.6%)	
Co-pay	**None**	2963 (91.5%)	
	Co-pay	275 (8.5%)	
Visit Type	**GP Visit**	2927 (90.4%)	
	Specialist Visit	311 (9.6%)	
Visit Fee (Co-Pay) (Ksh.)	**0**	2963 (91.5%)	
	50	24 (0.7%)	
	200	104 (3.2%)	
	500	147 (4.5%)	
Consultation (Insurance portion) (Ksh.)		1243 (243.58)	1200(1200-1200)
Total Consultation (Ksh.)		1272 (221.03)	1200(1200-1200)
Cost of Lab Tests (Ksh.)		835 (1463.35)	0(0-1400)
Cost of Medication (Ksh.)		2903 (2236.04)	2580.57(1412.6-3937.19)
Other services (Ksh.)		139 (578.67)	0(0-0)
Total cost of visit (Ksh.)		5149 (2717.55)	4698.16(3212.6-6274.26)

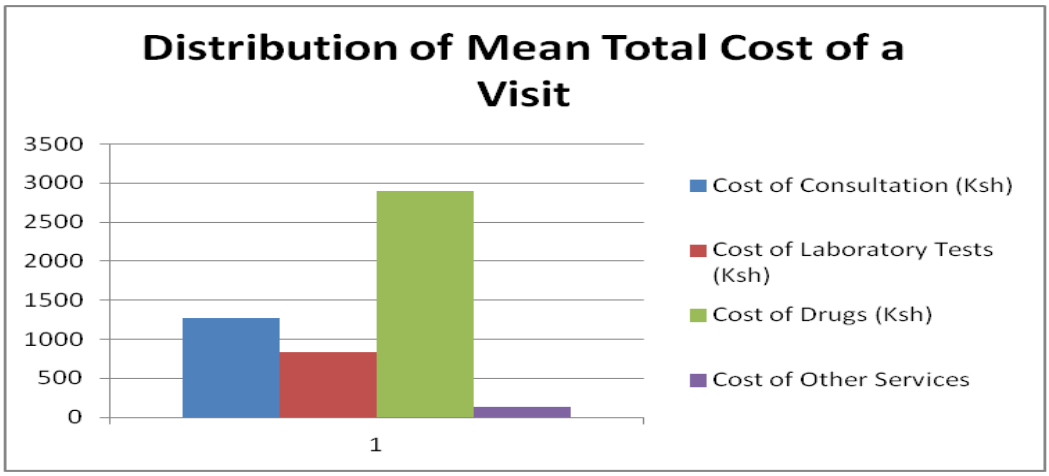

Figure 4.1: Distribution of the mean total cost of visit

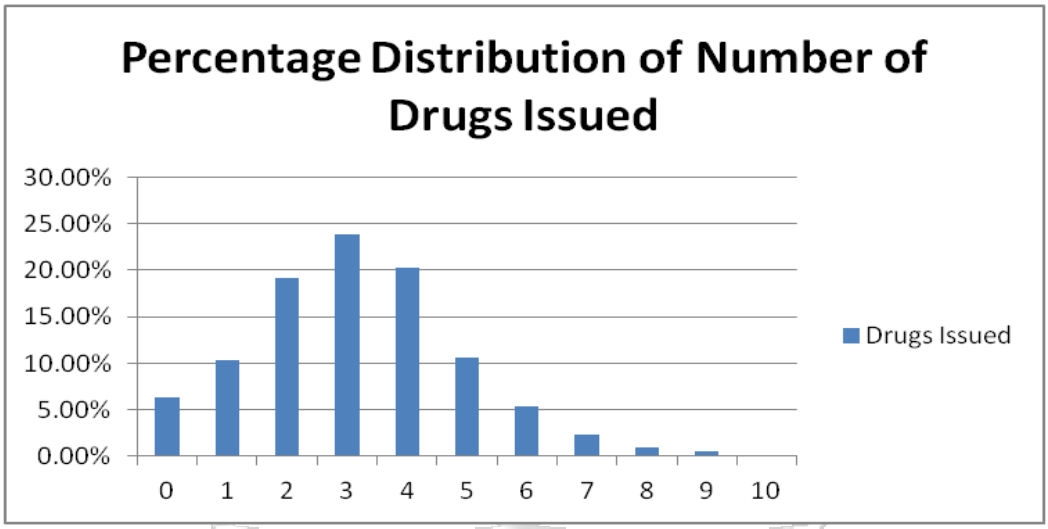

Figure 4.2: Percentage Distribution of Number of Drugs Issued

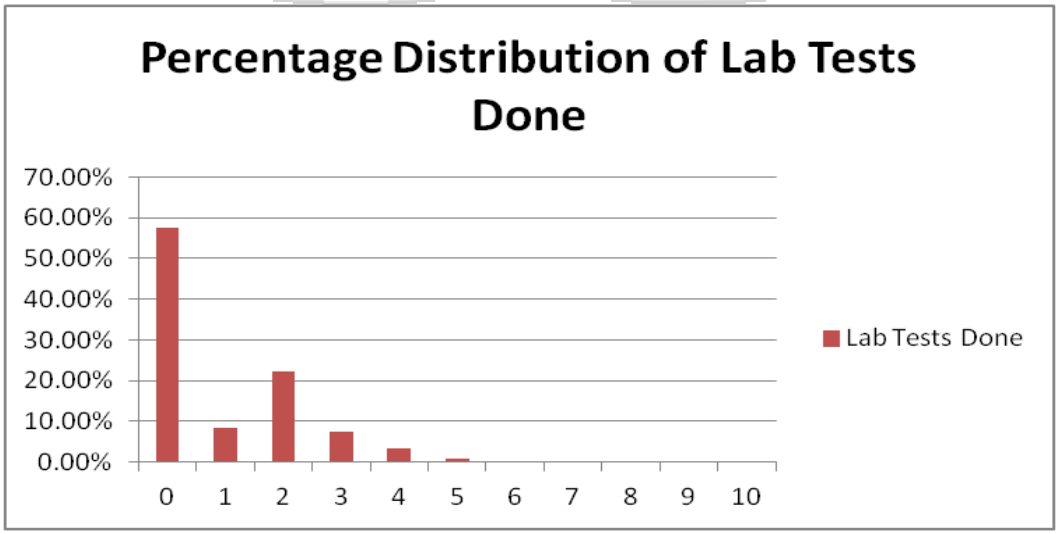

Figure 4.3: Percentage Distribution of Number of Lab Tests Done

4.2 Analysis of the Groups based of Co-Pay Status

The patient groups are analysed based on those visits that had a co-payment and those that did not have a co-payment. The analysis then proceeds to analyze the individual co-payment groups. Lastly, the patient visits are divided into those seen by a General Practitioner and those seen by a Specialist due to the different consultation fees paid and the probable difference in utilisation of services.

4.2.1 Comparison of patient visits with co-pay and those without co-pay

This analysis relates to all patient visits with a co-payment and those without a co-payment. Those visits with a co-payment are grouped as one group while those without a co-payment are grouped separately. Results in the table below show no significant difference in the mean age among the co-pay groups and the no co-pay groups (p value=0.152). There were significantly more males among the "No Co-pay" group, 1997 (67.4%) vs. 156 (56.7%) in "Co-pay" group (chi square p<0.001). There was a significant difference in the proportions under a corporate scheme among the "No Co-pay" group with a majority 2916 (98.4%) vs. 206 (74.9%) among the "Co-pay" group (Chi square p value <0.001).

There were no significant differences noted in the costs of lab tests, cost of medication, and cost of other services. Patient visits in the “No Co-pay” group had the lowest mean total cost of visit of Ksh. 5137 as compared to Ksh. 5279 in the “Co-pay” group, however without any statistical significance (p value = 0.405). There were no significant differences in the number of drugs issued and also number of lab tests among the "Co-pay" and the "No Co-pay" groups.

Table 4.2: Comparison of patient visits with co-pay and those without co-pay (Differences reaching statistical significance are highlighted in bold)

		No Co-pay		**Co-Pay**		**Test Statistic**
		Mean (SD)/ Count (%)	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	
Age		31 (18)	33(15-45)	33 (21)	34(13-48)	T-test, P value = 0.152
Gender.	**F**	966 (32.6%)		119 (43.3%)		**Chi square, P value <0.001**
	M	1997 (67.4%)		156 (56.7%)		
Corp/Ind	**CORP**	2916 (98.4%)		206 (74.9%)		**Chi square, P value <0.001**
	IND	47 (1.6%)		69 (25.1%)		
Consultation (Insurance portion)		1270 (219)	1200(1200-1200)	943 (292)	1000(700-1000)	T-test, P value <0.001
Total Consultation		1270 (219)	1200(1200-1200)	1290 (244)	1200(1200-1200)	T-test, P value =0.159
Cost of Lab Tests		826 (1465)	0(0-1400)	924 (1445)	0(0-1400)	T-test, P value = 0.292
Cost of Medication		2902 (2226.9)	2582.41(1425.2-3899.5)	2914 (2336.48)	2472.04(1225.36-4211.35)	T-test, P value = 0.936
Other services		138 (576)	0(0-0)	152 (604)	0(0-0)	T-test, P value = 0.689
Mean Total cost of visit		5137 (2725.36)	4673.7(3205.59-6252.1)	5279 (2633.23)	4868.8(3231.36-6720.94)	T-test, P value = 0.405

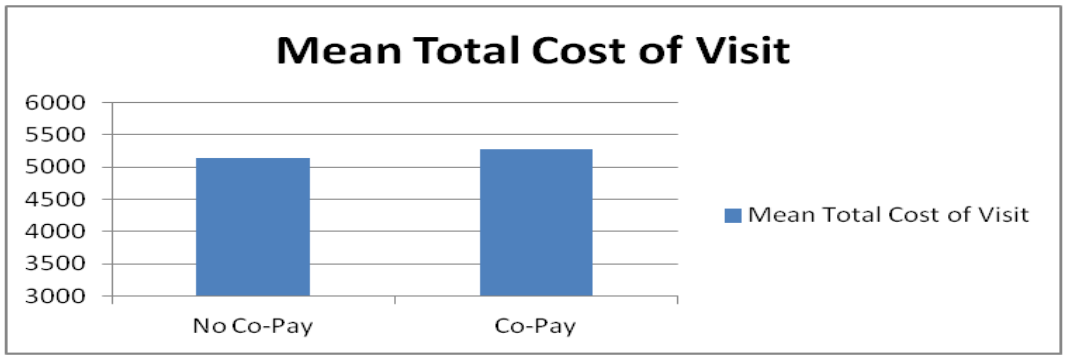

Figure 4.4: Mean Total Cost of Visit Based on Co-Pay Status (No Statistical significance seen, p value =0.405)

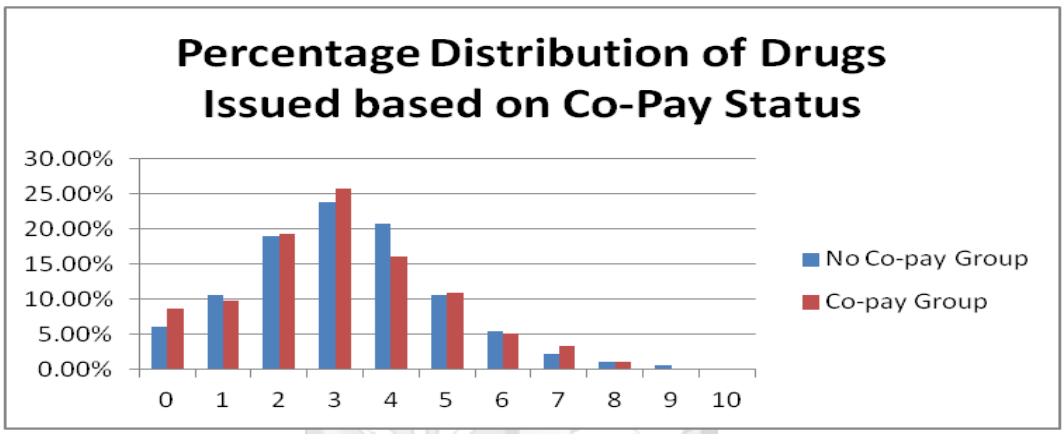

Figure 4.5: Percentage Distribution of Number of Drugs Issued Based on Co-pay Status (No statistical significance seen, p value =0.531)

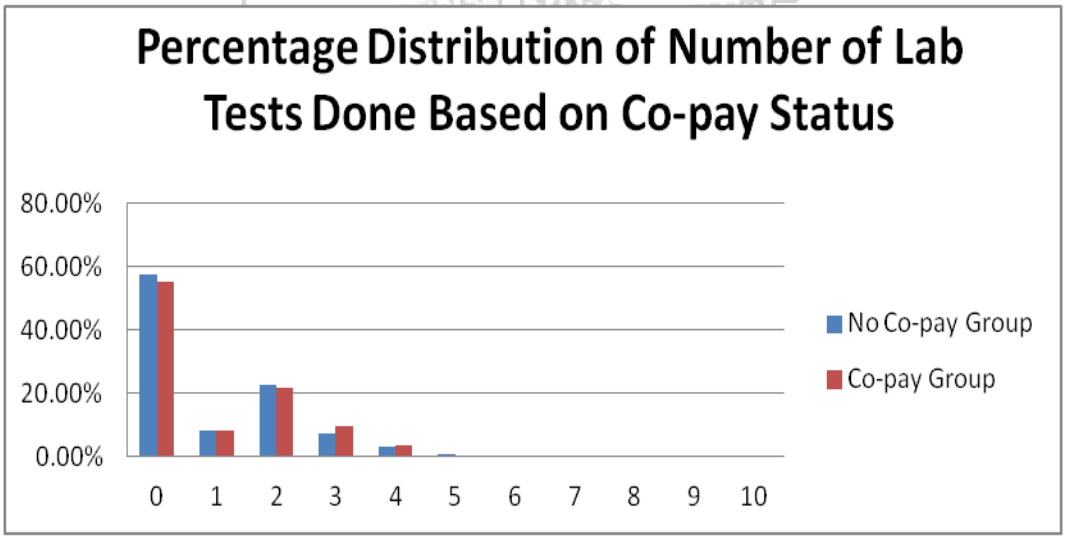

Figure 4.6: Percentage Distribution of Number of Lab Tests Done Bases on Co-pay status (No statistical significance seen in the distribution, p value =0.137)

4.2.2 Analysis of Combined (GP and Specialist) Patient Visits based on Amount of Co-Pay

This analysis looks at the utilisation of healthcare services for all visits based on the amount of co-pay the visits had. Results from the combined analysis show that the mean age among the co-pay groups was significantly different, those co-paying Ksh. 50 were much younger than those paying Ksh. 0, Ksh. 200 and Ksh. 500 (p value=0.002) as shown in table 4.3. A significant majority were males among those co-paying Ksh. 0 and Ksh. 200 in comparison to the other co-pay groups (p value<0.001). Results also showed a significant difference in the proportions under a corporate scheme among the co-pay categories, with majority (2916, 98.4% and 24, 100%) paying Ksh. 0 and Ksh. 50 respectively (Chi square p value <0.001).

No differences in the mean total consultation fee were observed from the results (p value =0.225). There were no significant differences noted in the mean costs of lab tests and cost of other services. There was no significant difference in the mean cost of medication. There was no significant difference in the mean total cost of a visit amongst the groups (p value = 0.065). There was no significant difference in the number of drugs issued among the co-pay groups. Overall, there was a significant difference in the number of lab tests among the co-pay groups (Chi square p <0.001).

Table 4.3: Analysis of Combined (GP and Specialist) Patient visits (Differences reaching statistical level are highlighted in bold)

		None		**Ksh. 50**		**Ksh. 200**		**Ksh. 500**		**Test Statistic**
		Mean (SD)/ Count (%)	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	
Age		31 (18)	33 (15-45)	21 (14)	26 (9-31)	32 (17)	34 (20-45)	36 (24)	39 (11-54)	**ANOVA, P value = 0.002**
Gender.	**F**	966 (32.6%)		10 (41.7%)		36 (34.6%)		73 (49.7%)		**Chi square, P value <0.001**
	M	1997 (67.4%)		14 (58.3%)		68 (65.4%)		74 (50.3%)		
Corp/Ind	**COR**	2916 (98.4%)		24 (100%)		91 (87.5%)		91 (61.9%)		**Chi square, P value <0.001**
	IND	47 (1.6%)		0 (0%)		13 (12.5%)		56 (38.1%)		
Consult.(Insurance port.		1270 (219)	1200 (1200-1200)	1275 (286)	1150 (1150-1150)	1065 (212)	1000 (1000-1000)	802 (258)	700 (700-700)	ANOVA, P value <0.001
Total Consult.		1270 (219)	1200 (1200-1200)	1325 (286)	1200 (1200-1200)	1265 (212)	1200 (1200-1200)	1302 (258)	1200 (1200-1200)	ANOVA, P value = 0.225

Cost of Labs		826 (1465)	0 (0-1400)	792 (1528)	0 (0-1150)	1022 (1383)	0 (0-1600)	876 (1480)	0 (0-1400)	ANOVA, P value = 0.586
Cost of Drugs		2902.18 (2226.9)	2582.41 (1425.2-3899.5)	1851.71 (1574.21)	1387.6 (900.6-2457.77)	3059 (2448.67)	2557.6 (1332.8-4408.5)	2983.93 (2327.96)	2725.96 (1310.88-4211.35)	ANOVA, P value = 0.111
Other services		138 (576)	0 (0-0)	0 (0)	0 (0-0)	189 (654)	0 (0-0)	151 (614)	0 (0-0)	ANOVA, P value = 0.523
Total cost of visit		5136.58 (2725.36)	4673.7 (3205.59-6252.1)	3968.38 (1906.37)	3417.39 (2411.28-5669.26)	5535.23 (2905.89)	5176 (3189.65-7028.13)	5312.3 (2480.52)	4895.7 (3480-6608.26)	ANOVA, P value = 0.065

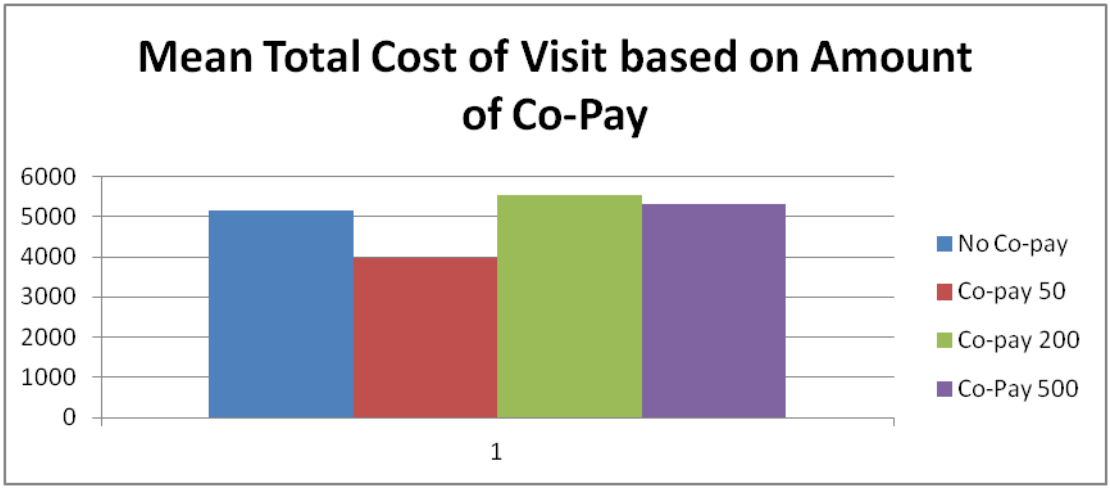

Figure 4.7: Mean Total Cost of Visit Based on Amount of Co-pay (No significant difference seen, p value =0.065)

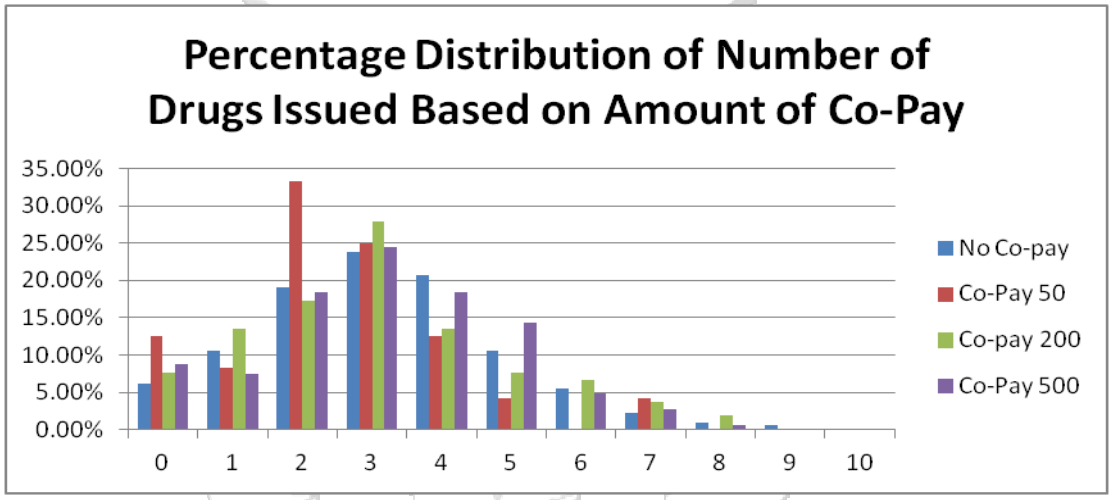

Figure 4.8: Percentage Distribution of Number of Drugs based on amount of Co-pay (No statistical significance seen in the distribution, p value =0.824)

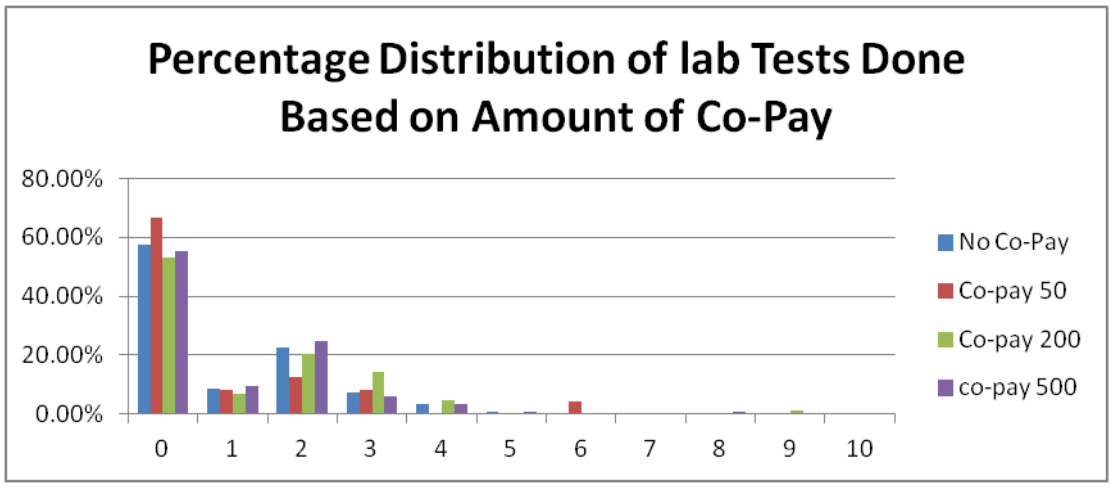

Figure 4.9: Percentage Distribution of Number of Lab Tests done Based on Amount of Co-pay (Statistical significance seen in the distribution, p value <0.001)

4.2.3 Analysis of Patient visits to a General Practitioner Based on Amount of Co-Pay

The patient visits seen by a GP accounted for 90.4% (2927) of the visits. This group was charged a consultation of Ksh. 1200, which is lower than that for specialist visits. There was a significant difference in the mean age among the co-pay groups. Those co-paying Ksh. 50 were much younger than those paying Ksh. 200 and Ksh. 500 (p value<0.001), as shown in table 4.4. There was significant majority of females among those co-paying Ksh. 500 in comparison to the other co-pay groups (p value<0.001). There was a significant difference in the proportions under a corporate scheme among the co-pay categories, with majority 2639 (98.3%) and 20 (100%) paying Ksh. 0 or Ksh. 50 respectively (p value <0.001). No significant differences were noted in the mean cost of lab tests and cost of other services (All p values >0.05). There were no differences in the mean cost of medication amongst the groups (p value =0.107). Those patients with Ksh. 50 co-pay had the lowest mean total cost of visit of Ksh. 4001.49, however without any statistical significance (p value = 0.091). There was no significant difference in the number of drugs issued amongst the co-pay groups. There was a significant difference in the number of lab tests among the co-pay groups (Chi square p <0.001).

Table 4.4: Analysis of Patient Visits to a General Practitioner (Differences reaching statistical significance are highlighted in bold)

		None		**Ksh. 50**		**Ksh. 200**		**Ksh. 500**		**Test Statistic**
Variable	**Categories**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	
Age (Years)		32.66 (17.81)	34 (18-46)	22.05 (14.35)	26 (9.5-31.5)	34.17 (15.83)	35 (25-46)	40.09 (22.31)	45 (18-55)	**ANOVA, P value <0.001**
Gender.	**Female**	846 (31.5%)		7 (35%)		31 (32.6%)		66 (52%)		**Chi square, P value <0.001**
	Male	1839 (68.5%)		13 (65%)		64 (67.4%)		61 (48%)		
Payee Type	**CORP**	2639 (98.3%)		20 (100%)		83 (87.4%)		75 (59.1%)		**Chi square, P value <0.001**
	INDIV.	46 (1.7%)		0 (0%)		12 (12.6%)		52 (40.9%)		
Consultation (Insurance portion) (Ksh.)		1200 (0)	1200 (1200-1200)	1150 (0)	1150 (1150-1150)	1000 (0)	1000 (1000-1000)	700 (0)	700 (700-700)	ANOVA, P value N/A

Total Consultation (Ksh.)		1200 (0)	1200 (1200-1200)	1200 (0)	1200 (1200-1200)	1200 (0)	1200 (1200-1200)	1200 (0)	1200 (1200-1200)	ANOVA, P value N/A
Cost of Lab Tests (Ksh.)		857.24 (1450.84)	0 (0-1400)	950 (1633.05)	0 (0-1400)	1069.47 (1417.9)	0 (0-1800)	940.16 (1565.31)	0 (0-1400)	ANOVA, P value = 0.505
Cost of Medication (Ksh.)		3026.93 (2224.4)	2713.2 (1544-3994.08)	1851.49 (1238.57)	1528.36 (1060.895-2457.765)	3096.16 (2500.89)	2582.08 (1324.8-4420)	3164.92 (2411.09)	2834.6 (1354.8-4437.58)	ANOVA, P value = 0.107
Other services (Ksh.)		115.86 (497.76)	0 (0-0)	0 (0)	0 (0-0)	207.14 (681.67)	0 (0-0)	107.64 (505.51)	0 (0-0)	ANOVA, P value = 0.243
Total cost of visit (Ksh.)		5200.03 (2697.19)	4738.54 (3310.9-6284)	4001.49 (1710.74)	3590.25 (2494.83-5669.26)	5572.77 (2974.32)	5174.4 (3156.9-7020)	5412.72 (2587.97)	4906.08 (3481.28-6720.94)	ANOVA, P value = 0.091

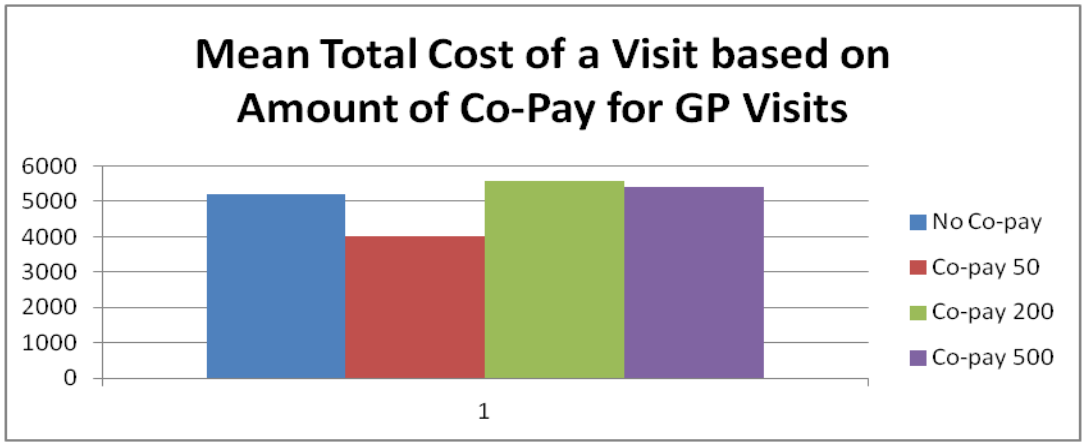

Figure 4.10: Mean Total Cost of a Visit Based on Amount of Co-Pay for GP Visits (No significant difference seen, p value = 0.091)

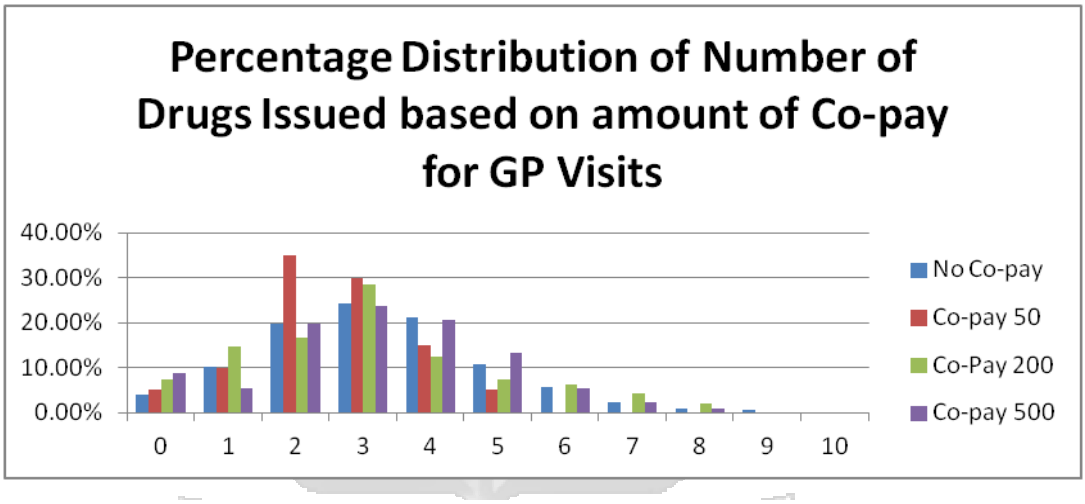

Figure 4.11: Percentage Distribution of Number of Drugs issued based on amount of Co-pay for GP Visits (No statistical significance seen in the distribution, p value = 0.510)

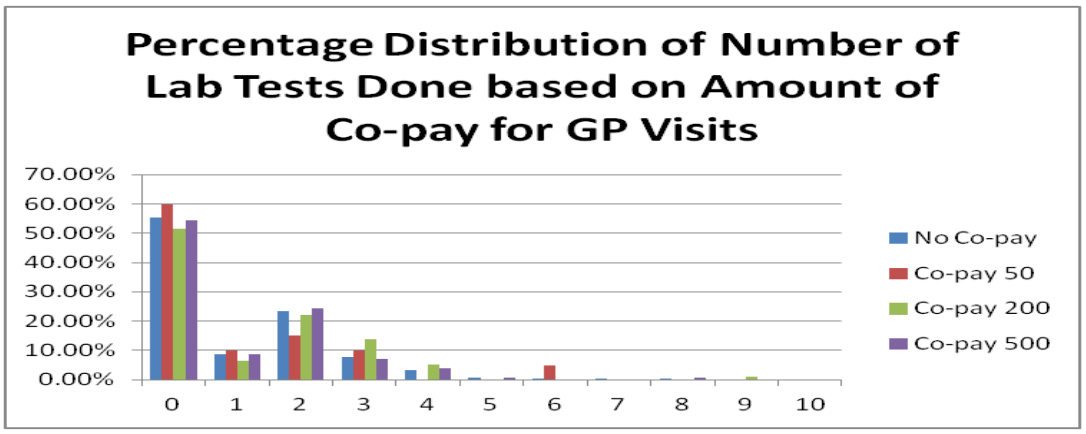

Figure 4.12: Percentage Distribution of Number of Lab Tests done based on amount of Co-pay for GP Visits (Statistical significance seen in the distribution, p value <0.001)

4.2.4 Analysis of Patients visits to a Specialist Based on Amount of Co-Pay

This analysis looks at the utilisation of healthcare services for visits to a specialist. This group consisted of 9.6% (311) of the visits. Results of these visits show a significant difference in the mean age among the co-pay groups, those co-paying Ksh. 500 were much younger than those paying None, Ksh. 50 and Ksh. 200 (p value <0.003).

There was no difference with regards to gender among the co-pay groups (p value =0.432). There was a significant difference in the proportions under a corporate scheme among the co-pay categories, with majority (277, 99.6% and 4, 100%) paying a co-pay of Ksh. 0 or Ksh. 50 respectively (p value <0.001). There was no difference in the mean of consultation (insurance portion) and mean of the total consultation costs. There were no significant difference noted in the mean costs of lab tests and cost of other services (All p values >0.05). There were no significant differences in the mean cost of medication amongst the groups (p value =0.480). Patient visits with a co-pay of Ksh. 50 co-pay had the lowest mean total cost of visit at Ksh. 3802.83 however without any statistical significance (p value = 0.867). There was no difference in the number of drugs issued and also number of lab tests among the co-pay groups.

Table 4.5: Analysis of Patient visits to a Specialist (Differences reaching statistical significance are highlighted in bold)

		None		**Ksh. 50**		**Ksh. 200**		**Ksh. 500**		**Statistic**
Variable	**Categories**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median (IQR)**	**Mean (SD)/ Count (%)**	**Median(IQR)**	
Age (Years)		19.78 (16.03)	14 (6-31)	18.5 (13.3)	19 (7-30)	12.44 (12.98)	7 (4-10)	7.05 (8.57)	3.5 (1-8.5)	**ANOVA, P value = 0.003**
Gender.	**F**	120 (43.2%)		3 (75%)		5 (55.6%)		7 (35%)		Chi square, P value = 0.432
	M	158 (56.8%)		1 (25%)		4 (44.4%)		13 (65%)		
Payee Type	**COR**	277 (99.6%)		4 (100%)		8 (88.9%)		16 (80%)		**Chi square, P value <0.001**
	IND	1 (0.4%)		0 (0%)		1 (11.1%)		4 (20%)		
Consultation (Insurance portion) (Ksh.)		1950 (0)	1950 (1950-1950)	1900 (0)	1900 (1900-1900)	1750 (0)	1750 (1750-1750)	1450 (0)	1450 (1450-1450)	ANOVA, P value N/A

Total Consultation (Ksh.)		1950 (0)	1950 (1950-1950)	1950 (0)	1950 (1950-1950)	1950 (0)	1950 (1950-1950)	1950 (0)	1950 (1950-1950)	ANOVA, P value N/A
Cost of Lab Tests (Ksh.)		529.13 (1566.95)	0 (0-0)	0 (0)	0 (0-0)	522.22 (834.83)	0 (0-900)	465 (621.78)	0 (0-1150)	ANOVA, P value = 0.915
Cost of Medication (Ksh.)		1697.32 (1864.64)	1176.71 (0-2683.21)	1852.83 (3046.86)	524.38 (0-3705.65)	2666.69 (1875.95)	2533.12 (1517.04-3362.24)	1834.61 (1217.68)	1814.62 (950.12-2747.4)	ANOVA, P value = 0.480
Other services (Ksh.)		347.3 (1050.37)	0 (0-0)	0 (0)	0 (0-0)	0 (0)	0 (0-0)	425 (1054.75)	0 (0-0)	ANOVA, P value = 0.669
Total cost of visit (Ksh.)		4523.74 (2918.68)	3945.72 (1950-5543)	3802.83 (3046.86)	2474.38 (1950-5655.65)	5138.91 (2139.62)	5938.48 (3467.04-7117.04)	4674.61 (1539.35)	4701.56 (3288.28-5692.68)	ANOVA, P value = 0.867

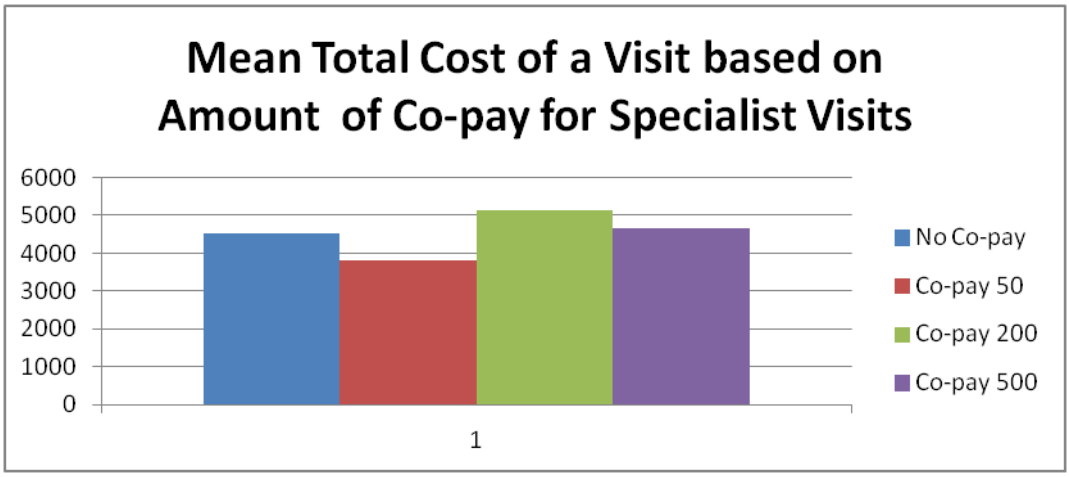

Figure 4.13: Mean Total Cost of a Visit based on Amount of Co-pay for Specialist Visits (No significant difference seen, p value =0.867)

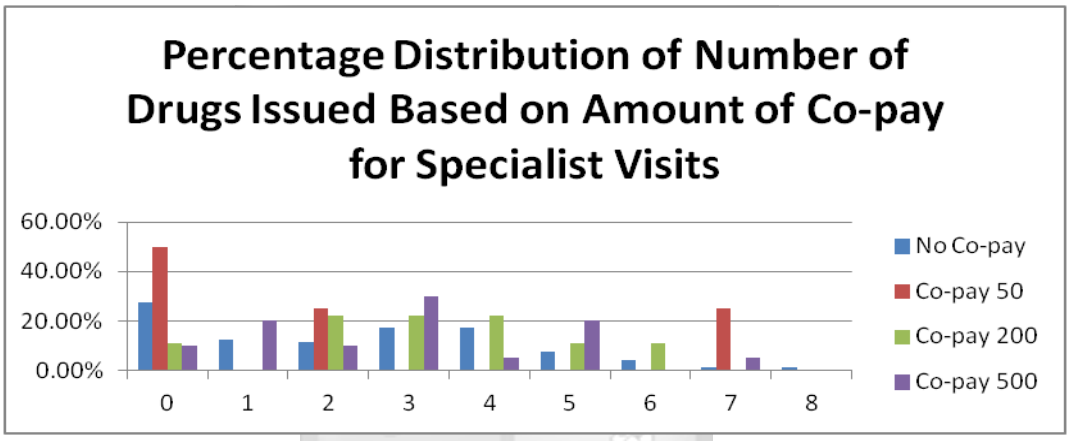

Figure 4.14: Percentage Distribution of Number of Drugs Issued Based on amount of Co-pay for Specialist Visits (No statistical significance seen in the distribution, p value =0.130)

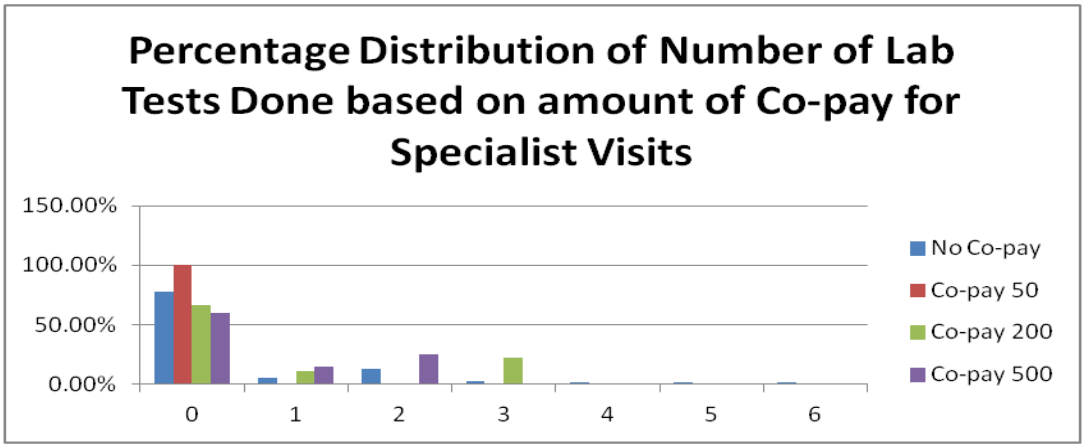

Figure 4.15: Percentage Distribution of Number of Lab Tests Done based on amount of Co-pay for Specialist Visits (No statistical significance seen in the distribution, p value =0.141)

CHAPTER FIVE: DISCUSSION, CONCLUSION, RECOMMENDATIONS AND LIMITATIONS

5.1 Discussion

The study sought to determine the effect of co-payments on utilisation of healthcare services by patients seeking care at AAR Healthcare Kisumu Outpatient Centre. The study indicated that co-payments had no effect on the overall utilisation and cost of healthcare services. This agrees with the findings of a study on Medicaid (Hartung et al., 2008), which did not show any significant difference in the total cost of a visit between those with a co-payment and those without a co-payment. The current study differs with results of other studies that indicated that co-payments reduce the overall cost of healthcare (Baum et al., 2016; Drummond & Towse, 2012), or increase the overall cost of healthcare (Subramanian, 2011). This may be because the current study looked at an aggregate cost of visits and did not follow for individual patients. The current study did not also consider the probable reduction of visits due to introduction of a co-pay since it was beyond the scope of the study.

Most of the studies have shown that the increase in healthcare costs is mainly in patients with chronic conditions who may have higher costs in later visits due to missed opportunities for addressing certain healthcare needs, hence more complications which become more expensive to treat (Del Mar, 2014). The patient composition in this study was heterogeneous, meaning patients with both acute and chronic conditions were considered, hence the different results obtained. The median age of the patients in this study was 33.5 years, meaning it was a rather young population with a lower incidence of chronic medical conditions.

The amount of co-payment made also had no effect on the overall cost of a visit. Those who paid higher co-payments had no significant higher cost of visit that those with lower co-payments. Hence increasing the amount of co-payment may not necessarily lead to lower costs of visits, but may affect access to healthcare services. The patient visits with a co-payment of Ksh. 50 showed a significant lower total cost of a visit as compared to other co-payment groups (Table 4.3). This is because the above group is made up of AAR Healthcare employees and their families, who in addition to a co-payment of Ksh. 50 have 20% of the cost of drugs deducted from their salaries, hence were likely to prefer cheaper medication.

The cost of drugs accounted for more than 50% of the total cost of a visit, hence a greater effect on the overall cost of healthcare. However, the study showed no significant difference amongst the different co-pay groups in regards to the cost and number of medication issued. This differs from results of other studies that showed a decrease in number of drugs issued after a co-payment was introduced (Stroupe et al., 2007; Subramanian, 2011). The current study did not look at the effect after the introduction of a co-payment but on the overall prescription patterns between those visits with a co-payment and those without. The effects of copayments on number and cost of medication issued are more pronounced on those patients with chronic conditions. However, the current study was carried out on a heterogeneous patient population with a mixture of both acute and chronic conditions; hence this might have contributed to the lack of difference noted. Other studies have also noted that the number of medication issued is dependent on the prescriber (Holloway et al., 2002), hence this may explain the findings. The current study did not distinguish utilisation of healthcare services based on the provider.

In the utilisation of laboratory services, the study showed no significant difference in the number and cost of laboratory tests done between those with co-payments and those without co-payments. This is consistent with results from a study done in Cyprus that showed that introduction of co-payments did not result in a decrease in laboratory tests ordered (Petrou, 2016). This may be because laboratory tests are supplier induced and therefore presence of a co-payment is unlikely to reduce their utilisation. However, there was a significant difference between the groups with a co-payment on the utilisation of laboratory services, with those paying Ksh. 50 having less laboratory tests done. As explained earlier, this group consists of AAR Healthcare staff and their families who in addition to the co-payment of Ksh. 50 have a 20% deduction on their pay on the cost of laboratory tests; hence they are likely to have a lower utilisation of laboratory services. The co-payment in this study was made at the point of registration of the patients, meaning that subsequent services provided were unlikely to be affected by its presence or absence; hence the healthcare workers had the freedom to request any tests irrespective of the co-payment status. Other studies have argued that co-payments may increase the number of services demanded by the patients due to missed opportunities in

previously due to the presence of a co-payment being a deterrent to access to services, but this was not noted in the current study.

5.2 Conclusion

Co-payments have no effect in the utilisation of healthcare services once the co-payment is made, but may have an effect on the access to services due to its role in reducing unnecessary visits to hospitals, hence reducing moral hazard. The amount of co-payment made also has no significant effect on the utilisation and overall cost of healthcare services. Co-payments in most cases (the current study included) are usually made at the point of registration of a patient. They may therefore reduce access to care but may not reduce utilisation of individual healthcare services, since their utilisation is now not dependent on the co-payment. Thus, co-payments may be used to drive patients to preferred healthcare providers by imposing co-payments on visits to those providers considered expensive, thus reducing utilisation of healthcare services and overall healthcare costs

5.3 Recommendations

In order to fully achieve the intended purpose, co-payments should be made at the point of offering a particular healthcare to a patient. This will directly impact utilisation of individual healthcare services, hence more effective in controlling costs. However, this measure may deny patients' quality of care since they may not be able to access certain services they may need. Co-payments, as applied in this study serve more to control access but not the overall cost at the point of utilisation. In addition, the amount of co-payment made seems to have no effect on the overall cost of individual healthcare services, thus the co-payments should be priced at a level that does not hinder access. This can be achieved by pricing the co-payments based on the economic status or the average monthly income of an individual.

5.4 Limitations of the study

The study was carried out in only one facility and only one insurance company was considered. While limited in scale, it is likely that results from a typical facility and a well-established insurer in Kenya are generalisable. However, this requires to be examined in a larger study. In addition, the utilisation of health services may have been influenced by the doctor attending to the patient. However, it was not possible

to look at provider-specific differences in this data set. The patient distribution amongst the three classes of patients considered for the study in terms of acute and chronic conditions is not certain; hence the study was not able to differentiate between different conditions, as this may affect utilisation of healthcare services.

REFERENCES

Association of Kenya Insurers. (2016). Association of Kenya Insurers Annual Report. Retrieved from www.akinsure.com

Baum, Z., Simmons, M. R., Guardiola, J. H., Smith, C., Carrasco, L., Ha, J., & Richman, P. (2016). Potential impact of co-payment at point of care to influence emergency department utilization. *Peerj*, *4*, e1544–e1544. https://doi.org/10.7717/peerj.1544

Chernew, M., Gibson, T. B., & Fendrick, A. M. (2010). Trends in Patient Cost Sharing for Clinical Services Used as Quality Indicators. *Journal of General Internal Medicine*, *25*(3), 243–248. https://doi.org/10.1007/s11606-009-1219-y

Chuma, J., & Maina, T. (2012). Catastrophic health care spending and impoverishment in Kenya. *BMC Health Services Research*, *12*(1), 413. https://doi.org/10.1186/1472-6963-12-413

DeKay, M. L., & Asch, D. A. (1998). Is the Defensive Use of Diagnostic Tests Good for Patients, or Bad? *Medical Decision Making*, *18*(1), 19–28. https://doi.org/10.1177/0272989X9801800105

Del Mar, C. B. (2014). Copayments for general practice visits. *The Medical Journal Of Australia*, *200*(7), 367–367.

Drummond, M., & Towse, A. (2012). Is it time to reconsider the role of patient co-payments for Pharmaceuticals in Europe? *The European Journal of Health Economics*, *13*(1), 1–5.

Garattini, L., & van de Vooren, K. (2013). Could co-payments on drugs help to make EU health care systems less open to political influence? *The European Journal of Health Economics*, *14*(5), 709–713.

Gemmill, M. C., Thomson, S., & Mossialos, E. (2008). What impact do prescription drug charges have on efficiency and equity? Evidence from high-income countries. *International Journal for Equity in Health*, *7*, 12–12. https://doi.org/10.1186/1475-9276-7-12

Goldman, D. P., Joyce, G. F., & Zheng, Y. (2007). Prescription drug cost sharing: associations with medication and medical utilization and spending and health. *JAMA*, *298*(1), 61–69.

Gruber, J. (n.d.). The Role of Consumer Copayments for Health Care: Lessons from the RAND Health Insurance Experiment and Beyond, 2006.

Hartung, D. M., Carlson, M. J., Kraemer, D. F., Haxby, D. G., Ketchum, K. L., & Greenlick, M. R. (2008). Impact of a Medicaid Copayment Policy on Prescription Drug and Health Services Utilization in a Fee-for-Service Medicaid Population. *Medical Care*, *46*(6), 565–572.

Hirsch, B. R., Balu, S., & Schulman, K. A. (2014). The impact of specialty pharmaceuticals as drivers of health care costs. *Health Affairs (Project Hope)*, *33*(10), 1714–1720. https://doi.org/10.1377/hlthaff.2014.0558

Holloway, K. A., Gautam, B. R., Harpham, T., & Taket, A. (2002). The influence of user fees and patient demand on prescribers in rural Nepal. *Soc Sci Med*, *54*. https://doi.org/10.1016/S0277-9536(01)00064-8

Kupor, S. A., Liu, Y. C., Lee, J., & Yoshikawa, A. (1995). The effect of copayments and income on the utilization of medical care by subscribers to Japan's National Health Insurance System. *International Journal Of Health Services: Planning, Administration, Evaluation*, *25*(2), 295–312.

Laba, T.-L., Usherwood, T., Leeder, S., Yusuf, F., Gillespie, J., Perkovic, V., … Essue, B. (2015). Co-payments for health care: what is their real cost?

Australian Health Review: A Publication Of The Australian Hospital Association, *39*(1), 33–36.

Lu, K. (2003). Charging the Poor More for Health Care: Cost-Sharing in Medicaid, Center on Budget and Policy Priorities. Retrieved from 2003. http://wwww. cbpp.org/cms/index.cfm?fa=view&id=1

Mulupi, S., Kirigia, D., & Chuma, J. (2013). Community perceptions of health insurance and their preferred design features: implications for the design of universal health coverage reforms in Kenya. *BMC Health Services Research*, *13*(1), 474. https://doi.org/10.1186/1472-6963-13-474

Petrou, P. (2016). Failed Attempts to Reduce Inappropriate Laboratory Utilization in an Emergency Department Setting in Cyprus: Lessons Learned. *The Journal Of Emergency Medicine*, *50*(3), 510–517. https://doi.org/10.1016/j.jemermed.2015.07.025

Rector, T. S., Finch, M. D., Danzon, P. M., Pauly, M. V., & Manda, B. S. (2003). Effect of Tiered Prescription Copayments on the Use of Preferred Brand Medications. *Medical Care*, *41*(3), 398–406.

Reddy, S. R., Ross-Degnan, D., Zaslavsky, A. M., Soumerai, S. B., & Wharam, J. F. (2014). Impact of a High-Deductible Health Plan on Outpatient Visits and Associated Diagnostic Tests. *Medical Care*, *52*(1), 86–92. https://doi.org/10.1097/MLR.0000000000000008

Reinhardt, U. E. (1992). Reflections on the Meaning of Efficiency: Can Efficiency Be Separated from Equity? *Yale Law & Policy Review*, *10*(2), 302–315.

Schumock, G. T., Li, E. C., Suda, K. J., Wiest, M. D., Stubbings, J., Matusiak, L. M., … Vermeulen, L. C. (2016). National trends in prescription drug

expenditures and projections for 2016. *American Journal of Health-System Pharmacy*, *73*(14), 1058. https://doi.org/10.2146/ajhp160205

Stroupe, K. T., Smith, B. M., Lee, T. A., Tarlov, E., Durazo-Arvizu, R., Huo, Z., … Weiss, K. B. (2007). Effect of Increased Copayments on Pharmacy Use in the Department of Veterans Affairs. *Medical Care*, *45*(11), 1090–1097.

Subramanian, S. (2011). Impact of Medicaid Copayments on Patients With Cancer: Lessons for Medicaid Expansion Under Health Reform. *Medical Care*, *49*(9), 842–847.

Tamblyn, R., Laprise, R., Hanley, J. A., Abrahamowicz, M., Scott, S., Mayo, N., … Mallet, L. (2001). Adverse events associated with prescription drug cost-sharing among poor and elderly persons. *JAMA*, *285*(4), 421–429.

Vegting, I. L., van Beneden, M., Kramer, M. H. H., Thijs, A., Kostense, P. J., & Nanayakkara, P. W. B. (n.d.). How to save costs by reducing unnecessary testing: Lean thinking in clinical practice. *European Journal of Internal Medicine*, *23*(1), 70–75. https://doi.org/10.1016/j.ejim.2011.07.003

Wallace, N. T., McConnell, K. J., Gallia, C. A., & Smith, J. A. (2008). How effective are copayments in reducing expenditures for low-income adult Medicaid beneficiaries? Experience from the Oregon health plan. *Health Services Research*, *43*(2), 515–530. https://doi.org/10.1111/j.1475-6773.2007.00824.x

Winkelmann, R. (2004). Co-payments for prescription drugs and the demand for doctor visits--evidence from a natural experiment. *Health Economics*, *13*(11), 1081–1089.

Xu, H., James, C., Carrin, G., & Muchiri, S. (2005). *An empirical model of access to health care, health care expenditure and impoverishment in Kenya: learning*

from past reforms and lessons for the future. Geneva: World Health Organization.

APPENDIX 1: LETTER OF INTRODUCTION

Strathmore Business School

Wednesday, 08 November 2017

Managing Director, AAR Healthcare Limited,
2nd Floor Williamson House,
4th Avenue Ngong Road,
Nairobi.

Dear Sir/Madam

INTRODUCTION – DR. GONE, MICHAEL ODONGO

This is to introduce **Dr. Gone, Michael Odongo**, admission number **MBA HCM/93054/16** who is an MBA HCM student at Strathmore Business School. As part of our SBS MBA HCM Master's Program, Micheal is expected to do applied research and to undertake a project. This is in partial fulfilment of the requirements of the Master of Business Administration. He would like to request for appropriate data from your organization to help him finalize his research.

Micheal is undertaking a research project on **'Effects of Co-payments on Utilization of Healthcare Services at a Private Out-Patient Facility in Kisumu, Kenya".** The research project shall be undertaken at the AAR Healthcare Kisumu Outpatient Centre. The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct usefulness to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest, if not of practical value to your organization.

We very much appreciate your support and we shall be willing to provide any further information if required.

Yours sincerely,

Prof. Gilbert Kokwaro

Director, Institute of Healthcare Management and
Academic Director, MBA in Healthcare Management

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Twitter: @SBSKenya.

APPENDIX 2: EXCEL SPREADSHEET FOR DATA COLLECTION

Date Of Service	Care Recipient No.	Age	Gender.	Corp/Ind	Visit Fee (Co-Pay)	Consultation	Lab Tests	Drugs	Other Revenues	Total	No. Drugs	No. Lab tests

APPENDIX 3: TIMELINE OF ACTIVITIES

STRATHMORE UNIVERSITY

SCHOOL OF GRADUATE STUDIES

PROPOSED WORK PLAN

FACULTY/SCHOOL/ INSTITUTE: __INSTITUTE OF HEALTHCARE MANAGEMENT_

Draft Title of Dissertation: __ EFFECTS OF CO-PAYMENTS ON UTILISATION OF HEALTHCARE SERVICES AT A PRIVATE OUT-PATIENT FACILITY IN KISUMU, KENYA_

WORK PLAN

Progress Stage	Stage Description	Proposed dates
1	Choice of Research Topic	September 2017
2	Research Problem clarification, Research objectives, Purpose and Significance	September 2017
3	Literature Review	October 2017
4	Proposed Research Methodology	October 2017
5	Proposal Presentation	November 2017
6	Data Collection	December 2017
7	Data Analysis and Interpretation	January 2018
8	Dissertation Report writing – first draft	January 2018
9	Final draft of research report	January 2018
10	Submission of dissertation for examination	January 2018
11	Oral defense of dissertation	February 2018
12	Correction of dissertation	February 2018

Any remarks:

____ NONE

DISSSERTATION EXAMINATION PROCESS AND CLEARANCE FOR GRADUATION

Step	Activity	Proposed Deadline	Proposed Graduation Yr.*
1.	Submit dissertation for examination	February 2018	June 2018
2.	Dissertation examination	March 2018	
3.	Oral defence of dissertation	April 2018	
4.	Correction of dissertation	April 2018	
5.	**Certification of final version of dissertation and Registration for graduation	April 2018	

IMPORTANT NOTES

1. **Graduation is on the last Friday in June. A student needs to have been registered to graduate by the last week of May.*
2. *****The dissertation should have been corrected and confirmed as the final version before graduation.***

SIGNATURES AND DATES:

Candidate's Name	Signature	Date
Supervisor:	Signature	Date
Co-Supervisor (if applicable)	Signature	Date
Faculty Dean:	Signature	Date

Please forward to Dean, SGS

Dean (School of Graduate Studies): **Name**	**Signature**	**Date:**

APPENDIX 4: BUDGET

ITEM	COMPUTATION	TOTAL (Ksh.)
Printing of Proposal	3 Copies*40*Ksh. 10	1,200
Binding of Proposal	3 Copies *100	300
Data Collection	Ksh. 10,000	10,000
Data Analysis	1* Ksh.20,000	20,000
Transport	Ksh. 20,000	20,000
Printing of Thesis	4 Copies*50*Ksh. 10	2,000
Binding of Thesis	4 Copies*Ksh.100	400
Courier Charges	3*Ksh.500	1,500
Total		55,400

APPENDIX 5: CONSENT FORM

PART A

I am Michael Gone, a student of Strathmore Business School currently undertaking a Master of Business Administration in Healthcare Management. I work at AAR Healthcare as a Branch Manager for the Kisumu Outpatient Centre. I am undertaking a study titled "Effects of Co-payments on Utilisation of Healthcare Services at a Private Out-patient Facility in Kisumu, Kenya". The study will be carried out at the AAR Kisumu Out-patient Centre and data will be obtained from the facility CIMS and ERPS systems. Individual patient data will not be revealed and confidentiality will be maintained at all times.

PART B

We authorize the above named student to carry out the study at our facility and access data from the CIMS and ERPS systems relating to the above study. The information obtained from the organisation shall be treated confidentially and shall be used for academic purposes only.

Name of Representative of AAR Healthcare CHARLES KARIUKI

Designation MANAGING DIRECTOR

Signature

Date 08/11/2017