

**FACTORS AFFECTING HEALTHCARE UTILIZATION IN  
MANAGED HEALTHCARE ORGANISATIONS – A CASE STUDY  
OF PEMBE FLOUR MILLS MEDICAL COVER AT AVENUE  
HEALTHCARE**

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**Factors Affecting Healthcare Utilization in Managed Healthcare Organisations –  
A Case Study of Pembe Flour Mills Medical Cover at Avenue Healthcare**

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Public Health in the Jomo Kenyatta University of Agriculture and Technology.**

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## DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

Signed..... Date.....

Denis Otieno Ogolla

This thesis has been submitted for examination with our approval as the University Supervisors.

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## **DEDICATION**

To my wife Roselyne and Son Bradley and Daughter Audrey. For your everlasting love,  
unending support and encouragement.

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## **LIST OF ABBREVIATIONS**

AHC	Avenue Healthcare
AIDS	Acquired Immune Deficiency Syndrome
EPO	Exclusive Provider Organization
GIT	Gastro Intestinal Infections
HIV	Human Immunodeficiency Virus
HMO	Health Maintenance Organization
MBA	Master of Business Administration
MCO	Managed Healthcare Organization
MPH	Master of Public Health
NASCOP	National Aids and Sexually Transmitted Infections Control Program
PPO	Preferred Provider Organization
PUD	Peptic Ulcer Disease
URTI's	Upper Respiratory Tract Infections
VCTT	Voluntary Counseling Testing and Treatment

## **ABSTRACT**

Managed Healthcare is a concept of healthcare delivery and financing where an enrolled population pays a fixed annual fee (capitation) to a medical provider for access to health services as needed. In healthcare financing, the moral hazard refers to the risk that individuals will be more likely to seek *more* health care services when costs are distributed evenly across the population covered within a particular insurance plan.

Access to healthcare in private hospitals in Kenya is out of reach for most Kenyans. The main reason for this is cost. Health insurance and Managed Healthcare organizations allow individuals, when healthy, to pay predictable amounts to cover unpredictable costs when sick. The moral hazard is one of the reasons for the high cost of medical covers.

Avenue Healthcare is a Managed Healthcare Organization and provides medical cover to employees of Pembe Flour Mills, a flour milling company. Since inception of the medical scheme for Pembe Flour Mills at Avenue Healthcare, renewal premiums have increased by over 200%. In the belief that Hidden Action Moral Hazard played a role in this increase in costs, Avenue Healthcare introduced a co-payment charge of Kshs. 30 for all visits to the clinic from May 2005. In view of these developments there was a need for data to establish healthcare utilization patterns before and after introduction of co-payment thereby aiding in policy development for Managed Healthcare organizations and insurance companies.

This study aimed at assessing the factors that influence healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare. Specifically, the study examined the factors that influence utilization patterns, compared the moral hazard with observed healthcare utilization patterns and established morbidity levels and patterns.

Ninety Eight eligible staff of Pembe Flour Mills who met the inclusion criteria were recruited for the study . Data was collected through a retrospective comprehensive review of medical records held by Avenue Healthcare for the period May 2004 – April 2005 (before Co-payment) and for the period May 2005 – April 2006 (After Co-payment). In addition all the respondents were also individually interviewed at Pembe Flour Mills factories using a structured questionnaire.

The results showed that there was a positive correlation between the age of the patient and healthcare utilization. Patients with chronic illnesses also tended to have a significantly higher mean number of visits. Boiling or treating drinking water influenced healthcare utilization patterns especially the number of visits for gastrointestinal infections.

The most common medical conditions among Pembe Flour mills employees include upper respiratory tract infections and allergic respiratory tract ailments, their combined total accounting for 49 % of the visits in 2004/5 and 22 % of the visits in 2005/6. This

was in keeping with the Flour milling activity of the factory which predisposes the employees to excessive dust. Other common conditions include gastro intestinal infections and chronic pain conditions.

There was a 42 % reduction in the mean number of visits from 6.3 to 3.63 after introduction of co-payment. Visits for minor ailments such as allergic respiratory tract ailments and upper respiratory tract infections significantly reduced (Mean of 1.48 to 0.37 and 1.81 to 0.45 respectively) while visits for major ailments such as lower respiratory tract infections, peptic ulcer disease and chronic pain conditions remained unaffected. The moral hazard was therefore found to be a significant problem associated with utilization of health services for Pembe Flour Mills employees. Minor ailments were noted to contribute most to the level of the moral hazard. Introduction of co-payment played a significant role in reducing the moral hazard. Because the co-payment was affordable, it did not adversely affect access to health services.

The study concludes that co-payment should be advocated for medical schemes where a population has easy access to health services resulting in the misuse of these services. The amount of co-payment has to be carefully decided depending on the socio-economic factors of the particular population so as not to adversely affect access to healthcare.

# CHAPTER ONE : INTRODUCTION

## *1.1 Background to the Study*

People use health care services for many reasons: to cure illnesses and health conditions, to treat accidents and injuries, to prevent or delay future health care problems, to reduce pain to increase quality of life, and sometimes merely to obtain information about their health status and prognosis.

Health care utilization can be appropriate or inappropriate, of high or low quality, expensive or inexpensive (Bernstein *et. al.*, 2003). The study of trends in health care utilization provides important information on these phenomena and may spotlight areas that may warrant future in-depth studies because of potential disparities in access to, or quality of, care.

Trends in utilization may also be used as the basis for projecting future health care needs, to forecast future health care expenditures, or as the basis for projecting increased personnel training or supply initiatives.

Managed Healthcare is a concept of healthcare delivery and financing where an enrolled population pays a fixed annual fee (capitation) to a medical provider for access to health services as needed (Patel and Thakker, 2005). Organizations practicing managed healthcare are referred to as Managed Healthcare organizations (MCO'S).



**Avenue Healthcare** was founded in 1995 for the purpose of managing the outpatient department at Avenue Hospital, and to extend medical services to company clients in the form of Mobile and In-House Clinics. In response to a growing need in the medical services market, Avenue Healthcare started Kenya's first Managed Healthcare Plan, bringing both preventive and curative medical services to groups at an affordable, per capita annual fee.

Avenue Healthcare now serves over 600 companies in Nairobi, Mombasa and Kisumu. Informative talks and presentations on pertinent health issues are a popular feature of Avenue Healthcare's services to company staff. Avenue Healthcare employs 32 full time doctors, in addition to nurses and other support staff in its six outpatient clinics in Kenya and maintains a panel of over 80 consultants for specialist care.

Pembe Flour Mills is a flour milling company with over 270 employees. Most of the employees and dependants seek medical care at one of the Avenue Healthcare clinics. They are covered for both in and outpatient visits at any Avenue Healthcare facility. Their medical scheme entitles them to unlimited consultations with any Avenue Healthcare doctor, all needed drugs and dressings, all needed laboratory tests, all X-rays CT-Scans and ultrasounds, specialist consultations when required, necessary procedures such as suturing, dressing among others

Before April 2005 no payment by Pembe Flour Mills staff or dependants was necessary when visiting any Avenue Healthcare Clinic. In April 2005, a co-payment of Kshs. 30 was introduced to try and reduce the number of unnecessary visits.

## ***1.2 Statement of the Problem***

Access to healthcare in private hospitals in Kenya is out of reach for most Kenyans. The main reason for this is cost. Health insurance and Managed Healthcare organizations allow individuals to pay predictable amounts when healthy to cover unpredictable costs when sick.

It is estimated that less than 1 % of the Kenyan population has some form of medical cover (Thakker, 2003). The main reason for this insignificant proportion is the high cost of medical covers. Healthcare utilization patterns would influence the cost of medical covers.

Gold (1999) found that in terms of cost, managed care had clearly achieved control resulting in reduction in costs to both the employer and the economy. He further finds that part of the reason for this reduction in cost is related to the use of co-payments stating that “there is some evidence that consumers out of pocket costs have started to rise, as plans impose more co-payments on members.

Since inception of the medical scheme for Pembe Flour Mills at Avenue Healthcare in 1998, renewal premiums have increased by 200%. This increase in rates was necessitated by high healthcare utilization by patients from Pembe Flour Mills attending Avenue Healthcare clinics. Healthcare Utilization thus remains a challenge to Managed Healthcare organizations.

### ***1.3 General Objective***

To assess factors that influence healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare.

#### ***1.3.1 Specific Objectives***

1. To determine the general socio-demographic characteristics of patients from Pembe Flour Mills attending Avenue Healthcare clinics.
2. To determine healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare before and after introduction of Co-payment.
3. To establish the extent of Hidden Information moral hazard among patients from Pembe Flour Mills
4. To compare the moral hazard with observed healthcare utilization patterns of patients from Pembe Flour Mills at Avenue healthcare
5. To establish morbidity levels and patterns of patients from Pembe Flour Mills attending Avenue healthcare clinics.

### ***1.4 Research Questions***

The study addressed the following questions; What factors are important to employees of Pembe Flour Mills in influencing the utilization of services at Avenue Healthcare? What are the trends in the utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare? What is the extent of Hidden Information moral hazard among

patients from Pembe Flour Mills? How has the introduction of a co-payment influenced healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare?

### ***1.5 Justification for the Study***

Managed Healthcare Organizations as a concept have been extensively studied. Safran and colleagues compared group and staff model HMO's with Individual Practice Association Models (Reschovsky, 2000). Schouten (1997) looked at the impact Managed Healthcare has and specifically looked at quality of care comparing it to cost.

Factors affecting healthcare utilization have also been extensively studied. One paradigm of health care utilization identifies predisposing, enabling, and need determinants of care (Anderson, 1995). Bernstein and colleagues notes various factors that influence need, and include aging, socio-demographic population shifts, and changes in the prevalence and incidence of different diseases (Bernstein *et. al.*, 2003).

No studies have specifically looked at the factors affecting healthcare utilization in relation to Managed Healthcare Organizations and further gone ahead to assess how co-payments may affect utilization patterns. This case study would thus go a long way in filling this knowledge gap.

## **CHAPTER TWO : LITERATURE REVIEW**

### ***2.1 Healthcare Financing***

The World Health Organization in December 2004 urged all member countries to consider mechanisms for pooling financing for healthcare, including Social Health Insurance, in order to achieve universal coverage (Thiende, 2005).

Healthcare financing has been defined as “Where the money comes from to pay for the operation of the health system”. It is essentially the revenue raising options to sustain the health system. Healthcare funding on the other hand is allocating the money raised to alternative activities within the health system. Remuneration is compensating the individuals employed for their labour (Shaw, 1999).

Healthcare financing methods are broadly classified public and private sources. It is important to note that most countries use several different methods. Developing countries typically finance the bulk of their health expenditures from more than one source (Hsiao, 1998). As per capita income of a country rises, levels of spending on health also rise and public share in total health spending also rises (Shaw, 1999). Thus, developing countries like those of Africa and South Asia with low per capita incomes have a larger percentage of private share of total health spending. For this reason, understanding the dynamics of private healthcare financing in these countries is of public health importance.

### ***2.1.1 Public Sources of Healthcare Financing***

Public Sources are mainly government financing sources. It may take three main forms as follows -:

- **General Tax revenue** – Includes direct taxes such as personal income tax, Corporate profit tax, property taxes, wealth taxes as well as Indirect taxes such as Sales Tax, Value Added Tax, Excise duties, import duties among others

General tax revenues have long been used in every country of the world to finance certain components of healthcare (Sorkin, 1978). General tax revenues may not be a stable source of finance for healthcare. This is largely the result of factors such as low political priority frequently given to healthcare in national budget decisions, instability of developing country economies and frequent use of public expenditure as a tool of macro economic policy. In practice, politics plays a significant role in allocating general tax revenues to the health sector and among different programs within the health sector. Again priority is often given to tertiary hospitals utilizing costly equipment (frequently imported) and serving the economic and political elite of the country. A good example is in our own country, Kenya where in the fiscal year 1993-94, 13% of total Kenyan government recurrent budget for health was allocated to Kenyatta National Hospital which caters for twenty to thirty thousand patients a year while 26% of government recurrent health budget was allocated to primary healthcare for the benefit of the country's twenty six million people (Hsiao, 1998).

- **Socially Mandated Payroll Taxes** – Here the government compels employers to deduct a percentage of each employees monthly wage for health to be paid to a social insurance fund. The government also compels the employer to also pay government in form of a social insurance fund a percentage of the employees monthly wage. It is usually applicable to the formal sector but can also apply to the informal sector e.g. through organized cooperatives.
- **Inflation** – Inflation may also be employed as an alternative means of financing health services (Sorkin, 1986). When governments spend more than their revenues, they may finance this deficit by printing more money. However, without simultaneous expansion in output, the increased volume of money leads to price increases. Many countries lack the ability to keep inflation under control, resulting in hyper – inflation with serious consequences for economic growth, savings and investments.

### ***2.1.2 Private Sources of Healthcare Financing***

Private Sources of healthcare financing may include the following -:

- **Out of Pocket Payment / Fee for service** – Payments for health services are paid directly by clients to private care providers and not reimbursed. User fees have always been employed by private sector providers to obtain revenues. The amount of user fees can be determined based on different principles. They can be full charges, co-payment i.e. a flat amount preset for each visit and coinsurance i.e. patients responsible to pay a percent of the full charge.

Proponents of user fees argue that it improves allocative efficiency, foster greater responsibility of users and accountability of providers and increase revenue which will be spent to improve quality and range of services. Critics question the ability of these form of financing to do any of these things and raise serious doubts the major objection being equity grounds i.e. the poor cant afford to pay and they will decrease their use of “necessary services” (Reddy and Vandemoortele, 1996).

- **Medical Savings Accounts** – Here, money is placed in individual savings accounts that are earmarked for relatively inexpensive personal health expenditures. Contributions to the accounts are mandated, as a percent of an employees wages paid by the employer and employee. Examples are in Singapore 6 – 8 % while in China, 11 %. Contributions are tax exempt. The money is used by individuals if and when they need to pay for healthcare. Unused health funds at death become part of and individuals estate.
- **Private Health Insurance** – Health Insurance is a means of protecting oneself from catastrophic financial losses involved in having to pay for health services when unexpected illness or injury occurs. Individuals make advance payment for future unknown health needs to insurance companies. The insurance companies thus pay out for healthcare when needed. Advantages of health insurance include the fact that individuals pay predictable amounts when healthy to cover unpredictable costs when sick or injured. The insurance agencies then



pool the predictable payments by many people to generate resources big enough to pay large health bills of the few who actually experience sickness or injury. Problems of health insurance however include adverse selection i.e. individuals only seek out insurance when sick, risk selection i.e. the insurance companies enroll only healthy members and moral hazard i.e. people tend to seek healthcare more when they have insurance.

- **Community Financing** – This is based on two principles i.e. community cooperation and self reliance. Recognizing healthcare is a basic necessity, some healthcare is a merit good and cooperative action can improve the social welfare of its members, the community takes collective action to mobilize the cooperation of all its members to finance, organize and manage healthcare. Community financing may be encouraged and supported by the government through its policies and regulations, technical and financial assistance but ideally, a community financing organization is not owned, operated or managed by the central or local governments. The consumer (community member) pays a contribution in advance for a package of benefits. The contribution may only cover a portion of the costs of the benefits while the local employers or governments may finance the remainder. The community organization creates a Health Maintenance Organization (HMO) for primary Healthcare. Unlike insurance financing, provision of primary care and financing are integrated together under community financing. The Bamako initiative is a good example

of community financing. The program is widespread and successful in many African Nations (Hsiao, 1998).

- **Managed Healthcare Organizations** – The concept employed by managed healthcare organizations is similar to that of community financing. Managed Healthcare organizations will voluntarily enroll individuals usually from a particular company coordinate and manage their health needs with the aim of improving quality and reducing cost.

## ***2.2 Managed Healthcare Organizations***

In many developed countries and especially the United States of America, Medical insurers are increasingly involved in the provision of healthcare in the new managed care models (American HMOs). In this new situation doctors face a dual loyalty both to the insurer and their patients, with potential for conflict of interest and misconduct (Cutler and Zeckhauser, 1999).

Managed Healthcare is a concept of healthcare delivery and financing where an enrolled population pays a fixed annual fee (capitation) to a medical provider for access to health services as needed (Patel, 2005). Organizations practicing managed healthcare are referred to as Managed Healthcare organizations (MCO'S). These organizations take various forms. The more common ones include, Health Maintenance Organizations (HMO's), Preferred Provider Organizations (PPO's) and Exclusive Provider Organizations (EPO's) (Thakker, 2003).

A Health Maintenance Organization (HMO) is a company that aims to ensure health of its members by providing an appropriate cost effective mix of curative and preventative medical services for a fixed annual fee per member (Patel and Thakker, 2005). The annual fees create a pool of funds from which the provider draws to provide its various services as needed. Insurance companies also create pools of funds that are used to pay for medical care as needed, but they do not otherwise manage the health needs of their clients. Thus while insurance companies only finance healthcare, HMO's do both healthcare delivery and healthcare financing.

PPOs are networks of practitioners that are most often organized by insurers, managed care organizations, or groups of practitioners. The networks contract with groups of practitioners who agree to provide services for a negotiated fee schedule (HIAA, 1996). Individuals who want to see a practitioner who is outside of the network can do so, but there is a financial penalty. Point-of-service plans (POS) combine features of HMOs and PPOs. They use a network of selected practitioners who are reimbursed by either capitation or fee-for-service. Individuals choose a primary care practitioner who controls access to specialists, and co-payments for seeing practitioners within the plan are low. When individuals see practitioners outside the plan, they pay higher deductibles and co-payments (HIAA, 1996). Currently, the feature most associated with managed care is cost containment. Compared with insurance plans, managed care plans have significantly lower rates of utilization of inpatient hospitalization, lower rates of utilization of more expensive and discretionary tests, increased utilization of preventive

services, and mixed results on quality as measured through outcomes (Miller and Luft, 1994).

Market forces are creating dramatic shifts in the structure and conduct of business in the health care delivery system. Employers, government agencies, and other purchasers of health care have become increasingly aggressive in demanding competitive prices from suppliers of health care services. The response to the new strategies in purchasing health care has been acceleration in the growth of managed care organizations.

Managed care imposes organization, controls, quality measurement, and accountability on the delivery of health care to achieve the purchaser's goals for access to care, quality of care, effectiveness of care, and cost of care (Goldstein, 1989; Miller and Luft, 1994; Mechanic *et al.*, 1995; Wells *et al.*, 1995).

Conventional insurance, places few restrictions on the choice of practitioners whose services are covered. Practitioners are reimbursed on the basis of the numbers and types of services that they provide, which produces unintended consequences: an incentive for practitioners to provide more services and an incentive for patients to seek more services because they are paid for by a third party thereby leading to what has been referred to as the moral hazard. Costs are typically controlled by higher co-payments, strict limits on services, and lifetime limits on aggregate coverage. In contrast, managed care imposes limitations on utilization by specifying which practitioners and which services are covered, and often also the number of allowable visits. Managed care

comes in many forms and new structures continue to develop, making generalizations difficult. However, managed care plans have the following characteristics in common (HIAA, 1996): they make arrangements with selected practitioners to furnish a specific set of health care services to enrollees; they have explicit criteria and standards for the selection of practitioners; they have formal programs for ongoing quality assurance, quality improvement, and utilization review; and they have financial incentives for members to use the practitioners and procedures that are covered by the plan.

### ***2.3 Healthcare Utilization***

Health care utilization rates are important indicators of what general types of care specific populations seek, and they also indicate how services may be shifting from one site to another. Overall utilization rates do not tell exactly what services are being provided to specific persons and cannot serve as proxies for either access to specific services or quality of care (Bernstein *et. al.*, 2003). A physician's office visit could include tests, procedures, and even surgery, or it could consist entirely of a discussion with a physician. A hospital or nursing home stay could be for diagnostic, palliative, or recuperative care, or for medical or surgical interventions. These trends can, however, spotlight areas that should be investigated in greater depth.

The health care delivery system of today has undergone tremendous change, even over the relatively short period of the past decade. New and emerging technologies, including drugs, devices, procedures, tests, and imaging machinery, have changed patterns of care and sites where care is provided (Detmer and Gelijns, 1994).

The growth in ambulatory surgery has been influenced by improvements in anesthesia and analgesia and by the development of noninvasive or minimally invasive techniques. Procedures that formerly required a few weeks of convalescence now require only a few days (Lumsdon, 1992). New drugs can cure or lengthen the course of disease, although often at increased cost or increased utilization of medical practitioners needed to prescribe and monitor the effects of the medications.

Over the past decade, both public and private organizations have made great strides in identifying causes of disease and disability, discovering treatments and cures, and working with practitioners to educate the public about how to reduce the incidence and prevalence of major diseases and the functional limitations and discomfort they may cause. Clinical practice guidelines have been created and disseminated to influence providers to follow recommended practices. Public education campaigns urge consumers to comply with behavioral recommendations for example exercise, weight loss programs and treatment regimens that may help to prevent or control diseases and their consequences.

Health care utilization also has evolved as the population's need for care has changed over time. Some factors that influence need include aging, socio-demographic population shifts, and changes in the prevalence and incidence of different diseases. As the prevalence of chronic conditions increases, for example, residential and community-

based health-related services have emerged that are designed to minimize loss of function and to keep people out of institutional settings (Bernstein *et. al.*, 2003).

The growth of managed care and payment mechanisms employed by insurers and other payers in an attempt to control the rate of health care spending has also had a major impact on health care utilization (Okunade and Miles, 1999). Efforts by employers to increase managed care enrollment, as well as major Medicare and Medicaid cost containment efforts such as the Prospective Payment System for hospitals and the Resource Based Relative Value Scale for physician payment, created incentives to shift sites where services are provided (Gilman, 2000). They also created incentives to provide services differently; for example, the increase in capitated payment and use of gatekeepers has been associated with a changing mix of primary care and specialty care (Chaix-Couturier *et. al.*, 2000).

A seven-year analysis of managed behavioral health care utilization in plans of 30 employers with nearly 60,000 employees found increased overall use of mental health services, greater provision of within network care, and reduced long-term costs for behavioral and medical care (Goldman *et. al.*, 1999)

One paradigm of health care utilization identifies predisposing, enabling, and need determinants of care (Anderson, 1995). Predisposing factors include the propensity to seek care, such as whether an individual's culture accepts the sick role or encourages stoicism, and what types of care are preferred for specific symptoms. Enabling factors include depth and breadth of health insurance coverage, whether one can afford co-

payments or deductibles, whether services are located so that they can be conveniently reached, and other factors that allow one to receive care. Need for care also affects utilization, but need is not always easily determined without expert input. Many people do not know when they need care and what the optimal time to seek care is, and many conditions are not easily diagnosed or treated. If all people could obtain unlimited health care, perceived need—by both patient and provider—might be the only determinant of health care utilization, but unfortunately barriers to needed care, such as availability or supply of services, ability to pay, or discrimination, have an impact on utilization overall.

Several other factors may affect healthcare utilization including, federal and state laws, population growth, proportion of the uninsured, access to providers, and patient and provider preference. Analysis of data by the Florida Agency for Healthcare Administration revealed that almost 70% of visits were made by persons under age 45 years and that visits by females were 18.5% higher than males. The majority of visits had an acuity level of low to moderate, and Medicare accounted for the largest proportion of high-acuity visits. Among the most frequent principal diagnoses were upper respiratory infection, middle ear infection and viral infection (O'Malley *et. al*, 2005).



## ***2.4 The Moral Hazard***

Moral hazard is the risk that the behaviour of an economic player will change as a result of the alleviation of real or perceived potential costs (Vaknin, 2005). It is a broad economic term that has been used in association with International Multilateral Financing, Stock Market investments, Healthcare Financing among others.

It has often been claimed that International Monetary Fund (IMF) bailouts, in the wake of financial crises - in Mexico, Brazil, Asia, and Turkey, to mention but a few - created moral hazard. Governments are willing to act imprudently, safe in the knowledge that the IMF is a lender of last resort, which is often steered by geopolitical considerations, rather than merely economic ones. Creditors are more willing to lend and at lower rates, reassured by the IMF's default-staving safety net. Conversely, the IMF's refusal to assist Russia in 1998 and Argentina in 2002 - should reduce moral hazard.

The IMF argues that in order to make the case for abolishing or drastically overhauling the IMF, one must show that the moral hazard generated by the availability of IMF financing overshadows any potentially beneficial effects in mitigating crises (IMF, 2001).

In healthcare financing, the moral hazard refers to the risk that individuals will be more likely to seek *more* health care services when costs are distributed evenly across the population covered within a particular insurance plan. Moral hazard occurs whenever

individuals are not responsible for paying all the costs associated with their medical treatment. This risk may result in health plans with the best coverage attracting individuals whose health care needs are greater than an average risk, which drives up the costs to all. Managed care, exclusions, deductibles and co-pays are tools intended to reduce moral hazard. The difficulty with moral hazard is that insurance companies may employ ethically questionable means to reduce costs, e.g., excluding persons with preexisting conditions, disabilities, and chronic illness.

The moral hazard is thus one of the important problems relating to medical schemes offered by both insurance companies and managed healthcare organizations. It may take different forms as follows -:

- Hidden Information Moral Hazard – Members use health services more often than if they were not on a scheme.
- Hidden Action Moral Hazard – Members demand more procedures or the best treatment
- Provider Moral Hazard – Supplier induced Demand i.e. medical providers do more investigations and more treatment than they would if the patient were not on a medical scheme.

On the other hand, doubt has been cast on the notion of "abuse" as a result of moral hazard (Vaknin, 2005). The moral hazard due to health insurance leads to excess

consumption, therefore it is not obvious that competition is second best optimal. Imperfect competition in the healthcare market may constrain the moral hazard by increasing prices. However if insurance markets are competitive, the moral hazard will not be constrained (Gaynor *et. al.*, 2005).

A competitive insurance market will always produce a contract that leaves consumers at least as well off under lower prices as under higher prices. Thus, imperfect competition in healthcare markets can not have efficiency enhancing effects if the only distortion is due to moral hazard."

Cutler and Zeckhauser (1999) analyzed health insurance markets and investigated whether health insurance plans result in better outcomes for health. They found that combining demand and supply-side interventions offers significant advantages to correct insurance market failures, particularly moral hazard issues, limiting the tendency of insured patients to over-consume health services (moral hazard), and at the same time limiting providers' tendency to over-prescribe and provide services beyond the extent that is medically justified (supply-induced demand).

These findings seem to imply that the moral hazard is indeed less of a problem in managed healthcare organizations than other insurance models. They however conclude that studies to date show little evidence to suggest that different insurance arrangements have different outcomes on health. Managed care may in fact be superior to traditional insurance, however long-term evidence is required.

## CHAPTER THREE : MATERIALS AND METHODS

In this chapter the materials and methods used to carry out the study are presented. The study site and study design are discussed first. This is then followed by a review of the study population with details on inclusion and exclusion criteria. The sampling procedure and data collection methods and analysis are then presented. The chapter concludes with a brief on ethical considerations.

### *3.1 Study Site*

The study was conducted at Avenue Healthcare clinics located in Nairobi and Pembe Flour Mills Factory located in Lunga Lunga road in Nairobi. **Nairobi** is the capital and largest city of Kenya. The city is located at 1°17'S, 36°49'E and occupies 684 square kilometres (260 sq mi). It is situated 1661 metres (5450 ft) above sea level.

Nairobi is the most populous city in East Africa, with an estimated urban population of between 3 and 4 million. According to the 1999 Census, in the administrative area of Nairobi, 2,143,254 inhabitants lived within 684 km<sup>2</sup>. Nairobi is currently the 4th largest city in Africa.

Nairobi is also one of the most prominent cities in Africa politically and financially. Home to many companies and organizations, Nairobi is established as a hub for business and Industry.

Avenue Healthcare has three clinics at various locations in Nairobi. The outpatient department of Avenue Hospital is located on First Parklands Avenue between Limuru and Masari roads. Being a hospital based clinic it is open twenty four hours a day, seven days a week providing the necessary backup to the other outpatient clinics.

The Industrial Area Clinic is located on the ground floor of P.J. Place along Enterprise road. This is an outpatient only clinic opening between 8.00 a.m. and 6.00 p.m on weekdays and between 8.00 a.m. and 2.00 p.m. on Saturdays. This clinic remains closed on Sundays and Public Holidays. It is the clinic closest to Pembe flour Mills factories also located in Industrial Area.

Avenue Healthcare's City Centre Clinic is based within the central business district of Nairobi. Located on the second floor of Nakumatt Lifestyle building between Monrovia and Mohktar Daddah streets, it is also an outpatient only clinic. Its opening hours are 8.00 a.m. to 8.00 p.m. on weekdays, 8.00 a.m. to 4.00 p.m. on Saturdays and 10.00 a.m. to 2.00 p.m. on Sundays and Public Holidays.

### ***3.2 Study Design***

This was a descriptive case study which focused on employees of a flour milling company, Pembe Flour Mills covered by a managed healthcare organization, Avenue Healthcare. Pembe Flour Mills presented a unique research opportunity because of the

introduction of Co-payment in May 2005. Data was thus available on healthcare utilization before and after introduction of Co-payment. For this reason Pembe Flour Mills medical cover at Avenue Healthcare was selected for the case study.

### ***3.3 Study Population***

All employees of Pembe Flour Mills who were medically covered by Avenue Healthcare on or before May 2004 formed the study population. Pembe Flour Mills has a total of 271 employees. However, only 98 of these employees were employed before May 2004 and were medically covered by Avenue Healthcare. These 98 employees thus formed the study population.

#### ***3.3.1 Inclusion Criteria***

Employees by Pembe Flour Mills and willing to participate and sign informed consent

#### ***3.3.2 Exclusion Criteria***

Employees by Pembe Flour Mills but NOT willing to participate or sign informed consent

### ***3.4 Sampling Procedure***

Owing to the small population size and the availability of all these employees within the factory, the evaluation was carried out on all 98 employees that formed the study population. This was thus a census survey.

### ***3.5 Study Instruments***

Both primary and secondary data were used. The primary data was collected using a structured questionnaire (Appendix 2). Records of visits by patients from Pembe Flour Mills to Avenue Healthcare were also used. The questionnaire was pre-tested at Avenue Healthcare City Centre clinic and necessary adjustments made before embarking on the actual data collection.

### ***3.6 Data Collection Methods***

The questionnaire was administered by the principle investigator and a research assistant through an interview session with each employee of Pembe flour mills recruited into the study. The research assistant was engaged and personally trained by the investigator for purposes of the study. The training focused on an overview of health financing, principles of managed healthcare, the moral hazard problem, a brief on Pembe Flour Mills and Avenue Healthcare, Pembe flour Mills medical cover at Avenue Healthcare as well as a background and objectives of the case study.

The principle investigator and research assistant worked with the human resource department to conduct short interviews with Pembe Flour Mills staff in an enclosed private office within the factory to ensure confidentiality.

The activities undertaken in data collection for every patient were as follows -:

1. Desk review of medical records of the patients from Pembe Flour Mills at Avenue Healthcare for the period May 2004 – April 2005 (Before Co-payment)

2. Desk review of medical records of the patients from Pembe Flour Mills at Avenue Healthcare for the period May 2005 – April 2006 (After Co-payment)
3. Research assistants administered a structured questionnaire through an interview session to each employee of Pembe flour mills recruited into the study.

### ***3.7 Data Management and Statistical Analysis***

At the end of each day, the questionnaires were checked for accuracy and completeness. The software used for data entry was SPSS for Windows Release 8.0.0. Data was double entered into SPSS for Windows. The data was then cleaned and validated before Analysis. A database was created from which data was analyzed again using SPSS for Windows Release 8.0.0.

Data analysis involved assessment of the health care utilization by patients from Pembe Flour Mills at Avenue Healthcare before and after the introduction of co-payment. Socio-demographic factors surrounding the utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare was also analyzed.

Data analysis involved the first level descriptive statistics (means, medians and standard deviations for continuous data; proportions and their 95% confidence intervals and frequency distributions for categorical data).

Second level analysis (using Statistical Package for Social Sciences (SPSS)) aimed at establishing any differences between utilization patterns before and after introduction of co-payment. The analysis involved use of Chi-square for categorical outcome variables



and Student t-test for normally distributed continuous outcome variables. For outcomes measured by continuous parameters, comparisons were done using ANOVA.

### ***3.8 Ethical considerations***

For the research project, consent was sought from the management of Avenue Healthcare and Pembe Flour Mills to access and utilize information on utilization patterns as well as to conduct interviews with Pembe staff. All information obtained was held as confidential to ensure the employees privacy.

Before the interview process begun, all participants were individually explained to what the study entails with emphasis on the fact that it is voluntary and that they have the right not to participate or to withdraw at any stage. They were required to sign an informed consent (Appendix 1). Scientific clearance for the proposal was sought and obtained from Center for Public Health (CPHR) Scientific Committee and KEMRI Scientific Steering Committee (Appendix 3). Ethical approval was obtained from KEMRI Ethical Review Committee (Appendix 4).

## **CHAPTER FOUR : RESULTS**

This chapter presents the results of the study. The results are presented in the order of the objectives of the study. First level descriptive statistics relating to general demographic information of the population is presented first.

Data analysis and findings relating to healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare before and after introduction of Co-payment is then presented. This is then followed by the analysis and findings establishing the extent of Hidden Information moral hazard among patients from Pembe Flour Mills and a comparison of the moral hazard with observed healthcare utilization patterns of patients from Pembe Flour Mills at Avenue healthcare. Finally data relating to morbidity levels and patterns of patients from Pembe Flour Mills attending Avenue healthcare clinics is analysed and presented.

### ***4.1 General and Demographic Information***

#### **4.1.1 Socio Demographic Characteristics**

Respondents were asked to give information regarding various socio demographic characteristics including their sex, marital status, education level, occupation and monthly income.

The minimum age of the respondents was 24 years while the maximum age was 63 years. The mean age was 35.99 years with a standard deviation of 8.49. Most of the employees (99%) were male. Only one female employee was recruited into the study. Over half the employees (51%) had completed secondary school level, while 33.7% had completed primary school level. Only 2% had no schooling. Most of the employees (51%) had a take home monthly salary of upto Kshs. 7,500, while 38.8% had salary of between Kshs. 7,501 and 15,000. Only 10.2 % had a salary greater than Kshs. 15,000. The monthly salary is important in trying to assess if the co-payment amount may affect access to healthcare. The findings are presented in Table 4.1.

**Table 4.1: Distribution of respondents by Socio Demographic Characteristics at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

		<b>Number</b>	<b>Percent</b>
<b>Age</b>	<b>=&lt; 30 Years</b>	31	31.5
	<b>31 – 40 Years</b>	39	39.6
	<b>41 – 50 Years</b>	20	20.3
	<b>&gt;= 51 Years</b>	8	8.6
<b>Sex</b>	<b>Male</b>	97	99.0
	<b>Female</b>	1	1.0
<b>Marital Status</b>	<b>Married or Living with Partner</b>	88	89.8
	<b>Never Married</b>	8	8.2
	<b>Divorced</b>	2	2.0
<b>Highest Level of</b>	<b>No Schooling</b>	2	2.0
	<b>Primary School</b>	33	33.7
	<b>Secondary School</b>	50	51.0
	<b>Some College/College Degree</b>	12	12.2
<b>Occupation</b>	Packer	24	24.5
	Machine Operator/Attendant	39	39.8
	Mill Attendant	7	7.1
	Loader	7	7.1
	Supervisor	4	4.1
	Others	17	17.1
<b>Monthly Income</b>	Kshs. 0 – 7,500	50	51.0
	Kshs. 7,501 - 15,000	38	38.8
	Above Kshs. 15,000	10	10.2

#### **4.1.2 Home Related Factors**

Data regarding various factors relating to the living environment of the respondents was collected. This included where they got their drinking water from, whether or not they boiled or treated drinking water, the cooking method they used, distance from their home to the nearest Avenue Healthcare Clinic and Travel mode while seeking healthcare.

The most common source of water was piped water from a community tap (48%) followed by piped water into the house/compound or plot (42.9%). Only a minority (9.2%) used water from other sources. Regarding whether the respondents boiled or treated drinking water, there was a relatively even distribution between the respondents. 37.8 % of the respondents always boiled or treated their drinking water while 33.7% did not. Only 28.6 % reportedly boiled or treated their drinking water, sometimes.

Kerosene was by far the most common cooking method being used by 84.7% of the respondents. Gas and charcoal was used by only 15.3%. Regarding the toilet used at home, flush toilets were more commonly used (62.2 % of the respondents). Pit latrines were used by 37.8%

Most respondents (69.4%) lived between 0 and 10 Kms from the nearest Avenue Healthcare clinic. 71.4 % of the respondents would however use a bus or matatu to travel to an Avenue Healthcare clinic.

These findings are presented in Table 4.2.

**Table 4.2 : Distribution of respondents by Home Related Factors at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

		<b>Number</b>	<b>Percent</b>
<b>Source of Drinking Water</b>	<b>Piped Water into house/compound plot</b>	42	42.9
	<b>Piped water from community tap</b>	47	48.0
	<b>Well/Borehole/Purchased Water/Pond/Dam/Lake/Stream</b>	9	9.2
<b>Boil/Treat Drinking Water</b>	<b>Yes ; Always</b>	37	37.8
	<b>Yes ; Sometimes</b>	28	28.6
	<b>No</b>	33	33.7
<b>Cooking Method</b>	<b>Kerosene</b>	83	84.7
	<b>Gas / Charcoal</b>	15	15.3
<b>Toilet Used</b>	<b>Flush Toilet</b>	61	62.2
	<b>Pit Latrine</b>	37	37.8
<b>Distance from home to Avenue Clinic</b>	<b>0 - 10 Kms</b>	68	69.4
	<b>Greater than 10 Kms</b>	30	30.6
<b>Travel Mode to Avenue</b>	<b>Walk/Bicycle</b>	28	28.6
	<b>Matatu / Bus</b>	70	71.4

#### **4.1.3 Treatment at other hospitals**

Respondents were asked whether they sought treatment at other facilities apart from Avenue Healthcare. The vast majority (68.4%) of employees of Pembe flour mills never

sought treatment from other hospitals apart from Avenue Healthcare clinics. Only 1 % of the respondents sought treatment from other facilities most of the time. This is an important finding because it indicates that the results obtained from records held by Avenue Healthcare gives a relatively accurate assessment of the health status of Pembe Flour mills employees. The findings are summarized in Table 4.3.

**Table 4.3: Distribution of respondents by treatment at other hospitals at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	<b>Number</b>	<b>Percent</b>
<b>Never</b>	67	68.4
<b>Occasionally</b>	10	10.2
<b>Sometimes</b>	20	20.4
<b>Most of the time</b>	1	1.0
Total	98	100.0

#### **4.1.4 Percentage of Visits if No medical cover**

Respondents were reminded that sometimes people with medical covers tended to seek treatment more frequently and for minor ailments as compared to those without medical covers. They were then asked what percentage of visits to Avenue Healthcare they would have made if they did not have a medical cover.

Majority (58.2%) of employees of Pembe flour mills would only have made 0 – 24% of visits to the hospital if they did not have medical covers. Only 2 % of the respondents would have made 75 – 100 % of the visits. The findings are presented in Table 4.4.

**Table 4.4: Distribution of respondents by percentage of visits if no medical cover at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	<b>Number</b>	<b>Percent</b>
<b>75 – 100 %</b>	2	2.0
<b>50 - 74 %</b>	9	9.2
<b>25 - 49 %</b>	30	30.6
<b>0 – 24 %</b>	57	58.2
<b>Total</b>	98	100.0

#### **4.1.5 Co-payment**

Respondents were asked whether they felt the Kshs. 30 co-payment before medical treatment was fair, affordable and whether they felt that the number of visits they would have made to Avenue Healthcare would have been affected had the co-payment been Kshs. 300. The findings are summarized in Table 4.5.

**Table 4.5: Distribution of respondents by co-payment fairness and affordability at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

		<b>Number</b>	<b>Percent</b>
<b>Is Co-pay Fair?</b>	<b>Yes</b>	24	24.5
	<b>No</b>	73	74.5
	<b>Not Sure</b>	1	1.0
<b>Is Co-pay affordable?</b>	<b>Yes</b>	59	60.2
	<b>No</b>	37	37.8
	<b>Not Sure</b>	2	2.0
<b>If Co-pay was Kshs. 300 would it affect no of visits?</b>	<b>Yes</b>	92	93.9
	<b>No</b>	6	6.1

Most employees (74.5%) felt the Co-pay was not fair while only 24.5 % of employees thought it was fair. Regarding affordability however, most employees (60.2%) felt the Co-pay was affordable and 37.8 % of employees thought it was not affordable. However if the co-payment was Kshs. 300 the vast majority of employees of Pembe flour mills (93.9%) feel that the number of visits to Avenue Healthcare would have been affected.

The data relating to whether or not co-payment was fair was cross tabulated against that for if co-payment was increased to Kshs. 300, it would affect the number of visits. Of those that felt co-payment was fair, most (95.8%) were of the opinion that an increase in co-payment to Kshs. 300 would indeed affect the number of visits to Avenue Healthcare clinics. Of those who felt co-payment was not fair 93.2% also agreed that if co-payment was increased to Kshs. 300, it would affect the number of visits they made. The chi square test indicates that there is NO difference in this results ( $\chi = 0.292$   $p = 0.864$ ).

Again, the results relating to whether or not the co-payment was affordable was cross tabulated against whether an increase in co-payment to Kshs. 300 would affect the number of visits. Of the respondents who felt that the Kshs. 30 co-payment was affordable, 91.5% also felt that an increase in the co-payment to Kshs. 300 would affect the number of visits they made. This percentage increased to 97.3% among those who felt the Kshs. 30 co-payment was not affordable. The Chi square test of the cross tabulation indicate that there is a no difference in these results ( $\chi = 1.451$   $p = 0.484$ ).



These results suggest that access to healthcare was not adversely affected by the Kshs. 30 co-payment because it was affordable. This is despite the fact that most respondents feel that the co-payment is NOT fair. However a co-payment of Kshs. 300 would have been punitive and would have affected access to healthcare.

#### **4.1.6 Suggestions to Improve medical Cover**

Suggestions were given on how to improve the respondents medical cover. This was an open-ended question and data obtained were analyzed using Content Analysis by looking at the emerging themes. Various ideas came out clearly. There were several suggestions to totally remove Co-payment while others felt other methods to handle it such as deducting it from the salary as opposed to paying cash would be better.

A number of employees felt the medical cover was very useful and their families should be included as beneficiaries to the scheme. The limitation of Avenue Healthcare clinics to Nairobi, Mombasa and Kisumu was also cited with the suggestion that Avenue Healthcare should partner with other facilities to allow for countrywide treatment.

Suggestions to improve operational aspects of service delivery were also raised such as increasing opening hours for the clinics, increasing the number of doctors and other medical personnel to hasten treatment, having more investigations and standardized treatment regimens.

## ***4.2 Healthcare Utilization Patterns***

The second specific objective of the study was to determine healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare before and after introduction of co-payment. To this end, medical records, held by Avenue Healthcare, of all employees recruited into the study were analyzed with a view to establishing the healthcare utilization patterns before and after introduction of co-payment.

### **4.2.1 Total Number of Visits**

The total number of visits to Avenue Healthcare by Pembe flour mills employees during the period May 2004 to April 2005 (before introduction of co-payment) and between May 2005 to April 2006 (after introduction of co-payment) was summarized.

The highest percentage of visits in the period before the introduction of co-payment was 4 accounting for 16.3% and 7 also accounting for 16.3% of the total visits. After the introduction of co-payment the highest percentage (41.8%) of was accounted for by the respondents made only between 0 and 2 visits. The data is as displayed in Table 4.6.

**Table 4.6: Distribution by total Visits to Avenue before and after Co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

No of Visits	Before Co-payment (2004/5)		After Co-payment (2005/6)	
	Frequency	Percent	Frequency	Percent
<b>0 – 2</b>	4	4.0	41	41.8
<b>3</b>	12	12.2	16	16.3
<b>4</b>	16	16.3	13	13.3
<b>5</b>	12	12.2	6	6.1
<b>6</b>	11	11.2	7	7.1
<b>7</b>	16	16.3	6	6.1
<b>8</b>	5	5.1	4	4.1
<b>9</b>	7	7.1	3	3.1
<b>10</b>	6	6.1	1	1.0
<b>11</b>	3	3.1	1	1.0
<b>12 or greater</b>	6	6.1	0	0.0
<b>Total</b>	<b>98</b>	<b>100.0</b>	<b>98</b>	<b>100.0</b>

#### **4.2.2 Total Number of Repeat Visits**

The total number of repeat visits between May 2004 and April 2005 and again between May 2005 and April 2006 was established from each employee’s medical records. This represented the period before introduction of co-payment and after introduction of co-payment, respectively. Repeat visits were defined as visits within one month of the previous visit and for a similar/related complaint.

Before the introduction of co-payment 42.9% of the respondents had no repeat visits while after co-payment was introduced this percentage increased to 74.5%. The data obtained are shown in Table 4.7

**Table 4.7: Distribution by repeat Visits before and after introduction of co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

No of Visits	Before Co-payment (2004/5)		After Co-payment (2005/6)	
	Frequency	Percent	Frequency	Percent
0	42	42.9	73	74.5
1	7	7.1	11	11.2
2	20	20.4	4	4.1
3	14	14.3	3	3.1
4	8	8.2	4	4.1
5 or greater	7	7.1	3	3.1
<b>Total</b>	98	100.0	98	100.0

#### **4.2.3 Total Number of Repeat Visits requested for by the doctor**

The total number of repeat visits requested for by the doctor between May 2004 and April 2005 and again between May 2005 and April 2006, was established from each employee's medical records. Repeat visits requested for by the doctor were defined as visits within one month of the previous visit and for a similar/related complaint, whereby the doctor specifically requested the patient to come again for review.

Most (73.5%) of the respondents had no repeat visits requested by the doctor in the period before co-payment. There was a slight increase in this percentage to 84.7% in the period after the introduction of co-payment. The data obtained are displayed in Table 4.8.

**Table 4.8: Distribution by Requested Repeat Visits before and after co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	Before Co-payment (2004/5)		After Co-payment (2005/6)	
	Frequency	Percent	Frequency	Percent
<b>0</b>	72	73.5	83	84.7
<b>1</b>	9	9.2	4	4.1
<b>2</b>	7	7.1	3	3.1
<b>3</b>	5	5.1	2	2.0
<b>4</b>	3	3.1	4	4.1
<b>5 or Greater</b>	2	2.0	2	2.0
<b>Total</b>	98	100.0	98	100.0

#### **4.2.4 Relationship between Age and Total Number of Visits**

The Age of respondents was correlated with the total number of visits for the period before the introduction of co-payment and after. The results indicate that there was a weak and positive correlation between the age of the employee and the total number of visits as presented in the Table 4.9. This correlation was found to be significant. More visits were seen in older patients.

**Table 4.9: Correlation between current age and no. of visits before and after introduction of co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

		<b>Age</b>	<b>Total Visits to Avenue before co-payment</b>	<b>Total Visits to Avenue after co-payment</b>
<b>Age</b>	Pearson Correlation	1.000	.227*	.347**
	Sig. (2-tailed)	.	.026	.001
	N	96	96	96

\* Correlation is significant at the 0.05 level (2-tailed).

\*\* Correlation is significant at the 0.01 level (2-tailed).

#### **4.2.5 Distance to the Nearest Avenue Healthcare Clinic**

The distance to the nearest healthcare clinic may affect the utilization of service. Pearson's correlation coefficient was established comparing the number of visits with the distance. There was NO correlation between the distance to the nearest Avenue Healthcare clinic and the total number of visits. This was regardless of the co-payment. The results are as tabulated in Table 4.10.

**Table 4.10: Correlation between total number of visits and distance to the nearest Avenue Healthcare Clinic at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

		<b>Total Visits to Avenue 2004/5</b>	<b>Total Visits to Avenue 2005/6</b>
<b>Distance from Home to Avenue</b>	<b>Pearson Correlation</b>	.049	-.057
	<b>Sig. (2-tailed)</b>	.633	.580
	<b>N</b>	98	98

#### **4.2.6 Presence or absence of chronic illness**

The presence or absence of chronic illness may affect the utilization of service. The mean number of visits by presence or absence of chronic illness was calculated. To establish that there was a statistically significant difference in the means, the independent T-test was applied.

The mean total number of visits, mean number of repeat visits and mean number of repeat visits requested for by the doctor were significantly less among the respondents with no chronic illness as compared to those with chronic illnesses. More visits were seen in patients with chronic illness as they usually require frequent follow up and reviews hence more visits. The results are indicated in Table 4.11.

**Table 4.11: Distribution and Mean Number of Visits by Presence or absence of chronic illness at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	<b>Chronic Illness</b>	<b>N</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>t – Value</b>	<b>p - Value</b>
<b>Total Visits to Avenue 2004/5</b>	Yes	26	8.77	2.76	5.771	0.000
	No	72	5.40	2.47		
<b>Total Visits to Avenue 2005/6</b>	Yes	26	6.31	2.45	8.512	0.000
	No	72	2.67	1.62		
<b>Repeat Visits to Avenue 2004/5</b>	Yes	26	2.54	1.70	3.395	0.001
	No	72	1.28	1.59		
<b>Repeat Visits to Avenue 2005/6</b>	Yes	26	1.81	1.88	6.824	0.000
	No	72	.17	.50		
<b>Requested Repeat Visits to Avenue 2004/5</b>	Yes	26	1.73	1.87	6.172	0.000
	No	72	.22	.56		
<b>Requested Repeat Visits to Avenue 2005/6</b>	Yes	26	1.54	1.84	6.959	0.000
	No	72	2.78E-02	.17		

#### **4.2.7 Gastrointestinal Infections and Boiling/Treating drinking water**

The number of visits for Gastro-intestinal infections may be affected by whether or not the respondents boil/treat their drinking water. The mean number of visits grouped according to whether the respondents boiled/treated drinking water always, sometimes or never. To establish whether there was a statistically significant difference in the means, a one-way analysis of variance (ANOVA) test was applied.



The highest mean number of visits for gastrointestinal infections was seen amongst those that never boil/treat their drinking water (mean 2.52 in 2004/5 and 1.67 in 2005/6). The lowest mean was seen among those who always boil their drinking water (mean 0.62 in 2004/5 and 0.24 in 2005/6). More visits relating to gastrointestinal infections are thus seen in respondents who do not boil/treat drinking water. As indicated by the analysis of variance, there was indeed a statistically significant difference in these means (P value 0.000). The results are summarized in Table 4.12.

**Table 4.12 Mean Number of visits for Gastrointestinal infections grouped by whether or Not respondents boil/treat drinking water at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	Gastrointestinal Infections 2004/5				Gastrointestinal Infections 2005/6			
	Mean	Std. Dev.	F - Value	p - Value	Mean	Std. Dev.	F - Value	p - Value
<b>Always boiled drinking water</b>	0.62	1.21	19.590	0.000	0.24	0.60	18.090	0.000
<b>Sometimes boiled drinking water</b>	1.57	1.10			0.89	0.99		
<b>Never boiled drinking water</b>	2.52	1.44			1.67	1.29		

### Toilet Used and Total number of visits

The type of toilet used at home may affect the general hygiene of the respondents and thus the utilization of service. The total number of visits grouped by type toilet used at home was established. The mean number of visits for each group was calculated and an independent T-test carried out. The results are as tabulated in Table 4.13.

**Table 4.13 Distribution of visits by type of toilet used at home at Pembe Flour Mills  
Nairobi, 2004 – 2005 (N=98)**

	Toilet Used at Home	N	Mean	Std. Deviation	t - Value	p - Value
<b>Total Visits to Avenue 2004/5</b>	<b>Flush Toilet</b>	61	6.15	2.67	-0.639	0.524
	<b>Pit Latrine</b>	37	6.54	3.37		
<b>Total Visits to Avenue 2005/6</b>	<b>Flush Toilet</b>	61	3.54	2.48	-0.471	0.639
	<b>Pit Latrine</b>	37	3.78	2.46		

As indicated by the P values above (0.524 and 0.639), the mean number of visits made by those using flush toilets was similar to the mean visits made by those using pit latrines.

### **4.3 Moral Hazard**

In healthcare financing, the moral hazard refers to the risk that individuals will be more likely to seek health care services when costs are distributed evenly across the population covered within a particular insurance plan. The research objectives included, establishing the extent of Hidden Information moral hazard and comparing the moral hazard with observed healthcare utilization patterns among patients from Pembe Flour Mills at Avenue Healthcare.

#### **4.3.1 Extent of Hidden Information moral Hazard**

In order to achieve this objective the mean number of visits for the period before and after introduction of co-payment was calculated. This was done for the total number of visits, the number of repeat visits and the number of repeat visits requested for by the doctor. The means of each of the above variables before introduction of co-payment (visits in 2004/5) was compared against the corresponding mean after introduction of co-payment (visits between 2005/6) and the paired t-test applied to establish if there was a statistically significant difference in the means.

The mean number of visits before co-payment was 6.3 with a standard deviation of 2.94 while after introduction of co-payment the mean was 3.63 and standard deviation is 2.46. The change in the mean number of visits from 6.3 to 3.63 is a 42 % reduction in the number of the visits after co-payment. The paired t-test indicates that there was a statistically significant difference between the mean number of visits before and after

introduction of co-payment for the total number of visits (p value 0.000). These results are as indicated in Table 4.14.

**Table 4.14: Mean Number of Visits before and after Co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	<b>Before Co-payment</b>	<b>After Co-payment</b>	<b>t - Value</b>	<b>p - Value</b>
Mean	6.30	3.63	12.953	0.000
Minimum	0	0		
Maximum	15	11		
Standard Deviation	2.94	2.46		

It is worth noting that the mean number of repeat visits after introduction of co-payment reduced to 0.6 as compared to 1.61 before introduction of co-payment. The paired t-test confirms that this decrease is statistically significant (p value 0.000). The results are as indicated in Table 4.15.

**Table 4.15 Mean Number of repeat visits before and after Co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	<b>Before Co-payment</b>	<b>After Co-payment</b>	<b>t - Value</b>	<b>p - Value</b>
Mean	1.61	0.6	7.018	0.000
Minimum	0	0		
Maximum	6	5		
Standard Deviation	1.71	1.27		

The mean number of repeat visits requested for by the doctor before introduction of co-payment was 0.62 while that after introduction of co-payment is 0.43. This decrease was significant (p value 0.002). These results are as indicated in Table 4.16.

**Table 4.16 Mean Number of repeat visits before and after Co-payment requested for by the doctor at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	<b>Before Co-payment</b>	<b>After Co-payment</b>	<b>t - Value</b>	<b>p - Value</b>
Mean	0.62	0.43	3.181	0.002
Minimum	0	0		
Maximum	6	5		
Standard Deviation	1.26	1.16		

#### **4.3.2 Comparing the moral hazard with observed healthcare utilization patterns**

Certain ailments such as upper respiratory tract infections and allergic respiratory tract ailments are in many cases quite minor and may not require medical intervention. Other ailments such as Diabetes, Hypertension, Peptic Ulcer Disease, Injuries and chronic pain conditions may have greater impact on health and may actually require medical intervention.

In comparing moral hazard and observed healthcare utilization patterns, the mean number of visits for the minor ailments before and after introduction of co-payment and the mean number of visits for the more severe ailments before and after introduction of

co-payment was established. The paired t-test was applied to establish if there was a statistically significant difference between the visits for minor ailments. The mean number of visits for each of minor ailment before introduction of co-payment (visits in 2004/5) and after introduction of co-payment (visits between 2005/6) were compared.

The paired t-test indicates that for both allergic respiratory tract ailments and upper respiratory tract infections (minor ailments) there was a statistically significant reduction (p value 0.000) in the mean of number of visits after introduction of co-payment as compared to before introduction of co-payment. The results are as indicated in Table 4.17

**Table 4.17 Mean Number of visits for minor ailments at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

Disease	Before		After		t - Value	p - Value
	Co-payment		Co-payment			
	Mean	Std. Deviation	Mean	Std. Deviation		
Allergic Respiratory Tract ailments	1.48	1.23	0.37	0.63	8.274	0.000
Upper Respiratory Tract Infections	1.81	1.36	0.45	0.8	8.753	0.000

The data relating to major ailments was analyzed in the same way. The paired T-test was then applied to establish if there is a statistically significant difference between the visits for major ailments.

The paired t-test indicates that for most major ailments with exception of injuries at work, there was **no difference** in comparison of the means of number of visits before and after introduction of co-payment. Even for injuries at work where a significant difference was noted, the mean number of visits increased after introduction of co-payment (0.41 after as compared to 0.21 before co-payment). This suggests that other factors aside from the co-payment may have led to this increase. The results are as indicated in Table 4.18.

**Table 4.18 Mean Number of visits for major ailments at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

Disease	Before Co-payment		After Co-payment		t - Value	p - Value
	Mean	Std. Deviation	Mean	Std. Deviation		
Lower Respiratory Tract Infections	0.0612	.24	0.0612	0.28	0.000	1.000
Dyspepsia / Peptic Ulcer Diseases	0.21	0.6	0.22	0.6	-0.179	0.859
Diabetes/Hypertension	0.23	1.18	0.21	1.06	0.815	0.417
Injuries at Work	0.21	0.68	0.41	0.74	-2.023	0.046
Injuries away from Work	0.17	0.46	0.17	0.45	-0.425	0.672
Chronic Pain Conditions	0.69	1.53	0.7	1.56	-0.207	8.36

#### 4.4 Morbidity Patterns

The fifth specific research objective was to establish morbidity levels and patterns of patients from Pembe Flour Mills attending Avenue healthcare clinics. To achieve this objective, the total number of visits for various common ailments between May 2004 and April 2005 was established from each employee's medical records. This represented the period before introduction of co-payment. The same was done for the period between May 2005 and April 2006 representing the period after introduction of co-payment.

The most common conditions found in the population included upper respiratory tract infections, allergic respiratory tract ailments, gastro intestinal infections and chronic pain conditions. Analysis of these data is presented in Table 4.19.

**Table 4.19 Distribution of Morbidity by type of illness before and after introduction of Co-payment at Pembe Flour Mills Nairobi, 2004 – 2005 (N=98)**

	Before Co-payment (2004/5)		After Co-payment (2005/6)	
	Number of Visits	Percentage	Number of Visits	Percentage
Allergic Respiratory Tract Ailments	145	22 %	36	9.8%
Upper Respiratory Tract Infections	177	26.8%	44	12%
Gastro Intestinal Infections	150	22.8%	89	24.2%
Injuries away from Work	15	2.3%	17	4.6%
Chronic Pain Conditions e.g. Osteoarthritis	68	10.3%	69	18.8%
Lower Respiratory Tract Infections	6	0.9%	6	1.6%
Dyspepsia/PUD	21	3.2%	22	6%
Skin Conditions	28	4.2%	15	4.1%
Diabetes/Hypertension	23	3.5%	21	5.7%
Injuries at Work	21	3.2%	40	10.9%
Others	5	0.8%	8	2.2%
<b>Total</b>	<b>659</b>	<b>100%</b>	<b>367</b>	<b>100%</b>



## **CHAPTER FIVE : DISCUSSIONS AND CONCLUSIONS**

In this chapter, a summary of results is presented, discussed and conclusions drawn. The chapter also provides the limitations of the study, suggestions for further research as well as recommendations for policy and practice.

### ***5.1 Summary and Discussions.***

The summary of results and discussion presented in this section has been done in order of the objectives of the study. The overall objective of the study was to assess the factors that influence healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare.

This was achieved by determining healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare before and after introduction of Co-payment, establishing the extent of Hidden Information moral hazard, comparing the moral hazard with observed healthcare utilization patterns and establishing morbidity levels and patterns of patients from Pembe Flour Mills attending Avenue healthcare clinics.

#### ***5.1.1 Healthcare Utilization Patterns***

In determining healthcare utilization patterns, it was established that the vast majority of employees of Pembe flour mills (68.4%) never sought treatment from other hospitals apart from Avenue Healthcare clinics. Only 1 % of the respondents sought treatment

from other facilities most of the time. This is because their medical cover at Avenue Healthcare entitles them to unlimited consultations with any Avenue Healthcare doctor, all needed drugs and dressings, all needed laboratory tests, all X-rays CT-Scans and ultrasounds, specialist consultations when required, necessary procedures such as suturing, dressing among others Hence data collected from records held by Avenue Healthcare would indeed represent an accurate assessment of the healthcare utilization and morbidity patterns of Pembe Flour Mills employees.

It was established that there was a weak and positive correlation (Pearson correlation coefficient of 0.227 before co-payment and 0.347 after co-payment) between the age of the employee and the total number of visits. More visits were seen in older patients. This agrees with Bernstein *et. al.* (2003) and would be expected because the older one gets the more the medical ailments one would suffer from.

An analysis of the medical records, held by Avenue Healthcare, of all employees recruited into the study before and after introduction of co-payment revealed that there was a 42 % reduction in the mean number of visits after Introduction of co-payment. The mean before introduction of co-payment was 6 while after introduction of co-payment was 3.63.

The mean number of repeat visits after introduction of co-payment reduced to 0.6 as compared to 1.61 before introduction of co-payment. There was, however, only a marginal decrease in the mean number of repeat visits requested for by the doctor from 0.62 before introduction of co-payment to 0.43 after introduction of co-payment.

Another important factor influencing healthcare utilization was the presence or absence of chronic illness. It was found that the mean number of visits, mean number of repeat visits and mean number of repeat visits requested for by the doctor was significantly more among those with chronic illnesses as compared to those without chronic illnesses. This again is in keeping with Bernstein *et. al.* (2003). The presence of chronic illness would require regular medical follow up and hence higher utilization of medical services.

Boiling or treating of drinking water was another factor found to influence healthcare utilization patterns especially the number of visits for gastro-intestinal infections which are usually acquired from food or water. The study found that significantly more visits relating to gastrointestinal infections were seen amongst respondents who did not boil or treat drinking water.

It was also thought that the distance to the nearest healthcare clinic may affect the utilization of service. This study, however, established that there was NO correlation between the distance to the nearest Avenue Healthcare clinic and the total number of visits. This was regardless of the co-payment. The most likely reason for this is that most respondents (69.4%) live between 0 and 10 Kms from the nearest Avenue Healthcare clinic. Only 29.6% of the respondents live between 11 and 20 Kms away while only 1% of the respondents live between 21 and 30 Kms. Another possible reason is that the Pembe Flour Mills factory is located relatively close (approximately 4 Kms)

from Avenue Healthcare's Industrial Area clinic. The employees can therefore access medical services from or to work. Therefore access to healthcare due to distance is not an issue for this population.

Another factor that was thought may influence healthcare utilization was the toilet used at home. It was however found that there is thus NO correlation between the toilet used at home and the total number of visits. This was most likely because type of toilet used at home may NOT have any direct relationship to the level of hygienic.

### ***5.1.2 Hidden Information Moral Hazard***

Hidden Information moral hazard refers to the risk that individuals will be more likely to seek *more* health care services when covered within a particular insurance plan as compared to if they were not on a scheme.

In comparing the means between the number of visits before and after introduction of co-payment, it was found that there, was a 42 % reduction in the mean number of visits after the introduction of co-payment (3.63 after co-payment from 6.3 before co-payment). There was also a reduction in the mean number of repeat visits after the introduction of co-payment (0.6 as compared to 1.61) as well as mean number of repeat visits requested for by the doctor (0.43 from 0.62). The decrease in the mean number of visits and repeat visits after the introduction of co-payment was found to be statistically significant (P value 0.000).

The reduction in the number of visits following the introduction of co-payment to the Pembe Flour mills medical cover is because co-payment essentially introduced a cost element to be directly borne by the member when seeking health services. It acted as a deterrent to those who would have wanted to misuse the service because of very minor ailments which may not require medical intervention.

### ***5.1.3 Comparing Moral Hazard with healthcare utilization patterns***

In comparing moral hazard and observed healthcare utilization patterns, the mean number of visits for the minor ailments before and after introduction of co-payment and the mean number of visits for the more severe ailments before and after introduction of co-payment was established.

For minor ailments, visits for allergic respiratory tract ailments and upper respiratory tract infections were selected. The mean number of visits for allergic respiratory tract ailments before co-payment was 1.48 while after co-payment, it reduced to 0.63. The mean number of visits for upper respiratory tract infections before co-payment was 1.81 while after co-payment, it reduced to 0.45. The reduction in the mean number of visits for allergic respiratory tract ailments and upper respiratory tract infections was found to be statistically significant difference (P values 0.000 for both cases).

For major ailments, visits for Lower Respiratory tract infections, Peptic ulcer disease, Diabetes/Hypertension, Injuries both at work and away from work and chronic pain conditions such as Osteoarthritis was studied. Comparison of the means of number of

visits before and after introduction of co-payment for these conditions indicated that there was no difference.

The comparison of the effect of co-payment on visitations for minor and major ailments therefore suggests that introduction of the co-payment did indeed have the desired effect of reducing the unnecessary visits especially for minor ailments such as allergic respiratory tract ailments and upper respiratory tract infections. It however had no effect on the number of visits for most of the major ailments such as lower respiratory tract infections, Peptic ulcer disease, Injuries and chronic pain conditions.

The most likely reason for this is that the co-payment amount was kept small (Kshs. 30) thereby ensuring that it is affordable. Hence although acting as a deterrent for unnecessary visits, it is still affordable enough to ensure those who require the medical services are not hindered from accessing the service.

This was further affirmed by the fact that the majority of respondents (60.2%) felt the Co-pay was affordable while only 37.8 % of employees thought it was not affordable. Further to this most respondents (93.9%) felt that the number of visits they would have made to Avenue Healthcare would have been affected had the co-payment been Kshs. 300.

#### ***5.1.4 Morbidity Levels and Patterns***

The most common conditions found in the population included upper respiratory tract infections, allergic respiratory tract ailments. This is in keeping with the findings of

O'Malley *et. al*, (2005). Gastro intestinal infections and chronic pain conditions were also common.

Pembe Flour Mills is a flour milling company and therefore there is quite a significant amount of dust within the factory. The number of visits for allergic respiratory tract ailments and upper respiratory tract infections as expected is therefore quite high, their combined total accounting for 49 % of the visits in 2004/5 and 22 % of the visits in 2005/6.

The number of visits for chronic pain conditions also accounted for 10 % of the visits in 2004/5 and 19 % of the visits in 2005/6. This can be explained by the fact that 26.5 % of the respondents had a chronic illness and of those with chronic illnesses 59 % had conditions resulting in chronic pain such as Osteoarthritis and Spondylosis.

## **5.2 Conclusions.**

From the foregoing the following conclusions can be drawn. Firstly, the vast majority of employees of Pembe flour mills seek treatment mainly from Avenue Healthcare clinics. Their medical cover with Avenue Healthcare is therefore effectively being utilized and provides for their medical needs.

Factors that influence the health utilization patterns include age, presence or absence of chronic illness and boiling/treating drinking water. It is worth noting that for this

population distance from home to the nearest Avenue Healthcare clinic did not affect healthcare utilization mainly because most of the population lives relatively close to the clinic and their workplace is located close to Avenue Healthcares Industrial Area clinic.

The most common conditions found among Pembe Flour mills employees include upper respiratory tract infections and allergic respiratory tract ailments in keeping with the Flour milling activity of the factory which predisposes the employees to excessive dust. Other common conditions include gastro intestinal infections and chronic pain conditions.

A significant reduction in the number of visits following the introduction of co-payment to the Pembe Flour mills medical cover was noted as the co-payment is a deterrent to those who would have wanted to misuse the service because of very minor ailments which may not require medical intervention. This reduction in the number of visits was mainly due to less visits for minor ailments such as allergic respiratory tract ailments and upper respiratory tract infections. There was no change in the number of visits for most major ailments such as Lower respiratory tract infections, Peptic ulcer Disease, Injuries and chronic pain conditions.

The moral hazard is therefore a major problem associated with utilization of health services for Pembe Flour Mills employees. Introduction of co-payment played a



significant role in reducing the moral hazard. Because the co-payment is affordable, it did not adversely affect access to health services.

### ***5.3 Limitations of the Study***

The study was done by collecting data from the employees of Pembe Flour Mills. However, it would have been important to get the views of other stakeholders such as management of Pembe Flour Mills and Avenue Healthcare, the doctors and nurses who treat these patients among others

Only one organization was studied. Many of the employees recruited into the study may therefore have some organizational influences and factors in common such as working environment, salary scales, organizational attitude towards co-pay among others. The results obtained may therefore not be absolutely reflective of the general issues relating to healthcare utilization and managed healthcare organizations.

There were also financial limitations as no external funding was obtained and all the funds for the research was obtained from the personal savings of the principal researcher.

#### ***5.4 Areas recommended for Research***

Arising from the first limitation outlined above, a study may be carried out that will collect data from other stakeholders such as employees of the Managed Healthcare Organizations. Data can also be collected from management of companies which subscribe to medical schemes with co-payment as opposed to those who do not, the government through the Ministry of Health, employee organizations such as trade unions, and employer organizations such as the Federation of Kenya Employers (FKE).

Also arising from the second limitation above, a replicative study can also be carried out that would collect data from employees working in different companies and also have medical schemes with co-payment.

One of the findings of the study is that for this population distance from home to the nearest Avenue Healthcare clinic did not affect healthcare utilization mainly because most of the population lives relatively close to the clinic and their workplace is located close to Avenue Healthcare's Industrial Area clinic. A study can be carried out whereby the population live at relatively variable distances in order to determine if distance would affect healthcare utilization.

The prevalence of allergic respiratory tract ailments and upper respiratory tract infections was also found to be quite high in this population. However a study can be done to compare the prevalence of these conditions among Pembe Flour Mills

employees and among any population with similar demographics but not exposed to flour milling dust in their workplace to determine if there is a statistically significant difference.

Another finding of the study is that the Introduction of co-payment had the effect of reducing the unnecessary visits especially for minor ailments such as allergic respiratory tract ailments and upper respiratory tract infections. It however had no effect on the number of visits for most of the major ailments such as lower respiratory tract infections, Peptic ulcer disease, Injuries and chronic pain conditions. It was further postulated that the reason for this was that the co-payment amount was kept small (Kshs. 30) thereby ensuring that it is affordable. Hence although acting as a deterrent for unnecessary visits, it is still affordable enough to ensure those who require the medical services are not hindered from accessing the service. A replicative study can be carried out whereby the co-payment is much higher based on the salary scales of the employees and determine if there is indeed an effect on visitations due to major ailments as well.

### ***5.5 Recommendations for Policy and Practice***

The prevalence of allergic respiratory tract ailments and upper respiratory tract infections among Pembe Flour mills employees was unacceptably high. This may be attributed to the high amount of dust in the factory being a flour milling company. The management of the factory would be advised to look into various engineering solutions

to improve dust extraction within the factory. All employees should also be advised to always wear their masks while within the premises.

A lower incidence of Gastro intestinal infections was found among those who boil or treat their drinking water. The population should therefore be advised on this in order to reduce the incidence of Gastro-intestinal infections.

The study concluded that the moral hazard is indeed a major problem associated with utilization of health services and the introduction of co-payment played a significant role in reducing the moral hazard. Co-payment should therefore be advocated for medical schemes where a population has easy access to health services resulting in the misuse of these services

The study further concluded that because the co-payment is affordable, it did not adversely affect access to health services. The amount of co-payment therefore has to be carefully decided depending on the socio-economic factors of the particular population. Co-payment should not adversely affect access to healthcare.

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# **APPENDICES**

## **APPENDIX I**

### **CONSENT FORM**

#### **Factors Affecting Healthcare Utilization – A Case Study of Pembe Flour Mills**

#### **Medical Cover at Avenue Healthcare**

#### **PART A. INFORMATION SHEET**

The following information is to enable you to give voluntary informed consent to your participation in this study. Please read the information carefully before signing the consent form (Part B). **[To be verbally administered to those Participants who are illiterate]**

#### **Objectives of the Study:**

The overall objective of the study is to assess the factors that influence healthcare utilization patterns by patients from Pembe Flour Mills at Avenue Healthcare. This will be done by determining healthcare utilization patterns of patients from Pembe Flour Mills at Avenue Healthcare before and after introduction of Co-payment, comparing the moral hazard with observed healthcare utilization patterns of patients from Pembe Flour Mills at Avenue healthcare, establishing morbidity levels and patterns of patients from Pembe Flour Mills attending Avenue healthcare clinics. The data generated will be used by the Management of Avenue Healthcare and Pembe Flour Mills in documenting healthcare utilization patterns and as a guide to decision making. Other organizations involved healthcare financing and healthcare delivery, including other Managed

Healthcare Organizations can also draw useful lessons on the relationship between the Moral Hazard and Managed Healthcare Organizations.

**Benefits for Participating Clients / Community:**

- You will receive a comprehensive review of your medical condition. Anybody found to have a problem will be referred to the Avenue Healthcare review clinic where senior Avenue Healthcare doctors will follow you up and effectively manage your condition.
- A comprehensive interview will be conducted in which you will be invited to give your views on factors affecting your illness and possible improvements on the quality of care, access to the healthcare services among others
- Employees of Pembe Flour mills and the general community seeking medical care at Avenue Healthcare will also benefit from improved policies and service delivery which would be implemented based on the study recommendations.

You may decline to participate in this study without giving reason. You will NOT be penalized, jeopardize your right to medical care or suffer any loss on due to your refusal to participate.

**Risks for Participating Clients:** Apart from the time taken for the interview session (approximately half an hour), which may take time away from other activities, no other risks are foreseen.

**What your Participation will Involve:**

- Upon enrollment into the study, a comprehensive review of your medical condition and utilization of services at Avenue Healthcare will be carried out.

Your medical records at Avenue Healthcare will be used for this purpose. You will then be invited for a personal interview to be conducted at Pembe Flour Mills factories whereby you will be given a brief on your medical history and utilization of services at Avenue Healthcare. You will then be asked detailed questions on your marital status, education level, income, factors that may cause disease or affect your utilization of services at Avenue Healthcare and your concerns on co-payment. We will work with your human resource department to set up appropriate appointments for this interview. We will encourage you to honor your scheduled appointments. Should you however be unable to honor the appointments we would ask that you inform us in advance to allow for re-scheduling.

### **Confidentiality**

- All Information you provide us will remain confidential. This information will only be accessed by the study team and it will not be relayed to your employer or any other family member unless with your permission. You will be made aware of any important issues related to your health should such a need arise. We will also assist you to obtain specialized medical care by referring you to the appropriate health care facility.

### **Withdrawal**

- You may withdraw from participation in this study at any time without giving reason and without jeopardizing your right to medical care.

**PART B. CONSENT FORM**

Please read the information sheet (PART A) or have the information read to you carefully before completing and signing this consent form. If there are any questions you have about the study, please free to ask them to the investigator prior to signing your consent form.

For further details and enquiries, problems relating to your participation, please contact the principle investigator: Dr. Denis Ogolla, Avenue Healthcare, Town Clinic

P.O. Box 45280-00100 Nairobi

Tel : 254-2-219170, 254-2-218825

**Consent form for the study:**

**FOR COMPLETION BY ALL PARTICIPANTS**

I have read the information sheet concerning this study and I understand what will be required of me to take part in the study. Any questions I have concerning this study have been answered. I understand that any time I may wish to withdraw from this study I will do so without giving any reason and without affecting my access to normal health care and management. I agree to take part in this study.

Signed/Thumbprint

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Name

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Date :

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# APPENDIX II

## QUESTIONNAIRE

Serial No. \_\_\_\_\_

**Instructions to Research Assistants : Circle the correct response. Write the response in the appropriate space provided**

### **Section A : General Information**

1. Name \_\_\_\_\_

2. Reg. Number \_\_\_\_\_

3. Date of Joining Scheme \_\_\_\_\_

### **Section B : Demographic Information**

4. What is your age? \_\_\_\_\_ Birthdate if available \_\_\_\_\_

5. What is your sex? (1) Male (2) Female

6. What is your marital status?

(1) Married or living with partner (2) Never Married

(3) Divorced (4) Separated (5) Widowed

7. What is your highest level of Education?

(1) No Schooling (2) Primary School (3) Secondary School

(4) Some College (5) College Degree (6) Some Post College

(7) Graduate/Professional Degree

8. What is your occupation \_\_\_\_\_



**Section C : Analysis of Medial Records**

**May 2004 – April 2005**

**May 2005 – April 2006**

**(Before Co-Payment)**

**(After Co-Payment)**

16. \_\_\_\_\_ Total No. of visits to Avenue Healthcare \_\_\_\_\_

17. \_\_\_\_\_ Total No. of repeat visits to Avenue Healthcare \_\_\_\_\_  
(Within one month of previous visit and for similar/related complaints)

18. \_\_\_\_\_ Total No. of repeat visits to Avenue Healthcare \_\_\_\_\_  
requested for by doctor  
(Within one month of previous visit and for similar/related complaints)

19. Morbidity Patterns (Number of Visits for the following ailments)

( ) Allergic Respiratory Tract Ailments ( )

( ) Upper Respiratory Tract Infections ( )

( ) Lower Respiratory Tract Infections ( )

( ) Gastro Intestinal Infections ( )

( ) Dyspepsia / Peptic Ulcer Diseases ( )

( ) Skin Conditions ( )

( ) Diabetes / Hypertension ( )

( ) Injuries at Work ( )

( ) Injuries away from Work ( )

( ) Chronic Pain Conditions e.g Osteoarthritis, ( )

( ) Others ( )

20. Any documented chronic illness \_\_\_\_\_  
\_\_\_\_\_



**Section D :**

21. In your opinion, to what extent do you feel the following factors have led to your ill health? Use a five (5) point rating scale where -:

1 = No extent at all

5 = Very great extent

	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
a) Water consumed	( )	( )	( )	( )	( )
b) Food consumed	( )	( )	( )	( )	( )
c) Injuries at Work	( )	( )	( )	( )	( )
d) Injuries away from work	( )	( )	( )	( )	( )
e) Communicable diseases at work	( )	( )	( )	( )	( )
f) Communicable diseases at home	( )	( )	( )	( )	( )
g) Communicable diseases in Public Places	( )	( )	( )	( )	( )
h) Work related dust	( )	( )	( )	( )	( )
i) Stress at work	( )	( )	( )	( )	( )
j) Stress at home/from friends or relatives	( )	( )	( )	( )	( )
k) Genetic Factors	( )	( )	( )	( )	( )

22. Do you seek treatment at other hospitals apart from Avenue Healthcare?

(1) Never

(2) Occasionally

(3) Sometimes

(4) Most of the time

(5) Always

23. Sometimes when people have medical covers, they tend to seek treatment more frequently and for minor ailments as compared to those without medical covers. In your opinion, what percentage of your visits to Avenue Healthcare would you have made if you did not have a medical cover?

- (1) 75 – 100 %      (2) 50 – 74 %      (3) 25 – 49 %      (4) 0 – 24 %

24. Do you feel the Kshs. 30 co-payment before medical treatment is fair ?

- (1) Yes      (2) No      (88) Not sure

25. Do you feel the Kshs. 30 co-payment before medical treatment is affordable ?

- (1) Yes      (2) No      (88) Not sure

26. If the co-payment was Kshs. 300 do you think it would affect the number of visits you make to Avenue Healthcare?

- (1) Yes      (2) No      (88) Not sure

27. What suggestions do you have to improve your medical cover?

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