

PATIENT'S SELF-REFERRAL DECONGESTION MODEL

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DECLARATION

This research project report is my original work and has not been presented in any other University for the award of degree.

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Approval

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DEDICATION

I dedicate this project to my loving husband, Mr. Jackson Getange and My parents Mr. and Mrs. Moenga.

ACKNOWLEDGEMENT

To the Almighty God, I am eternally grateful.

I acknowledge the wonderful support I received from my supervisors DR. Joshua Agola and DR. Richard Omollo through this study.

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ABSTRACT

With self-referral, patients get to be attended by staff with special training without having to go through lower tier facilities. However, it occasions high health costs associated with underutilization of primary health care and overuse of higher tier levels, congestion, as well as overburdening of referral hospitals. In turn, it limits patients' access to highly skilled health workers because they will also be attending to less complex cases that would have been otherwise handled at the PHC facility levels. This research aimed to develop a model for decongesting referral hospitals by limiting self-referrals. The objective was accomplished by evaluating the strengths and challenges of the current referral hospital decongestion models. A health model for decongesting patient self-referrals was developed afterwards. A descriptive analytical research design was used to interview patients who visited the outpatient department at Kisii Teaching and Referral Hospital. Purposive random sampling was used to recruit 172 respondents. Respondents were provided with questionnaires to answer, and the data was analyzed quantitatively using the Statistical Package for Social Sciences (SPSS version 24). Quantitative data were presented in the form of tables and pie charts, quantitative methods (descriptive and inferential analysis) such as frequencies and percentages were used. The resulting model was expected to aid in the reduction of congestion in higher tier hospitals by promoting adequate utilization of PHCs resources before considering referrals. The study findings established a significant positive relationship between socio-demographic factors, primary health facility characteristics, referral facility characteristics and level of hospital congestion in the referral hospitals. The study recommends the need to strengthen the referral mechanism and linkages between the various tiers through utilization of EMR and e-consultations. The study also recommends physician referred patients be attended first except in emergencies.

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CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Primary care clinics, health centers as well as hospitals are commonly found in many nations. A well-designed healthcare plan would typically include provisions that help caregivers focus on locating and receiving primary care in the first place, and then if possible direct them to higher levels of care. The caretaker's health care costs will be insignificant if they follow the referral scheme. However, many countries (primarily in the developing world) prefer to avoid primary care facilities altogether and instead only use referral care clinics (i.e. those that refer patients to other healthcare facilities, especially for diseases that can be effectively treated in the primary care facility). Referral centers bear an unnecessary financial burden because of this. This also increases caregivers' costs and as well as the overall health care system (Edosa *et al.*, 2019).

Physician self-referral is a global practice. It happens each time a physician asks a patient to return for an appointment but in which the patient is asked to see fellow practitioner within the physician's own medical circle or refers a patient for a service (blood work, imaging or surgical procedure etc) to facility for monetary gain (Levin & Rao, 2011).

Self-referrals make primary health care to be under-utilized and hospitals over used, congested and overburdened, leading to an increase of health care costs. This situation forces many patients to spend long hours waiting to be attended by health personnel in hospitals thus leading to misapplication of the health personnel's time for minor cases, which decreases the access to needy patients to see the highly trained health workers. In many situations, due to large patient loads, human and physical resources are stretched to capacity, which results in hospitals compromising the care that they provide to patients (Wolkite *et al.*, 2015).

According to WHO, primary health care accords people comprehensive quality care varying from promotion and prevention to treatment, rehabilitation and palliative care (Medcalf & Nunes, 2018). However, availability of personnel with specialized training and other diagnostic procedures in referral facilities and distance among other factors often compel self-referral in which case they show up without any referral documentation (Abere, Atnafu & Mulu, 2021). A considerably higher proportion of

self-referred patients exist in several nations. 62.8% of patients in England are self-referrals. In the United States, there are just a few general practitioners (GPs) for every hundred thousand people; therefore, patients frequently refer themselves to specialty care. In the study that was done in Sri Lanka, it was discovered that approximately two-thirds of people who sought treatment in rural areas passed the basic level of treatment (Kraaijvanger *et al.*, 2016).

After China implemented its health reform in 2009, a surge of investment was made to improve primary care because it was revealed that Chinese patients were using higher-level hospitals as their primary care destinations (Meng *et al.*, 2019). Instead of making efforts to boost lower-level service usage, the implementation of higher-level service-usage policies saw self-referrals to the top hospitals rise while primary healthcare visits fell. The majority of patients self-referred to referral hospitals because of a lack of an effective way to rapidly move them to emergency care facilities, along with a shortage of medical staff members to help care for patients (Kraaijvanger *et al.*, 2016). To put it another way, approximately 60% to 90% of patients in Nigeria utilize direct-care facilities instead of referring hospitals, with the net result being a reduction in referral hospitals (Koce *et al.*, 2019).

With these results, it appears that self-referrals in Tanzania, Zimbabwe, and South Africa, along with patients who accepted self-referrals at referral hospitals and believed their cases could be handled at a lower level of treatment, were given 72.5 percent, 60 percent, and 50 percent of the total referrals used in these respective countries (Edosa *et al.*, 2019).

In 2014, Kenya put together a document termed “Kenya Health Sector Referral Implementation Guidelines”. It outlines the health service delivery system in six levels of care, starting at the community through primary care services and health centres all the way to county referral health services and finally to the national referral health services. However skewed levels of development across counties and uneven investments in the health sector have seen patients disobey the recommended referral structure in seeking healthcare services. There are some referral system issues the Kenyan health system is confronting. By creating a consistent referral system for patients, they will first seek primary care, and then the more specialist care will be offered if needed. Doctors and other healthcare providers must provide advice and

carry out operations. Patients are expected to receive therapy progressively under Kenya's traditional health system: they receive it in primary care, secondary care, and, if necessary, tertiary care (MOH, 2012). GOK in 2012 surveyed patients who were treated at Kenyatta National Hospital and found that just 3.6 percent of patients got referral letters from the lower-tier clinics. The majority of patients came to the clinic without referral letters, indicating that they were not following the established referral guidelines. Four important variables lead patients to self-refer, according to (Kivuva, Njoroge & Wanja, 2021). These include a hospital's location, great reputation, high quality of care, and employee friendliness.

1.2 Problem Statement

With self-referral, patients get to be attended by staff with special training in referral healthcare facilities without having to go through lower tier facilities (Kreindler, 2017). It occasions high health cost associated with underutilization of primary health care and overuse, congestion, as well overburdening of referral hospitals (Aliyu *et al.* (2015). In turn, it limits patients' access to highly skilled health workers because they will also be attending to less complex cases that would have been handled at the PHC facility levels (Wolkite *et al.*, 2015). Various improvement approaches have been packed and repackaged but much still remain desired as evidenced by long queues at referral hospitals across Kenya and other East African nations. Kenya's referral service model comprises of four groups of elements including patient movement, expert movement, specimen movement, and patient parameter movement. The client movement agenda focuses on reducing self-referrals to referral hospitals (KHSRS, 2014-2018). Averting the aforesaid issues requires creating a model to reduce patient self-referral in which patients get to utilize primary healthcare facilities before proceeding to higher tier facilities.

1.3 Objectives of the Study

1.3.1 General Objective

The main objective of this research study was to develop patient's self-referral decongestion model.

1.3.2 Specific Objectives

- i. To evaluate the strengths and challenges of the current self-referral decongestion models
- ii. To develop model for decongesting patient self-referrals.

1.4 Research Question

- i. What are challenges for current patient referral systems?
- ii. Which models are used for decongesting patient referrals?

1.5 Significance of the Study

Self-referral is a major concern in referral hospitals. To ensure effective health service delivery in the referral hospitals, an effective self-referral model needs to be in place. The referral model will assist the government to ensure that resources allocated in various level of health care are utilized as required by controlling patients walking in the referral hospital without the guidance of a healthcare provider. The study finding will further help the policy makers in emphasizing in the implementation of the referral guidelines by addressing the identified gaps so as to come up with the effective solution for the same. The finding will further give an insight of the problem to all the stakeholders which will lead to creation of awareness on patient referral to all hence improvement of quality of care and reduction of congestion frustrations in referral hospitals.

1.6 Scope of Study

The study's goal was to find existing roadblocks to referral in the current system, to see if any current models were helpful in easing patients into care, and to build an electronic health system for easing patients into care. The length of the project matches the University's master's research policy, which stipulates two years, and the area of study was Kisii County.

1.7 Assumptions of the Study

Information required was provided by respondents within the required timeframe once approval to collect data was granted. The researcher assumed finances would be available and that there would be no major constraints and hindrances to the research and that the respondents would be transparent, honest and truthful in their responses to the research questions.

1.8 Limitations of the Study

The study was confined in Kisii Teaching and Referral Hospital. The study was limited to the use of questionnaires for purposes of data collection. The researcher had an introductory letter from the institution showing the purpose of the study to avoid resistance from the respondents.

1.9 Definitions of Terms and Concepts

Appointment system: It is a procedure that streamlines clinic preparation and eliminates excessively lengthy wait times.

Caretaker: An individual who is responsible for the care of a patient

E-Health: Is a catch-all word that refers to a broad range of health and care services provided through information and communication technologies (ICTs), including electronic health records (EHRs), health information systems, remote monitoring and consulting services (e.g., Tele-health, Telemedicine, Tele-care), self-management tools, and health data analytics.

Electronic Medical Records (EMR): A computerized medical records system that records, stores, and displays patient data making it possible for the information to be share across different settings.

E-referrals or electronic referrals or Electronic consultation is an electronic network that facilitates the smooth transition of medical records from the client management system of a primary to a secondary treating practitioner.

Healthcare Systems: The association of individuals, agencies, and resources that provide health care services to target populations.

Hospital Decongestion- Reducing hospital overcrowding

Infrastructure: The fundamental equipment and structures that an entity requires to work

M-Health: Is a subset of e-Health that is linked to mobile telephony and applications

Patient flow: The healthcare system's capacity to serve patients quickly and efficiently as they progress through the stages of treatment

Primary Health Care (PHC) is a collection of publicly available first-level programs that facilitate health and disease prevention, as well as provide diagnostic, curative, rehabilitative, supportive, and palliative care.

Referral system: Is a network that provides services to clients at various levels of service delivery, based on the client requirements.

Referral: A procedure in which someone or something is referred for consultation, examination, or additional action.

Secondary Health Care: This is the level at which serious conditions requiring medical knowledge and more comprehensive monitoring of the patient's wellbeing are provided.

Self-referral: Is when patients self-refer to a higher-level healthcare facility rather than their primary care facility in the hopes of receiving quality health care.

Tele-health: Is the application of information and communication technologies (ICTs) to share health data and provide health care services through geographic, temporal, socioeconomic, cultural, and political constraints.

1.10 Abbreviations and Acronyms

CHPS:	Community-based Health Planning Services
ED:	Emergency Department
E-Health:	Electronic Health
EMR:	Electronic Medical records
GPs:	General Practitioners
HCWs:	Health Care Workers
HIS:	Health Information System
ICT:	Information Communication Technology
KHSSP	Kenya Health Sector Strategic Plan
LMICs:	Low and Middle-Income Countries
MCH	Maternal Child Health
M-Health	Mobile Health
MOH:	Ministry of Health
NHIN:	Nationwide Health Information Network
NHS:	National health information services
NHSSP:	National Health Sector Strategic Plan
OPD:	Out-Patient Department
PCP:	Primary Care Physician
POS:	Point Of Service
IEC:	Information, Education, Communication

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The literature was collected from works of different scholars and organizations but related field of study. The literature materials put together was intended to provide the current state of knowledge on the research topic, show the gaps in the area of study and present background information related to the research problem. At the end of the literature review the conceptual model developed was presented.

2.2 Challenges Facing Patient Referral System

Health is a basic human right (Cook, 2020). Visser *et al.* (2015) note that effective referral networks have been identified as being important to a health system since the Alma Ata Declaration, which called for community involvement in primary health care. While all this is true, it is critical to have a good referral system in place to ensure that quality of treatment is guaranteed at all levels of care. This form of referral system allows efficient management of client health requirements by employing the resources that are already accessible. Several of the congestion concerns with existing referral programs is as result of service consumers' lack of awareness, socioeconomic issues, patient wait times, physician shortages, pharmaceutical, amenity, and equipment shortages.

According to Koce *et al.* (2019), those who sought treatment at the secondary levels might have done so because they lacked knowledge of the various levels of healthcare services' activities. Service users had inadequate knowledge of the healthcare system and were ignorant of other resources as claimed by Craker (2014). Durand *et al.* (2012) clarify that emergency department patients prefer to go to the emergency room at the clinic where they have a referral rather than go to the nearest hospital with all of the possible referral options accessible to them. Additionally, Nanyonjo *et al.* (2015) write that people's confusion over health facility functions results in a reduction in the referral mechanism.

Over 58% of patients in Limpopo over the age of 20 to 39 had recommended themselves to the referral hospitals, whereas a descriptive study which spanned the age range of 20 to 45 found that 79% of the self-referrals they received were under the age of 45 (Visser *et al.*, 2015). A research by the Ethiopian Ministry of Labor discovered that male employed people skip the referral system more frequently than female

employees. Additional factors for men's health seeking behavior include pragmatic financial and behavioral incentives (Alberti, 2015). Unemployed patients avoid primary care institutions because of a lack of money, according to (Detollenaere, 2018). In addition, a third-party plan is in place to make healthcare more accessible to lower-income persons. Since these patients aren't highly educated, they continue to seek treatment at a higher level in the hopes of unconventional diagnostic testing. Rehman *et al.* (2014) found that both skilled and uneducated persons bypass lesser levels of healthcare. The study further affirmed that residency of the patient, economic disposition of the mother as major factor that influence where a woman would give birth in Kenya (Lewis, Kitui & Davey, 2013). The results of an investigation carried out elsewhere Ogden *et al.* (2013) revealed that social contacts influence referral behavior among patients and health care workers.

A report by Padmore (2017) found that a majority of patients in Africa opt to self-refer for care, particularly family, culture, and peer-influenced reasons, in the early stages of illness. Relying on close and distant social networks, as well as confidence and perceptive components, acceptance and conflation of multiple therapeutic practices and decisions have also been reported. Due to expensive fees, long transit costs, and previous poor experiences with medical care, patients in Ghana avoided getting treatment for malaria, and other prevalent ailments. Abstaining from other useful activities could cause patients to use friends and family members as well as forego therapy. Health problems often develop to the point where it is more cost-effective to seek medical treatment at a referral hospital than of undergoing regular primary care (Ansah *et al.*, 2016). Regardless matter how terrible, costly, or accessible a health care option is for a rural citizen, if the quality of health facilities is acceptable, then they are more likely to consider seeking medical attention elsewhere.

Self-referral to higher level hospitals has been shown to occur due to a shortage of medical staff, which results in longer wait times for services (Lam *et al.*, 2017). Additionally, (Beacheet *et al.*, 2016) found that physicians' failure to respond to patient recommendations was a significant contributor to self-referrals. Thus, it was preferable that physicians who were available to be seen by patients who had referrals were seen by them. Rebecca (2014), found that patient waiting times have an impact on the type of institution that patients want to visit, and many patients are not willing to make the trip to a certain hospital because of long wait times. Similarly, Okoli *et al.* (2017) found

that presenting to higher levels of treatment was frequently motivated by a preference for high-quality service and professional staff.

Services users rejected primary care because of limited appointment hours and the high cost of specialists' offices, according to a study published in 2014 (Bleaustin *et al.*, 2014). As a result, patients with vital signs have little alternative but to use an email account or phone during non-business hours in order to raise the issue with a manager. Researchers found that due to schedule issues, service consumers presented to the referral center rather than to their primary health care institutions during business hours.

Patients frequently refer themselves to hospitals due to concerns about their own health. The ordering of one's health-seeking behaviors is dictated by the value one places on their disease condition. Minor problems will be handled by primary care facilities; but significant problems will be handled by large hospitals, where patients believe they will get superior care (Somasundaram *et al.*, 2018).

Drugs and equipment availability have a substantial impact on decision-making at different levels (Oslislo *et al.*, 2019). Although having some advanced equipment was thought vital, an absence of that equipment required self-referrals to higher level facilities, particularly during the diagnostic stage. The above was mentioned by Dr. Abdi, who added that patients who opt to self-refer for healthcare have found that they lack confidence in the proper healthcare provider, don't have sufficient supplies in the first level of care, and don't have main laboratory tests available.

A lack of amenities such as light, water, and a pleasant ambiance in lower-level institutions negatively impacted patients' health care-seeking habits, and so resulted in a higher number of patients seeking care at higher-level facilities (Koce *et al.*, 2019). Although Kahabuka *et al.* (2012) state the opposite, it is explained in another study by Chai-Coetzer *et al.*, (2013) that patients who were not originally investigated for the source of their ailments before obtaining treatment at primary care facilities later chose to self-refer to higher level hospitals.

It was discovered in a discussion conducted by Agarwal (2012) that people will self-identify at a higher facility, believing that the care they are receiving is of higher quality. While the aforementioned paper emphasizes the limitations of certain health

facilities' communication tools, however Naseriasl *et al* (2015) contend that health facilities' lack of proper communication equipment promotes self-referrals. In order to correct this problem, it is imperative that customers be referred to facilities from other facilities without proper communication. Additionally, the paper-based referral procedure has some noteworthy disadvantages, such as incomplete paperwork, poor handwriting, and excessively long waiting times for specialist evaluation. Without previous appointment, some patients are referred, which means that intermediate and tertiary care facilities are consistently lacking beds. There is also a lack of coordination and communication between different healthcare professionals, which results in a low recommendation acceptance rate for top-level facilities.

EMRs that are not incorporated in order to aid in referrals are creating concerns with self-referrals, according to the findings of (KHSSP, 2018). An inadequate integration in the health system makes patient information available in disorganized manner. To successfully treat patients, a general practice physician must collaborate and coordinate with various specialists in the field. When this occurs, general practitioners have the opportunity to actively connect with the referral system and provide two-way communication between health care providers. This, as a result, shows that bypassing basic health care has become the norm, resulting in inadequate and excessive usage at the lower and upper levels of health care delivery (Rezvani & Gotalizadeh, 2011).

Kiberu, Scott & Mars (2019) reported that there are huge differences in the ways that e-health and telemedicine are defined. This process ultimately results in the creation of a shared base of knowledge and understanding, as well as the utilization of accessible technologies that assist in raising user and decision-maker awareness, as well as providing training opportunities.

2.2.1 Current Health Referral Systems

There are many referral systems in place, depending on the jurisdiction and country. Merging autonomous health systems at all levels into a comprehensive and coordinated National Health Service is implemented in South Africa (NHS). Primary health care practitioners should be used to deliver primary health care, and referral systems should be present at all three levels of health care to facilitate this goal (South Africa Ministry of Health, 2009). A qualitative study by Shams *et al.* (2015) demonstrated that the referral system is ineffective and inefficient and hence must be changed with regards to performance.

There is no uniformity to the role delineation, monitoring, and referral patterns in Armenia's general healthcare referral system, as well as cases in which a patient should be referred for a certain ailment. Although there is no direct communication between the referral facilities, mostly due to the absence of referral and counter-referral procedures, Armenian physicians are very upset by this (Agola & Raburu, 2018). In another study (Eskandari *et al.*, 2013) on barriers to referrals to health care in rural populations in Iran, the researchers discovered that the referral system has no hierarchical relationship. Due to lack of feedback, referral and follow-up processes are disrupted.

In Khiavi *et al.* (2012), the country's inadequate referral system contributed to overpopulation in hospitals. This led to overpopulation in hospitals and operating rooms because patients were referred to them when they did not go via the referral system and because the prestige of the hospitals attracted more patients. A large majority of Nigerian referrals are to higher-level referral facilities on their own, while in Tanzania, referral facilities of this type are most often employed as a form of primary care (Jumbam *et al.*, 2020). The study revealed that 84% of children admitted with meningitis to the two facilities were self-referred. To determine the best possible solution, the Ministry of Health commissioned a baseline study in eight counties (Garissa, Kakamega, Kilifi, Kirinyaga, Machakos, Nairobi, Nakuru, and Siaya) during June and July 2013, and the study found that the health referral system demands reinforcement.

2.2.2 E-Health Systems

An E-health system seeks to provide healthcare and information, locally and remotely, using the Internet and related technology (Mugo & Nzuki, 2014). The concept of e-health is about using technology to increase access to and enhance existing health care. The physicians in this case patients who reside far away from the hospital by providing remote patient care through tele-health as other health practitioners utilize this technology to monitor disease and other epidemic outbreaks in a variety of situations (Moerman *et al.*, 2014).

Health-related awareness activities and health initiatives can all be supported by using e-health. It is particularly effective in reducing medical errors, providing excellent care, lowering health service delivery expenditures, and empowering patients towards taking

charge for personal healthcare treatment (Mair *et al.*, 2012). Further, virtual communication between patients and health care providers is also enabled through e-Health. Technology facilitates online appointments; distant specialist care tools that measure physiological records, and actual patient meetings, and allows this engagement to take place (Crock, 2016). It is possible that an increased focus on e-health can help lower health care costs while enhancing care delivery by encouraging people to be more involved in health decisions. The resulting consensus is that e-health tools will increase quality, patient safety, and care management while also optimizing health outcomes (Busagala & Kawono, 2013; Mugo, 2014).

In order to describe Telemedicine as defined by Dantu and Mahapatra (2013), the authors note that this system enables access to health care services for both underserved rural, semi-urban, and distant locations as well as for a wider population that does not require a physical referral. On the other hand, general practitioners and specialists can conduct tele-consultations, with the benefits of this helping to maintain health issues in primary care rather than have them referred to secondary care. For minimizing secondary care expenses and helping to prevent excessive travel for senior patients, this is crucial. As well, the utilization of tele-radiology in primary care alleviates the issue of more patients referring to secondary care for radiology imaging.

Working Together for Health (2017) claims that 4.3 million health workers are in short supply around the world, with 57 countries unable to deliver even the most basic health services. This confirms that a major health care practitioner shortage exists not only of doctors, but also of health care workers with diplomas or training in tele-health and other e-health-related sectors. The use of telemedicine to deliver multiple degrees of training and target different training levels is possible.

The rate at which cell phones have progressed in the previous two decades has permitted the development of smart-phones and other sophisticated gadgets (sensor-rich and Internet-enabled). Additionally, the simplest gadgets on the market today possess significant multimedia functionality, which may be harnessed to generate powerful applications (for example, for surveillance or learning). Li *et al.* (2020), stated that "m-health" (the simple e-health provided by mobile devices) and the extensive availability of smart phones have contributed to a significant rise in initiatives targeting rural and isolated community health workers (CHWs) in

developing countries, many of which are designed to assist and improve the lives of this group of individuals.

The Kenya e-Health Development Unit is part of the Division of Monitoring and Evaluation, Health Research Development and Informatics, which supervises the Kenya e-Health Development Unit. At the moment, the link between the Mo ICT and the Division of e-Health is not well-defined, which makes it impossible to gauge, oversee, and control health information systems (HIS) that are currently operational in Kenya. In addition, there is no centralized registration for all of the e-Health projects that are being implemented in Kenya (Kenya National e-Health Policy, 2016-2030).

2.3 Model for Decongesting Patients

To effectively increase efficiency, healthcare facilities have devised a variety of strategies that support both the patient and the staff. Numerous models have been implemented to facilitate patient decongestion in these facilities. Among these systems are those for patient flow, patient appointment scheduling, and patient referral, Mobile clinic model, outreach model, tele-health model and Optimization Model for measuring spatial access over healthcare networks

2.3.1 Patient Flow Model

Patient flow pertains to the healthcare system's capacity to treat patients swiftly and efficiently from the moment they are admitted, screened, tested, operated on, placed in beds, and discharged. In the event that blockages develop in the flow, there will be a rise in waiting times and throughput, both of which will affect the service's overall quality of delivery (Abdelrahman *et al.*, 2015).

Increased investment in ambulatory care services, clinical decision units, and labs and endoscopic units contributed to the rise in ambulatory care, clinical decision units, and other facilities resulting the emergency room to be overcrowded, tense, and hazardous, as well as having overworked staff and delayed regular activities, causing patients to be classified as outliers and for the clinical results to worsen, to solve this situation patient flow model was developed enhance the flow of patients (Carter *et al.*, 2014)

The findings of the study by Kreindler (2017) indicate that although some widely established flow approaches have been repackaged and bundled into organizational improvement methodologies, the data supporting these methods is lacking. A recent

comprehensive review of ED overcrowding management measures could reveal that just a few strategies have real efficacy (Carter *et al.*, 2014). Other than these methods, there is no reliable data to support the efficacy of the ED-based techniques, like ordering triage nurses, triage liaison doctors, minor treatment areas, and rapid evaluation zones. Additionally, according to Pines *et al.* (2011), most health systems found it difficult to make timely access to needed treatment available.

2.3.2 Patient Appointment Model

In response to concerns with health facilities endangering the quality of health care delivery, this type of model was developed. Peak workloads for counter staff, lengthy wait times for patients, and extended hours for doctors and nurses during clinic sessions are included (Akinode & Oloruntoba, 2017). Improving patient scheduling improves quality of health service delivery through reducing medical errors hence lowering the number of unsatisfied patients. A wide variety of healthcare facilities around the world have adopted the model for crowding, wait times, and lack of access to resources, and it's possible the model will allow more people to receive the healthcare they need while at the same time cutting costs and increasing patient and staff satisfaction by decreasing waiting times and lessening strain caused by scheduling constraints such as patients, facilities, and providers (Tiago, 2017). Despite the fact that appointment systems fix the issue of overcrowding, hospitals are just as bad as they were before to the implementation of these systems, and that has been blamed on the inadequate scheduling mechanism that was put in place (Aliyu *et al.*, 2015).

According to Babes and Sarma (2012), single-block appointment systems create additional hectic time for clinicians. All patients were put into a block that allocated a particular date rather than a specific time period to the clinic session. Based on an individual appointment system, build a rule for scheduling outpatient appointments. This has been proved to be robust, as patients walk in personally at same time intervals in every single block. In a study published in the journal BMC Medical Research Methodology, Aliyu *et al.* (2015) identified aspects that affect the appointment scheduling system and then attempted to create a model that might be utilized to reduce patient wait times.

They classified appointment systems and decided to develop an alternative system that could help reduce patient time spent in hospitals' navigation processes, such as Waiting in the Doctor Queue, Doctor Diagnosing Process, and Lab Process, with the assistance of simulation software that can be used to model any given system by simulating its behavior. Though a simulated model was able to reduce patient wait times in comparison to the appointment classification method, delays were observed thus inefficient (Akinode & Oloruntoba, 2017). The patient appointment model despite its robustness has not been able to address emergencies thereby necessitating investigations to unearth new models.

2.3.3 Patient Referral Model

One of the referral model guidelines' aims is to decrease patient self-referral to the highest level of treatment.

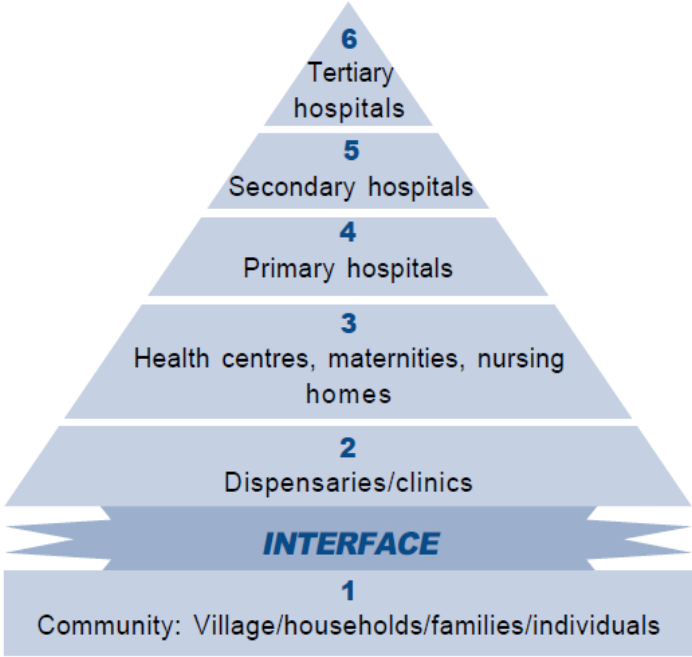
Health system organization by levels of care (level 1-6)	Health system tiers
	Tier 4: National referral facilities
	Tier 3: County referral facilities
	Tier 2: Primary care facilities
	Tier 1: Community services

Figure 2.1: Kenya Health Care System with Four Tiers of Care Compared to the Previous Six Levels of Care

Source: (Overview of the Health System in Kenya, 2005)

The third tier consists of the county referral services, which include the former main and secondary hospitals. Both outpatient and inpatient care is offered at these facilities. These facilities are staffed by physicians, clinical officers, and nurses (Joarder *et al.*, 2020). In some secondary hospitals, clinical officers and nurses serve as educational institutions for interns and med students, while others are places for interns to gain some extra experience. National referral centers that provide highly specialized services are employed in the fourth tier, which functions as training and research support. The various levels of treatment include government-owned hospitals, faith-based organizations, and private health institutions (Kinyanjui, Gachanja & Muchai, 2015). A massive network of services is made available by the public health system, which is the most widely used of them all. The second largest network is made up of faith-based hospitals, which are mainly located in urban areas, followed by private hospitals located mostly in urban areas.

In the referral chain diagram, a patient is referred from the community unit to primary health care, which then directs them to secondary care, where they will likely be referred to tertiary care if they have a more serious condition. Some health care facilities lack key components of the health system, such as information on referral services, which can disrupt the smooth operation of the referral system. These individual components include a communication network that's inadequate, financial resources that are insufficient, an unbalanced mix of healthcare workers, a shortage of equipment, and logistical inefficiency/scarceness (Tonui, Chepkutto & Rotich, 2021).

2.3.5 Optimization Model for measuring spatial access over healthcare networks

The view that universal health care is critical for dealing with both acute health issues and promoting general care of people is widely accepted. Right to use is critical for public health decision makers, covering various dimensions such as accessibility,

availability, affordability, accommodation, and acceptability (Li *et al.*, 2015). This approach focused on accessibility and affordability with spatial access models for patients and services that are located within a health network. In health service delivery, patients are classified as nodes of demand, while healthcare professionals are considered nodes of supply. An arc connects them if the healthcare professional is in a position to serve the patient (Wang, 2012).

This system was developed to estimate how many people would have access to the resource if the community has the resources required for it and the required population and distance are taken into consideration. Realized access means resources that are actually being used, which is influenced by a variety of things such as financial constraints, behavioral patterns, and other variables (Li, Serban & Swann, 2015).

The Optimization model's objectives include capturing a patient's know-how rather apart and avoids overestimating patient demand and capturing of system effects due to change based on congestion, it also provide more elements of access than traditional catchment methods (Li *et al.*, 2015). Optimization models have been used in healthcare decision-making and service research to determine the optimal location for a new clinic, to ensure that resource locations are sufficient to meet demand across a network, to route nurses for home health services, to improve health outcomes among communities, and to evaluate policies for pandemic influenza, breast cancer, and HIV across a network, among other things. Wang (2017) discussed many instances in which optimization models could be used to enhance network access or operation (Serban, 2015). Despite being a widely used model, there still lacks adequate documentation its role in decongestion in a comprehensive manner.

2.3.6 Outreach Model

Outreach services are one of the models to augment access to health workers and to enhance overall retention lower tier levels (Ed *et al.*, 2015). Better mobilization of hospital based staff move to remote areas is a stratagem to improve access to health to the population in remote and rural areas. In resource constrained settings, outreaches have the potential of reaching a vast majority of proper in their villages. Outreach services increasing becoming prevalent across regions. However, there are no clear definitions or models of outreach services followed across Kenya and therefore lack standardization.

A significant portion of the studies reviewed largely describe the services provided to the population. As such, it renders it difficult to analyze the full impact of the outreach service delivery models in the community in relation to referral to higher tier facilities. From available information, it is difficult to account for referrals made to both PHC and referral facilities (Shin, Kim & Kang, 2020).

On the plus side Ed *et al.*, (2015) notes that wide variety of players can offer outreach services: including hospitals or health institutions, professional boards, private companies, nongovernmental organizations or government agencies. The groups of health experts participating range from one strategy to the next, and modalities to organize them also contrast with regards to voluntarism or incentivized (Loukaitou-Sideris & Mukhija, 2020).

2.3.7 Tele-health Model

Tele-health model serves as a leading tool for increasing augments specialty care for patients without the hassle of traveling to distant referral hospitals (Bouamrane, Osbourne & Mair, 2011, May). Patients attending PHC facilities may need advanced care than primary care providers may be able to offer, however their access of the

specialists may be prohibited due to physician referral, geographic location, and lack of adequate insurance. In addition, studies have revealed that specialists are mostly based in urban set-ups (Moyo and Madziyire, 2020). The number of specialists also tends to be lower compared to general physicians and other primary care providers. As opposed to staffing remote PHC facilities with specialty personnel, tele-health connects specialists with local patients on virtual platform. As result, it widens remote patients' access to specialty care with minimal need for referral. Tele-health has many benefits with regards to better diagnoses and suitable care plans in addition to sharable diagnostic images and procures (Gadenz *et al.*, 2021).

E-consultation encompasses the utilization of web-based programs or shared electronic medical records which come at a cost implication. Among other obstacles, digital barriers including connectivity and data budget, unaffordability of smartphones, delayed feedback on short messaging services particularly especially undelivered messages coupled with minimal computer skills are major barriers to successful e-health. In Zimbabwe reported poor internet connectivity, expensive internet and illiteracy among its senior healthcare workers (Moyo and Madziyire, 2020). A Nigerian study reported lack of airtime for phone calls and text messages not being delivered on time hindering effective communication between PHC personnel and Specialists.

2.3.8 Mobile Clinic Model

Mobile Health Clinics (MHCs) are an advanced model of healthcare delivery provision that breach health inequalities in susceptible and hard to reach communities and populations. Provision of preventative health care services such as screenings, and introducing chronic disease managements have been documented by MHCs. Ease of access of quality healthcare strongly associate with social determinants of health

including race, socioeconomic standing, living conditions as well as level of education (Bravema, Egerter & Williams, 2011).

World Health Organization (2013) documented disparities in health access to be socially and economically motivated among underprivileged groups whose determinants of health are always feeble. MHCs express a sense of perceptibility and convenience that disregard many logistical obstacles to conventional forms of healthcare, including transportation costs (Muriuki, & Muriuki, 2016), difficulties making appointments, prolonged waiting times and multifaceted organizational processes thereby facilitating and uplifting vulnerable populations to receive the needful health services (Abdel *et al.*, 2016).

MHCs have the possibility to provide an array of cost-savings gains to the healthcare system, by inducing prompt patient care initiation, cultivating patients' capability to self-manage their conditions, preventing emergency room visits and self-referral (Muriuki, & Muriuki, 2016). The strengths of MHCs notwithstanding, they do face challenges associated with heightened fragmentation of care, financing, and restraints of space and clinic structure and limitations of continuity of care (Abdel-Aleem *et al.*, 2016). Most of MCHs are not fully integrated into the healthcare system and thus involve vast connections with nearby hospitals in order to offer quality specialty clinics, ancillary services, laboratories and pharmacies to ensure acceptable care is provided. Many MHCs have faced problems in tracking successful patient referrals. Acquisition and maintenance of appropriate vehicles is also hence sustainability issues (Hill *et al.*, 2014).

2.4 Models Applications, Strengths and Weaknesses

Table 2.1: Models Applications, Strengths and Weaknesses

Model	Application	Strengths	Limitations
Appointment system (Akinode and Oloruntoba, 2017).	Scheduling patients	Reduces clinical errors and the frequency of dissatisfied patients. The model has been widely used to minimize patient wait times and waiting room congestion, and it has the capacity to develop access to medical resources thus reducing expenses in addition it lowers health practitioners and patient frustration.	Does not fix self-referral problems
Patient flow (Abdelrahman <i>et al.</i> , 2015)	Managing the movement of patients through a hospital's different departments	It enhances clinical safety and alleviates workers strain. It is important in accomplishment of application of a national emergency care access standard.	Concentrate mostly on patient traffic, oblivious to patient overcrowding.
Patient referral(Kenya health care system 2005)	When referring patients to healthcare facilities	Ensures the proper flow of medication at the subsequent stage	Does not ensure the procedure is followed when patients are transferred from one stage to another.
Optimization Model for measuring spatial access over healthcare networks (Swann 2016).	Administration of healthcare networks.	This paradigm concentrated on spatial access models for patients and services in a health network, thus addressing accessibility and affordability.	The system placed a premium on usability and availability, while glossing over some dimensions of affordability.
Mobile clinic model (Abdel-Aleem <i>et al.</i> , 2016).	Provide health care services close to the community	Its solves issues like difficulties in making appointments, long waiting times in hospital	space and clinic structure is not adequate to cater for all required facilities in a hospital set up
Tele –health model (Gadenz <i>et al.</i> , 2021).	connects specialists with local patients on virtual platform	it widens remote patients' access to specialty care with minimal need for referral	Poor internet connectivity Expensive to maintain
Outreach model (Ed <i>et al.</i> , (2015)	Providing healthcare services in remote areas occasionally	Promotes health care accessibility	It difficult to make patient follow ups, It cannot cover the entire communities health needs

2.5 Summary of Gaps

The ballooning number of self-referral patients to referral hospitals stems from a number of factors. Social and demographic factors, PHC facilities inadequacies with regards to essential services such functional labs and adequately stocked pharmacies and prolonged waiting times; have all been cited to be promoting self-referral. Lack of utilization of digital technology, poor internet connectivity and affordability compromises continuity of care thus lack of from lower tier facilities to referral ones hindering patients follow up. As a result, an all-inclusive model that tackles congestion problems is required.

2.6 Theoretical Model

This study modeled patients' inclination for higher tier facilities behavior on the foundation of one broad theory of behavior: the theory of reasoned action, (Ajzen, & Fishbein, 1977). As such, the study borrowed from a theory of reasoned behavior; a concept suggested by Icek Ajzen to advance on the analytical power of the theory of reasoned action by identified behavioral control. It asserts that patients behave the way they do because of reasoned action. This theory informed my choice of objectives which intensely examined the extent to which the long waiting times, availability of drugs and lab services or lack thereof in the lower level health facilities guided the ultimate action by the patient to skip PHC facilities in favour of referral hospitals. It stated that the drive to seek health care at a higher level health facility is driven by the belief that the state of the infrastructure is better hence they stand a better chance of receiving quality medical care. The study does not capture the role of supervising organization under this model. The model which guided the variables under study is well described in the diagram below.

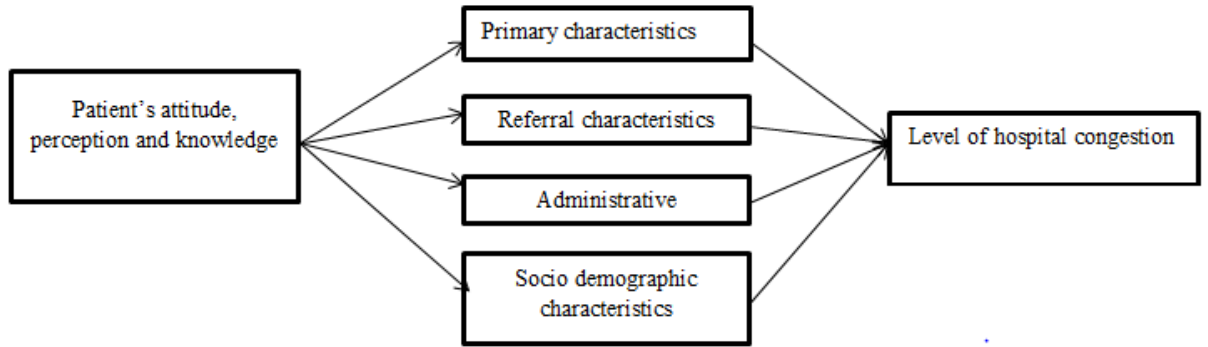


Figure 2.2; Theoretical Model

2.7 Conceptual Framework

The existing referral hospital decongestion models have various shortcomings including diminished understanding among service users and providers; patient wait times and shortage of medical staff. Further constraints documented with regards to frequent drug stock outs, amenities, and equipment; insufficient communication tools; and a lack of incorporation of electronic health records (Donnell *et al.*, 2016). Most PHC facilities do not have computers or internet for electronic data storage to enhance continuity of care and sharing of patient data electronically. The study adopted an enhanced patient referral model for decongesting self-referrals to referral hospitals. Using the developed model, patients will easily be able to understand guideline for seeking healthcare services, hence helping address waiting time at referral health facilities, shortage of medical staffs and amenities. Depending on the nature of illness, it is expected that patients will be updated on referral guidelines promoting personalized diagnosis and curative recommendations, hence addressing quality of care and equipment unavailability issues (Abere, Atnafu & Mulu, 2021). Moreover, digital services such as online stores can provide avenues for drug ordering from anywhere on the globe, hence countering the drug unavailability problem.

Hospital set ups seem to be more focused on disease specific paradigms as opposed to age and sex determinants of healthcare seeking behaviors. However, investigations have revealed that gender and age influence a community's approach to healthcare seeking. As such, focusing on demographic characteristics was necessary to show how men and women sought referral healthcare services for proper modeling going forward. For PHC characteristics, lack of awareness among service users, long waiting and inadequacies in communication potentially lead to patient referring themselves even after receiving all services thereby contributing higher levels of congestion at KTRCH

secondary to prolonged waiting time, short consultation time and dissatisfaction. Referral facility characteristics such availability of advanced lab services and necessary medication coupled with administrative paradigms such as availability of IEC materials to guide the referral process from lower tier facilities contributed to higher levels of hospital congestion.

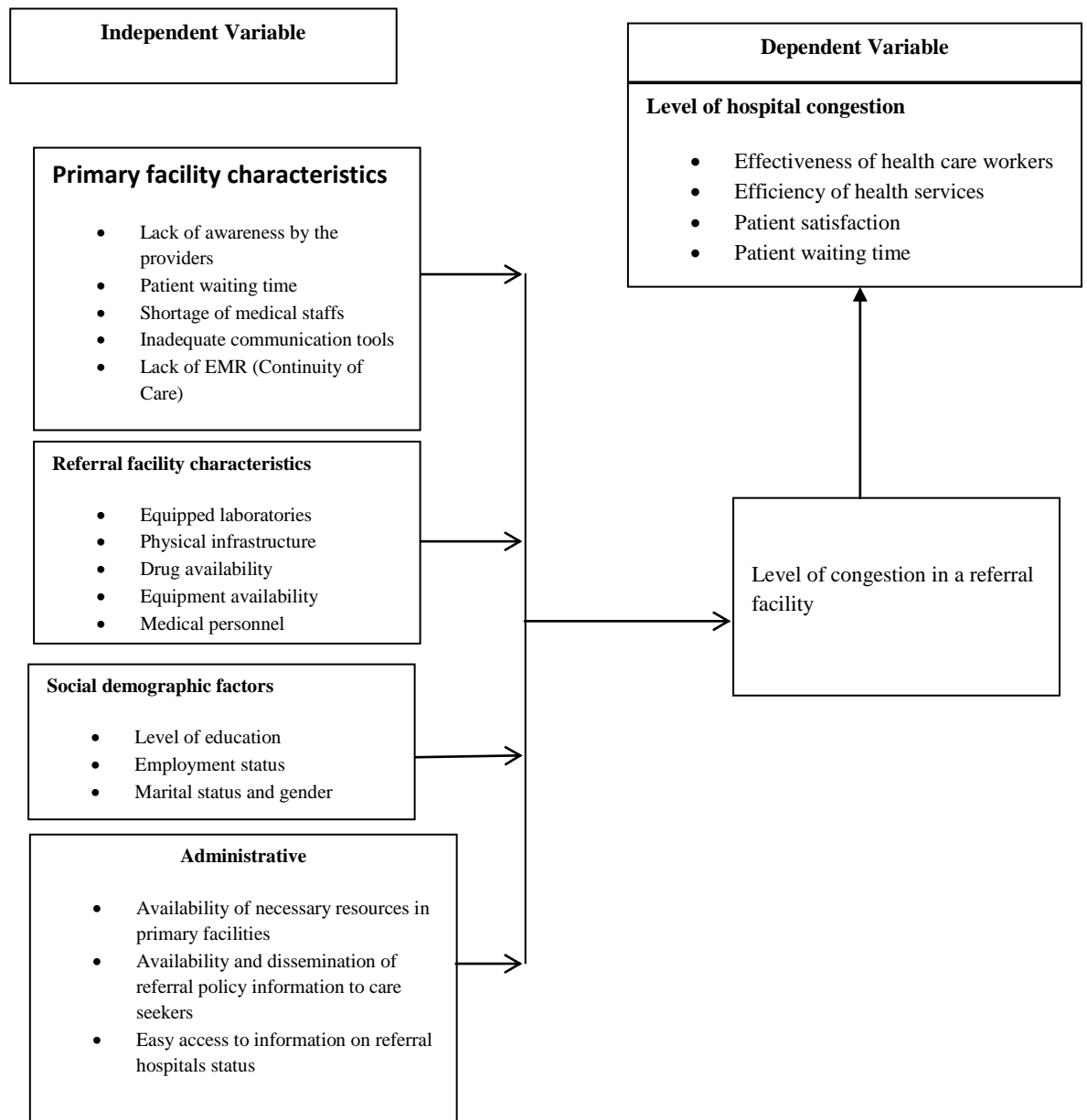


Figure 2.3: Conceptual Model

Source: Researcher, (2019)

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter accounts for research design, study population, and the sample size involved. Additionally, it gives description for data collection process, interpretation, as well as test tools that were used in the study. At the conclusion of this chapter, the effectiveness and consistency of tools and ethical considerations were discussed.

3.2 Research Design

A descriptive analytical research design was adopted. The study design ensured that the results and findings presented were based on data collected at one point in time. It is also analytical because inferential statistics involved compared various characteristics of the study population (Omar, 2015). This design is justified as it described the current situation and established if there was a relationship between demographic factors, PHC variables and level of hospital congestion.

3.3 Target Population

A target population is the complete group of subjects from which a study makes inferences (Blumberg, Cooper & Schindler, 2014). It is the whole group of objects / subjects in which the study is interested to generalize the research outcomes and conclusions. Patients who visited the outpatient department at Kisii Teaching and Referral Hospital were recruited for the study.

3.4 Sample Size and Sampling Technique

According to Singh & Masuku (2014), a sample means a number of objects to be chosen from the group. It should accomplish the requirements of effectiveness, portrayal and consistency. Sampling must be appropriate if reliable and valid inferences are to be made. Purposive sampling was used to select KTRCH, it one of the largest facilities and serves patients with neighbouring countries of Narok, Nyamira and Homabay. According to the DHIS, 24158 patients visited KTRH in quarter three (Oct-Dec 2019); of which 10350 were adults. An average 345 patients visited KTRH daily

for that quarter. This figure was regarded as the study population for the study. The sample size was determined using the following statistical computation as outlined by Ryan, (2013) ;

$$n = N/(1 + N(\varepsilon^2))$$

$$n = 345/(1 + 345(0.05^2))$$

$$n = 345/(1 + 345(0.0025))$$

$$n = \frac{345}{1 + 0.9}$$

$$n = 182$$

Where;

n=sample size

N= population under study

ε =Margin error

3.5 Research Instruments

Questionnaires were distributed to the respondents in the sector. Four parts were included in the questionnaire. The first part of questionnaire was an overview, in which the intent of the questionnaire was explained, emphasizing that the data collected was used purely for academic purposes. Additionally, it clarified how to react to the questions eliciting basic information about the participants and the government hospital. The remaining parts included questions designed to elicit information about the factors that influence self-referral among patients to referral hospitals.

3.5.1 Piloting of the Research Instrument

Dworkin (2012) contend that the idea of saturation is the most notable factor to consider when considering sample size decisions in studies. Saturation is described by many as the point at which the data collection process no longer yields any new or relevant data. As a result, the analysis used a sample of 16 respondents percent of the

sample) who did not partake in the final data gathering process. As such, a pilot questionnaire was distributed to establish the validity to a group of 16 respondents with similar demographic characteristics to the final respondents chosen for convenience, with the objective of fine-tuning the questionnaire and identifying potential issues. Piloting the research instrument was accomplished by the use of the test-retest process. Some unclear questions on hospital level congestion were revised.

3.5.2 Validity of the Instrument

According to Taherdoost (2016), validity refers to the accuracy and significance of inferences drawn from study findings. To be considered legitimate, data collection instruments content must be applicable to the identified need or gap. The instrument's validity was evaluated in terms of the questionnaire's construction and material. This ensured that the questions were structured in a clear manner, that they were understandable.

3.5.3 Reliability of the Instrument

Taherdoost (2016) describes reliability as the extent to which the data collection instrument provides consistent results or data following repeated testing. This metric indicated the degree to which a study replicated. Additionally, it referred to the condition in which "the findings of a study replicated using a comparable approach". Research administered questionnaires were the primary instrument for data collection. Cronbach's alpha was run to determine reliability of the questionnaire and average value of 0.56 was attained and was considered acceptable.

3.6 Data Collection Procedure

Reconnaissance visitations were made to KTRC by the principal investigator to familiarize with the hospital set-up and seek help from the staff for smooth data collection process. The entire data collection procedure and review process took two weeks. When respondents agreed to participate in the study, the researcher

administered the questionnaire with the assistance of the OPD staff on duty while filling the questionnaire. Filled questionnaires were checked for completeness and securely stored by the principal investigator.

3.7 Data Analysis and Presentation

To address quantitative data in the form of tables and graphs, descriptive analysis techniques such as frequencies and percentages were used. The data obtained was evaluated quantitatively using the Statistical Package for Social Sciences (SPSS version 24) tool. A quantitative approach was, using both descriptive and inferential analysis, and the p-value was to quantify the intensity of the relation between variables.

3.8 Ethical Considerations

The researcher obtained authorization from appropriate authorities and attached letters from them to the research proposal prior to data collection assuring respondents that the research conducted was solely for academic purposes. The researcher's methods and procedures were based on mutual informed consent, and the researcher also ensured that the findings were generalized and not unique to any one person. The researcher sought relevant and approval letters from the University, National Commission for Science, Technology and Innovation, Kisii Teaching and Referral Hospital for progression to data collection.

CHAPTER FOUR: RESULTS

4.1 Introduction

This chapter focused on presentation of data findings, interpretations and discussions.

The study as well provided regression and correlation analysis. The study findings are based on the factors influencing patient self-referrals to referral hospitals and challenges facing current referral frameworks: a case of Kisii Teaching and Referral Hospital in Kisii County.

4.2 Response Rate

The study sampled 182 respondents whereby 172 questionnaires were fully filled and returned for analysis. A hundred and seventy two questionnaires represented 94.2% response rate.

4.3 Socio-demographic Characteristics

4.3.1 Classification by Gender

The study sought to determine the respondent's gender. The study findings are as presented below;-

The study results showed that 67% of the respondents were male whereas 33% of the respondents were female. This implies that both genders were fairly represented in the study.

4.3.2 Respondents Age Bracket

The researchers were interested to find out the age bracket of the respondents. The study findings were as tabulated in table 4.1;

Table 4.1: Respondents Age Group

Age Bracket	Frequency	Percentage
Under 29 years	38	22
30 – 39 years	62	36
40 – 49 years	50	29
Above 50 years	22	13
Total	172	100

The study results showed that 36% of the respondents were between 30 – 39 years; 29% of the respondents were aged between 40-49 years, 22% of the respondents indicated under 29 years and 13% of the respondents indicated above 50 years.

4.3.3 Respondents Marital Status

The respondents were asked to indicate their marital status and results as shown table 4.2;-

Table 4.2: Respondents Marital Status

Marital Status	Frequency	Percentage
Single	57	33
Separated	15	9
Widowed	21	12
Married	79	46
Total	172	100

The study findings revealed that 46% of the respondents were married, 33% of the respondents were single, 12% of the respondents were widowed and 9% of the respondents were separated. The study findings indicated that majority of the findings indicated that they were married.

4.3.4 Respondents Academic Qualification

The respondents were asked to indicate their academic qualification. The respondents results were presented table 4.3;-

Table 4.3: Respondents Academic Qualification

Academic Qualification	Frequency	Percentage
Primary	14	8
Secondary	89	52
Tertiary	65	38
Total	172	100

According to the respondent's academic qualification level, revealed that 52% of the respondents indicated they had reached secondary academic level, 38% of the respondents indicated they had tertiary, 8% of the respondents indicated they had completed their primary level of education. This shows that majority of the respondents were learned and could provide appropriate results in regards to the subject under investigation.

4.3.5 Respondents Referred From Facility

The respondents were required to provide their opinion on how they determined their referral facility and the findings are shown in figure 4.1;-

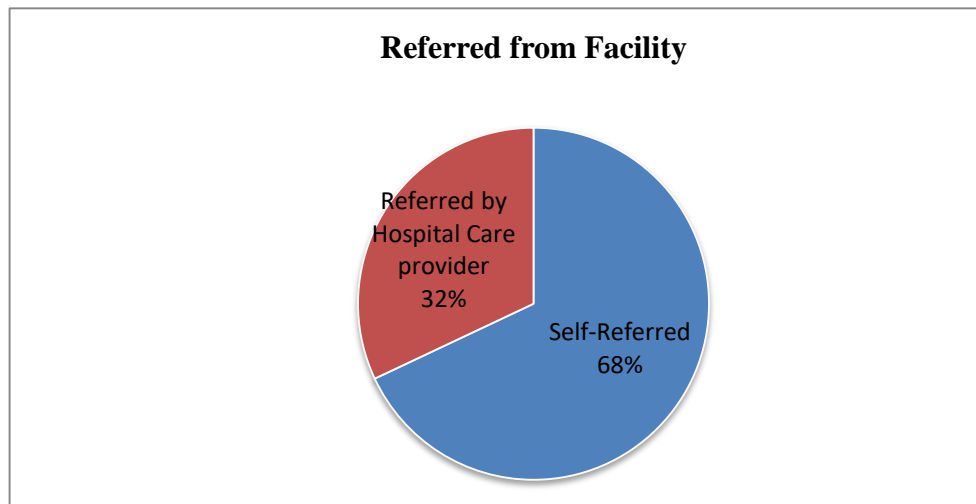


Figure 4.1: Respondents Referred From Facility

The study findings highlighted that 68% of the respondents indicated that they self-referred themselves and 32% of the respondents indicated they were referred by their healthcare provider.

4.3.6 Respondents Occupation Status

The respondents were required to provide their occupation status. The results are as shown in figure 4.2;-

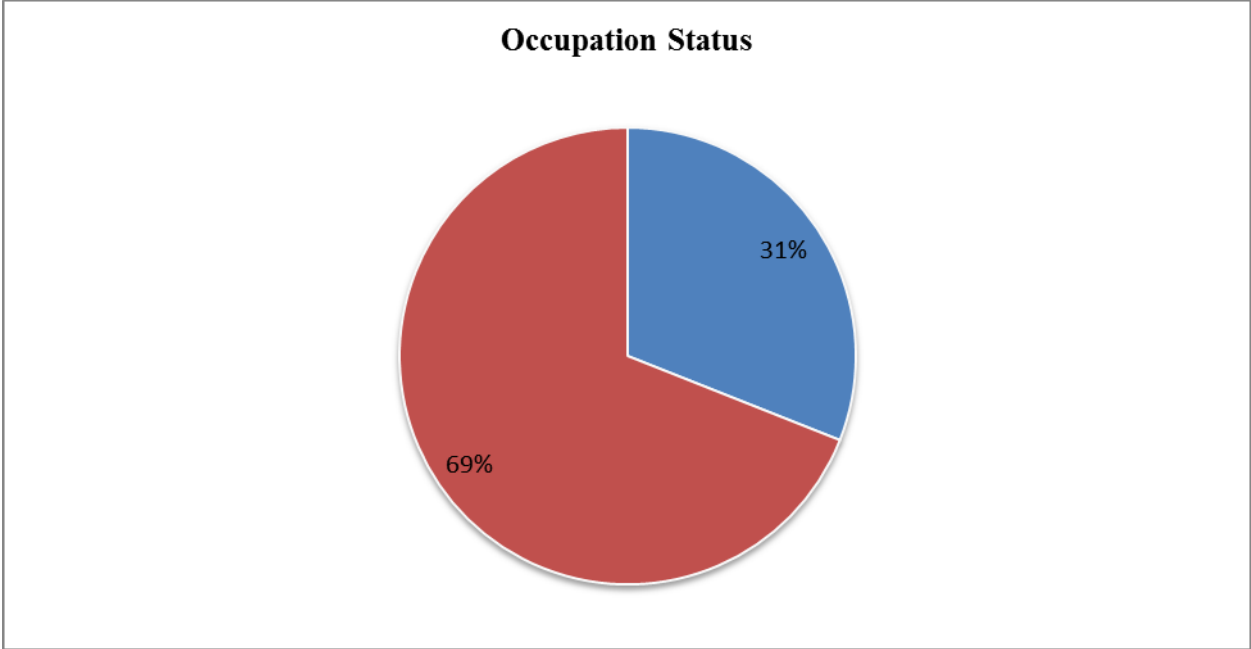


Figure 4.2: *Respondents Occupation Status*
Figure 4.3 indicates that 69% of the respondents were unemployed while 31% of the respondents were employed.

4.4 Primary Health Facility Characteristics

The study focused on identifying the primary health facility characteristics and the findings are as presented in table 4.4.

Table 4.4: *Primary Health Facility Characteristics*

Statements	NO	YES	Mean	St.D
Fare to PHC affordable	78 45%	94 55%	1.68	.499
PHC always open and accessible	123 72%	49 28%	1.72	.453
Waiting time is short at the PHC	146 85%	26 15%	1.16	.365
Drugs are always available in PHC	158 92%	14 8%	1.08	.274
Lab test available at PHC	138 80%	34 20%	1.80	.399
Primary Health Centre is clean	70 41%	102 59%	1.41	.493
I receive all services at the PHC	98 57%	74 43%	1.68	.468
Provider gives required information at the PHC	67 39%	105 61%	1.62	.488

In Table 4.4 the study findings established that fare to PHC affordable affected access to primary healthcare whereby it had a mean of 1.68 and a standard deviation of 0.499. This was attributed by the fact that the patients usually access a referral facility that they can easily access without incurring any extra costs. The patients indicated PHC were always open and accessible had a mean of 1.72 and a standard deviation of 0.453. This shows that majority of the respondents could not easily access their primary health facility. The waiting time was found to be long at the PHC whereby it was denoted by a

mean of 1.16 and a standard deviation of 0.365. This finding confirms that the patients self- refer because long waiting time in the PHC.

4.5 Referral Facility Characteristics

The study focused on determining the referral facility characteristics. The study results are as presented in table 4.5;-

Table 4.5: *Referral Facility Characteristics*

Statements	NO	YES	Mean	St. D
It cost me little fare to come to this referral facility	109 63%	63 37%	1.37	.483
Availability of the health care provider I want guides my decision on which facility to visit	60 35%	112 65%	1.14	.348
I have confidence with providers working at the referral facility	19 11%	153 89%	1.11	.314
Waiting time at this facility is short	94 55%	78 45%	1.66	.8042
Availability of medicine attracts me to this referral facility	24 14%	148 86%	1.14	.348
Infrastructure attracts me to this referral facility	38 22%	134 78%	1.22	.412
I am attracted to quality service in this facility	51 30%	121 70%	1.30	.458
I got a lab order that brought me to this referral facility	98 57%	74 43%	1.68	.468

Table 4.5 shows that on the statement that the respondents indicated that it cost them little fare to access the referral hospitals. A considerable majority (63.0%) did not incur any cost of transportation while the remaining 37.0% lived within walking distance of KTRH. On the availability of provider at the referral facility at all times, 65.0% of respondents intimated that it was a major consideration in opting for referral hospitals over PHC facilities whereas the remaining 35.0% noted that it was not the core reason for their choice of KTRH over peripheral facilities. .

Majority of the respondents had confidence in the health care providers at the referral facility whereby it was noted that 89.0% of the study population agreed with that statement. Only 11.0% of the study population gave no consideration to patients' self-perceived prowess of healthcare providers at referral hospitals compared to that at PHC facilities. , On the factor that waiting time, longer waiting times discouraged did not deter 55.0% of the study population to self-refer while the remaining 45.0% noted that they opted for KTRH because of shorter waiting periods of time.

Availability of medicine attracts the respondents to the referral facility had a recorded 86.0% while the remaining 14.0% did not take this factor into consideration. On the statement that infrastructure attracts the respondents to the referral facility 78% attributed better infrastructure translated to superior services while the remaining 22.0% thought otherwise. On the statement that the respondents are attracted to the quality service in the referral facility 121 patients accounting for 70% of the study population indicated that it was a major decision factor while only 30.0% did not consider it as the primary reason for their choice of KTRH over PHC facilities. Referrals for lab and other diagnostics procedures accounted for 43% of the study population.

4.6 Administrative

Table 4.6: Administrative

Statements	NO	YES	Mean	St. D
D1: Is this your first time seeking health services in this facility? If No answer D3 and if yes answer the next question	133 77%	39 23%	1.77	.420
D2: Did you know that you are supposed to seek for health services from the primary health care first?	137 80%	35 20%	1.36	.482
D3: Have you attended the primary health care facility before?	149 87%	23 13%	1.28	.486
D4: Did you <i>get all</i> the services at the primary health care facility? If No, answer question D5	110 64%	62 36%	1.72	.450
D5: Were you referred by the health care provider to this facility? If yes answer question D6?	103 60%	69 40%	1.13	.336
D6: Were you given a referral letter to the referring facility?	105 61%	67 39%	1.91	.290
D7: When you arrived at the referral facility, did the health care provider tell you that they were aware about your referral?	97 56%	75 44%	2.00	.000
D8: When you seek for health care services in the primary health care, are you normally advised on what you can do in case you want to seek health services at the referral hospital? If No answer the next question	109 63%	63 37%	1.96	.288
D: At the primary health care, are there posters giving guidelines on how a patients are supposed to seek health services in referral hospitals?	115 67%	57 33%	1.90	.297

Table 4.6 shows that on the statement as to whether it was the first time to seek health services in the facility 23% acknowledged that to have been true while remaining 77.0% said it was a revisit. Only 20.0% had visited PHC level facilities before proceeding to KTRH while the larger segment of 80.0% was walk-ins. The 20.0% of respondents who had visited PHC facilities, only 62 had received all the services but still proceeded

for higher tier facilities. The remaining 110, who accounted for 80% missed either diagnostic tests or drugs compelling them to visit KTRH. Those who were referred by PHC physicians accounted for 40 percent with the remaining 60% referring themselves with a significant majority 39% showing up without referral letters. With regards to physician-patient interaction time, 75.5% of the respondents noted that it was long while the remaining 24.5% regarded it acceptably short. Satisfaction was also examined to which 76.2% reported to be dissatisfied with whole process. Only 23.8% of the respondents reported to have been satisfied with the entire self-referral process.

4.7 Relationship Between Factors (socio-demographic, PHC Characteristics, Referral Facility Characteristics and Level of Congestion)

Analysis of level of congestion (waiting time, time during in consultation with physician and satisfaction) was done with respect to socio-demographic, PHC characteristics, referral facility characteristics and administrative aspects.

4.7.1 Relationship Socio-Demographic Characteristics and Levels of Congestion

Table 4.7. Chi square Test for Selected Socio-demographic Characteristics in Relation to Level of Congestion

	Cramer's V	df	P.value
Age vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.76	1	0.407
Consultation Time	0.31	1	0.03
Satisfaction	0.70	1	0.683
Sex vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.227	1	0.310
Consultation Time	0.174	1	0.155
Satisfaction	0.152	2	0.65
Marital status vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.147	3	0.295
Consultation Time	0.262	3	0.008
Satisfaction	0.046	3	0.949
Level of Education vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.114	1	0.335
Consultation Time	0.202	1	0.032
Satisfaction	0.239	1	0.374

There was a positive relationship between the level of congestion and the age, sex and marital status

With a P value of 0.683 and 0.949, it showed that age and marital status were feebly related to higher levels satisfaction. The relation between consultation time and age,

marital status and level of education showed positive strong relationships with P values of 0.008 and 0.032

4.7.2 Relationship Selected PHC Characteristics and Levels of Congestion

Table 4.8; Chi square Test for Selected PHC Characteristics in Relation to Level of Congestion

	Cramer's V	df	P.value
PHC open and Accessible vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.105	1	0.167
Consultation Time	0.01	1	0.989
Satisfaction	0.10	1	0.001
Drugs available vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.067	1	0.377
Consultation Time	0.021	1	0.786
Satisfaction	0.033	2	0.664
Lab Tests vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.033	3	0.664
Consultation Time	0.010	3	0.893
Satisfaction	0.133	3	0.80
Waiting time at PHC vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction)			
Waiting time	0.069	1	0.364
Consultation Time	0.111	1	0.147
Satisfaction	0.091	1	0.833

There was a positive relationship between the level of congestion and the PHC facility characteristics

Availability of drugs, lab tests and waiting time at PHC showed a weak positive correlation with congestion, particularly satisfaction recording P values of 0.664, 0.80 and 0.833. While opening PHC on time was strongly related to satisfaction with P-valued at 0.001.

4.7.3 Relationship Administrative Referral Facility Characteristics and Levels of Congestion

Table 4.9; *Chi square Test for Selected Referral Facility Characteristics in Relation to Level of Congestion*

	Cramer's V	df	P.value
No Referral Letter vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction			
Waiting time	0.061	1	0.609
Consultation Time	0.140	1	0.300
Satisfaction	0.00	1	0.100
Referral Facility Unaware of Referral Letter vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction			
Waiting time	0.227	1	0.310
Consultation Time	0.174	1	0.155
Satisfaction	0.152	2	0.065
IEC and Posters on Referrals at Referral Facility vs Level of Congestion (waiting time, time during in consultation with physician and satisfaction			
Waiting time	0.214	3	0.051
Consultation Time	0.239	3	0.030
Satisfaction	0.138	3	0.210

There was a significant positive relationship between the level of congestion and the administrative characteristics

For the case of facility staff being unaware of referral letters presented by patients, chi square analysis a positive weak correlation of P=0.310 and Cramer's V of 0.214 while the relationship was most significant to satisfaction at P=0.030. Having a referral letter did not do the respondents any good with regards to because a huge majority reported not being satisfied with a P= 0.210. A Chi square analysis to relate administrative characteristics level of congestion showed a positive significant relationship between

level of congestions (waiting time and duration during consultation with P values of 0.051, and 0.030.

4.7.4 Linear Regression Analyses of Selected Indicators (Determination of Coefficients)

Table 4.10; *Determination of Coefficients*

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 (Constant)	.594	.606		.979	.333
Demographic Characteristics (MS)	.062	.056	.173	1.113	.272
Waiting Time (PHC characteristics)	.053	.117	.071	.458	.649
Referral Facility Characteristics	.194	.137	.219	1.413	.166

a. Dependent Variable: Level of Congestion (Waiting time)

b. Socio-demographic, PHC characteristics and Referral Facility Characteristics

The regression equation is therefore;

$$Y = 0.594 + 0.062 X_1 + 0.053 X_2 + 0.194 X_4$$

The regression model above noted that taking all factors into consideration (Socio-demographic factors, primary health facility characteristics and referral facility characteristics) to be constant zero, the level of hospital congestion will be an index of 0.594. The study results taking into consideration of the independent variables to be zero then a units increase in socio-demographic factors can lead to an increase of 0.062 in the scores of level of hospital congestion; a unit increase in primary health facility characteristics of 0.53 can lead to an increase in hospital congestion and lastly a unit increase of 0.194 by referral facility characteristics can lead to an increase in hospital congestion in referral hospitals. This implies that the three study variables had a strong positive relationship to the dependent variable which was level of hospital congestion.

CHAPTER FIVE: DISCUSSION

5.1 Socio-demographic Characteristics

5.1.1. Classification by Sex

Differentials have been established to exist in the manner and frequency which men and women seek healthcare services (Wang *et al.*, 2013). In a systematic review carried out in the UK, various studies spanning for over two decades revealed that fewer men sought consultation from their female counterparts (Hunt *et al.*, 2011). In a gender-specific difference systematic review of 42 studies examining healthcare seeking among cancer patients across the America, Rana *et al.* (2020) described men as unwilling users of healthcare services while women termed as frequent users. Continental demographics taken into account, an African study among TB patients in Soweto showed that fewer men attended a required clinic which was half the number of women recruited for the study despite the burden of TB being 1.6 times higher in men than women (Makgopa, Cele & Mokgatle, 2022). In contrast, the current study showed 67% of the respondents being male while were females 33%.

5.1.2 Classification by Age

Hospital set ups seem to be more focused on disease specific paradigms as opposed to age and sex determinants of healthcare seeking behaviors. However, investigations have revealed that gender and age influence a community's approach to healthcare

seeking (Lim *et al.*, 2019). A study carried out in Limpopo revealed that 59% patients between the age of 20-39 years had self-referred themselves to referral hospitals in search of advanced medical procedures while another descriptive cross sectional study revealed that majority of their self-referrals 79% were below the age of 45. In the current study, the results showed that 36% of the respondents were between 30 – 39 years; 29% of the respondents were aged between 40-49 years, 22% of the respondents indicated below 29 years and 13% of the respondents indicated above 50 years. As such healthcare referral models need to take into account age specific needs.

5.1.3 Classification by Marital Status

Ågård *et al.* (2015) note that spouse perform critical roles in fostering health behaviours such encouraging seeking healthcare services early. Marital status can as well influences the families' economic status which in turn deprives or accords family resources necessary for affording healthcare. The demographic findings of the current study showed that majority 46% of revealed that of the respondents seeking referral services at KTRH were married, 33% of the respondents were single. This means that this is the population that is likely to take advantage of their spouses in terms of positive health behaviour such timely healthcare seeking.

5.1.4 Classification by Level of Education

Studies have consistently shown that educational attainment has a strong effect on positive health behaviours and attitudes. People with higher educational attainment also tend to earn higher incomes that confer them advantages of seeking healthcare early before diseases require referral. On the other hand, individuals with higher incomes will tend to seek advanced healthcare services that can only be availed in higher tier facilities (Visser *et al.*, 2015). In the current study revealed that 52% of the respondents indicated they had reached secondary academic level, 38% of the respondents indicated

they had tertiary education levels which inferred that the respondents need for healthcare referral services.

5.1.5. Patients Referred by Physician Vs Self-referral Patients

In pursuit of constitutional rights, it is on logical for individuals to seek the highest attainable standards of healthcare services. Various studies have reported varying statistics of self-referrals across the globe. In study examining factors for self-referrals among patients attending OPD in North West Ethiopia, 63.9% of 443 respondents reported to have self-referred themselves while the remaining 36.1% report to have been referred by physicians (Abere, Atnafu & Mulu, 2021). Another study reported a self-referral percentage of 4.7%-8.5% in central Africa (Forrest *et al.*, 2011). Wolk *et al* (2015) argued that 2/3 of patients seek for treatment in Rural District Hospitals by pass lower tier facilities. Padmore (2017) similarly argued that majority of self-referrals are based on peer induced factors which make individuals to bypass the lower level health services in favor of the higher level ones which outsets the health issue. The current study recorded 68% self-referred patients against 32% physician referred respondents.

5.1.6. Occupation

Generally, higher social economic status secondary to employment promotes prestige, power, and economic welfare which have been used to assess people's economic and sociological ranking. People with superior economic rankings tend to consume refined good and services; healthcare services are no exception (Li *et al.*, 2020). In most cases, referral hospitals may act as one stop shop for all the services patients may need. This compels patients presenting medical problems that may have been managed at lower tier levels to show up at referral hospitals. In the current, 69% of the respondents were unemployed while 31% of the respondents were employed thereby not conforming matching income to superior referral health services. The study, however, agreed with

Lewis *et al* (2013) who noted economic stability and employment status to be among leading factors influencing choice of place of delivery for women in Kenya.

5.2 Primary Healthcare Characteristics

There is paucity of data regarding primary healthcare characteristics in Kenya (Ojaka, Olango & Jarvis, 2014). Some of the characteristics of focus in the current study included use of bus fare to the facility: opening of PHC on time and accessibility, waiting time, availability of drugs, cleanliness of facility, availability of lab tests, and availability of all needed services and issuance of information by providers to clients. With regards to waiting time, a South African study identified shortening of waiting time as one of the factors of improving service delivery in PHC (Egbujie *et al.*, 2018). Similar observations were made by McIntyre & Chow (2020) who noted that long waiting time denotes a struggling healthcare system. In the current study, 87.2% of the respondents indicated that long waiting time was a fundamental factor their skipping of PHC facilities in favor of KTRH.

An Ethiopian study showed accessing transport with ease, availability of lab services, availability of recommended medication and other diagnostic procedures and getting information about the referral system from physicians at the lower tier facilities affected patient self-referral (Abere, Atnafu & Mulu, 2021). Oslislo *et al.*, 2019) opined that the accessibility of drugs and/or equipment had a significant effect on choice facility at different levels. Absence of certain drugs or advanced equipment prompted self-referrals to higher level facilities, especially during the diagnostic stage, when certain advanced equipment is deemed necessary. The findings were similar to Abdi (2015) who stated that patients' decision to self-refer was influenced by a lack shortage of drugs and laboratory services at the primary level of care.

5.3 Referral Facility Characteristics

Various aspects of referral facilities were examined including cost of transportation, availability of specialized staff in referral healthcare facilities, confidence in referral facility staff, waiting time and availability of medicine among other were examined.

With regards to the cost of transportation, a Tanzanian study intimated that patients travelled for long distances in pursuit of superior quality of life with little to no regard of cost of transportation (Kahabuka *et al.*, 2011). A systematic data synthesis of 21 studies yielded a positive association between higher costs of healthcare with improved quality of care while another 18 reported of no improved quality of care secondary to additional cost (Hussey, Wertheimer & Mehrotra, 2013). Similarly, (Okoli *et al.*, 2017) established that a preference for high-quality service and professional workers were frequently cited as reasons for presenting to higher levels of treatment. Majority of the patients agreed that bus fare and general cost of healthcare did influence their choice of KTRH while only 37.0% had incurred cost and still opted to utilize the facility's services over peripheral ones.

The World Health Organization (WHO) (2018) noted an alarming low number of healthcare personnel in Sub-Saharan Africa in which the estimation indicated over 800,000 against a rapidly burgeoning population. The situation gets worse with inequities in distribution healthcare personnel in different regions with over 80% of doctors and 60% of other healthcare practitioners preferring cities and the private sector (Asuke *et al.*, 2016). In study carried out by Ogaji & Mezie-Okoye (2017) the results revealed that inadequate medical staff led to increased self-referrals amongst patients seeking healthcare services in higher tier facilities. In the current study, the finding showed that a significant portion accounting for 65% of the study population took this factor into serious account. In addition Beache *et al.*, (2016) established that lack of specialist attending resulted to be the contributing factor in the case of self-referral which is according to the this study results.

Studies across Africa reveal that patients often wait 2-4 hours in lines of OPD facilities before seeing a physician. A Ghanaian study estimated 74.5 minute waiting time for

patients at the OPD sections while in Ethiopia waiting time of 2 hours while 4.5 waiting hours to get service was recorded in central Africa. Examining this concept was important in underscoring the need for higher numbers of HCWs both lower and higher tier facilities for fostering effective referral frameworks. In the current study, 65.0% of the patients opted for KTRH over PHC facilities for that reason. A low number of healthcare staff translates to lengthy waiting time in which Rebecca (2014) who noted that patients tend to shy off such facilities. The current finds are incongruent to such observations considering that 55.0% indicated that the waiting time at KTRHC was not short.

Infrastructure allowed the patients to seek better healthcare services thus making them to choose referral facility. This is similar to a study conducted in China by Jin *et al* (2017) found out that, availability of preferred health provider tend to play a part in patients' decision to seek care. The study revealed that with the increased availability of specialized physicians at the health facilities that dealt with Diabetes mellitus, the number of patients seeking care in those health facilities greatly increased (Wang *et al.*, 2017). This means lack of availability of lab orders highly influenced the patients' decision on choosing the referral facility. This implies that the referral facility characteristics were crucial towards making vital decision of facility referral.

The study findings by Abdi (2015) stated that the decision of the client to refer himself or herself was based on the healthcare providers' ability, assurance from the healthcare facility, the available drugs, and laboratory services among other services.

Unavailability of the drugs at the primary health facilities could have pushed the patients to seek medical care at the higher level health facilities. This finding is in agreement with a similar study conducted in five countries; Kenya, Ghana, Rwanda, Tanzania and Uganda which revealed that 18% - 41% of the primary health care centers

lacked drugs, running water and electricity (Hsia, Mbembati, Macfarlane & Kruk, 2011).

5.4 Administrative Characteristics

Patient satisfaction is considered significant measure of healthcare outcomes. SERVQUAL model has been used to measure patient satisfaction with regards to tangibles; reliability; responsiveness; assurance, and empathy. These parameters are instrumental bringing repeat clients to facilities (Mthethwa & Chabikuli, 2016).

In the current study, 23.0% of the respondents notably were repeat customers whereas the majority had visited for the first time. Determination of respondents' knowledge of how referrals work, 80% majority indicated that they did not know of the need to visit PHC facilities before proceeding to higher tier facilities. The 20% acknowledging their knowledge of utilizing PHC facilities first and still opted to skip them was attributed to patients' desire to elude time-wasting process PHC referrals to specialists or for diagnostic procedures. The delays occasioned by referral processes have necessitated pursuit of options, most particularly hospital-based quick diagnosis units for clients with inferred life-threatening disease such as cancer (Bosch *et al.*, 2014)

According to Osborn *et al.* (2015), the role of PHC ought to offer people with quality comprehensive care - ranging from promotion and prevention to treatment, rehabilitation and palliative care. Due to strained resources, sometimes PHCs fall short of meeting people's expectations. Gupta *et al.* (2017), healthcare workers at one level of a healthy system are at liberty to refer in case they have insufficient resources (drugs, equipment, skills) to address a clinical condition. In the current study, patients who had sought services in PHC before proceeding to KTRH were asked whether they had received all the services before being referred. More than 2/3 had not received all the services they needed prompting 60.0% self-referrals. The situation was compounded by

lack of communication between healthcare providers on the number of patients being referred because 56.0% reported that HCWs at the referral hospitals were oblivious of referral letters occasioning long waiting times for even emergency situations. In study Azamar-Alonso, *et al.* (2019, electronic referral (eReferral) were emphasized as it because of its potential in lowering wait times and advancing workflow efficiency.

There is paucity of literature on training or educating patients on referral systems at the PHC level and how it can potentially inform patient's choice of referral facility. In the current study, only 37.0% of the patients reported to have received some level of education regarding referrals from healthcare practitioners. Similar observations were made for the case of availability IEC materials displaying referral systems and processes at peripherals levels because only 33% reported to have seen posters guiding referrals. The finding echoed Koce *et al.* (2019) who noted that service users need knowledge of the functions of various levels of healthcare services, which could have influenced their decision to seek treatment at the secondary levels.

5.5. Relationship Between Factors (socio-demographic, PHC Characteristics, Referral Facility Characteristics and Level of Congestion)

5.5.1 Relationship between Socio-Demographic Characteristics and Levels of Congestion

According to Lim *et al.*, (2019), understanding age, sex, marital status and other socio-demographic paradigms is crucial in understanding community healthcare seeking behaviors with a view of improving healthcare utilization and health outcomes among various populations. In the current study, weak positive associations between marital status and satisfaction with P values of 0.683 and 0.949 disagreeing with the finding of the aforementioned study. On the other hand, the relation between consultation time

and age, marital status and level of education showed positive strong relationships with P values of 0.008 and 0.032.

5.5.2 Relationship between Selected PHC Characteristics and Levels of Congestion

The PHC sector is rapidly becoming relevant as a levels for population health interventions, more so in relation to marginalized regions, where the most gains in health status can be attained (Browne *et al.*, 2015). Equipping the PHC facilities with necessary departments such lab and affordable drugs is vital to avoid unwarranted referrals (Bahadori *et al.*, 2017). In the current study, a strong association was noted between levels of hospital congestion and availability of drugs and lab tests at lower tier facilities.

5.5.3 Relationship Referral Facility Characteristics and Levels of Congestion

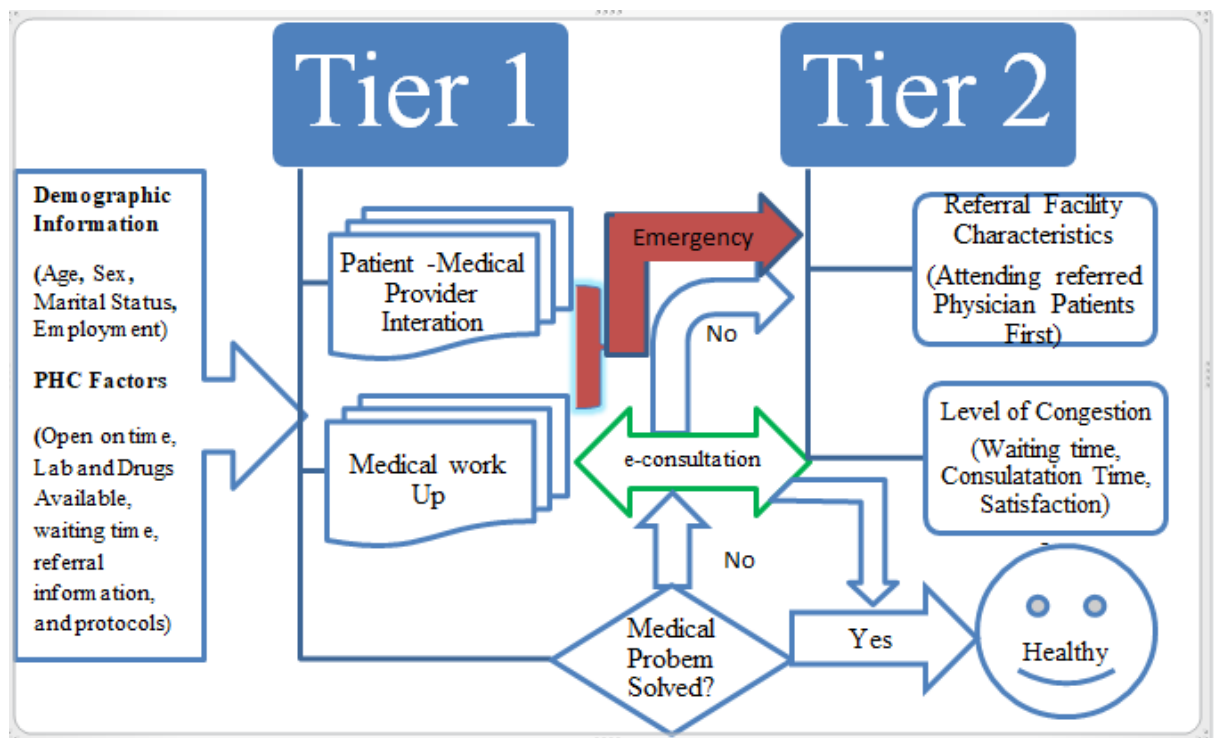
A Chi square analysis to relate administrative characteristics level of congestion showed a strong positive relationship between level of congestions (waiting time and duration during consultation with P values of 0.051 and 0.030. Although having referral letters showed a weak positive association with levels of satisfaction, a referral letter is a crucial document because it provided details summaries on the patients and their medical histories for smooth transition of care when communicated beforehand (Jiwa *et al.*, 2019). Availability of IEC materials such as posters can be instrumental in educating the public in the spirit of fighting congestions in referral hospitals. Studies have revealed that IEC materials can achieve higher levels of behavior change. IEC materials are a cost-effective method of realizing better health outcomes both clinical and public health interventions (Geleta & Deriba, 2022). The positive strong associations between IEC materials and levels of satisfaction and consultation time with P values of 0.051 and 0.030 attest to the need for their presence in every referral hospital.

5.5.4 Linear Regression Analyses of Selected Indicators

Long waiting time in PHC facilities has been known to compel patients to self-refer to other bigger facilities thereby wasting of vastly trained medical personnel’s time for minor cases (Abere, Atnafu & Mulu, 2021). Additionally, as a result of huge patient load, human and physical resources are strained to capacity, which in in turn compromises the care given to patients. A vast majority of studies Africa indicated self-referral magnitudes of 27.7%, 30.8% 33.9%, 60%, and 87% in Kenya, Mozambique, Ghana, Nigeria and Sudan (Wambui, 2013 & Yao & Agadjanian, 2018). The current study agreed to those studies by indicating 59.4% referral and level of satisfaction of self-referral patients.

5.6. Developed Decongestion Model

Figure 5.1: *Developed Model*



The finding in this study reveals that the level of congestion in the referral facilities is influenced by a host of factors namely; demographic characteristics, PHC facility characteristics and referral facility (administrative) factors. Patients resort to skipping

PHC facilities all together if their demographic needs are not by the facilities capabilities to open on time, shortening waiting times, having labs and adequate drugs. Failure of PHC to provide all services needed overburdens the next tier facilities with less complicated conditions that could have been managed at that level.

The model developed takes into account of all the variables of the study to ensure that protocol gets to be followed. All primary resources would need to be exhausted before ensuing referrals from lower tier facilities. It will however call for preparation and training of healthcare workers on the referral model. Adequate assessment of population needs and available health system capacity, a suitable referral facility, coordination with other stakeholders, established communications and transportation networks, and agreement with referrer and recipient protocols. It is crucial to emphasize that ineffective self-directed reference leads to system inefficiency and patient payment difficulties, as well as the accumulation of unnecessary costs and a dearth of comprehensive patient health care information.

CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.1 Introduction

This chapter highlighted the summary of findings, conclusions and recommendations formulated from the study findings respectively.

6.2 Summary of Findings

6.2.1 Foundation of the Current Model

The study findings established that there is a significant positive relationship between socio-demographic factors and level of congestion in a referral hospital. The study results highlighted that socio-demographic factors influenced an increase of 0.59 in the level of hospital congestion. Most respondents who self-referred were between 30 and 39 years; the majority of them were educated and were employed.

The study highlighted that there is a positive relationship between primary health facility characteristics and level of hospital decongestion. The study found out that a unit increase in primary health facility characteristics of 0.062 influenced an increase in level of hospital congestion. This is confirmed from the findings where the PHC lacked most of the services required despite the fact of it being near, taking less waiting time, availability of drugs and lab services. The study established that there was a positive relationship between referral facility characteristics and level of hospital congestion. The study findings highlighted that a unit increase of 0.19 by referral facility characteristics can lead to an increase in congestion of referral hospitals because it's well-equipped. By so doing, the study met its objectives; it examined the strengths and weaknesses of the existing models and developed a model to navigate through the problems associated with congestion in referral hospitals.

6.3 Conclusion

Based on the findings, it can be concluded that levels of congestion in referral hospitals were influenced by several significant factors. Marital status greatly influenced level of satisfaction while level of education was a major influencer of consultation time. Opening of PHCs on and availability of drugs impacted on the level of satisfaction at referral hospitals in a significant way. Laboratory tests at PHC level influenced congestion levels with regards to consultation and waiting time. Availability of IEC such as posters also had a significant influence on the levels of satisfaction.

6.4 Recommendation

1. Strengthening the abilities of lower tier facilities to provide all services with minimal waiting times is instrumental; it will ensure that patients do not skip lower tier facilities in favour of referral hospitals.
2. Displaying IEC materials such posters and communicating referral protocols are vital in both referral and lower tier facilities.
3. E-consultations before referring patients are necessary from lower tier facilities to higher facilities to ensure that PHC facilities resources are fully utilized. It will require that PHCs invest in digital healthcare equipment and network and literacy to ensure uninterrupted competent consultations.
4. Following the developed referral model, physician referred patients will need to be attended to first; given priority over those who self-referred themselves. By so doing, it will compel patients to seek services at PHC levels first.
5. The study recommends that future studies examine the obstacles to use of technology in referrals with regards to healthcare personnel's digital literacy.

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APPENDICES

Appendix I: Letter of Transmittal

LYDIA MOENGA

P.O Box 86 –

40200,

Kisii.

23rd, June 2021,

Dear Respondent,

I am a student pursuing Master of Science in Health Informatics University of Jaramogi Oginga Odinga Science and Technology. Currently, I am conducting a research study entitled: *Patient's self-referral decongestion model*

You have been chosen as my respondent to support in providing data for this research. I humbly request you to take few minutes and answer the attached questionnaire. The information you shall give will be used for academic purposes only, will be confidential. Do not write your name anywhere on the questionnaire.

For this case I request you to respond to all questions with utmost honesty.

Thank you for your participation and effort in completing the questionnaire.

Yours Sincerely,

.....

LYDIA BISIERI MOENGA

Appendix II : Informed Consent

Consent form

LYDIA MOENGA
P.O Box 86 –
40200,
Kisii.

23rd, June 2021

Dear Respondent,

I am a student pursuing Master of Science in Health Informatics University of Jaramogi Oginga Odinga Science and Technology. Currently, conducting a research study entitled: *Patient's self-referral decongestion framework for referral hospitals*

The finding will be used to support health systems in Kenya and other countries. Hence, countries, communities and individual will benefit from improved quality healthcare services. This research proposal is required to support health systems since it will generate new knowledge in this area that will direct managers in making decisions that are research based

Procedure to be followed

In this study respondents will be asked questions and informations will be recorded in the questionnaire.

Respondents will not be forced to participate in the study and one will not be victimized or penalized for refusal in participation. In addition, respondents choice will not be used against him/her nor affect anywhere.

Please remember the participation in the study is voluntary. Participants are allowed to ask questions related the study at any time. Further a respondent will not be forced to respond to questions and he /she can stop any interview at any time without any victimization

Discomfort and risks

Respondents will be asked some personal questions which may make them an ease but if this happens to an individual,he/she may decide not to respond and may also stop the interview at any time,the interview may take half an hour to complete

Benefits

Participating in this study will support us in strengthening quality service delivery in Kenya and other countries which have the same problem in study.This research proposal is required to support the health care delivery systems since will create new knowledge in this area thus informing managers in making research based decisions

Rewards

Participants will not be given any reward for taking part in the interview

Confidentiality

Respondents will not allowed to write their names in tha questionnaire to ensure utmost confidentiality is maintained

Contact information

Incase of any questions, you may contact the following supervisors;

Dr. Joshua Agola - Lecturer Department of Computer and Software Engineering
Jaramogi Oginga Odinga University of Science and Technology Telephone Number:
0725679579
Email: agolau@gmail.com

Dr. Richard Omolo - Lecturer Department of Computer and Software Engineering
Jaramogi Oginga Odinga University of science and Technology Telephone number:
0721680611
Email: comolor@gmail.com

Participant`s statement

I have voluntary accepted to take part in the study after being satisfied with the procedure to be followed during the study and being assured that my information will be kept condefintial

Name of Respondent.....
Date.....
Signature.....

Investigator`s statement

I, witnesses, that I have explained to the participant in a language s/he understands the processes to be followed in the study and the risks and the benefits involved.

Name of interviewer.....
Date.....
Interviewer signature.....

Appendix III : Questionnaire

This questionnaire is intended to collect research facts concerning factors influencing patient self- referrals to referral hospitals and challenges facing current referral frameworks: a case of Kisii Teaching and Referral hospitals in Kisii County. The questionnaire has four sections. For section one, kindly respond to all items using a tick [] and for section B, C and D indicate a Yes or No where appropriate. You are requested not write your name anywhere on the questionnaire. I would appreciate your voluntary participation in completing the questionnaire. Thank you.

SECTION A: SOCIAL DEMOGRAPHIC CHARACTERISTICS

(Please. tick () the appropriate answer.)

A1.Your Gender? Male () Female ()

A2.Your Age group?

Under 29 years [] 30-39 years [] 40-49 years [] 50 years or over []

A3. Marital status

Married () Single () Divorced () Widowed () Separated

A4.Your educational level

Primary () secondary () tertiary

A5. Referred from facility

Yes () self- referred ()

A6.Occupation status

Employed () Unemployed ()

SECTION B: PRIMARY HEALTH FACILITY CHARACTERISTICS

(Please indicate Yes or No for the questions below)

B1. Fare to PHC affordable

B2. PHC always open and accessible

B3. Waiting time is short at the PHC

B4. Drugs are always available in PHC

B5. Lab tests available at PHC

B6. Primary Health Centre is clean

B7. I receive all services at the PHC

B8. Provider gives required information at the PHC

SECTION C: REFERRAL FACILITY CHARACTERISTICS

(Please indicate Yes or No for the questions below)

C1. It cost me little fare to come to this referral facility

C2. Availability of a health care provider I want guides my decision on which facility to visit

C3. I have confidence with providers working at the referral facility

C4. Waiting time at this facility is short

C5. Availability of medicine attracts me to this referral facility

C6. Infrastructure attracts me to this referral facility

C7. I am attracted to quality of service in this facility

C8. I got a lab order that brought me to this referral facility

SECTION D: Administrative

(Please indicate Yes or No for the questions below)

D1. Is this your first time seeking health services in this facility? If No answer D3 and if yes answer the next question

D2. Did you know that you are supposed to seek for health services from the primary health care first?

D3. Have you attended the primary health care facility before?

D4. Did you *get all* the services at the primary health care facility? If No, answer question D5

D5. Were you referred by the health care provider to this facility? If yes answer question D6?

D6. Were you given a referral letter to the referring facility?

D7. when you arrived at the referral facility, did the health care provider tell you that they were aware about your referral?

D8. When you seek for health care services in the primary health care, are you normally advised on what you can do in case you want to seek health services at the referral hospital ? If No answer the next question

D9. At the primary health care, are there posters giving guidelines on how a patients are supposed to seek health services in referral hospitals?

SECTION E: LEVEL OF HOSPITAL CONGESTION

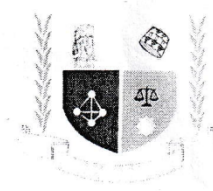
D1. For how long did you wait in line before being attended to?

D2. How much time did you spend with the doctors?

D3. Were you satisfied with the whole exercise at the referral facility?

I greatly appreciate for taking your time to fill this questionnaire

Appendix IV: Introductory Letter from the University



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE & TECHNOLOGY

BOARD OF POSTGRADUATE STUDIES

Office of the Director

Tel. 057-2501804

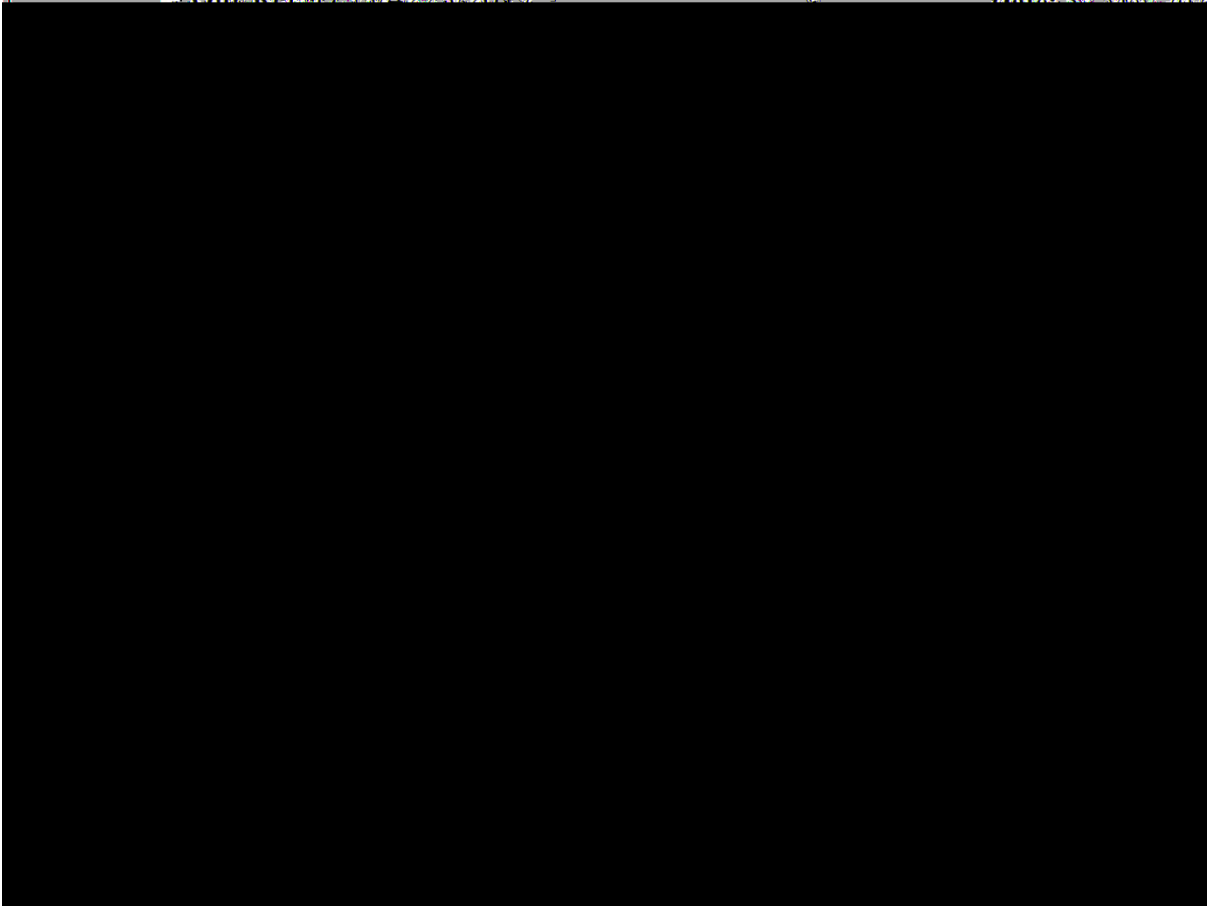
P.O. BOX 210 - 40601

Email: bps@jooust.ac.ke

BONDO

Office of the Director

Date: 11/03/2017



Appendix V: Research Permit

