FACTORS ASSOCIATED WITH PATIENT WAITING TIME AT A MEDICAL OUTPATIENT CLINIC: A CASE STUDY OF UNIVERSITY OF NAIROBI HEALTH SERVICES

By

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LIST OF ABBREVIATIONS

MOH	- Ministry of Health
PWT	- Patient Waiting Time
SSC	- Senior Staff Clinic
UHS	- University Health Services
UON	- University of Nairobi
WHO	- World Health Organization

OPERATIONAL DEFINITIONS OF TERMS

Health service delivery   provision of health services to staff and students at senior staff clinic.

Healthcare   provision and maintenance of physical and mental health status of outpatients through provision of health intervention

Outpatient   a patient who visits a medical facility for treatment or care but is not hospitalized overnight at the facility

Outpatient clinic   a stand-alone health centre that provides treatment services without an overnight stay for staff and students.

Working station   the area or room a health provider works from in clinic

Service point   the area in the clinic designated for service provision.

Arrival time   the time a patient reports at the registration or records office seeking healthcare.

Departure time   the time a patient exits the clinic after reaching the last service point.

Patient waiting time   the whole waiting time which is the service points waiting time added together.

Service point waiting time   the time spent awaiting for a service at respective service points namely records office, triage nursing, pharmacy and consultation rooms.

ABSTRACT

Background: Excessive long waiting time in outpatient clinics in Africa is a constant challenge for patients and the health providers of these facilities. Prolonged waiting times are associated with poor adherence to treatment, missed appointment and failure or delay in initiation of necessary treatment. The time a patient spends at each service point before being attended to by a health provider and the overall total time a patient spends in a health facility from the arrival time to the departure time is a major factor towards the perception of the patient towards the care received. **Objective:** To determine wait time and associated factors among outpatients attending senior staff clinic at University of Nairobi health services. **Methodology**: In this cross-sectional study, data collection was conducted on 384 outpatient over a period of four weeks using an interviewer administered pretested structured exit questionnaire with a time-tracking section. Simple random sampling was used to select respondents in a walk- in outpatient clinic set up. To analyse all data was cleaned then entered in the Statistical Package for Social Sciences (SPSS) 20. Analysis of variance (ANOVA), and cross tabulation was used to establish associations between the independent variable and dependent variables. **Results:** In total 384 patients were tracked and interviewed. The average patient waiting time was 55.3mins during the four week study period. Majority of the respondents waited in the clinic for 60 minutes to receive the services they had sought. The longest average patient waiting was 13.1 minutes at the doctor's office. Most services sought for at the UHS are new consultations and specialised consultations. Whilst most respondents at 69% felt the time they had spent at the clinic was acceptable, many at 52% suggested that improving availability of staff at their stations will help in reducing Patient waiting time at UHS. In this study, gender (P=0.005) and availability of doctors (p=0.000) were found to affect patient waiting time.

Conclusion: Identifying the area of delay and the actual mean waiting time at the clinic is the first step for UHS in implementing the needed changes in internal processes and practices at the clinic. Majority of the patients are spending an hour at the facility to be served. Most patients felt the overall time spent in the facility is acceptable but suggested that improving availability of health workers at their stations will reduce the patient waiting time and thus enhance service delivery to the university community.

CHAPTER ONE: INTRODUCTION

1.1 Background

Many health care systems globally continue to grapple with lengthy waiting time for patients. For instance in developing countries like the United States (US), the Institute of Medicine called the long waits in emergency outpatient department a national epidemic. In addition studies in the United States have found the average waiting times to be twice the recommended time for acute patients (Horwitz et al. 2010).In addition, a report in 2014, from the Centre for Disease Control found that the average patient treatment time was 90minutes.Another international survey conducted by the Canadian Institute of Health information in 2012, showed that at least half of the patients take four hours to be given treatment. Consequences of long stays in the health facilities have been linked to poor outcomes (Yeboah & Thomas 2009). Some of these established outcomes at individual level are unhappy patients, with low satisfaction levels towards the services received. Studies have shown that these patients will not return to these facilities while others will leave the facility without being attended to thus risking their health (Nabbuye-Sekandi et al. 2011).In a tertiary hospital in Nigeria, a study carried out in a busy outpatient unit showed that the longer a patient waited the lower the satisfaction levels reported. Most patients found a waiting time of less than 30 minutes acceptable while more than 60 minutes was reported as not acceptable(Umar, I., Oche, M. O., & Umar 2011). The Institute of Medicine recommends that patients should be attended to within 30 minutes of their arrival to the facility or their appointment (Musinguzi 2015)

In many developing countries in sub Saharan Africa, mean waiting time in facilities of more than four hours has been reported. A study of patient flow efficiency in three HIV clinics in Uganda reported a mean waiting time of up to 4.6 hours (Wanyenze et al. 2010).Several determinants have been identified to be leading to the long waiting hours in many outpatients units within and without hospitals in developing countries. Some are few health personnel, and a high patient load (Maluwa et al. 2012). Out of these causes, lack of adequate staff has emerged the main reason for long stay in clinics (Dimakou et al. 2015). In a busy hospital in Malawi, a study on moral distress in nursing practice

established that nurses developed low morale for work and strain due to attending to many patients daily (Maluwa et al. 2012).

A study done in Indonesia found that managing the flow of patients in a health facility can improve the time a patient spends on the queue (Mardiah & Basri 2013).Long waiting time in outpatient clinic negatively affect the perception of service provision and clinic experience by patients (Oche & Adamu 2013). The length of time a patient spends at each service delivery point as they wait to receive the required care from the health service provider and the overall total time the patient spends in a health facility from the time of arrival at the facility to the time of exiting the facility is one major factor that affects the patient's perception of the quality of care delivered (Bleustein et al. 2014).

These factors and the subsequent long waiting time are prevalent in developing nations such as Malawi, in which factors such as insufficient equipment, long registration procedures, patient overload, and insufficient human resources are the main causes of long patient waiting time (Maluwa et al. 2012; Musinguzi 2015). According to Oche & Adamu (2013), a patient who waits for long to get a service perceives this as a hindrance to care. Yeboah & Thomas (2009) observed that the result of long waiting times is dissatisfaction and poor compliance to drug regimens leading to poor clinical outcomes.
In Kenya, a study done at a specialized outpatient clinic in Kenyatta National Hospital found that 33.7% of the respondents reported that waiting for the doctor delayed them (Mwanga 2013).And in Pumwani Maternity hospital findings of a study showed that patients who waited for less that 30minutes were more satisfied than those who waited for more than 60 minutes and therefore longer patient waiting time was found to affect patient satisfaction (Wandera Nyongesa et al. 2014).

1.2 Purpose of the study
The study provided information to facility managers and health providers working in similar health care settings on the average patient waiting time and factors associated in order to improve service delivery.

1.3 Research questions

1. How does the type of service sought affect patient waiting time at University of Nairobi health services?
2. How does the patient arrival time at the clinic affects waiting time at the University of Nairobi health services?
3. How does the availability of healthcare providers at their work stations influence patient waiting time at University of Nairobi health services?

1.4 Objectives of the study

The following were the objectives of the study

1.4.1 Broad objective

To assess the patient waiting time and identify associated factors that affect patient waiting time at University of Nairobi health services.

1.4.2 Specific objectives

1. To establish how the type of services sought affect patient waiting time at the University of Nairobi health services
2. To assess how the patient arrival time affects waiting time at University health services.
3. To examine how availability of healthcare providers at their work stations affect patient waiting time at the University of Nairobi health services

1.5 Significance of the study

This study was useful in generating facility specific information and recommendations to the management of SSC. However other outpatient facilities with a similar set up can also benefit by customizing to suit their facilities. An understanding of the factors associated with waiting time may help to enhance systems and operational changes in facilities and as a result improve patients' experience and shorten patient waiting time. In addition, any gaps identified in human resource management, infrastructure and internal processes can be addressed. Policies can be formulated specifically for stand-alone outpatient clinics especially within institutions to address patient waiting times.

1.6 Conceptual Framework

The study variables are as shown in Figure 1 below. Adapted from a previous study (Musinguzi 2015)

Patient factors
Social demographic
- Age
- Sex
- Status
- student
  - Staff
  - Dependent

Independent variables
- No. of patients seeking a particular service
- Availability of staff at working station
- Patient arrival time

Clinical status
- Severity of illness (Intervening variable)

Administrative factors
- Eligibility for service
(**Moderating variable**)

PATIENT WAITING TIME (Dependent Variable)

Figure 1. Conceptual framework

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Much of the published work about patient waiting time in health facilities covers large hospitals and outpatient departments within these large hospitals. Majority of these studies have been done in developed countries (Whyte & Goodacre 2015).A good number of literary work has also been done in developing countries like Nigeria and Uganda (Wanyenze et al. 2010; Musinguzi 2015; Oche & Adamu 2013).Several factors have been established from the findings of these studies that they affect patient waiting time. Some of these factors are few health personnel, high patient load and inadequate infrastructure and medical equipment (Chen & Li 2010; Maluwa et al. 2012).Most of the research conducted in these area has established that patients experience long waiting time before receiving the services they have sought in health facilities (Pillay et al. 2011; Zhu et al. 2012).

2.2 Patient waiting time.

Patient waiting time is the time a patient takes at each service point before being served and the overall time a patient spends in a facility from arrival to the registration desk till the time of leaving the facility or last service (Musinguzi 2015; Pillay et al. 2011).Several factors lead to long waiting hours in majority of hospitals in the developing world. Some of these factors are few health or medical personnel, high patient load, and few record clerks These factors and the subsequent long waiting time are not only prevalent in Africa but also in other developing nations such as Malawi, where other factors such as insufficient equipment, long registration procedures, patient overload, and insufficient human resources are the main causes of long waiting time(Chen et al. 2010; Maluwa et al. 2012).

Stahl et al. (2011) observed that patient waiting time management has been a challenge to many health facilities mainly due to lack of buffer and coupling outpatient systems. However, several studies that have been done to measure waiting time and to track patient flow (Musinguzi 2015; Jafry et al. 2016; Wanyenze et al. 2010).The mean waiting time of a patient in a facility is one measure used to determine the efficiency of health

care delivery in health facilities (Wanyenze et al. 2010). In a Malaysian public hospital for example, it was established that patients waited for more than two hours since registration time till collection of drugs (Pillay et al. 2011). Waiting times have been shown to be significantly longer in teaching hospitals, public hospitals and outpatient trauma centres. Staff shifts have little effect upon mean waiting times, until a decision to admit is made (Lane et al. 2010). The recommendation by the institute of medicine is that patients should be seen within 30 minutes of their arrival time (Musinguzi 2015). This has however not been realized in many African countries. For instance, a study done at a tertiary hospital in Nigeria, shows that majority of patients waited 90-180 min in the clinic (Oche & Adamu 2013).

2.3 Type of service sought by patients

Types of services sought by patients in health facilities depend on the model with most of outpatients clinic having the ambulatory model (Horwitz et al.2010).According to (Ringard & Hagen 2011) patients who did not choose a hospital individually and had not used the local hospital for any other reasons experienced the most waiting . On the other hand, patients who chose by themselves the local hospital and those who did not make such choices but had not used the local hospital for any other reasons also reported longer wait. (Wanyenze et al. 2010), in their study in Ugandan HIV clinics, found that the type of patient or service sought by the patient is among other factors that influence operational efficiency of clinics.

2.4 Availability of healthcare providers at their working station

Availability of a health provider at their work station when the patients arrive at each service point is an important factor on how soon a patient receives the services required (Okotie et al. 2008). Whilst many studies have been carried out to address the association between shortage of staff and staff workload with patient waiting times, there is limited literature on the availability of health care workers at their stations, and how this affects the patient waiting time. A study done in Uganda, on health workforce performance established that over 80% of health workers said they report on duty as required and are

available to provide health services when needed. However the study did not link these findings directly to how it affects the waiting time (Lutwama et al. 2013).

Shortage of staff in a health facility has been shown to affect the provision of health services and hence lead to long wait times (Oche & Adamu 2013). In addition, (Carr et al. 2014) observes that patients wait longer when the available nursing or medical staff are not adequate to provide the care needed. In a health facility, waiting time does not improve if there are no health care providers to offer the services (Okotie et al. 2008; Olowookere et al. 2012).Lastly,(Marjorie & Mavuso 2008), observed that lack of efficiency by staff when on duty can lead to patients waiting for long, especially when they are busy with other activities.

2.5 Arrival time of patients

Arrival time to the health facility is the time the patient presents themselves to the first service point which is the registration office(Whyte & Goodacre 2016). The time a patient arrives in the facility is used as the start point for checking or measuring how long it takes to receive the entire service in a facility. This arrival time is assumed to be the time that the patient was booked for the appointment or is in need of the health care service. Arriving late at the health facility for the appointment has been shown to affect amount of time a patient spends with a physician and the overall efficiency of the facility (Okotie et al. 2008). The system of giving appointments, whether it is walk- in as per need or uneven can cause long wait times if not well organized (Zhu et al. 2012). However, (Tiwari et al. 2014), observes that the arrival patterns of patients is random and has little or less effect on the arrival and the particular day of arrival affect the wait time in a specific facility.

The way patients are booked determines how many arrive on the queue at any given time and this can influence the waiting time (Lawton et al. 2012).The time a patient presents to the facility has a direct association with the length of waiting. It has been shown that long waiting times are associated with night time, Mondays and Sundays. The mean wait time for patients who arrive early is shorter than those who arrive late to receive specialized

services(Whyte & Goodacre 2016; Chan et al. 2010).When many patients arrive in the clinic at the same time it leads to longer wait times. (Marjorie & Mavuso 2008)

2.6 Theoretical Review

For many years, much research has been carried out on ways of reducing the waiting in line since this has remained a challenge among systems in healthcare settings. Queuing systems means patients arrive at the facility, wait for services they need, then they are served and they depart (Afrane & Appah 2014).The structure of the waiting line model comprises of patients arriving to the facility ,followed by the patient getting into a line and waits to be served. A patient is chosen from the queue then the required service is then delivered and the patient leaves the queuing system(Lieberman 2005).The number of service points, the system's capacity or limit in terms of the maximum patients it can handle or accommodate and how the choice of the next patient in line is made forms the queue system of a health facility. For most facilities the choice of the next patient in the line is according to the urgency of their health needs or on a first come first served basis by using the patient arrival times (Fomundam & Herrmann 2007; Musinguzi 2015; Vass & Szabo 2015).

After patients receive the services they sought in outpatient clinics, they leave the clinic via a number of ways which includes; admission to a hospital, receiving the service and returning to their homes, or referred to other facilities (Musinguzi 2015). The waiting line model theory will be of help in this study at senior staff clinic by providing an understanding on how patient arrival time, staff availability and service needs of the patients affect the mean waiting time in a health facility.

2.7 Study Justification/Problem statement

Patient waiting time in different health care settings has been extensively covered both locally and internationally. However, it is clear that there is still more work that remains to be done on patient arrival time, types of services sought by patients in outpatient clinics and availability of staff on duty as will be covered in this study. Knowledge of the waiting time for patients in a facility help to improve the patient satisfaction and the

overall rating of the health facility, which can boost the morale of health providers in turn (Umar, I., Oche, M. O., & Umar 2011; Mwanga 2013). In a study carried out by Nabbuye-Sekandi et al. (2011), they found that overall satisfaction of patients in outpatient unit is closely linked to the waiting time. Waiting time is affected by a number of factors which are broadly categorized into environment factors, patient's factors and provider factors. However, health facilities have different factors affecting the waiting time of patients, with studies indicating that waiting time is relatively longer in developing countries than in developed countries. Varied waiting times are also experienced in different service categories in health facilities, with studies indicating that emergency section tends to have short waiting times (Dimakou et al. 2015; Jaakkimainen et al. 2014; Afrane & Appah 2014).Most studies, that have been done in this area, have used self-reports of patients on how long they waited which raises concern over information bias. Moreover, many studies on patient waiting time in Kenya have been conducted in public health facilities or specialized outpatient clinics within hospitals. For instance, a study done by Mwanga (2013) in a specialized outpatient clinic in Kenyatta National Hospital found that 33.7 per cent of respondents were delayed at the clinic while waiting for the doctor. Since a big percentage of the clients who seek care are outpatients it is important to address any operational factors that can improve the patient's experience(Nabbuye-Sekandi et al. 2011).

Senior staff clinic leadership, like all other similar outpatient clinics, is committed to provide quality and timely health care services to all students and staff to enable them pursue the core business of the university which is teaching and learning. (UHS service charter, 2015).For these reasons, the need to measure patient waiting time and identify clinic specific factors in service delivery that could be influencing the waiting at SSC is key to achieving its goal. This study will be useful in generating facility specific information and recommendations to the management of SSC. However other outpatient facilities with a similar set up can also benefit by customizing to suit their facilities. An understanding of the factors associated with waiting time may help to enhance systems and operational changes in facilities and as a result improve patients' experience and shorten patient waiting time. In addition, any gaps identified in human resource

management, infrastructure and internal processes can be addressed. Practices can be changed specifically for stand-alone outpatient clinics especially within institutions to address patient waiting times. Lastly there is need to build on local data in this area so as to improve decision making and policy.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This Chapter outlines how the research was conducted and the procedures and processes that were used to achieve the purpose of the study.

3.2 Study Design

This was a cross- sectional study of outpatients at the senior staff clinic.

3.3 Study Area

The study was carried out at the University of Nairobi health Services senior staff clinic (S.S.C) which is situated in the main campus along lower state house road. The clinic provides services to both staff and students of the University of Nairobi that are outside Nairobi County. The reason for choosing the senior staff clinic is due to the fact that it acts as the main referral centre for all the other satellite clinics and operates 24hrs on a daily basis. About 100 patients seek services at the clinic daily (Medical records office, UHS). The SSC runs general medical clinics daily and specialized clinics from Monday to Friday. It has a team of health providers comprising of consultant physicians, medical officers, nurses, pharmacists and medical records officers. The University of Nairobi has a student population of more than 50,000 and staff population of more than 10,000. (Students finance records, 2016) and (Human resource records 2016). Most patients are seen on a walk- in basis without scheduled appointments with few patients admitted for day observation and minor procedures .All patients who need referral services are sent to the main hospitals according to laid down regulations at UHS.

3.4 Study population

The study population included all patients seeking out patient care services at the senior staff clinic in university health services during the four weeks period of study.

3.5 Inclusion Criteria

Any patients above 18 years of age, those below 18years who were accompanied by adult (above 18 years) caregivers were allowed to participate in the study after they consented to take part in the study.

3.5.1 Exclusion criteria

All patients who did not consent and those below 18 years who were not accompanied by an adult care giver were excluded. In addition all participants who had already been interviewed earlier during the study were excluded.

3.6 Sample size calculation and Sampling procedure

3.6.1 Sample size

Since there were no earlier studies on patient waiting time in a similar setting, the proportion of patients who take longer than recommended waiting time to receive services is unknown. Therefore the study assumed that 50% of patients visiting the clinic daily experienced long waiting time. The following formula for calculation of sample size was be used (Nabbuye-Sekandi et al. 2011).

$$n = \frac{z^2 p(1-p)}{d^2}$$

Where n = sample size desired

z = standard normal deviate which at 95% confidence level is 1.96

p = assumed proportion of patients experiencing longer waiting time = 0.5

1-p= assumed target population not to have waited for long.

d = desired margin of error which is 0.05

$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.0025}$$

= 384 patients

In total 384 respondents were recruited during the four week study period

3.6.2 Sampling procedure

Simple random sampling was employed to select participants from all patients who attended the clinic each day during the four weeks period. According to the records officer at SSC an average of 100 patients are registered per day. Therefore the sampling frame was all the 100 patients. We used the daily required sample size of 20 respondents (two trained assistants following ten patients each) daily .To select a sample of 20 patients each day were assigned a consecutive number one to one hundred (1 -100) next to each patient that visited the clinic using random numbers from the random tables. Twenty (20) random numbers with replacement when necessary were selected. For example, if the first three numbers from first column and row on the first table were: 011,032,049(patients from the numbered list of 100 patients) selection of the 11th, 32nd, 49th patient was done from our list to be part of the sample. This was repeated every day in the morning until we achieved the required sample size. Each day of the week(Monday to Friday) was allocated a random table. The selected respondents were approached and requested for a written consent after explanation regarding what the research entailed. After consenting, the researcher or her assistants followed the respondent while recording the waiting time at each service point up to the last service point (pharmacy section) and interviewed the respondent using a structured questionnaire. This randomization approach was appropriate because patients visit the facility at different times, without scheduled appointments and therefore it was feasible to achieve the sample size required. Randomization also reduced biasness and minimized the effect of confounders.

3.7 Study variables

The dependent variable in the study was the patient waiting time while the independent variables were the demographic factors like age, sex and patient status (employee, employee dependent and student. The other independent factors were patient arrival time, availability of staff at work stations and the type of services sought by a patient. The moderating factor in this study was the eligibility of services which depended with the terms of service of an employee and being a bona fide student who was in session. The intervening variable was the severity of illness of a patient.

3.8 Data collection tool

A pretested structured exit questionnaire with a time tracking section (appendix 2) was used. The data collection tool was created and questions were chosen from a validated questionnaire on patient waiting time from a previous study in Uganda(Musinguzi 2015). The researcher extracted information from the staff duty roster .The data collection was summarized in the table below.

Table 1: Data Collection Tool Summary

Data	Tools
Socio demographic data	Exit questionnaire
Services sought	Exit questionnaire
Arrival time (patient)	Time track tool
Waiting time	Time track tool
Availability of staff	Exit questionnaire staff duty roster

3.8.1 Data collection procedure

The researcher and team was in the clinic from 8.00 till 500pm daily during the four week study period. Two trained research assistants mainly undergraduate students with data collection experience were used to collect data for a period of four weeks. The assistants were trained for a day by the researcher on the data collection tool and how to administer the tool. The assistants guided by the researcher participated in the selection of participants, requested consent , allocated serial numbers on the questionnaire, then recorded the socio-demographic data of the participant selected, and then tracked the participants through the service points while recording the actual waiting time on the tool using synchronized mobile phones. Finally the exit questionnaire was administered at the last point of service. The assistants then recorded the number of staff at the work stations and the number of staff on the duty roster by checking the duty rota placed on the notice board at the nursing station.

3.9 Quality assurance /control procedures

A pre-test study was conducted at the non-participating clinic, in the main students' clinic which attends to both staff and students. A sample of 30 exit questionnaires with time tracking tools was administered by two trained research assistants, who later took part in the main study. All participants were allowed to sign an informed consent to take part in the study after all the information had been explained to them. Internal validity was ensured through random selection of the participants while external validity was ensured by pre-testing and correcting the questionnaire. This also improved the reliability of the results. Administering a structured questionnaire ensured uniformity of the questions and answers to all participants. The researcher also supervised the whole process and conducted most of the consenting process in order to answer any questions from the participants. In addition, to minimize the observer bias or and change of behaviour by health workers and patients, the assistants kept a distance from the patients they were tracking.

3.10 Data processing and analysis

The filled questionnaires were checked at the end of each day by the researcher to ensure completeness and accuracy. The data was stored safely and handled by the research team only. Data was entered into the Statistical Package for Social Sciences (SPSS) software cleaned, verified and analysed. The descriptive data like socio-demographic data (age category, sex, patient status) and the patient characteristics (patient arrival time, type of service sought by patient) namely, categorical data was summarized in frequencies, percentages and proportions. These were presented in tables, charts and graphs. The analysis for categorical data was done using cross tabulation where possible. Central measure tendency was also calculated. Analysis of variance (ANOVA) was used to compare the average patient waiting time (continuous variable) among two or more populations (categorical variables). A one way an ANOVA was preferred over the student t- test because while the two will give the same results for two groups e.g. gender the ANOVA gives more information on the variance among the groups and within the groups. To control the effect of confounders, univariate analysis of variance which does regression analysis was used for all variables that were found to have significant

difference to check for confounders. During processing, it was found that three patients did not fill in their gender and seven did not fill in their age and patient status therefore these data was excluded during analysis. In addition for the section on types of services sought and suggestions to reduce patient waiting time most of the patients chose more than two services which made analysis by cross tabulation not possible Therefore for this data proportions were done.

3.11 Ethical Consideration

Participation in study was voluntary, no coercion was used and participants were assured that no repercussions will follow clients that are unwilling to participate. Willing participants signed an informed consent form expressing their willingness to participate in the study. Anonymity of participants was assured by coding all questionnaires uniquely using numbers and by not recording names of participants. Confidentiality of information given by clients was upheld .The research findings will be presented to the stakeholders after completion of the study. Ethical approval was obtained from Kenyatta National Hospital and University of Nairobi Ethics and Research committee permission was also sought from University of Nairobi health services.

3.12 Dissemination of study results Plan

The results of the study were presented as a dissertation to the University of Nairobi. A summarized copy of the report will be presented to senior staff clinic at UHS. Copies of the report will also be kept in the University of Nairobi library for future reference. The study may also be published in scientific journals for public access in future.

3.13 Study limitations

The first was that the laboratory as a service point was not included in the study because of it was located outside the main clinic and this could distort the study of time. Secondly, the data collected during the exit interview depended on the patients self-reports thus could be distorted if the participants were not honest. In addition, all the health workers in the clinic were aware of the data collection going on and may have changed their behaviour but this was managed by conducting the study for four weeks. In

addition, the collection of data on the number of doctors at the work stations was a big challenge due to the intermittent arrival and departure of doctors from their work stations within each shift. In addition this study used one method of data collection which could have limited the amount and type of data that can be collected. Furthermore, the findings may not be wholly generalized in Kenya, since there are different outpatient set ups and SSC is an institution based stand-alone out patients' clinic within an institution.

3.15 Study closure plan and procedure

The principal investigator formally closed the study when data collection procedure was completed and the interview with the last client was completed. The principal investigator thanked the management of the senior staff clinic in UHS and all staff and informed them that the data collection on participants was complete and there will be no more contact with patients for purposes of collecting data on this study.

CHAPTER FOUR: RESULTS

4.0 Introduction

The findings as covered in this chapter are as follows socio-demographic data of the respondents, patient waiting time, types of service sought by patients, availability of health workers at their stations, patient arrival time and finally acceptability of overall time spent

4.1 Social Demographic Characteristics

This information comprised of age category (years) gender and patient status (staff, staff dependant and student) as shown in table 2 below

Table 2- Socio-demographic data

Characteristic	N	Percentage (%)
Gender		
Male	140	36.5
Female	241	62.8
Missing	3	.8
Age		
Less than 20 years	14	3.6
21 - 30 years	110	28.6
31 - 40 years	110	28.6
41 - 50 years	82	21.4
51 - 60 years	53	13.8
60 and above	8	2.1
Missing	7	1.8
Patient Status		
Employed or staff	202	52.6
Student	71	18.5
Staff dependant	104	27.1
Missing	7	1.8

The results shows that majority of patients seen at the clinic are females. In the study the female participants were 62.8% and male were 36.5%. Majority of the responded were between 21 and 30 years (28.6%) and 31 to 40 years (28.6%). Additionally, most of them were staff of the university (52.6%)

4.2 Patient waiting time

On average patients take 55.3 minutes at the clinic and the longest average waiting time is at the doctor's area (13.1 minutes). This is shown in table 3 below

Table 3-Average waiting time at different service points

Service point	Average waiting time (Minutes)
Records office	5.8
Nursing station	7.8
Doctors area	13.1
Pharmacy	5.5
Average time spent at the facility	55.3

The mode is 60 minutes, the minimum is 11 minutes and the maximum is 229 minutes.

4.3 Type of service sought by respondents

Patients come to the facility for various services. The services sought by various patients is as shown in figure 2 below
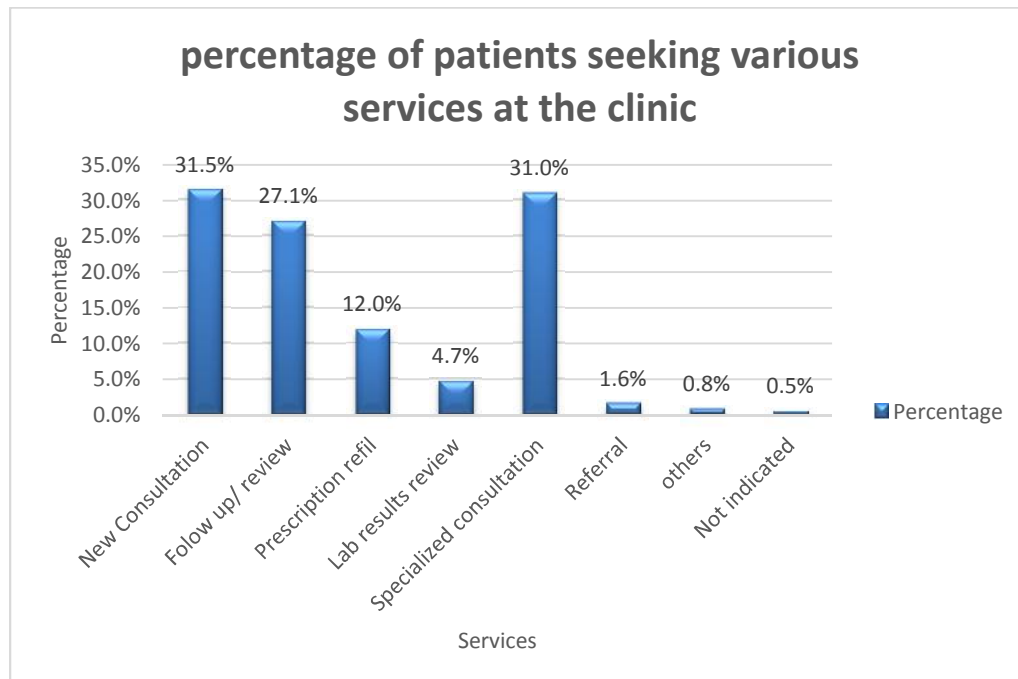
Figure 2- Proportion of patients seeking various services at the clinic

The results suggest that most patients visit the clinic for new (31.5%) and specialized consultation (31%) while follow ups (27.1%) and prescription refill (12%).Most of the clients selected more than two services. Since most patients chose more than two services it was not possible to do cross tabulation. The patients who sought others 1% included filling of medical forms.

4.3.1 Proportion of patients who received all services

80.2 % of patients who participated in the study received all the services while 19% did not receive all the services. Most of the patients who did not receive all the services were due to drugs. This is represented by 66.7% as shown in the table 4 below.

Table 4-Proportion of patients who received all services at the clinic

Service	Frequency	Percent
General consultation	1	1.3%
Follow up or review	1	1.3%
Lab results	4	5.3%
Specialist	13	17.3%
Specialist and drugs	1	1.3%
Referral	3	4.0%
Drugs	50	66.7%
Others	2	2.7%
Total	75	100.0%

Majority of the respondents who did not receive all the services was due to unavailability of drugs (63.5%) at the pharmacy and 16.2% were other services that are not available at the facility. as shown in figure 3.
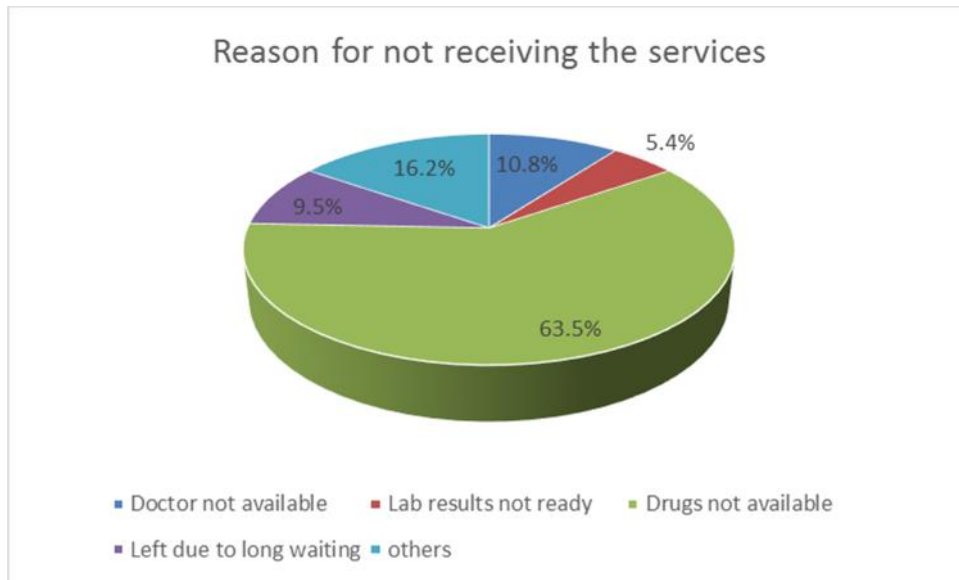
Figure 3- Reason for not receiving the Services at the Clinic

4.4 Availability of health workers at their stations

More than 95% of the other health care workers were at their working station except the doctors where only 86.4% were at their working stations during the four weeks study period. Data collection for this information was also impended by the non-uniform departure and arrival at different times of the shift in the day by the doctors. This is shown in figure 4 below.
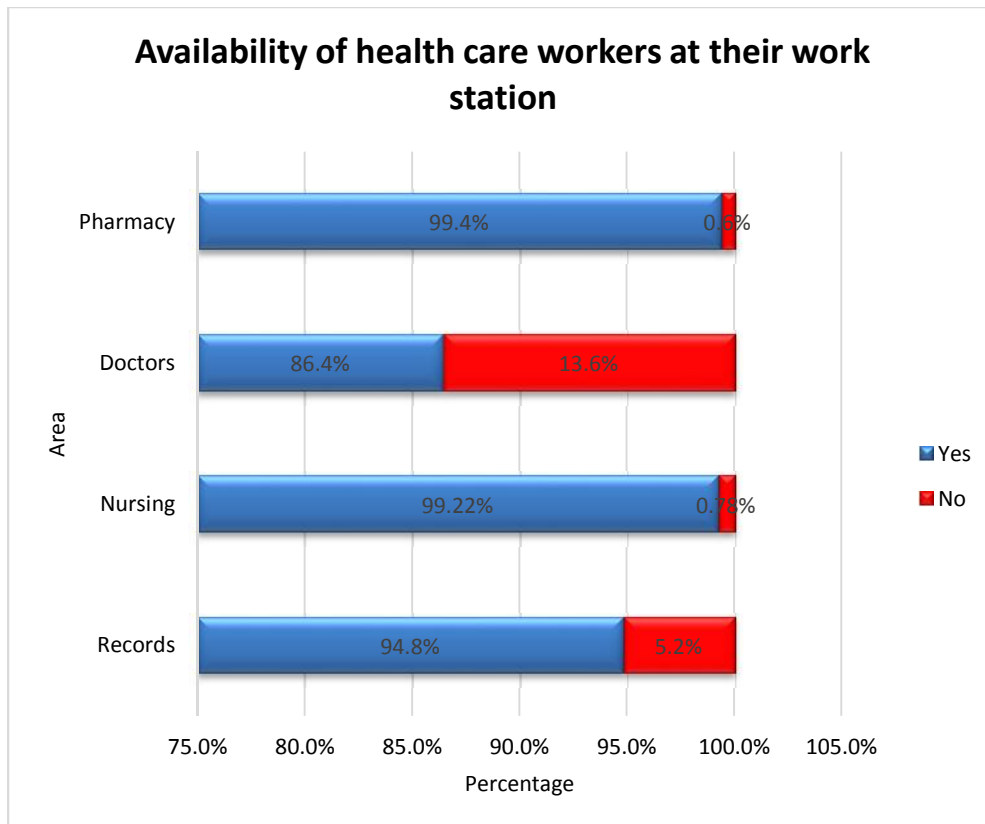
Figure 4 - Availability of health care workers at their working stations

Communication on non-availability of staff in various section was done minimally, at the records only 30% were communicated to, at the nursing station 33%, at the doctor's office 42% and finally at the pharmacy 50%. The participant's responses shows that 61.5% felt that availability of staff at their working area affected their waiting time at the clinic. However 34.5% felt that did not affect and 3.1% did not know whether it affected or not.

4.5 Patient arrival time

The results in table 5 below shows that majority of patient go for services at the clinic early in the morning.

Table 5- Patient arrival time at the clinic

Arrival time	Frequency	Percentage
Early morning	184	47.9
Late morning	56	14.6
Mid-day	46	12.0
Afternoon	98	25.5
Total	**384**	**100.0**

Majority of patients 47.9% arrive at the clinic in the early morning hours Additionally, results shows that only 12% of patients who visit the clinic are given appointment and only 35% among them are given appointment time. When asked if scheduled appointment would reduce waiting time, 51.8% felt that it would not reduce while 28.9% felt that it would reduce the waiting time.

4.5.1 Patient rating waiting time at service points

Majority of the patients rated the waiting time at pharmacy as appropriate 96% while the doctor's office scored the least for appropriate at only 63%

Figure 5- Rating of waiting time at service points

The patients who delayed at the clinic attributed this to the doctor's office. The results show that 36% of patients felt they waited the most at the doctor's office. Figure 6

Areas that caused delays at the clinic
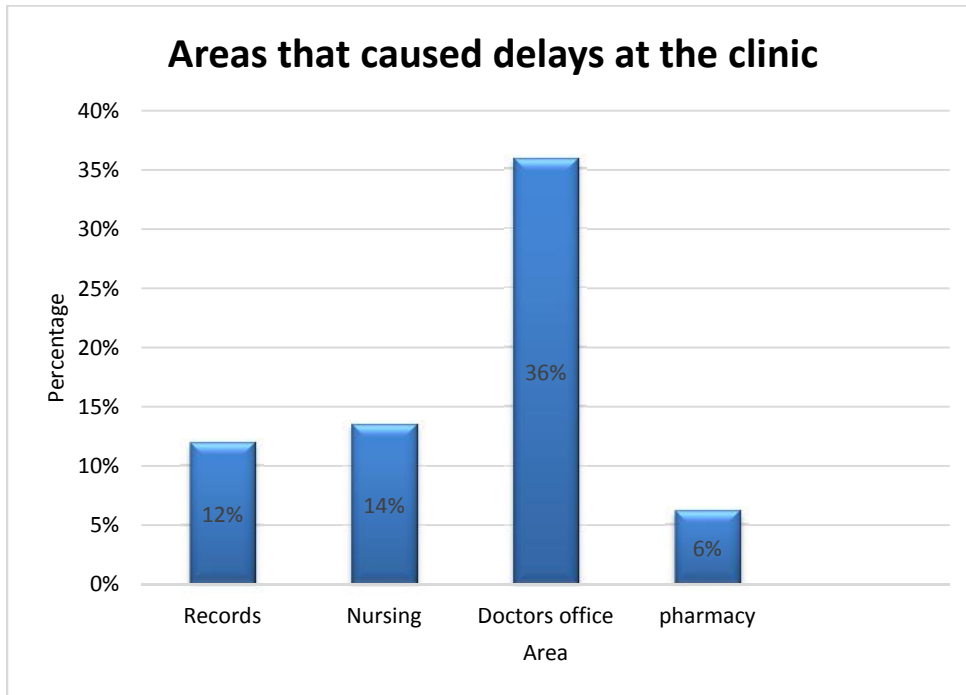
Figure 6- Areas that cause delays at the clinic

4.5.2 Suggestions by respondents on ways to reduce waiting time

In terms of reducing patient waiting time, most of the clients suggested that there is need to improve staff availability (52%) and increase staff per shift (29%).Unfortunately since most patients chose more than one strategy it was not feasible to do cross tabulation to establish whether there was any significance. The other suggestions made by the patients 2%, majority suggested that computerizing medical records and improving staff efficiency would help in reducing patient waiting time.

Table 6 – Response on strategies to improve patient waiting time

Strategy of reducing patient waiting time	Frequency	Percentage
Increase staff per shift	110	29%
Improve staff availability	198	52%
Introduce appointment system	33	9%
Increase service points	94	24%
Don't know	19	5%
Others	9	2%

4.6 Acceptability of overall time spent

69% of patients felt that the time spent at the clinic is acceptable while 31% felt that it was not acceptable. There was no significant difference by gender P = 0.632
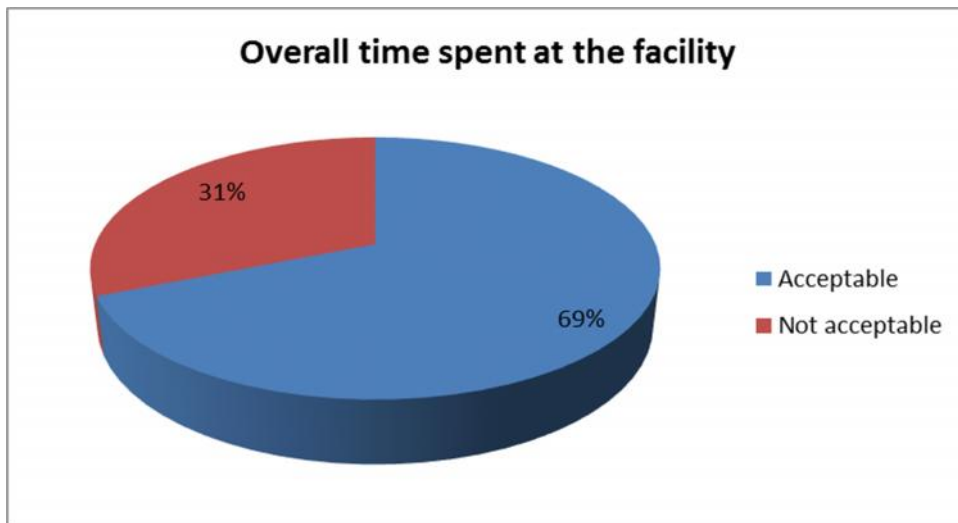
Figure 7- Acceptability of overall time spent at the clinic

4.7 Association between variables

4.7.1 Cross tabulation

A cross tabulation to check overall acceptability of time spent in the clinic by respondents by gender showed that there is no significant difference with a chi square test value of 0.23 and P = 0.632.

4.7.2 Analysis of variance for availability of doctors and patient waiting time

One way analysis of variance of total time spent against availability of doctors at the work station was conducted which showed a statistically significant difference showing that availability of doctors affect overall waiting time at the clinic(P = 0.000)

Table 7- Availability of doctors and total time spent at the clinic

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	71329.195	1	71329.195	69.746	**.000**
Within Groups	389650.800	381	1022.706		
Total	460979.995	382			

Table 8- Gender and total time spent at the clinic

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	9347.432	1	9347.432	7.923	**.005**
Within Groups	447155.644	379	1179.830		
Total	456503.076	380			

A one way analysis of variance on gender and total time spent at the clinic showed a significance difference between male and females (P = 0.005) and thus a univariate analysis of variance was carried out to check for confounding and it was found to be still significant(P= 0.001)

Patient arrival time and mean waiting time

There is no significance difference between the time of arrival and the total time spent at the clinic since the P =0.099. However, Tukey HSD was conducted as a post hoc test to establish the average time in each arrival category. This is shown in the table below. The result shows that patients who arrive at the clinic late morning take the longest time (59.1minutes) while patients who arrive at the clinic in the afternoon take shorter time (48.6 minutes).

Table 9- Mean waiting time for various arrival time

Arrival time	N	Mean (Minutes)
Early morning	184	58.5
Late morning	56	59.1
Mid-day	46	52.1
Afternoon	98	48.6

Patient status and patient waiting time

There is a significant difference in the time spent at the clinic depending on patient status (P =0.013) as shown in table 10.

Table 10- Total time spent against patient status

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	10435.698	2	5217.849	4.395	**.013**
Within Groups	443995.395	374	1187.153		
Total	454431.093	376			

Since there was a significant difference(P =0.013) for patient status against waiting time a post hoc test, Tukey HSD was conducted to detect where the difference was. From the results, the significant difference is between employed/ staff and students (P= 0.009). This is shown in table 11.

Table 11-Post Hoc test - Tukey HSD for patient status and total waiting time

(I) Patient status	(J) Patient status	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Employed or staff	Student	-14.08402*	4.75368	**.009**	-25.2698	-2.8982
	Staff dependant	-3.21782	4.15836	.719	-13.0028	6.5671
Student	Employed or staff	14.08402*	4.75368	**.009**	2.8982	25.2698
	Staff dependant	10.86620	5.30428	.102	-1.6152	23.3476
Staff dependant	Employed or staff	3.21782	4.15836	.719	-6.5671	13.0028
	Student	-10.86620	5.30428	.102	-23.3476	1.6152

Univariate analysis of variance: Patient waiting time and Gender, Patient Status and availability of doctors

To check for confounding the three variables (gender, patient status and availability of doctors) that were significant in one way ANOVA were run in a univariate analysis variance where gender and availability of doctors were found to be significant and patients status was however not significant as shown in table 12 . This shows that patient status is a confounder.

Table 12- Univariate analysis of variance: Patient waiting time and Gender, patient status and availability of doctors

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	89048.202^a	10	8904.820	8.926	.000
Intercept	528930.752	1	528930.752	530.175	.000
Patient Status	877.927	2	438.964	.440	.644
Gender	11445.270	1	11445.270	11.472	**.001**
Availability of Doctors	30874.770	1	30874.770	30.947	**.000**

CHAPTER FIVE: DISCUSSION

This study sought to assess the patient waiting time and identify associated factors using the queuing theory. UHS like many health facilities utilizes the single channel and several phases. Application of this theory is therefore important to help in predicting how long a patient should take to receive a particular service and this can be used to design facility specific patient management guidelines. This is where all patient register at one records office for file retrieval then move to one nursing station for vital signs observation, then they are sent to several consultation rooms. Therefore this study, sought to answer three questions; how does the type of service sought by a patient affect the patient waiting time at UHS? How does the patient arrival time at the clinic affect the waiting time? And how does the availability of health care workers at their work station influence patient waiting time at UHS?

5.1 Social Demographic characteristics

More than half of the respondents were female and this was shown to be significant. These findings are similar to other studies done in Nigeria, (Oche & Adamu 2013) and other developed countries (Whyte & Goodacre 2016) but percentage for the female was higher than that found in another study in Nigeria (Umar, I., Oche, M. O., & Umar 2011).This study found that gender of the patient influenced waiting time which concurs with findings in similar studies (Oche & Adamu 2013).

5.2 Mean Patient Waiting Time

The mean patient waiting time was found to be comparable to other findings in Nigeria (Okotie et al. 2008). While these findings contrast with findings in Malawi in a rural health centre (Jafry et al. 2016) which had a higher mean time. While most of the respondents spent one hour in the facility this average patient waiting time is lower than the average waiting time in Nigeria which was much higher(Umar, I., Oche, M. O., & Umar 2011) but much higher than another (Chen et al. 2010).The mean waiting at UHS may further be improved therefore if the areas of delay are addressed.

5.3 Type of services sought

The services sought at the facility were categorised as new general consultation, follow up consultation, prescription refill, specialised consultation, lab results and referral. Most of the respondents sought for new consultations and specialised consultations. There was however no significant association between the services sought and the patient waiting time. This concurs with other studies done in India (Singh et al. 2013). The explanation for the services sought could be because this is a work place facility mainly for staff and students who therefore seek services because of convenience of access to services while at work. While majority of the patients who participated in the study received all the services they sought at the clinic, a few did not which was mainly due to lack of drugs. This study is similar to ((Umar, I., Oche, M. O., & Umar 2011; Musinguzi 2015) however the type of service sought by a patient was found not to affect the patient waiting time for this study.

5.4 Availability of Health Workers at their Station

From the findings most of the health workers were available at their work stations with the least availability being reported at the doctors' area. In addition communication to patients at the various service points on how long it would take before a health worker is available to help them was minimal in all the service areas with the least communication being at the records office. The reason for this finding could be because the record office is the start point for all patients. While this may be one of the first studies to address how availability of health workers at their station affect patient waiting time. It is noteworthy that other studies have identified availability of health workers as important in reducing patient waiting time (Ameh et al. 2013; Oche & Adamu 2013). This study found that availability of health workers affected patient waiting time.

5.5 Patient Arrival Time

Like the findings of this study, similar studies found that majority of patients arrive in the health facility in the morning hours (Wanyenze et al. 2010; Tiwari et al. 2014). The arrival pattern of patients in this study could be more less explained by the fact that majority are employees of the university who would like to be treated for the various

health needs before they report to their work station. This could further be the reason for their response from majority that they feel being given an appointment will reduce patient waiting time and they prefer walking in for services as and when they need them. The respondents rating of waiting time of services at each service points showed that most of them waited longest at the doctor's office. This concurs with other findings in similar studies (Wanyenze et al. 2010; Ho 2014) but contrasts with another (Musinguzi 2015) in Uganda that found out that registration and pharmacy areas had the longest waiting time. The two main suggestions from the respondents on how to reduce patient waiting time in the clinic were to improve the availability of health workers at their station and to increase staff per shift. These suggestions are more less the same with some given in another study (Ameh et al. 2013) and different from those suggested by respondents in Malaysia (Pillay et al. 2011) however patient arrival time was not found to be a significant factor affecting patient waiting time in this study. It was also noted that the few patients who were given an appointment were not given a specific time for the appointment similar to another study in Uganda (Wanyenze et al. 2010).

5.6 Acceptability of Overall Time Spent in the Clinic

In general more than half of the respondents felt the found the overall time spent in the facility acceptable while most of the respondents waited for at least one hour to receive services they felt that this waiting time can be further improved if the areas of delay can be addressed. The results of the acceptability compare well with other studies in Nigeria (Oche & Adamu 2013; Ameh et al. 2013) and (Ho 2014) in Singapore while they were slightly lower than that of a similar study (Olowookere et al. 2012).

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

This study found that the mean waiting time in senior staff clinic is about an hour to get the services needed which most patients felt was acceptable. Availability of healthcare workers and especially the doctors was found to affect the patient waiting time at UHS with majority of patients suggesting that improving availability of health workers at their stations will help reduce patient waiting time. This may be the one of the first studies in a stand-alone outpatient medical clinic and therefore further studies are needed in this area that will involve healthcare workers and other qualitative data collection methods. In addition other proved ways of improving healthcare workers performance like capacity scenario challenges can be applied by managers in UHS to improve decision making on staffing levels that can provide optimal wait time reduction and hence improve service delivery to the university community.

6.2 Recommendation

Findings in this study showed that majority of respondents sought for new medical consultation and specialised consultation. Thus there is need for UHS management to address the areas of delay identified to enable patients to get timely services. Most of the patients arrive early morning hours to the clinic and therefore the hospital administrator needs to improve practices of all the health workers especially doctors to arrive on time on duty to avoid further delays to the patients. Lastly availability of doctors at their workstations needs to be addressed and secondly that where there is shortage more staff are employed according to the availability of resources to reduce the patient waiting time Whilst the study will add to the body of knowledge on patient waiting in outpatient facilities in similar set ups, it will also help the UHS management team to come up with new practices to reduce waiting time since identifying the areas causing delays in the clinic, is the first step for UHS towards implementing changes in the internal processes and practises in communication and doctors duty schedules in order to improve further the clinic wait time and enhance service delivery.
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APPENDIX 1: PARTICIPANT INFORMED CONSENT FORM

Introduction

I, Rebecca Wafula of the school of public Health, University of Nairobi is conducting a study on patient wait time and associated factors in senior staff clinic at University of Nairobi health services, as part of my course work, I request you to be part of the study. The purpose of this consent form is to give you the full information concerning the study to allow you to make a decision on whether you would like to take part or not.

Purpose and benefits

The purpose of the study is to get information on the length of time a patient takes to be served in senior staff clinic and any possible factors that influence the wait. You may not directly benefit from taking part in the study since there is no payment or monetary gain. However, the findings will be useful to the management of this clinic to improve service delivery to all patients. There is no repercussion on future visits as a result of the participation in this study. The study will involve interviewing you using a questionnaire to gather some general information about yourself and also a trained research assistant will follow you through the service provision to record your waiting time at each service point.

Procedures

The data collection will last for a period of about two weeks .you are allowed to participate only once during this period. The study will involve a random selection procedure by a research team. This will be followed by a trained research assistant tracking you through all the service points except the laboratory as they record the time you wait before being served .Finally, you will be asked a few questions using a questionnaire for about ten minutes at the last point of service or pharmacy on your waiting experience in the clinic. This process will not interfere with your treatment process and the research assistant will not follow you into the service points. The participation is voluntary and very important.

Confidentiality

The information you give will be kept safely and used only for academic purposes only by the study team. Findings of the study will also be shared with the management of UHS to help in service delivery improvement. I will not write down your name and participation is voluntary. You are also free to stop participating at any point of the interview without any form of repercussion. The exit interview will take about 10 minutes of your time.

Contact

If you have questions about this study, you can call the Kenyatta National Hospital/University of Nairobi Ethics committee on telephone number 0202726300 or the principal investigator Rebecca Bisanju Wafula on mobile number 0720908250

Declaration

The purpose of the study has been clearly explained to me and I understand .I volunteer to participate in this research .I give the research team permission to use my information, follow me during service provision, and interview me afterwards as described in this consent form.

Printed name of researcher…………………………………………..
Signature………………
Date……………………

Name of research assistant ………………………………………..
Signature………………
Date……………………

Participant

 I hereby agree to participate. ☐

Signature of participant……………………………………. Date …………………..

APPENDIX 2: PARTICIPANT EXIT QUESTIONNAIRE

SERIAL NUMBER…………………...   **DATE: ………………………**

START TIME: ……………………   **END TIME: ………………………**

SECTION 1: SOCIO- DEMOGRAPHIC DATA

1Gender   Male   [   ]   Female [   ]

2. In which age category do you belong?

a) Less than 20 years   [   ]

b) 21-30years   [   ]

c) 31-40 years   [   ]

d) 41-50 years   [   ]

e) 51-60years   [   ]

f) 60 and above   [   ]

3. What is your patient status?

a) Employee / staff   [   ]

b) Student   [   ]

c) Staff dependant   [   ]

SECTION II: TIME TRACKING TOOL

To be filled by the research assistant for each participant during service provision. This tool will be used to record actual time at each service point as the patients move through each point.

SERVICE POINT		TIME SPENT
RECORDS OFFICE	Patient arrival time at records desk Time file leaves the records office to nurses' station	
NURSING STATION	Time the file is received in triage room Time patient is called into the triage room	
DOCTOR AREA	Time the file is received on the doctors desk Time the patient is called into the doctors room	
PHARMACY	Time the patient placed a prescription in the tray Time the patient collects the drugs	

Patient arrival time…………………

Departure time……………………..

Total time spent……………………

SECTION III: TYPE OF SERVICE SOUGHT BY THE PATIENT

1. What kind of service are you seeking today?

   a) New consultation   [   ]

   b) Follow – up /Review   [   ]

   c) Prescription Re-fill   [   ]

   d) Lab results review   [   ]

   e) Specialized consultation   [   ]

      (Gynaecologist, ENT, Physician)

   f) Referral Services   [   ]

   g) Others………………………………………………………… (Specify)

2. Did you receive all the services you needed today?

   Yes   [   ]

   No   [   ]

3. If the answer is No, in 2 above which services did you not receive?

   a) Consultation (General)   [   ]

   b) Review   [   ]

   c) Lab results   [   ]

   d) Specialist   [   ]

   e) Referral   [   ]

   f) Drugs   [   ]

   g) Others   [   ]

4. Why did you not receive the service today?

   a) Doctor not available   [   ]

   b) Lab results not ready   [   ]

   c) Drugs not available   [   ]

   d) Left without being seen by doctor due to long waiting [   ]

   e) Other (Specify)………………………………………………………………………

SECTION IV: AVAILABILITY OF HEALTH WORKERS AT STATIONS

1. Did you find a health worker to attend to you at each of the following stations when you arrived?

   a) Records Office   Yes   [ ]   No [   ]

   b) Nursing Station   Yes   [ ]   No [   ]

   c) Doctor's Room   Yes   [ ]   No [   ]

   d)Pharmacy   Yes   [ ]   No [   ]

2. If No, in any of the above, were you clearly communicated to, on how long you will wait before the staff is available to serve you?

   a) Records Office   Yes   [ ]   No [   ]

   b) Nursing Station   Yes   [ ]   No [   ]

   c) Doctor's Room   Yes   [ ]   No [   ]

   d) Pharmacy   Yes   [ ]   No [   ]

3. Do you think availability of staff at their work stations affects how long you patient wait in the clinic?

   a) Yes   [ ]

   b) No   [ ]

   c) Not sure   [ ]

4. Do you think staffs in this clinic are available when you need them to attend to you?

   a) Yes   [ ]

   b) No   [ ]

   c) Not sure   [ ]

5. In your opinion what reasons may cause staff not to be available at their work stations?

   a) Lateness/ Absenteeism [ ]

   b) Shortage of staff   [ ]

   c) Many idle movements [ ]

   d) Don't know   [ ]

6. Number of staff at the work station

      (To be filled by the research assistant)

      Record office   [   ]

      Nursing stations   [   ]

      Doctors   [   ]

      Pharmacists   [   ]

7. Number of staff on the duty roster

      (To be filled by the research assistant)

      Record office   [   ]

      Nursing stations   [   ]

      Doctors   [   ]

      Pharmacists   [   ]

SECTION V: PATIENT ARRIVAL TIME

1. What time did you arrive at the clinic today?

   a) Early morning (8a.m. – 11 a.m.)   [   ]

   b) Late morning (11a.m. – 12.00pm)   [   ]

   c) Mid-day (12p.m. – 1.p.m.   [   ]

   d) Afternoon (1p.m. – 5.p.m.)   [   ]

2. Did you have an appointment for your visit today?

   a) Yes   [ ]   b) No   [ ]

3. If yes in above, did you arrive on time for the appointment?

   a) Yes   [   ]

   b) No   [   ]

4. If NO in Q2, Do you think if you were given an appointment it would help in reducing

   the waiting time?

   a) Yes   [   ]

   b) No   [   ]

PART VI: PATIENT WAITING TIME

1. How would you rate the waiting time at each of these points?

Service point	Appropriate	Fairly long	Too long
Records office	[ ]	[ ]	[ ]
Nursing station	[ ]	[ ]	[ ]
Doctors Room	[ ]	[ ]	[ ]
Pharmacy	[ ]	[ ]	[ ]

2. Which area/ areas in the clinic contributed to or made you take long in the facility today?

    a) Records office   [   ]

    b) Nursing station   [   ]

    c) Doctors Room   [   ]

    d) Pharmacy   [   ]

3. How do you think the patient waiting time can be reduced?

    a) Increase staff per shift   [   ]

    b) Improve staff availability at their status   [   ]

    c) Introduce appointment system   [   ]

    d)Increase service points   [   ]

    e) Don't know   [   ]

    f) Other (Specify) …………………………………………

4. How do you feel about the overall time spent in the facility today?

    a) Acceptable   [   ]

    b) Not acceptable   [   ]

APPENDIX 3: LETTER OF APPROVAL – UHS

UNIVERSITY OF NAIROBI

UNIVERSITY HEALTH SERVICES
STATE HOUSE RD.
NAIROBI

P.O. BOX 30197-00100
NAIROBI, KENYA
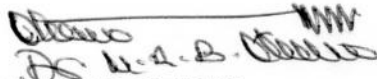TEL: 2725308/997/7414
Fax: 2722457

Our REF: UON/CA/UHS/100/9

5th September, 2016

Rebecca Bisanju Wafula
School of Public Health
College of Health Sciences
UNIVERSITY OF NAIROBI

RE: APPROVAL TO CONDUCT A STUDY AT SENIOR STAFF CLINIC

Following approval of your study by the KNH/UON ERC, permission is hereby granted for you to collect data from senior staff clinic to enable you to complete your study on *"Patient waiting time and associated factors"* at a medical outpatient clinic at University of Nairobi Health services.

Kindly liaise with the nursing officer in charge of senior staff clinic for facilitation. By copy of this letter, the Nursing officer in charge is informed and requested to facilitate.

CHIEF MEDICAL OFFICER
UNIVERSITY HEALTH SERVICES
P. O. Box 30197 - 00100
NAIROBI

DR.M.R.B. OTIENO
AG. CHIEF MEDICAL OFFICER

cc. Deputy Chief Medical Officer (staff)

Deputy Chief Medical Officer (students)

Hospital Administrator

Nursing Officer in charge-ssc

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APPENDIX 4: LETTER OF APPROVAL – KNH/UON ERC

UNIVERSITY OF NAIROBI
COLLEGE OF HEALTH SCIENCES
P O BOX 19676 Code 00202
Telegrams: varsity
Tel:(254-020) 2726300 Ext 44355

KNH-UON ERC
Email: uonknh_erc@uonbi.ac.ke
Website: http://www.erc.uonbi.ac.ke
Facebook: https://www.facebook.com/uonknh.erc
Twitter: @UONKNH_ERC https://twitter.com/UONKNH_ERC

KENYATTA NATIONAL HOSPITAL
P O BOX 20723 Code 00202
Tel: 726300-9
Fax: 725272
Telegrams: MEDSUP, Nairobi

Ref: KNH-ERC/A/328

22nd August, 2016

Rebecca Bisanju Wafula
Reg. No.H70/75006/2014
School of Public Health
College of Health Sciences
University of Nairobi

Dear Rebecca

REVISED RESEARCH PROPOSAL "PATIENT WAITING TIME AND ASSOCIATED FACTORS IN A MEDICAL OUTPATIENT CLINIC AT UNIVERSITY OF NAIROBI HEALTH SERVICES   **(P503/07/2016)**

This is to inform you that the KNH- UoN Ethics & Research Committee (KNH- UoN ERC) has reviewed and **approved** your above revised proposal. The approval period is from 22nd August 2016 – 21st August 2017.

This approval is subject to compliance with the following requirements:

a)   Only approved documents (informed consents, study instruments, advertising materials etc) will be used.
b)   All changes (amendments, deviations, violations etc) are submitted for review and approval by KNH-UoN ERC before implementation.
c)   Death and life threatening problems and serious adverse events (SAEs) or unexpected adverse events whether related or unrelated to the study must be reported to the KNH-UoN ERC within 72 hours of notification.
d)   Any changes, anticipated or otherwise that may increase the risks or affect safety or welfare of study participants and others or affect the integrity of the research must be reported to KNH- UoN ERC within 72 hours.
e)   Submission of a request for renewal of approval at least 60 days prior to expiry of the approval period. (*Attach a comprehensive progress report to support the renewal*).
f)   Clearance for export of biological specimens must be obtained from KNH- UoN ERC for each batch of shipment.
g)   Submission of an *executive summary* report within 90 days upon completion of the study.
      This information will form part of the data base that will be consulted in future when processing related research studies so as to minimize chances of study duplication and/ or plagiarism.

"Protect to discover"

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